

# CITY OF BETHEL

## City Council Meeting Agenda, April 27, 2021 – 6:30 PM

Website: <https://www.cityofbethel.org/council>

Location: Council Chambers, City Hall, 300 Chief Eddie Hoffman Highway, Bethel

Council Members: Mayor Michelle DeWitt, Vice-Mayor Haley Hanson, Perry Barr, Alyssa Leary, Mark Springer, Rose Henderson, Conrad McCormick



### ALL PUBLIC MEETINGS OF THE CITY OF BETHEL WILL BE HELD VIRTUALLY

<https://zoom.us/j/96155206634?pwd=cUZJM2Z5bmJLc1RDWWhtTMW10d2Z3Zz09>

Meeting ID: 961 5520 6634

Passcode: 419164

+1 346 248 7799 US (Houston)  
+1 669 900 9128 US (San Jose)  
+1 253 215 8782 US (Tacoma)  
+1 312 626 6799 US (Chicago)  
+1 646 558 8656 US (New York)  
+1 301 715 8592 US (Washington DC)  
877 853 5257 US Toll-free  
888 475 4499 US Toll-free  
833 548 0276 US Toll-free  
833 548 0282 US Toll-free

### WRITTEN PUBLIC TESTIMONY

- 1) Email [cityclerk@cityofbethel.net](mailto:cityclerk@cityofbethel.net) by 4:00pm the day of the meeting.
  - 2) Specify the written submission is for People To Be Heard.
  - 3) Provide full real name of the person making submission.
- Public testimony may be summarized if the length of the submission exceeds the five minutes time limit.

### 1. CALL TO ORDER

### 2. PLEDGE OF ALLEGIANCE

### 3. ROLL CALL

### 4. PEOPLE TO BE HEARD – FIVE MINUTES PER PERSON

### 5. APPROVAL OF CONSENT AGENDA AND REGULAR AGENDA

### 6. APPROVAL OF MEETING MINUTES

6.1. \*4-13-2021 Regular City Council Meeting

### 7. REPORTS OF STANDING COMMITTEES

7.1. Committee/Commission/Board Agendas And Draft Meeting Minutes

Posted April 21, 2021 at City Hall, AC Co., Swanson's, and the Post Office.

Kevin Morgan, Deputy City Clerk

City Clerk's Office Contact Information: Email [cityclerk@cityofbethel.net](mailto:cityclerk@cityofbethel.net) Phone 907-543-1384

Items noted with an asterisk (\*) are consent agenda items, unless removed from the consent agenda they are approved upon the approval of the agenda. Ordinances introduced at this meeting may be set for public hearing at the next regular meeting.

The Council may by unanimous consent, after 12:00 AM Fix the Time to Which To Adjourn until the following day at 6:30 PM

## **8. SPECIAL ORDER OF BUSINESS**

## **9. UNFINISHED BUSINESS**

- 9.1. Public Hearing Of Ordinance 20-25: Creating An Excise Tax On The Distribution Of Sugar-Sweetened Beverage Products (Parks Recreation Aquatic Health And Safety Center Committee)
- 9.2. Public Hearing Of Ordinance 21-13: Authorizing The Acquisition Of Interest In Land For A Utility Easement From Irvin L. Kreider And Diana S. Kreider, Co-Trustees Of Kreider Revocable Trust Involving The Bethel Avenues Piped Water And Sewer Project - Phase I (Interim City Manager Williams)
- 9.3. Public Hearing Of Ordinance 21-14: Amending Bethel Municipal Code 4.16.160 Sales Tax Exemptions And Limitations (Interim City Manager Williams)
- 9.4. Public Hearing Of Budget Ordinance 20-12(l): Amending The City Of Bethel Fiscal Year 2021 Budget- Water Sewer Study- COVID Food Distribution- Community Action Grant- Bethel Heights Water Treatment Facility- Hauled Refuse (Interim City Manager)

## **10. NEW BUSINESS**

- 10.1. \*Introduction Of Ordinance 21-15: Temporarily Reducing Payments Listed Under 5.20.160 A. Of The Bethel Municipal Code For Taxicab, River Taxi, Limousine Or Bus Permit Not In Operational Statues As A Result Of COVID-19 (Public Safety And Transportation Commission)
- 10.2. \*Introduction Of Budget Ordinance 20-12(m): Amending The City Of Bethel Fiscal Year 2021 Budget- Property Maintenance- Piped Water- Hauled Sewer (Interim City Manager Williams)
- 10.3. \*Resolution 21-08: Providing Support Of The Kuskokwim 300 Race Committee's Application For A Grant For The Development And Repair Of Trails And Trail Marking In The Region (Vice-Mayor Hanson)
- 10.4. AM 21-08: Purchase Of Axon TASER Conducted Energy Weapons (Interim City Manager Williams)
- 10.5. AM 21-09: Direct Administration To Sign Memorandum Of Agreement Between State Of Alaska And City Of Bethel Containing Grant Terms And Conditions Allowing The City To Receive Up To \$284,729.75 To Support COVID-19 Vaccine Administration, Testing, And Other COVID-19 Related Activities (Interim City Manager Williams)
- 10.6. Negotiated Employment Agreement Between The City Of Bethel And Peter A. Williams (Mayor DeWitt)
- 10.7. \*Personal Leave- City Clerk- April 28th- May 7th, 2021 (Mayor DeWitt)

Posted April 21, 2021 at City Hall, AC Co., Swanson's, and the Post Office.

Kevin Morgan, Deputy City Clerk

**City Clerk's Office Contact Information:** Email [cityclerk@cityofbethel.net](mailto:cityclerk@cityofbethel.net) Phone 907-543-1384

Items noted with an asterisk (\*) are consent agenda items, unless removed from the consent agenda they are approved upon the approval of the agenda. Ordinances introduced at this meeting may be set for public hearing at the next regular meeting.

The Council may by unanimous consent, after 12:00 AM Fix the Time to Which To Adjourn until the following day at 6:30 PM

10.8. \*US District Court Jury Duty- City Manager- Month of May 2021 (Mayor DeWitt)

## **11. REPORTS**

11.1. Mayor's Report

11.2. City Manager's Report

11.3. Clerk's Report

## **12. COUNCIL MEMBER COMMENTS**

## **13. EXECUTIVE SESSION**

## **14. ADJOURNMENT**

Posted April 21, 2021 at City Hall, AC Co., Swanson's, and the Post Office.

Kevin Morgan, Deputy City Clerk

**City Clerk's Office Contact Information:** Email [cityclerk@cityofbethel.net](mailto:cityclerk@cityofbethel.net) Phone 907-543-1384

Items noted with an asterisk (\*) are consent agenda items, unless removed from the consent agenda they are approved upon the approval of the agenda. Ordinances introduced at this meeting may be set for public hearing at the next regular meeting.

The Council may by unanimous consent, after 12:00 AM Fix the Time to Which To Adjourn until the following day at 6:30 PM

**1. CALL TO ORDER**

A Regular Meeting of the Bethel City Council was held on April 13, 2021 at 6:30 p.m., in the council chambers, Bethel, Alaska.

Mayor DeWitt called the meeting to order at 6:31 p.m.

**2. PLEDGE OF ALLEGIANCE**

**3. ROLL CALL**

|                                                                                                                                                                                                                                                                                                                                                                  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Comprising a quorum of the Council, the following members were present:</b>                                                                                                                                                                                                                                                                                   |
| City Council Member Rose Henderson (telephonically)<br>City Council Member Conrad McCormick (telephonically)<br>City Council Member Mark Springer (telephonically)<br>City Council Member Alyssa Leary (telephonically)<br>Vice-Mayor Haley Hanson (telephonically)<br>City Council Member Perry Barr (telephonically)<br>Mayor Michelle DeWitt (telephonically) |
| <b>Members Absent:</b>                                                                                                                                                                                                                                                                                                                                           |
|                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Also in attendance were the following:</b>                                                                                                                                                                                                                                                                                                                    |
| Interim City Manager Peter Williams (telephonically), City Clerk Lori Strickler (telephonically), City Attorney Libby Bakalar (telephonically)                                                                                                                                                                                                                   |

**4. PEOPLE TO BE HEARD – Five minutes per person**

Eileen Arnold-Spoke in favor of Ordinance 20-25. Proposed that the businesses could choose not to pass the tax onto the consumer.

Ana Hoffman- Spoke in opposition to Ordinance 20-25. Spoke of other factors that lead to tooth decay such as: eating habits, difficulty of accessing dental care, and lack of access to water with fluoride. Listed the multiple taxes that Bethel already has and believes that more tax would not achieve the goals of the ordinance.

Beverly Hoffman- Spoke in favor of Ordinance 20-25 to improve community health and infrastructure. Discouraged the corporate influence from the beverage industry and

encouraged the Council to adopt the suggested amendments presented by the Parks, Recreation, Aquatic Health and Safety Center Committee.

Cezary Maczynski - Spoke in opposition to Ordinance 20-25. The question should go to a vote of the people instead of the City Council. Suggested that the tax would disproportionately affect the Alaskan Native population.

Kathy Hanson- Spoke in favor of Ordinance 20-25. If passed the revenue would be dedicated to the recreational opportunities for the community residents. Presented information on the effects of consuming sugar sweetened beverages and that reduced consumption will improve the health of our residents.

Rick Robb- Spoke in opposition to Ordinance 20-25. The tax will cost people money, create inflationary pressure, and will affect lower income people the most. Suggested the City has a balanced budget and does not need the additional revenue. Regulating what people eat or drink is not a duty of the City Council.

Ellen Hodges- Spoke in favor of Ordinance 20-25, Communities that have the tax consume less sugar sweetened beverages. The excise tax is paid by the businesses. The City should use polices to limit use of these products and increase recreational opportunities.

Shadi Rabi- Spoke in favor of Ordinance 20-25. Suggested the excise tax would help improve our community health.

Liz Bates- Spoke in favor of Ordinance 20-25. Spoke of the detrimental and addictive effect of sugar which mainly affects those with lower income. Spoke in favor of the AM authorizing the purchase of a groomer to increase healthy exercise in the community.

Luz Meenk-The beverage industry is paying large amounts of money to market sugary sweetened beverages to our children, The excise tax has shown to help reduce the amount of sugary sweetened beverages. Spoke in favor of recreational opportunities.

Mary Beth Whalen- Spoke in favor of Ordinance 20-25. Suggested food and nutrition policies work when small manageable steps are taken.

*City Clerk Strickler read the written testimony into the record:*

Dane Lenaker- Spoke in favor of Ordinance 20-25. Spoke of the negative impacts of sugar sweetened beverages and sugar. Listed health problems from tooth decay in our region. Other communities that have implemented this tax have shown positive effects. The city may also need the revenue as State funding may continue to decline in the future.

Eileen Arnold- In support of the partial opening of the fitness center. Tundra Women's Coalition (TWC), in pre-pandemic times, used the facility for the children in shelter, the teens in the Teens Acting Against Violence Group, and as a benefit to the staff. Looks forward to a time when the facility can be fully re-opened, but is grateful for whatever services can be offered in the meantime.

Eric Middlebrook- Ordinance 20-25 is a new tax on people. To have the funds go into Parks and Recreation projects directly, circumvents the city budget process. Tax dedication by ordinance should be discussed on its own merit. The tax should be debated on its own and preferably voted on by the public or an advisory vote.

Henrietta Knight- Spoke in opposition to Ordinance 20-25. Should be put to a vote; not decided by council members.

Josh Anderson- Spoke in opposition to Ordinance 20-25. Small businesses are struggling through COVID times. The ordinance would have a negative impact on the cost of goods, especially in rural areas.

Mark Reynolds- Spoke in favor of Ordinance 20-25. Spoke of the dental decay of the region and the lifelong negative impacts.

Susan Taylor- Recommended that the Sugar Sweetened Beverage tax be put into the next election to be voted on; the city council should prioritize its time on other issues.

William Eggiman- Spoke in favor of Ordinance 20-25. Sugary beverages have no nutritional value and negative health effects such as diabetes and tooth decay. Spoke of the detrimental effect of these problems on children in the region. Excise taxes discourage purchase of these products and do not affect sales tax items. Recommends the revenue from the tax could fund health related activities and facilities.

## **5. APPROVAL OF CONSENT AGENDA AND REGULAR AGENDA**

Main Motion: Approval of Consent and Regular Agenda.

|              |                                                                                                          |
|--------------|----------------------------------------------------------------------------------------------------------|
| Moved by:    | Haley Hanson                                                                                             |
| Seconded by: | Mark Springer                                                                                            |
| In favor:    | Perry Barr, Haley Hanson, Alyssa Leary, Mark Springer, Michelle DeWitt, Rose Henderson, Conrad McCormick |
| Opposed:     | None                                                                                                     |
| Results:     | Motion Carries                                                                                           |

Remove from Consent Agenda- New Business Item 10.3 Budget Ordinance 20-12(I)-

Mayor DeWitt

## **6. APPROVAL OF MEETING MINUTES**

**Item 6.1.** - \*3-23-2021 Regular City Council Meeting  
*Passed on the consent agenda.*

**Item 6.2.** - \*3-30-2021 Special City Council Meeting  
*Passed on the consent agenda.*

## **7. REPORTS OF STANDING COMMITTEES**

**Item 7.1.** - Committee/Commission/Board Meeting Minutes And Draft Agendas

Port Commission, Council Member Springer- Nothing to report.

Planning Commission, Vice-Mayor Hanson- Met on April 8th, Reviewed the land lease ordinance with YKHC concerning the PATC building, and the Commission will review the lease at the next meeting on May 13th.

Community Action Grant Technical Review Board, Council Member Barr- Stated the Council will be considering an AM to approve the last quarter grant awards. Encouraged the public to submit grant requests to "Green Up" Bethel.

Parks, Recreation, Aquatic Health and Safety Center Committee, Mayor DeWitt- The Gym feasibility study is starting to happen. Two resolutions will be coming soon to the council: suggested parks names for unnamed parks; and changing the name of the committee to the Community Parks and Recreation Committee. Discussed the Sugar Sweetened Beverage tax, FY2022 budget for contracting recreational services, the Boardwalk project from YKHC to the college, Clean Up Green Up, and a winter access trail with BNC and community volunteers.

Finance Committee, Council Member McCormick- Have not met since the last meeting.

Public Works Committee, Council Member Leary- Have not met since the last meeting.

Public Safety and Transportation Commission, Council Member Henderson- Discussed goals of the body, ideas and recommendations for community involvement for the Fire and Police department, and recruitment. Reviewed an ordinance concerning taxi fees; expects the recommendation at the next meeting. Will hold a special meeting on the 13th to discuss the proposed operating budget for the Fire and Police department.

## **8. SPECIAL ORDER OF BUSINESS**

## **9. UNFINISHED BUSINESS**

**Item 9.1.** - Public Hearing Of Ordinance 20-25: Creating An Excise Tax On The Distribution Of Sugar-Sweetened Beverage Products (Parks Recreation Aquatic Health And Safety Center Committee)

*Mayor DeWitt opened the Public Hearing.*

Hugh Dymont- Doesn't have a position on the excise tax itself but suggested the City Council present an advisory vote on the ballot.

Pamela Conrad-Spoke in favor of Ordinance 20-25. Would like to prevent diabetes for future generations. Buying a product with an excise tax is the choice of the consumer. Filters to improve the taste of water are easy to obtain. Reducing consumption could also reduce our carbon footprint.

Jim Krieger- Spoke in favor of Ordinance 20-25. He provided statistical information to support his position that sugary drink taxes work to address the health impacts and harm caused by sugary drink consumption without raising grocery prices or job loss. The tax could be used to raise money for recreation.

David Hicks- Spoke in opposition to Ordinance 20-25. The tax is something that will affect the surrounding communities and the tax will have no effect on the health and recreation opportunities for these communities. There are other reasons for tooth decay in the region such as: access to fluoridated water, lack of oral hygiene, and inaccessibility of dental care. The tax should be put to the will of the people.

Christy Inman - Spoke in opposition to Ordinance 20-25. The tax should be

presented to the voters of Bethel. Spoke of the difficulty of finding soda to sell and other goods at this time. Unfair to tax goods that are difficult to find and it is unfair to tax people who will not be able to use the benefits of the tax. Spoke of the low quality of water in the surrounding communities.

Amber Jones- Spoke in favor of Ordinance 20-25. Spoke of the harm of sugary drinks which target youth and people with lower incomes. Advocates for education to acknowledge the role Sugar Sweetened Beverages have in our community.

Emily Nenon- Spoke in favor of Ordinance 20-25. Worked on a tobacco tax excise and found that an increase of price leads to a decrease in consumption. Spoke of cancer and its relationship with obesity. A Sugar Sweetened Beverage tax reduces consumption. Would reduce obesity and future cancer risk for the youth.

Jamie Morgan- Spoke in favor of Ordinance 20-25. Provided information and statistical information on sugar drinks as they relate to heart health. Spoke of the high rate of consumption of sugary drinks in the area compared to the recommended amount.

Brian Lefferts, as the Chair of the Parks Recreation, Aquatic Health and Safety Center Committee- Spoke in favor of Ordinance 20-25. Also spoke in favor of the suggested amendments which were passed unanimously by the Committee.

*City Clerk Strickler read the written public testimony from:*

Gary Decossas- Spoke in opposition to Ordinance 20-25, Provided suggestions for the council to outline their funding goals and establish a sunset for the tax. Raised concerns of the Finance Department's ability to implement the tax.

Victoria Hardwick- Spoke in favor of Ordinance 20-25. Recommended that tax and education be used to lower the amount of tooth decay in the region.

*Mayor Dewitt closed the Public Hearing.*

Main Motion: Adopt Ordinance 20-25.

|              |                  |
|--------------|------------------|
| Moved by:    | Haley Hanson     |
| Seconded by: | Conrad McCormick |

Motion to Amend Section 4.17a.010 Definitions to (new language is underlined removed

language is stricken):

-

~~"Beverage for Medical Use" means a beverage suitable for human consumption and manufactured for use as a:~~

- ~~1. Source of necessary nutrition due to a medical condition, or~~
- ~~2. For use as an oral rehydration electrolyte solution for infants and children formulated to prevent or treat dehydration due to illness.~~

-

~~It shall not include drinks commonly referred to as "Sports Drinks" or any other common names that are derivations thereof.~~

"Beverage for Medical Use" means a beverage suitable for human consumption and manufactured for use as an oral nutritional therapy for Persons who cannot absorb or metabolize dietary nutrients from food or beverages, or for use as an oral rehydration electrolyte solution for infants and children formulated to prevent or treat dehydration due to illness.

"Beverage for Medical Use" shall also mean a "medical food" as defined in section 5(b)(3) of the Orphan Drug Act (21 U.S.C. 360ee(b)(3); this Act defines medical food as "a food which is formulated to be consumed or administered externally under the supervision of a physician and which is intended for the specific dietary management of a disease or condition for which distinctive nutritional requirements, based on recognized scientific principles, are established by medical evaluation."

"Beverage for Medical Use" shall not include drinks commonly referred to as "sports drinks" or any other common names that are derivations thereof.

"Bottle" means any closed or sealed container regardless of size or shape, including, without limitation, those made of glass, metal, paper, plastic, or any other material or combination of materials.

~~"Bottled Sugar-Sweetened Beverage" means any sugar-sweetened beverage in a container-bottle that is ready for consumption without further processing, such as, and without limitation, dilution or carbonation.~~

~~"Consumer" means a natural person who purchases a sugar-sweetened beverage product in the city for a purpose other than resale in the ordinary course of business.~~

means a Person who purchases a Sugary Drink for consumption and not for sale to another.

~~"Distributor" means any person who distributes sugar-sweetened beverage products in the city.~~  
means any Person, including manufacturers and wholesale dealers, who receives, stores, manufactures, bottles, and/or distributes Bottled Sugary Drinks, Syrups, or Powders, for sale to Retailers doing business in the State, whether or not that Person also sells such products to Consumers.

"Natural Fruit Juice" means the original liquid resulting from the pressing of fruits, or the liquid resulting from the dilution with water of dehydrated natural fruit juice.

"Natural Vegetable Juice" means the original liquid resulting from the pressing of vegetables, or

the liquid resulting from the dilution with water of dehydrated natural vegetable juice.

"Non-nutritive Sweetener" means any non-nutritive substance suitable for human consumption that humans perceive as sweet and includes, without limitation, aspartame, acesulfame-K, neotame, saccharin, sucralose, stevia, and other artificial sweeteners. "Non-nutritive Sweetener" excludes Sugars. For purposes of this definition, "non-nutritive" means a substance that contains fewer than 5 calories per serving.

"Person" means any natural person, partnership, cooperative association, limited liability company, corporation, personal representative, receiver, trustee, assignee, or any other legal entity.

"Place of Business" means any place where Sugary Drinks, Syrups, or Powders are manufactured or received for Sale in the State.

"Powder" means any solid mixture, containing one or more caloric sweetener as an ingredient, intended to be used in making, mixing, or compounding a sugar-sweetened beverage by combining the powder with one or more ingredients.  
means any solid mixture of ingredients used in making, mixing, or compounding Sugary Drinks by mixing the powder with any one or more other ingredients, including without limitation water, ice, Syrup, simple Syrup, fruits, vegetables, fruit juice, vegetable juice, carbonation, or other gas.

"Retailer of Sugar-Sweetened Beverage Products" means a person, other than a distributor, manufacturer, or wholesaler who receives, stores, mixes, compounds, or manufactures a sugar-sweetened beverage and sells or otherwise dispenses the sugar-sweetened beverage to the ultimate consumer.

"Retailer" means any Person who sells or otherwise dispenses in the State a Sugary Drink to a Consumer whether or not that Person is also a Distributor as defined in this section.

"Sale" means the transfer of title or possession for valuable consideration regardless of the manner by which the transfer is completed.

"Simple Syrup" means a mixture of water and one or more natural or common sweeteners without any additional ingredients.  
means a liquid mixture of ingredients used in making, mixing, or compounding Sugary Drinks using one or more other ingredients including, without limitation, water, ice, a Powder, simple Syrup, fruits, vegetables, fruit juice, vegetable juice, carbonation, or other gas.

"Sugars" means any monosaccharide or disaccharide nutritive sweetener such as glucose, fructose, lactose, and sucrose. Examples include, without limitation, cane sugar, beet sugar, high-fructose corn syrup, honey, fruit juice concentrate, and other caloric sweeteners. For purposes of this definition, "nutritive" means a substance that contains 5 or more calories per serving.

"Sugar-Sweetened Beverage" means any non-alcoholic beverage which contains at least 5 grams of caloric sweetener per 12 fluid ounces.

-

"Sugar-Sweetened Beverage " means any nonalcoholic beverage, carbonated or noncarbonated, which is intended for human consumption and contains any added Sugars. As used in this definition, "nonalcoholic beverage" means any beverage that contains less than one-half of one percent alcohol per volume. The term "Sugary-sweetened beverage" does not include beverages sweetened solely with Non-nutritive Sweeteners; Natural Fruit or Vegetable Juice; Milk; infant formula, Beverages for Medical Use; or Water.

1. "Sugar-Sweetened Beverage" includes all drinks and beverages commonly referred to as "soda," "pop," "cola," "soft drinks," "sports drinks," "energy drinks," "sweetened ice teas," "sweetened coffees," or any other common names that are derivations thereof.
2. "Sugar-Sweetened Beverage" does not include any of the following:
  - a. Any beverage in which milk is the primary ingredient, i.e., the ingredient constituting a greater volume of the product than any other;
  - b. Any beverage for medical use;
  - c. Any liquid sold for use for weight reduction as a meal replacement;
  - d. Any product commonly referred to as "infant formula" or "baby formula";
  - e. Any alcoholic beverage;
  - f. Any beverage consisting of 100 percent natural fruit or vegetable juice with no added caloric sweetener. Natural fruit juice and natural vegetable juice is the original liquid with or without water added resulting from the pressing of fruits or vegetables;
  - g. Sweetened medication such as cough syrup, liquid pain relievers, fever reducers and similar products; or
  - h. Any product commonly used exclusively to mix with alcohol that may exceed 5 grams or more per serving of caloric sweetener per 12 ounces of fluid that is not a sugar sweetened beverage, including without limitation margarita mix, bloody mary mix, daiquiri mix or similar products.

|              |                                                                                           |
|--------------|-------------------------------------------------------------------------------------------|
| Moved by:    | Conrad McCormick                                                                          |
| Seconded by: | Haley Hanson                                                                              |
| In favor:    | Perry Barr, Haley Hanson, Alyssa Leary, Michelle DeWitt, Rose Henderson, Conrad McCormick |
| Opposed:     | Mark Springer                                                                             |
| Results:     | Motion Carries                                                                            |

Motion to Amend Section 4.17a.090 Dedication of Revenue (old language is stricken and new language is underlined):

**4.17a.090 Dedicated Revenues.**

~~A. All revenues collected from the excise tax imposed by this chapter shall be deposited monthly in an interest-bearing account dedicated to the park development fund, and shall be designated for the funding of park and recreational design and development, park maintenance and other recreational opportunities in the City of Bethel.~~

The revenue generated and held in the interest-bearing account shall be allocated to supplement the difference in sales tax revenue and operations revenue to support the operations and maintenance of the YK Fitness Center and planning and construction of YK Fitness Center Phase II. The remaining annual revenue shall be dedicated in the park development fund and shall be designated for the funding of park and recreational design and development, park maintenance, other recreational opportunities, and water projects in the City of Bethel.

Moved by: Conrad McCormick

|              |                                                         |
|--------------|---------------------------------------------------------|
| Seconded by: | Alyssa Leary                                            |
| In favor:    | Alyssa Leary, Michelle DeWitt, Conrad McCormick         |
| Opposed:     | Perry Barr, Haley Hanson, Mark Springer, Rose Henderson |
| Results:     | Motion Fails                                            |

Motion to Amend Section 4.17a.020 Excise tax on sugar-sweetened beverage to strike one cent and insert two cents.

**4.17a. 020 Excise tax on sugar-sweetened beverages.**

A. In addition to any other taxes imposed by the city, the city hereby levies an excise tax of ~~one cent (\$0.01)~~ two cents (\$0.02) per fluid ounce on the privilege of distributing sugar-sweetened beverage products in the city. The tax is imposed only when the supply, acquisition, delivery or transport is for the ultimate retail sale of the sugar-sweetened beverage products within the city.

|              |                                                                                                          |
|--------------|----------------------------------------------------------------------------------------------------------|
| Moved by:    | Rose Henderson                                                                                           |
| Seconded by: | Conrad McCormick                                                                                         |
| In favor:    | None                                                                                                     |
| Opposed:     | Perry Barr, Haley Hanson, Alyssa Leary, Mark Springer, Michelle DeWitt, Rose Henderson, Conrad McCormick |
| Results:     | Motion Fails                                                                                             |

Motion to Amend Ordinance 20-25 to insert whereas statements the reference health impacts sugary-sweetened beverage consumption.

**WHEREAS,** sugar-sweetened beverages are leading sources of added sugars in the American diet according to the Centers for Disease Control (CDC) and Prevention;

**WHEREAS,** the average American drinks nearly 42 gallons of sweetened beverages a year, the equivalent of 39 pounds of extra sugar, every year;

**WHEREAS,** the CDC states in 2011-2014, 6 in 10 youth and 5 in 10 adults drank a sugar-sweetened beverage on average each day;

**WHEREAS,** a study conducted in 2015 reviewing the association between added sugar intake and dental caries in Yup'ik children using a novel hair biomarker, showed:

- 49% of children consumed sugar-sweetened fruit drinks (e.g., Tank, Kool-Aide) 2-3 times per day and 15.7% of the respondents reported consuming sugar-sweetened beverages more than 4 times a day at home;
- Nearly 14% consumed soda 2-3 times per day, 43.1% consumed sodas 1-4 times per week;
- Over 45% consumed 100% juice drinks (e.g., orange, apple, grape) and 65%;

-

**WHEREAS,** another study conducted characterizing beverage patters among Alaska Natives living in rural, remote communities found that, sugar-sweetened beverages contribute to more than 75% of beverage intake among Yup'ik youth who on average derive 328 kcals and 83 grams of added sugar from sugar-sweetened beverages;

**WHEREAS,** according to a study evaluating beverage consumption in an Alaska native village, consisting of 25 adults, 21 adolescents 12-17, 21 children 3-11:

- 'nearly half (46%) of all added sugars consumed by the U.S. population ages 2 and older come from sugary drinks;
- 72% of adults reported consuming sugar sweetened beverages at least once per week and 20% reported daily consumption;
- Sweetened just beverages such as Tank or Kool-aid were consumed most frequently with 100% of adolescents and 76% children reporting some consumption, 38% reported daily consumption;
- Children in the village were more than twice as likely as U.S. children to report ever consuming sweetened juice beverages (76% vs. 34%). as were adults (33% vs. 17%);
- children (29%) and adolescents (52%) in the village were more likely to report ever consuming sports and energy drinks than U.S. children (7%) or adolescents (12%);
- about 23% of Alaska adults and almost 50% of Alaska high school students drink one of more sugary beverages every day;
- 31% of Alaska 3-year-olds drink some amount of sugary beverages every day;

**WHEREAS,** a review of consumption of sugar-sweetened beverages among adults in rural Alaska finds:

- participants in communities with in-home piped water reported a mean sugar-sweetened beverage consumption frequency of 7.8 times per week while participants in communities without in-home piped water reported a mean frequency of 12.5 times per week;
- participants who lived in a community without in-home piped water reported consuming sugar-sweetened beverage 46% more often than those who lived in a community with in-home piped water;

**WHEREAS,** the Alaska Department of Health and Social Services found:

- 'overall, 23% of Alaska adults consumed 1 or more sugary drinks daily in 2017, including sugar-sweetened sodas as well as non-carbonated beverages;
- Alaska Native adults (40%) and adults from other races (32%) were more likely to drink 1 or more sugary drinks daily than White adults (18%);
- 'overall, 49% of Alaska high school students consumed a daily average of 1 or more sugary drink servings (glass, bottle or can) in 2019 (such as Gatorade or PowerAde), energy drink (such as Red Bull, Rockstar, or Monster), or another sugar-sweetened beverage (such as lemonade, sweetened tea or coffee drinks, flavored milk, Snapple, or Sunny Delight) with 15% drinking three or more services per day;
- Alaska Native students (58%) were significantly more likely than White students (43%) and those of other races (46%) to consume at least 1 sugary drink a day;

in 2016-2018, 13% of Alaska 3-year-olds drank soda daily, and 28% drank sweetened non-soda drinks daily, one in ten (10%) of Alaska 3-year-olds drank 2 or more cups of sweetened non-soda beverages on a given day;

- over one third of 3-year-olds (39%) drank more than 1 cup of 100% fruit juice, and 17% drank less than 1 cup;
- 3-year-old Children of Alaska Native mothers (53%) were significantly more likely than other children to drink any sugary drinks daily, and children of other non-Native race mothers (37%) were also significantly more likely than children of White mothers (19%) to drink any sugary drinks daily
- children in Northern (74%) and Southwest (70%) Alaska were more likely than those in other regions (range: 14% to 28%) to drink any sugary drinks daily;

- **WHEREAS,** the American Heart Association suggests a daily added-sugar limit of no more than 100 calories per day which equates to about **6 teaspoons** or 24 grams of sugar for most women and children under 18, and no more than 150 calories per day which equates to about **9 teaspoons** or 36 grams of sugar for most men;

- **WHEREAS,** drinking one 20-ounce bottle of soda which contains the equivalent of approximately **17 teaspoons of sugar**, results in almost three times the recommended limit of sugar for women and children, and almost twice the recommended limit of sugar for men;

- **WHEREAS,** overconsumption of sugary drinks by people of all ages is associated with weight gain/obesity, type 2 diabetes, heart disease, kidney diseases, non-alcoholic liver disease, tooth decay and cavities, gout and rheumatoid arthritis;

- **WHEREAS,** in Alaska 32 % among children 6 to 11 years of age, and 65 % among children 12 to 17 years of age;

#### DIABETES FOCUS

- **WHEREAS,** over the past 30 years, adult diabetes rates have nearly tripled in the United States with 9 percent of adults have diabetes and more than one-third have prediabetes, 14% of the people in the Yukon Kuskokwim Delta are diagnosed with diabetes or pre-diabetes;

- **WHEREAS,** over the past 10 years, the number of people diagnosed with prediabetes has almost doubled;

- **WHEREAS,** over the past 10 years, the percentage of teens nationwide that have diabetes or prediabetes has increased from 9 percent to 23 percent;

- **WHEREAS,** by consuming one sugar-sweetened beverage a day increases the risk of developing Type Two Diabetes by 25%;

- **WHEREAS,** one if five people with diabetes are under the age of 45;

- **WHEREAS,** one in three children born today is expected to develop diabetes in their lifetime, if measures are not taken to reduce consumption of sugar sweetened beverages, we are increasing risks for youth in our community to face complications from diabetes such as heart disease, nerve damage, gum infections, kidney disease, hearing impairment, blindness, amputation of toes, feet, or legs, and increased risk of Alzheimer's disease;

- **WHEREAS,** 85% of the people diagnosed with Diabetes in the Yukon Kuskokwim Delta experience obesity or excess weight;

- **WHEREAS,** the Alaska Diabetes Coalition Strategic Plan 2020-2025 states:

- as of 2016, 7.5% of adults in Alaska have known diabetes and 11.1% of adults have known prediabetes and more than 100,000 Alaska adults have been diagnosed with diabetes or prediabetes, but more—over 80% are likely at risk and do not know it;
- diabetes is the 8th leading cause of death in Alaska, identified as a cause of death for 3,662 Alaskans between 2007 and 2016 – 889 as the underlying cause of death (i.e., direct cause), and 2,773 as a contributing cause of death;
- in total during 2016, diabetes contributed to the need for services in 70,487 hospital visits – 9,067 of these were inpatient visits, where the person was admitted to a hospital, and 7% indicated diabetes as the primary diagnosis, or reason care was needed;
- more Alaska Native people and Black or African American people have diabetes or prediabetes than Whites in Alaska;

- **WHEREAS,** a review in the International Journal of Circumpolar Health finds evidence indicating that while Alaska Natives have a low prevalence of diabetes compared with other Native Americans, they are experiencing a more rapid rate of increase than other groups;

- **WHEREAS,** the evidence shows three changes have occurred concurrently over the past few decades; an increased proportion of carbohydrate in the diet, increasing prevalence of obesity, and increasing prevalence of diabetes additionally, there is evidence that elements of the traditional diet, specifically frequent seal oil and salmon intake, correlate with a lesser risk of glucose intolerance

#### OBESITY FOCUS

- **WHEREAS,** there is overweighing evidence linking obesity and the consumption of sweetened beverages, such as soft drinks, energy drinks, sweet teas, and sports drinks and currently the Unites States as a 42%, this marks an increase of 26% since 2008;

- **WHEREAS,** obesity rates have tripled for adolescents and quadrupled for children 6 to 11 years of age;

- **WHEREAS,** an evaluation of risk factors for obesity at age 3 in Alaskan children, including the role of beverage consumption shows:

- obesity prevalence among all 3-year olds was 24.9% and among Alaska Native children 42.2%;
- among Alaska Native children, obesity risk was greater among residents of the Northern/Southwest region of the state in comparison with other areas, such as Anchorage (51.6% versus 32.4%; p = 0.04);
- adult obesity prevalence has more than doubled from 13% in 1991 to 31% in 2018, while overweight prevalence has remained relatively consistent;
- between 1991 and 2018, adult obesity prevalence increased among Alaska Native adults (16% to 34%) and White (non-Hispanic) adults (13% to 30%);
- overweight/obesity prevalence was not significantly different between any additional race groups, including Black adults (70%), Hispanic adults (70%), Alaska Native adults (67%), and White adults (66%);
- in 2019, about 2% of Alaska high school students were underweight, 68% were at a healthy weight, 15% were overweight, and 15% were obese;
- overweight/obesity prevalence was significantly lower among 3-year-old children of White mothers (27%) than among children of Alaska Native / American Indian mothers (57%);

- DENTAL FOCUS

-

**WHEREAS,** there is evidence that shows a positive relationship between sugar intake and cavities;

- GENERAL CLOSING

-

**WHEREAS,** drinking one or two sodas a day increases the risk of developing type 2 diabetes by 26 percent, drinking just one soda a day increases an adult's likelihood of being overweight by 27 percent, and for children, the likelihood doubles to 55 percent;

**WHEREAS,** evidence suggests that sugar sweetened beverage tax can reduce consumption of these harmful products, sugary drink taxes have led to a significant decline in sugary drink consumption in Mexico and Berkeley, CA;

**WHEREAS,** in 2012, 50,000 deaths were associated with drinking too many sugary drinks. Of that, 40,000 deaths in the U.S. were attributed to heart problems and 10,000 deaths were attributed to type 2 diabetes caused specifically by consuming too many sugary drinks;

**WHEREAS,** an excise tax on sugar-sweetened beverages is intended to protect the health, safety and well-being of the people in our community;

-

|              |                                                               |
|--------------|---------------------------------------------------------------|
| Moved by:    | Perry Barr                                                    |
| Seconded by: | Alyssa Leary                                                  |
| In favor:    | Haley Hanson, Alyssa Leary, Michelle DeWitt, Conrad McCormick |
| Opposed:     | Perry Barr, Mark Springer, Rose Henderson                     |
| Results:     | Motion Carries                                                |

Motion to Amend Section 4.17a.020 Excise tax on sugar-sweetened beverage to insert a .0025 per ounce excise tax for sugar-sweetened beverages made from powders.

**4.17a. 020 Excise tax on sugar-sweetened beverages.**

A. In addition to any other taxes imposed by the city, the city hereby levies an excise tax of one cent (\$0.01) per fluid ounce on the privilege of distributing sugar-sweetened beverage products in the city. The tax is imposed only when the supply, acquisition, delivery or transport is for the ultimate retail sale of the sugar-sweetened beverage products within the city.

B. For the purposes of this Chapter, the volume, in ounces, of a sugar-sweetened beverage product shall be calculated as follows:

1. For a bottled sugar-sweetened beverage the tax shall be calculated on the volume, in fluid ounces, of sugar-sweetened beverages distributed to any person in the course of business in the city.

2. For sugar-sweetened beverage made from syrups ~~and powders~~ the tax shall be calculated on:

a. The manufacturer's suggested serving size for the volume of fluid ounces of sugar-sweetened beverages produced from syrup ~~or powder~~ upon the initial distribution of syrup ~~or powder~~; or

b. If the labeling or packaging does not specify the recommended number of servings per container, the tax shall be calculated using the largest volume of fluid ounces of sugar-sweetened beverages that could be produced from syrup ~~or powder~~ upon the initial distribution of syrup or powder.

3. For sugar-sweetened beverage made from powders the excise tax shall be \$.0025 per ounce.

|              |                                                                                                          |
|--------------|----------------------------------------------------------------------------------------------------------|
| Moved by:    | Alyssa Leary                                                                                             |
| Seconded by: | Perry Barr                                                                                               |
| In favor:    | Perry Barr, Haley Hanson, Alyssa Leary, Mark Springer, Michelle DeWitt, Rose Henderson, Conrad McCormick |
| Opposed:     | None                                                                                                     |
| Results:     | Motion Carries                                                                                           |

Motion to postpone until the next regular City Council Meeting.

|              |                                                                              |
|--------------|------------------------------------------------------------------------------|
| Moved by:    | Haley Hanson                                                                 |
| Seconded by: | Mark Springer                                                                |
| In favor:    | Perry Barr, Haley Hanson, Alyssa Leary, Mark Springer, Michelle DeWitt, Rose |

|          |                             |
|----------|-----------------------------|
|          | Henderson, Conrad McCormick |
| Opposed: | None                        |
| Results: | Motion Carries              |

Motion to take a ten minute break.

|              |                                                                                                          |
|--------------|----------------------------------------------------------------------------------------------------------|
| Moved by:    | Haley Hanson                                                                                             |
| Seconded by: | Mark Springer                                                                                            |
| In favor:    | Perry Barr, Haley Hanson, Alyssa Leary, Mark Springer, Michelle DeWitt, Rose Henderson, Conrad McCormick |
| Opposed:     | None                                                                                                     |
| Results:     | Motion Carries                                                                                           |

**Item 9.2.** - Public Hearing Of Ordinance 21-12: Authorizing The Acquisition Of Interest In Land For A Utility Easement From Benjamin Kawagley Involving The Bethel Avenues Piped Water And Sewer Project - Phase I (Interim City Manager Williams)

*Mayor DeWitt opened the Public Hearing.  
No one present to be heard.  
Mayor Dewitt closed the Public Hearing.*

Main Motion: Adopt Ordinance 21-12.

|              |                                                                                                          |
|--------------|----------------------------------------------------------------------------------------------------------|
| Moved by:    | Rose Henderson                                                                                           |
| Seconded by: | Alyssa Leary                                                                                             |
| In favor:    | Haley Hanson, Alyssa Leary, Mark Springer, Michelle DeWitt, Rose Henderson, Conrad McCormick, Perry Barr |
| Opposed:     | None                                                                                                     |
| Results:     | Motion Carries                                                                                           |

*Council Member Barr momentarily departed the meeting due to connectivity issues.*

**Item 9.3.** - Public Hearing Of Budget Ordinance 20-12(k): Amending The City Of Bethel Fiscal Year 2021 Budget- Airport Incentive Program- YK Fitness Center Water Usage- Preliminary Engineering Report And Environmental Assessment (Interim City Manager Williams)

*Mayor DeWitt declared a conflict of interest as Executive Director of Bethel Community Services Foundation (BCSF) which is involved with CARES funded*

*projects.*

Motion to Confirm Mayor DeWitt has a conflict of interest.

|              |                                                                                         |
|--------------|-----------------------------------------------------------------------------------------|
| Moved by:    | Mark Springer                                                                           |
| Seconded by: | Haley Hanson                                                                            |
| In favor:    | Perry Barr, Haley Hanson, Alyssa Leary, Mark Springer, Rose Henderson, Conrad McCormick |
| Opposed:     | None                                                                                    |
| Results:     | Motion Carries                                                                          |

*Mayor DeWitt did not participate or vote on this item of business.  
Vice- Mayor Hanson presided over this item of business.*

*Vice-Mayor Hanson opened the Public Hearing.  
No one present to be heard.  
Vice-Mayor Hanson closed the Public Hearing.*

Main Motion: Adopt Budget Ordinance 20-12(k).

|              |                                                                                         |
|--------------|-----------------------------------------------------------------------------------------|
| Moved by:    | Alyssa Leary                                                                            |
| Seconded by: | Conrad McCormick                                                                        |
| In favor:    | Perry Barr, Haley Hanson, Alyssa Leary, Mark Springer, Rose Henderson, Conrad McCormick |
| Opposed:     | None                                                                                    |
| Results:     | Motion Carries                                                                          |

## **10. NEW BUSINESS**

Motion to Suspend the rules to extend the meetings past 11:00 p.m.

|              |                                                                                                          |
|--------------|----------------------------------------------------------------------------------------------------------|
| Moved by:    | Mark Springer                                                                                            |
| Seconded by: | Haley Hanson                                                                                             |
| In favor:    | Perry Barr, Haley Hanson, Alyssa Leary, Mark Springer, Michelle DeWitt, Rose Henderson, Conrad McCormick |
| Opposed:     | None                                                                                                     |
| Results:     | Motion Carries                                                                                           |

**Item 10.1. - \*Introduction Of Ordinance 21-13: Authorizing The Acquisition Of Interest In Land For A Utility Easement From Irvin L. Kreider And Diana S. Kreider, Co-Trustees Of Kreider Revocable Trust Involving The Bethel Avenues Piped Water And Sewer Project - Phase I (Interim City Manager Williams)**

*Passed on the consent agenda.*

**Item 10.2. - \*Introduction Of Ordinance 21-14: Amending Bethel Municipal Code 4.16.160 Sales Tax Exemptions And Limitations (Interim City Manager Williams)**

Passed on the consent agenda.

**Item 10.3. - \*Introduction Of Budget Ordinance 20-12(I): Amending The City Of Bethel Fiscal Year 2021 Budget-Water Sewer Study- COVID Food Distribution- Community Action Grant- Bethel Heights Water Treatment Facility- Hauled Refuse (Interim City Manager)**

*Mayor DeWitt declared a conflict of interest as her place of employment (BSCF) is a potential recipient of funding from the budget modification.*

Motion to confirm Mayor DeWitt has a conflict of interest.

|              |                                                                                         |
|--------------|-----------------------------------------------------------------------------------------|
| Moved by:    | Haley Hanson                                                                            |
| Seconded by: | Mark Springer                                                                           |
| In favor:    | Perry Barr, Haley Hanson, Alyssa Leary, Mark Springer, Rose Henderson, Conrad McCormick |
| Opposed:     | None                                                                                    |
| Results:     | Motion Carries                                                                          |

*Mayor DeWitt did not participate or vote on this item of business.  
Vice- Mayor Hanson presided over this item of business.*

Motion to introduce Budget ordinance 20-12 (I)

|              |                                                                             |
|--------------|-----------------------------------------------------------------------------|
| Moved by:    | Alyssa Leary                                                                |
| Seconded by: | Perry Barr                                                                  |
| In favor:    | Haley Hanson, Alyssa Leary, Mark Springer, Rose Henderson, Conrad McCormick |
| Opposed:     | None                                                                        |
| Results:     | Motion Carries                                                              |

**Item 10.4. - \*Resolution 21-07: Authorizing Consulting Services For The City Council To Evaluate And Improve The Investigation, Processing, And Prosecution Of Reported Sexual Assault Cases Within The Criminal Justice System In Bethel (Council Member McCormick)**

*Passed on the consent agenda.*

**Item 10.5. - AM 21-07: Authorize And Direct City Administration To Issue Checks**

Totaling \$101,474.93 To Year 4, Quarter 1 Community Action Grant Awardees Based On The Community Action Grant Technical Review Board's (CAGTRB) Work On Scoring Applications And Deciding How Much To Award Each Applicant (Interim City Manager Williams)

*Mayor DeWitt declared a conflict of interest as her place of employment (BCSF) has the potential to obtain grant funding from the approval of this agenda item.*

Motion to confirm Mayor DeWitt has a conflict of interest.

|              |                                                                                         |
|--------------|-----------------------------------------------------------------------------------------|
| Moved by:    | Perry Barr                                                                              |
| Seconded by: | Haley Hanson                                                                            |
| In favor:    | Perry Barr, Haley Hanson, Alyssa Leary, Mark Springer, Rose Henderson, Conrad McCormick |
| Opposed:     | None                                                                                    |
| Results:     | Motion Carries                                                                          |

*Mayor DeWitt did not participate or vote on this item of business.  
Vice- Mayor Hanson presided over this item of business.*

Main Motion: Approve AM 21-07.

|              |                                                                                         |
|--------------|-----------------------------------------------------------------------------------------|
| Moved by:    | Rose Henderson                                                                          |
| Seconded by: | Alyssa Leary                                                                            |
| In favor:    | Perry Barr, Haley Hanson, Alyssa Leary, Mark Springer, Rose Henderson, Conrad McCormick |
| Opposed:     | None                                                                                    |
| Results:     | Motion Carries                                                                          |

**Item 10.6.** - \*IM 21-05: Presentation Of The City's Water And Sewer Services Expenditures Compared To Budget From July 1, 2020 To March 31, 2021 – Utilities Maintenance – Water And Wastewater Activity Report (Interim City Manager Williams)

*Passed on the consent agenda.*

**Item 10.7.** - \*IM 21-06: Transfer Of Funds Over \$5,000, Under \$12,500 Within The Public Works Department, Hauled Utilities Division (Interim City Manager Williams)

*Passed on the consent agenda.*

**Item 10.8.** - \*Personal Leave- City Attorney- April 16th and 19th, 2021 (Mayor DeWitt)

*Passed on the consent agenda.*

## **11. REPORTS**

**Item 11.1.** - Mayor's Report

**Item 11.2.** - City Manager's Report

**Item 11.3.** - Clerk's Report

## **12. COUNCIL MEMBER COMMENTS**

Mayor DeWitt- Thanked all the people who worked on developing Ordinance 20-25.

Vice-Mayor Hanson-Thanked the many people that participated in the discussion this evening. Explained to the public the need to postpone the consideration of adoption.

Council Member Barr- Thanked the YKHC employees for supporting better health for our community and region. Thanked all the participants that called in this evening and participated in the public hearing and people to be heard.

Council Member Leary-Thanked everyone from the public that participated in the discussion this evening.

Council Member Springer- Thanked everyone from the public that participated in the discussion this evening. Encouraged everyone to be careful traveling; the ice road is closed. The city roads are rough. Drive slowly and be considerate of other drivers and pedestrians.

Council Member Henderson- Thanked all the drivers that slow down at the puddles when people are walking pass them. Suggested the City include pictures of the parks on the website.

Council Member McCormick-Thanked everyone that reached out to him prior to the

meeting and for those that participated in the meeting. Hopes to see more public engagement on other issues. Check your nutritional facts; know what you are consuming.

### **13. EXECUTIVE SESSION**

**Item 13.1.** - In Accordance With AS 44.62.310.C(2)- Subjects That Tend To Prejudice The Reputation And Character Of Any Person, Provided The Person May Request A Public Discussion- City Manager Six Month Evaluation (Mayor DeWitt)

*No motions made.*

### **14. ADJOURNMENT**

Main Motion: Adjournment.

|              |                                                                                                          |
|--------------|----------------------------------------------------------------------------------------------------------|
| Moved by:    | Mark Springer                                                                                            |
| Seconded by: | Alyssa Leary                                                                                             |
| In favor:    | Perry Barr, Haley Hanson, Alyssa Leary, Mark Springer, Michelle DeWitt, Rose Henderson, Conrad McCormick |
| Opposed:     | None                                                                                                     |
| Results:     | Motion Carries                                                                                           |

*Meeting ended at 11:32 p.m.*

---

Michelle DeWitt, Mayor

ATTEST:

---

Lori Strickler, City Clerk

---

# City of Bethel Community Action Grant Technical Review Board Meeting Minutes

---

March 10, 2021

Regular Meeting 7 p.m.

Bethel, Alaska

---

## **I. CALL TO ORDER**

MEETING CALLED TO ORDER AT 7:04 pm.

## **II. ROLL CALL**

|                                     |                 |
|-------------------------------------|-----------------|
| <b>BOARD MEMBERS PRESENT:</b>       |                 |
| S. Grady Deaton, Chair              | Jennifer Dobson |
| Leif Albertson, Vice Chair          | Louise Russell  |
| <b>BOARD MEMBERS ABSENT:</b>        |                 |
| Perry Barr                          | Lucinda Alexie  |
| <b>ALSO IN ATTENDANCE:</b>          |                 |
| John Sargent, Recorder & Ex Officio |                 |

## **III. PEOPLE TO BE HEARD**

None.

## **IV. APPROVAL OF AGENDA**

|                            |                   |                     |
|----------------------------|-------------------|---------------------|
| <b>MOVED:</b>              | L. Albertson      | Approval of Agenda. |
| <b>SECONDED:</b>           | L. Russell        |                     |
| <b>VOTE ON MAIN MOTION</b> | 4-0 Motion Passes |                     |

## **V. APPROVAL OF MINUTES**

|                            |            |                                        |
|----------------------------|------------|----------------------------------------|
| <b>MOVED:</b>              | J. Dobson  | Approve March 3, 2021 Meeting Minutes. |
| <b>SECONDED:</b>           | L. Russell |                                        |
| <b>VOTE ON MAIN MOTION</b> |            |                                        |

## **VI. UNFINISHED BUSINESS**

A. Review amount of CAG funding available.

Chair G. Deaton introduced the memorandum in the packet. J. Sargent explained the funding available from alcohol use tax revenue collected and the City Manager's preference to only distribute CAG funding that appears in the FY 2021 Budget. A budget modification can be introduced to Bethel City Council to coincide with the CAGTRB recommendation so that both can be approved by Council simultaneously.

---

# City of Bethel Community Action Grant Technical Review Board Meeting Minutes

---

March 10, 2021

Regular Meeting 7 p.m.

Bethel, Alaska

---

- B. Review and score applications and responses received (may include questions to applicants in attendance).

|                            |                   |                                            |
|----------------------------|-------------------|--------------------------------------------|
| <b>MOVED:</b>              | J. Dobson         | Move into Committee as a Whole at 7:26 pm. |
| <b>SECONDED:</b>           | L. Albertson      |                                            |
| <b>VOTE ON MAIN MOTION</b> | 4-0 Motion Passes |                                            |

L. Albertson explained that three applications were discussed during the last meeting. Four applications have yet to be discussed.

Applicants were given a chance to speak on their applications and answered questions from board members.

Board members devised a list of questions for five of the seven applicants. Recorder took notes on questions in order to prepare and disseminate the questions to applicants by email.

G. Deaton moved the board out of Committee as a Whole at 9:21 pm.

|                            |                  |                                                                                                                                                           |
|----------------------------|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>MOVED:</b>              | J. Dobson        | Request that Recorder prepare and disseminate letters by email to applicants containing the questions board members devised when in Committee as a Whole. |
| <b>SECONDED:</b>           | L. Albertson     |                                                                                                                                                           |
| <b>VOTE ON MAIN MOTION</b> | 4-0 All in favor |                                                                                                                                                           |

- C. Review/revise applications, forms, & processes.

A board member said that Recorder should put this item on every agenda, but do not include the materials in the packet. No other discussion on this item occurred.

- D. Update on previous award recipients, projects funded, final reports, and other follow-up issues.

A board member expressed that a review of all email exit report submissions should be conducted by Recorder.

## **VII. NEW BUSINESS**

- A. Declaration of Vacant Seat on CAGTRB as a result of City Council appointment of Olivia Guy on March 26, 2019, but no signed oath

---

# City of Bethel Community Action Grant Technical Review Board Meeting Minutes

---

March 10, 2021

Regular Meeting 7 p.m.

Bethel, Alaska

---

returned within 45 days thereafter. Reference BMC 2.52.070. (A)8  
[https://bethel.municipal.codes/BMC/2.52.070\(A\)\(8\)](https://bethel.municipal.codes/BMC/2.52.070(A)(8))

|                            |                  |                                                                                                                                                                 |
|----------------------------|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>MOVED:</b>              | J. Dobson        | Declare a vacant seat on CAGTRB as a result of City Council appointment of Olivia Guy on March 26, 2019, but no signed oath returned within 45 days thereafter. |
| <b>SECONDED:</b>           | L. Russell       |                                                                                                                                                                 |
| <b>VOTE ON MAIN MOTION</b> | 4-0 All in favor |                                                                                                                                                                 |

- B. Resolution of Ordinance stipulations guiding procedures, practices, and protocol of the Community Action Grant Technical Review Board.

|                            |                  |                                                                                                                                |
|----------------------------|------------------|--------------------------------------------------------------------------------------------------------------------------------|
| <b>MOVED:</b>              | L. Albertson     | Support CAGTRB Council Representative Perry Barr putting new CAG resolution on City Council agenda for March 23, 2021 meeting. |
| <b>SECONDED:</b>           | L. Russell       |                                                                                                                                |
| <b>VOTE ON MAIN MOTION</b> | 4-0 All in favor |                                                                                                                                |

## VIII. BOARD MEMBER COMMENTS

- J. Dobson: Its good to see a lot of applications. That will help us to be discriminating in our funding allocation.
- L. Albertson: I appreciate everyone's time tonight. It was a very productive meeting.
- L. Russell: I appreciate everyone's participation in the meeting.
- J. Sargent: Seven applications were submitted this time. Our record for a quarter.
- S. Grady Deaton: I'm sorry I missed the meeting last week. I think we might want to include exit reports in our scoring somehow.

## IX. ADJOURNMENT

|                            |                  |                      |
|----------------------------|------------------|----------------------|
| <b>MOVED:</b>              | L. Russell       | Adjourn the meeting. |
| <b>SECONDED:</b>           | J. Dobson        |                      |
| <b>VOTE ON MAIN MOTION</b> | 4-0 All in favor |                      |

Meeting Adjourned at 9:40 pm.

---

# City of Bethel Community Action Grant Technical Review Board Meeting Minutes

---

---

March 10, 2021

Regular Meeting 7 p.m.

Bethel, Alaska

---

APPROVED THIS \_\_\_\_\_ day of \_\_\_\_\_ 2021.

Respectfully Submitted:

\_\_\_\_\_  
S. Grady Deaton, Chair

ATTEST: \_\_\_\_\_  
John Sargent, Recorder

**PUBLIC NOTICE**  
**REGULAR MEETING OF THE**  
**Community Action Grant Technical Review Board**  
**Wednesday, March 18, 2021, 7:00 p.m.**  
**Council Chambers, 300 State Highway, Bethel, Alaska**



**AGENDA**

**Members**

S. Grady Deaton, Chair  
Leif Albertson, Vice-Chair  
Perry Barr, Council Rep.  
Jennifer Dobson  
Louise Russell  
Lucinda Alexie

**Ex-Officio**

John Sargent

**Recorder**

John Sargent

THE CITY OF BETHEL IS HOLDING ALL PUBLIC MEETINGS VIRTUALLY.

Join Zoom Meeting

<https://zoom.us/j/92536987705?pwd=M0pEUUIrTlhWZVZCc2c4RXdrOGpZdz09>

Meeting ID: 925 3698 7705

Passcode: 257386

One tap mobile

+16699009128,,92536987705#,,,,\*257386# US (San Jose)

+12532158782,,92536987705#,,,,\*257386# US (Tacoma)

Dial by your location

+1 669 900 9128 US (San Jose)

+1 253 215 8782 US (Tacoma)

+1 346 248 7799 US (Houston)

+1 646 558 8656 US (New York)

+1 301 715 8592 US (Washington DC)

+1 312 626 6799 US (Chicago)

888 475 4499 US Toll-free

833 548 0276 US Toll-free

833 548 0282 US Toll-free

877 853 5257 US Toll-free

Meeting ID: 925 3698 7705

Passcode: 257386

Find your local number: <https://zoom.us/u/aplyrKbRy>

- I. CALL TO ORDER
- II. ROLL CALL
- III. PEOPLE TO BE HEARD
- IV. APPROVE AGENDA
- V. APPROVE MINUTES
  - A. March 10, 2021 Regular Meeting.

VI. UNFINISHED BUSINESS

- A. Review amount of CAG funding available.
- B. Review, discuss, and score applications and responses received (may include questions to applicants in attendance).
- C. Review/revise application, forms, & processes.
- D. Update on previous award recipients, projects funded, final reports, CAG award agreements, and other follow-up issues.

VII. NEW BUSINESS

- A. Resolution and Ordinance stipulations guiding procedures, practices, and protocol of the Community Action Grant Technical Review Board.

VIII. COMMISSION MEMBER COMMENTS

IX. ADJOURNMENT

POSTED: Post Office, AC, AC Quickstop, Swanson's, and City Hall

# City of Bethel Community Action Grant Technical Review Board Meeting Minutes

March 18, 2021

Regular Meeting 7 p.m.

Bethel, Alaska

## I. CALL TO ORDER

MEETING CALLED TO ORDER AT 7:01 pm.

## II. ROLL CALL

### BOARD MEMBERS PRESENT:

S. Grady Deaton, Chair  
Leif Albertson, Vice Chair

Jennifer Dobson  
Louise Russell

### BOARD MEMBERS ABSENT:

Perry Barr

Lucinda Alexie

### ALSO IN ATTENDANCE:

John Sargent, Recorder & Ex Officio

## III. PEOPLE TO BE HEARD

None.

## IV. APPROVAL OF AGENDA

|                            |                   |                     |
|----------------------------|-------------------|---------------------|
| <b>MOVED:</b>              | L. Russell        | Approval of Agenda. |
| <b>SECONDED:</b>           | L. Albertson      |                     |
| <b>VOTE ON MAIN MOTION</b> | 4-0 Motion Passes |                     |

## V. APPROVAL OF MINUTES

|                            |                   |                                         |
|----------------------------|-------------------|-----------------------------------------|
| <b>MOVED:</b>              | J. Dobson         | Approve March 10, 2021 Meeting Minutes. |
| <b>SECONDED:</b>           | L. Russell        |                                         |
| <b>VOTE ON MAIN MOTION</b> | 4-0 Motion Passes |                                         |

## VI. UNFINISHED BUSINESS

|                            |                   |                                 |
|----------------------------|-------------------|---------------------------------|
| <b>MOVED:</b>              | L. Russell        | Move into Committee as a Whole. |
| <b>SECONDED:</b>           | L. Albertson      |                                 |
| <b>VOTE ON MAIN MOTION</b> | 4-0 Motion Passes |                                 |

A. Review amount of CAG funding available.

Chair G. Deaton introduced the topic and turned it over to J. Sargent to summarize the memorandum included in the packet. J. Sargent said that the amount available in the budget for CAG distribution is \$45,366.53. The estimated amount available from a review of alcohol use taxes collected and

# City of Bethel Community Action Grant Technical Review Board Meeting Minutes

March 18, 2021

Regular Meeting 7 p.m.

Bethel, Alaska

expressed in the memorandum provided at the March 10, 2021 meeting was \$143,214.55.

B. Review and score applications and responses received (may include questions to applicants in attendance).

G. Deaton introduced the applicants present and allowed them to summarize their responses submitted. CAGTRB members asked questions and listened to applicant responses.

CAGTRB members scored all seven applications. Scores were reported on a spreadsheet on the screen for all to see. A discussion was held about how much money the board would recommend for each project (application). The final table of scores and funding recommendations appears below.

|                          | CAGTRB members |     |     |       | Request    | Recommended |         |
|--------------------------|----------------|-----|-----|-------|------------|-------------|---------|
|                          | #1             | #2  | #3  | #4    |            | Award       | Average |
| Quyana Café              | 164            | 151 | 143 | 151   | 10,000.00  | 10,000.00   | 152     |
| Gladys J. Wrestling      | 170            | 135 | 121 | 160   | 34,974.93  | 34,974.93   | 147     |
| Brian Lefferts-lawnmower | 120            | 147 | 146 | 144   | 5,550.00   | 5,550.00    | 139     |
| BCSF-Food Security       | 120            | 114 | 131 | 137   | 23,000.00  | 10,000.00   | 126     |
| Brian Lefferts-Groomer   | 100            | 118 | 126 | 116   | 35,350.00  | 35,350.00   | 115     |
| YPCC First Fridays       | 104            | 90  | 94  | 115   | 2,600.00   | 2,600.00    | 101     |
| Friends of Canines       | 109            | 66  | 93  | 120   | 19,425.00  | 3,000.00    | 97      |
| Winterhouse              | 96             | 59  | 78  | 87    | 50,000.00  | 0.00        | 80      |
|                          |                |     |     | Total | 180,899.93 | 101,474.93  |         |

# City of Bethel Community Action Grant Technical Review Board Meeting Minutes

March 18, 2021

Regular Meeting 7 p.m.

Bethel, Alaska

G. Deaton moved the board out of Committee as a Whole at 10:03 pm.

|                            |                   |                                                                                                                                                                                               |
|----------------------------|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>MOVED:</b>              | J. Dobson         | Recorder develop and submit an Action Memorandum to City Council that recommends funding the applicant projects based on the scoring results and discussion held during Committee as a Whole. |
| <b>SECONDED:</b>           | L. Albertson      |                                                                                                                                                                                               |
| <b>VOTE ON MAIN MOTION</b> | 4-0 Motion Passes |                                                                                                                                                                                               |

|                             |                    |                                                                                                                                                       |
|-----------------------------|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>MOVED:</b>               | L. Albertson       | Reconsider motion for Recorder to develop and submit Action Memorandum to City Council to recommend funding.                                          |
| <b>SECONDED:</b>            | L. Russell         |                                                                                                                                                       |
| <b>AMENDMENT #1</b>         | L. Albertson       | Develop and submit Action Memorandum and Budget Modification Ordinance to account for CAGTRB recommended funding amount that is over budgeted amount. |
|                             | L. Russell         |                                                                                                                                                       |
| <b>VOTE ON AMENDMENT #1</b> | 3-1 Motion Fails.  |                                                                                                                                                       |
| <b>AMENDMENT #2</b>         | L. Albertson       | Develop and submit Action Memorandum and Budget Modification Ordinance to account for CAGTRB recommended funding amount that is over budgeted amount. |
|                             | L. Russell         |                                                                                                                                                       |
| <b>VOTE ON AMENDMENT #2</b> | 4-0 Motion Passes. |                                                                                                                                                       |
| <b>VOTE ON MAIN MOTION</b>  | 4-0 Motion Passes. |                                                                                                                                                       |

C. Review/revise applications, forms, & processes.

G. Deaton expressed his wish that the exit report become part of the score sheet and would like to discuss this at a future meeting.

D. Update on previous award recipients, projects funded, final reports, and other follow-up issues.

This item was discussed briefly during Committee as a Whole. No action taken.

---

# City of Bethel Community Action Grant Technical Review Board Meeting Minutes

---

March 18, 2021

Regular Meeting 7 p.m.

Bethel, Alaska

---

## **VII. NEW BUSINESS**

- A. Resolution of Ordinance stipulations guiding procedures, practices, and protocol of the Community Action Grant Technical Review Board.

No discussion. No action taken.

## **VIII. BOARD MEMBER COMMENTS**

- L. Russell: I appreciate the effort everyone made. It's great when we have tough decisions to make. I hope we get more good applications next time.
- L. Albertson: Thank you for your time, everyone. I appreciate all of you. I feel good about how we are spending these dollars.
- J. Dobson: I appreciate everyone who participated in the meeting. Thank you for joining us.
- S. Grady Deaton: This is the largest amount of non-board participation we have had during our meetings. I want coffee.
- J. Sargent: I am sorry about not including the participant responses in your packet, It was a big packet and I had the responses ready to include. I could not mail it to you because it was so big. I had to send you a link to download it.

## **IX. ADJOURNMENT**

|                            |                  |                      |
|----------------------------|------------------|----------------------|
| <b>MOVED:</b>              | J. Dobson        | Adjourn the meeting. |
| <b>SECONDED:</b>           | L. Albertson     |                      |
| <b>VOTE ON MAIN MOTION</b> | 4-0 All in favor |                      |

Meeting Adjourned at 10:20 pm.

APPROVED THIS \_\_\_\_\_ day of \_\_\_\_\_ 2021.

Respectfully Submitted:

\_\_\_\_\_  
S. Grady Deaton, Chair

ATTEST: \_\_\_\_\_  
John Sargent, Recorder

**PUBLIC NOTICE**  
**REGULAR MEETING OF THE**  
**Community Action Grant Technical Review Board**  
**Wednesday, March 3, 2021, 7:00 p.m.**  
**Council Chambers, 300 State Highway, Bethel, Alaska**



**AGENDA**

**Members**

S. Grady Deaton, Chair  
Leif Albertson, Vice-Chair  
Perry Barr, Council Rep.  
Jennifer Dobson  
Louise Russell  
Lucinda Alexie

**Ex-Officio**

John Sargent

**Recorder**

John Sargent

THE CITY OF BETHEL IS HOLDING ALL PUBLIC MEETINGS VIRTUALLY.

Join Zoom Meeting

<https://zoom.us/j/94551864382?pwd=bm0vc2YyV09IR1BRS1lyaWEzVVd0Zz09>

Meeting ID: 945 5186 4382

Passcode: 554407

One tap mobile

+16699009128,,94551864382#,,,,\*554407# US (San Jose)

+12532158782,,94551864382#,,,,\*554407# US (Tacoma)

Dial by your location

+1 669 900 9128 US (San Jose)

+1 253 215 8782 US (Tacoma)

+1 346 248 7799 US (Houston)

+1 646 558 8656 US (New York)

+1 301 715 8592 US (Washington DC)

+1 312 626 6799 US (Chicago)

877 853 5257 US Toll-free

888 475 4499 US Toll-free

833 548 0276 US Toll-free

833 548 0282 US Toll-free

Meeting ID: 945 5186 4382

Passcode: 554407

Find your local number: <https://zoom.us/u/aCJ7XsaBR>

I. CALL TO ORDER

II. ROLL CALL

III. PEOPLE TO BE HEARD

IV. APPROVAL OF AGENDA

V. APPROVAL OF MINUTES

A. November 30, 2020 Regular Meeting.

VI. UNFINISHED BUSINESS

- A. Review amount of CAG funding available.
- B. Review, discuss, and score applications and responses received (may include questions to applicants in attendance).
- C. Update on previous award recipients, projects funded, final reports, CAG award agreements, and other follow-up issues.

VII. NEW BUSINESS

- A. Declaration of Vacant Seat on CAGTRB as a result of City Council appointment of Olivia Guy on March 26, 2019, but no signed oath returned within 45 days thereafter. Reference BMC 2.52.070.(A)8 [https://bethel.municipal.codes/BMC/2.52.070\(A\)\(8\)](https://bethel.municipal.codes/BMC/2.52.070(A)(8))

VIII. COMMISSION MEMBER COMMENTS

IX. ADJOURNMENT

POSTED: Post Office, AC, AC Quickstop, Swanson's, and City Hall

---

# City of Bethel Community Action Grant Technical Review Board Meeting Minutes

---

March 3, 2021

Regular Meeting 7 p.m.

Bethel, Alaska

---

## I. CALL TO ORDER

MEETING CALLED TO ORDER AT 7:16 pm.

## II. ROLL CALL

|                                     |
|-------------------------------------|
| <b>BOARD MEMBERS PRESENT:</b>       |
| Leif Albertson, Vice Chair          |
| Louise Russell                      |
| Jennifer Dobson                     |
| Lucinda Alexie                      |
| <b>BOARD MEMBERS ABSENT:</b>        |
| Perry Barr                          |
| S. Grady Deaton, Chair              |
| <b>ALSO IN ATTENDANCE:</b>          |
| John Sargent, Recorder & Ex Officio |

## III. PEOPLE TO BE HEARD

Shane Iverson spoke in favor of Brian Lefferts' proposal to purchase a lawnmower and trail grooming equipment. Shane and Brian are soccer coaches.

Silas Lefferts spoke in favor of Brian Lefferts' proposal. He plays soccer on the field to be maintained.

## IV. APPROVAL OF AGENDA

|                            |                   |                 |
|----------------------------|-------------------|-----------------|
| <b>MOVED:</b>              | J. Dobson         | Approve Agenda. |
| <b>SECONDED:</b>           | L. Russell        |                 |
| <b>VOTE ON MAIN MOTION</b> | 4-0 Motion Passes |                 |

## V. APPROVAL OF MINUTES

|                            |                   |                                            |
|----------------------------|-------------------|--------------------------------------------|
| <b>MOVED:</b>              | J. Dobson         | Approve November 30, 2020 Meeting Minutes. |
| <b>SECONDED:</b>           | L. Russell        |                                            |
| <b>VOTE ON MAIN MOTION</b> | 4-0 Motion Passes |                                            |

## VI. UNFINISHED BUSINESS

A. Review amount of CAG funding available.

John summarized the memorandum in the packet on the funding available and the accompanying spreadsheet. The City Manager is limiting CAG awards to the figure in the FY 21 Budget, which is \$84,000. Administration will put forward Budget Modification Ordinances to council, if sufficient alcohol use tax revenue is available.

---

## City of Bethel Community Action Grant Technical Review Board Meeting Minutes

---

March 3, 2021

Regular Meeting 7 p.m.

Bethel, Alaska

---

- B. Review and score applications and responses received (may include questions to applicants in attendance).

|                            |                   |                                 |
|----------------------------|-------------------|---------------------------------|
| <b>MOVED:</b>              | L. Russell        | Move into Committee as a Whole. |
| <b>SECONDED:</b>           | J. Dobson         |                                 |
| <b>VOTE ON MAIN MOTION</b> | 4-0 Motion Passes |                                 |

Three applicants presented their projects and answered questions from the board before the Vice-Chair recognized that one member was no longer on the zoom call. An effort was made to contact the board member. The Vice-Chair discontinued the meeting and apologized to those in attendance.

Meeting Adjourned at 9:05 pm.

APPROVED THIS 10th day of March 2021.

Respectfully Submitted:

\_\_\_\_\_  
S. Grady Deaton, Chair

ATTEST: \_\_\_\_\_  
John Sargent, Recorder

**PUBLIC NOTICE**  
**REGULAR MEETING OF THE**  
**Community Action Grant Technical Review Board**  
**Wednesday, March 10, 2021, 7:00 p.m.**  
**Council Chambers, 300 State Highway, Bethel, Alaska**



**AGENDA**

**Members**

S. Grady Deaton, Chair  
Leif Albertson, Vice-Chair  
Perry Barr, Council Rep.  
Jennifer Dobson  
Louise Russell  
Lucinda Alexie

**Ex-Officio**

John Sargent

**Recorder**

John Sargent

THE CITY OF BETHEL IS HOLDING ALL PUBLIC MEETINGS VIRTUALLY.

Join Zoom Meeting

<https://zoom.us/j/97967880499?pwd=QTBHd2I0QUJyaUR0dkpQTUJWZ3UwZz09>

Meeting ID: 979 6788 0499

Passcode: 208753

One tap mobile

+16699009128,,97967880499#,,,,\*208753# US (San Jose)

+12532158782,,97967880499#,,,,\*208753# US (Tacoma)

Dial by your location

+1 669 900 9128 US (San Jose)

+1 253 215 8782 US (Tacoma)

+1 346 248 7799 US (Houston)

+1 646 558 8656 US (New York)

+1 301 715 8592 US (Washington DC)

+1 312 626 6799 US (Chicago)

833 548 0282 US Toll-free

877 853 5257 US Toll-free

888 475 4499 US Toll-free

833 548 0276 US Toll-free

Meeting ID: 979 6788 0499

Passcode: 208753

Find your local number: <https://zoom.us/u/a4vCKaF6g>

- I. CALL TO ORDER
- II. ROLL CALL
- III. PEOPLE TO BE HEARD
- IV. APPROVAL OF AGENDA
- V. APPROVAL OF MINUTES
  - A. March 3, 2021 Regular Meeting.

VI. UNFINISHED BUSINESS

- A. Review amount of CAG funding available.
- B. Review, discuss, and score applications and responses received (may include questions to applicants in attendance).
- C. Update on previous award recipients, projects funded, final reports, CAG award agreements, and other follow-up issues.

VII. NEW BUSINESS

- A. Declaration of Vacant Seat on CAGTRB as a result of City Council appointment of Olivia Guy on March 26, 2019, but no signed oath returned within 45 days thereafter. Reference BMC 2.52.070.(A)8 [https://bethel.municipal.codes/BMC/2.52.070\(A\)\(8\)](https://bethel.municipal.codes/BMC/2.52.070(A)(8))
- B. Resolution and Ordinance stipulations guiding procedures, practices, and protocol of the Community Action Grant Technical Review Board.

VIII. COMMISSION MEMBER COMMENTS

IX. ADJOURNMENT

POSTED: Post Office, AC, AC Quickstop, Swanson's, and City Hall

# City of Bethel

## Finance Committee Agenda

Monday, April 26th, 2021 – 6:30 p.m.

Council Chambers, City Hall-300 State Highway



Carol Ann Willard  
Finance Committee Chair  
Term Ends 2022

Robert Rey  
Finance Committee Vice Chair  
Term Ends 2021

Conrad McCormik  
City Council Representative  
Term Ends 2021

David Trantham, Jr.  
Finance Committee Member  
Term Ends 2023

Mary Beth Hessler  
Finance Committee Member  
Term Ends 2021

Brian Henry  
Finance Committee Member  
Term Ends 2023

Farah Sears  
Finance Committee Member  
Term Ends 2023

John Hamilton  
Alternate Member  
Term Ends 2022

Marybeth Whalen  
Finance Committee Member  
Term Ends 2021

Xavier Mason  
Assistant  
Finance Director  
543-1375  
[xmason@cityofbethel.net](mailto:xmason@cityofbethel.net)

Janeen Nichols  
Interim Recorder  
543-3150  
[jnichols@cityofbethel.net](mailto:jnichols@cityofbethel.net)

**All City of Bethel Meetings will be held virtually.**

**Join Zoom Meeting or Dial by your Local Number.**

<https://zoom.us/j/94852607519?pwd=MVE2RndPM0VvZnA5bGljYis5M0kzUT09>

**Meeting ID: 948 5260 7519**

**Passcode: 240694**

|                                 |                                  |                                  |                                        |
|---------------------------------|----------------------------------|----------------------------------|----------------------------------------|
| +1 253 215 8782 US<br>(Tacoma)  | +1 346 248 7799<br>US (Houston)  | +1 669 900 9128 US<br>(San Jose) | +1 301 715 8592 US<br>(Washington D.C) |
| +1 312 626 6799 US<br>(Chicago) | +1 646 558 8656<br>US (New York) | 833 548 0276 US<br>Toll-free     | 833 548 0282 US<br>Toll-free           |
| 877 853 5257 US Toll-<br>free   | 888 475 4499<br>US Toll-free     |                                  |                                        |

### I. CALL TO ORDER

### II. ROLL CALL

### III. PEOPLE TO BE HEARD - Five minutes per person.

3.1 Notice: Public Testimony By Email Will Be Accepted.

To Qualify, It Must:

- 1) Be Emailed to [jnichols@cityofbethel.net](mailto:jnichols@cityofbethel.net) by 4pm the Day of the Meeting.
- 2) Specifically Request That It Is To Be Read At People To Be Heard.
- 3) Contain the full, real name of the person sending it.

Note: depending on the amount of emails received, the chair may summarize the content of the email



### IV. APPROVAL OF AGENDA

### V. APPROVAL OF MINUTES

- a) 03/22/2021

### VI. SPECIAL ORDERS OF BUSINESS

- a) Committee Commission Member Training

### VII. UNFINISHED BUSINESS

### VIII. NEW BUSINESS

- a) Informative Memorandum

### IX. EX OFFICIO MEMBER REPORT

### X. FINANCE COMMITTEE MEMBER COMMENTS

### XI. ADJOURNMENT

---

# City of Bethel, Alaska

## Planning Commission

---

April 08, 2021

Regular Meeting

Bethel, Alaska

---

### **I. CALL TO ORDER:**

A regular meeting of the Planning Commission was held virtually via Zoom on April 8, 2021. The Chair of Commission, Kathy Hanson called the meeting to order at 6:35 PM.

### **II. ROLL CALL:**

Compromising a quorum of the Commission, the following members were present for roll call: Kathy Hanson, John Guinn, Alex Wasierski, Shadi Rabi, and Stanley Hoffman Jr.

Excused Absence: Lorin Bradbury

Unexcused Absence: Brian Henry and Haley Hanson

Also Present: Ted Meyer, City Planner; Pauline Boratko, Recorder

### **III. PEOPLE TO BE HEARD:**

John Wallace- voiced is concern about the transfer of city land to ONC.

### **IV. APPROVAL OF THE AGENDA:**

|                       |                     |                               |
|-----------------------|---------------------|-------------------------------|
| <b>MOVED:</b>         | Shadi Rabi          | Motion the approve the agenda |
| <b>SECONDED:</b>      | Stanley Hoffman Jr. |                               |
| <b>VOTE ON MOTION</b> | Unanimous           |                               |

### **V. APPROVAL OF THE MINUTES:**

|                       |            |                                                           |
|-----------------------|------------|-----------------------------------------------------------|
| <b>MOVED:</b>         | Shadi Rabi | Motion to approve the meeting minutes from March 11, 2020 |
| <b>SECONDED:</b>      | John Guinn |                                                           |
| <b>VOTE ON MOTION</b> | Unanimous  |                                                           |

### **VI. SPECIAL ORDER OF BUSINESS:**

#### **VII. NEW BUSINESS:**

- A. Review and recommend the ordinance that amends and extends the land lease agreement between the City of Bethel and YKHC for the PATC building that is currently situated on the boundary line that divides Lot 2 and Lot 4C, Block 10 of the Courthouse Subdivision.

|                       |                     |                                                                                                              |
|-----------------------|---------------------|--------------------------------------------------------------------------------------------------------------|
| <b>MOVED:</b>         | Alex Wasierski      | Motion to postpone decision until next regular scheduled meeting with lease agreement in the meeting packet. |
| <b>SECONDED:</b>      | Stanley Hoffman Jr. |                                                                                                              |
| <b>VOTE ON MOTION</b> | Unanimous           |                                                                                                              |

### **VIII. UNFINISHED BUSINESS:**

**IX. PLANNER'S REPORT:** Ted Meyer gave his report.

**X. COMMISSIONER'S COMMENTS:**

K. Hanson-no comment.  
S. Rabi- no comment.  
A. Wasierski- no comment.  
J. Guinn- no comment.  
S. Hoffman-no comment.

**X. ADJOURNMENT:**

|                       |                |                                |
|-----------------------|----------------|--------------------------------|
| <b>MOVED:</b>         | Shadi Rabi     | Motion to adjourn the meeting. |
| <b>SECONDED:</b>      | Alex Wasierski |                                |
| <b>VOTE ON MOTION</b> | Unanimous      |                                |

With no further business the meeting adjourned at 7:14 pm

APPROVED THIS \_\_\_\_ DAY OF \_\_\_\_\_, 2021

\_\_\_\_\_  
Kathy Hanson, Chair

\_\_\_\_\_  
ATTEST: Pauline Boratko, Recorder



**CITY OF BETHEL**  
**PUBLIC WORKS COMMITTEE**  
**WEDNESDAY, APRIL 21, 2021, 5:30 p.m.**  
**LOCATION: VIRTUAL ZOOM MEETING**

**COMMISSION MEMBERS**

|                               |                                    |
|-------------------------------|------------------------------------|
| Gary Decossas, Chair          | Ryan Jeffries                      |
| Alyssa Leary, Vice Chair (CR) | <i>Four Vacancies</i>              |
| Juan Delgado                  | <i>Council Representative (CR)</i> |
| Ryan Butte                    |                                    |

**STAFF**

**Public Works Director:** Bill Arnold  
**Admin. Asst.:** Charlie Dan  
**Email:** [pwadmin@cityofbethel.net](mailto:pwadmin@cityofbethel.net)  
**Phone:** 907-543-3110  
**Website:** [www.cityofbethel.org](http://www.cityofbethel.org)

**Join Zoom Meeting**

<https://zoom.us/j/94283290754?pwd=ZDdDSzBqOGcxZlVqM0VmK0pYVUZZZz09>

**Meeting ID: 942 8329 0754**

**Passcode: 686894**

**Dial by Location**

|                            |                            |                           |                           |
|----------------------------|----------------------------|---------------------------|---------------------------|
| 253 215 8782 US (Tacoma)   | 301 715 8592 US (DC)       | 833 548 0276 US Toll-free | 877 853 5257 US Toll-free |
| 346 248 7799 US (Houston)  | 312 626 6799 US (Chicago)  | 833 548 0282 US Toll-free | 888 475 4499 US Toll-free |
| 669 900 9128 US (San Jose) | 646 558 8656 US (New York) |                           |                           |

I. CALL TO ORDER

II. ROLL CALL

III. PEOPLE TO BE HEARD

IV. APPROVAL OF AGENDA

V. APPROVAL OF MINUTES

VI. UNFINISHED BUSINESS

A. Amending BMC 08.12.020 and 08.12.030

B. Recommendation for City Code Enforcer Follow up

C. Update on Re-naming "Polk" Road

D. Update on Avenues Water/Sewer Project

E. Evaluate 2021 Committee Goals, Tasks, and Priorities

F. Public Works Facility Improvements

G. Recommendation for QA/QC Oversight for Avenues Project

H. Hauled Services Billing Ordinance

I. Hauled Services Holding Tank Overflow Liability Ordinance

VII. NEW BUSINESS

A. Entering Site Distance at Intersections

VIII. EX OFFICIO MEMBER REPORTS

IX. COMMITTEE MEMBER COMMENTS

X. ADJOURNMENT

**People to be Heard Through Written Testimony**

- Must be emailed to [pwadmin@cityofbethel.net](mailto:pwadmin@cityofbethel.net) by 4:00 p.m. the day of the meeting.
- Specifically request that it be presented under people to be heard.
- Contain full, real name of the person sending the request.

Posted April 15, 2021 Year at City Hall, AC Co., Swanson's, and the Post Office.

Charlie Dan, Public Works Assistant

Introduced by: PRAHSC Committee  
Introduction Date: August 25, 2020  
December 8, 2020  
Public Hearing Date: April 13, 2021  
Public Hearing Date: April 27, 2021  
Action:  
Vote:

# CITY OF BETHEL, ALASKA

## Ordinance #20-25

### AN ORDINANCE BY THE BETHEL CITY COUNCIL CREATING AN EXCISE TAX ON THE DISTRIBUTION OF SUGAR-SWEETENED BEVERAGE PRODUCTS

**WHEREAS,** sugar-sweetened beverages are leading sources of added sugars in the American diet according to the Centers for Disease Control (CDC) and Prevention;

**WHEREAS,** the average American drinks nearly 42 gallons of sweetened beverages a year, the equivalent of 39 pounds of extra sugar, every year;

**WHEREAS,** the CDC states in 2011-2014, 6 in 10 youth and 5 in 10 adults drank a sugar-sweetened beverage on average each day;

**WHEREAS,** a study conducted in 2015 reviewing the association between added sugar intake and dental caries in Yup'ik children using a novel hair biomarker, showed:

- 49% of children consumed sugar-sweetened fruit drinks (e.g., Tank, Kool-Aide) 2-3 times per day and 15.7% of the respondents reported consuming sugar-sweetened beverages more than 4 times a day at home;
- Nearly 14% consumed soda 2-3 times per day, 43.1% consumed sodas 1-4 times per week;
- Over 45% consumed 100% juice drinks (e.g., orange, apple, grape) and 65%;

**WHEREAS,** another study conducted characterizing beverage patterns among Alaska Natives living in rural, remote communities found that, sugar-sweetened beverages contribute to more than 75% of beverage intake among Yup'ik youth who on average derive 328 kcals and 83 grams of added sugar from sugar-sweetened beverages;

Introduced by: PRAHSC Committee  
Introduction Date: August 25, 2020  
December 8, 2020  
Public Hearing Date: April 13, 2021  
Public Hearing Date: April 27, 2021  
Action:  
Vote:

**WHEREAS,** according to a study evaluating beverage consumption in an Alaska native village, consisting of 25 adults, 21 adolescents 12-17, 21 children 3-11:

- nearly half (46%) of all added sugars consumed by the U.S. population ages 2 and older come from sugary drinks;
- 72% of adults reported consuming sugar sweetened beverages at least once per week and 20% reported daily consumption;
- Sweetened just beverages such as Tank or Kool-aid were consumed most frequently with 100% of adolescents and 76% children reporting some consumption, 38% reported daily consumption;
- Children in the village were more than twice as likely as U.S. children to report ever consuming sweetened juice beverages (76% vs. 34%). as were adults (33% vs. 17%);
- children (29%) and adolescents (52%) in the village were more likely to report ever consuming sports and energy drinks than U.S. children (7%) or adolescents (12%);
- about 23% of Alaska adults and almost 50% of Alaska high school students drink one of more sugary beverages every day;
- 31% of Alaska 3-year-olds drink some amount of sugary beverages every day;

**WHEREAS,** a review of consumption of sugar-sweetened beverages among adults in rural Alaska finds:

- participants in communities with in-home piped water reported a mean sugar-sweetened beverage consumption frequency of 7.8 times per week while participants in communities without in-home piped water reported a mean frequency of 12.5 times per week;
- participants who lived in a community without in-home piped water reported consuming sugar-sweetened beverage 46% more often than those who lived in a community with in-home piped water;

**WHEREAS,** the Alaska Department of Health and Social Services found:

- overall, 23% of Alaska adults consumed 1 or more sugary drinks daily in 2017, including sugar-sweetened sodas as well as non-carbonated beverages;

Introduced by: PRAHSC Committee  
Introduction Date: August 25, 2020  
December 8, 2020  
Public Hearing Date: April 13, 2021  
Public Hearing Date: April 27, 2021  
Action:  
Vote:

- Alaska Native adults (40%) and adults from other races (32%) were more likely to drink 1 or more sugary drinks daily than White adults (18%);
- overall, 49% of Alaska high school students consumed a daily average of 1 or more sugary drink servings (glass, bottle or can) in 2019 (such as Gatorade or PowerAde), energy drink (such as Red Bull, Rockstar, or Monster), or another sugar-sweetened beverage (such as lemonade, sweetened tea or coffee drinks, flavored milk, Snapple, or Sunny Delight) with 15% drinking three or more services per day;
- Alaska Native students (58%) were significantly more likely than White students (43%) and those of other races (46%) to consume at least 1 sugary drink a day;  
in 2016-2018, 13% of Alaska 3-year-olds drank soda daily, and 28% drank sweetened non-soda drinks daily, one in ten (10%) of Alaska 3-year-olds drank 2 or more cups of sweetened non-soda beverages on a given day;
- over one third of 3-year-olds (39%) drank more than 1 cup of 100% fruit juice, and 17% drank less than 1 cup;
- 3-year-old Children of Alaska Native mothers (53%) were significantly more likely than other children to drink any sugary drinks daily, and children of other non-Native race mothers (37%) were also significantly more likely than children of White mothers (19%) to drink any sugary drinks daily
- children in Northern (74%) and Southwest (70%) Alaska were more likely than those in other regions (range: 14% to 28%) to drink any sugary drinks daily;

**WHEREAS,** the American Heart Association suggests a daily added-sugar limit of no more than 100 calories per day which equates to about **6 teaspoons** or 24 grams of sugar for most women and children under 18, and no more than 150 calories per day which equates to about **9 teaspoons** or 36 grams of sugar for most men;

**WHEREAS,** drinking one 20-ounce bottle of soda which contains the equivalent of approximately **17 teaspoons of sugar**, results in almost three times the

Introduced by: PRAHSC Committee  
Introduction Date: August 25, 2020  
December 8, 2020  
Public Hearing Date: April 13, 2021  
Public Hearing Date: April 27, 2021  
Action:  
Vote:

recommended limit of sugar for women and children, and almost twice the recommended limit of sugar for men;

**WHEREAS,** overconsumption of sugary drinks by people of all ages is associated with weight gain/obesity, type 2 diabetes, heart disease, kidney diseases, non-alcoholic liver disease, tooth decay and cavities, gout and rheumatoid arthritis;

**WHEREAS,** in Alaska 32 % among children 6 to 11 years of age, and 65 % among children 12 to 17 years of age;

**WHEREAS,** over the past 30 years, adult diabetes rates have nearly tripled in the United States with 9 percent of adults have diabetes and more than one-third have prediabetes, 14% of the people in the Yukon Kuskokwim Delta are diagnosed with diabetes or pre-diabetes;

**WHEREAS,** over the past 10 years, the number of people diagnosed with prediabetes has almost doubled;

**WHEREAS,** over the past 10 years, the percentage of teens nationwide that have diabetes or prediabetes has increased from 9 percent to 23 percent;

**WHEREAS,** by consuming one sugar-sweetened beverage a day increases the risk of developing Type Two Diabetes by 25%;

**WHEREAS,** one in five people with diabetes are under the age of 45;

**WHEREAS,** one in three children born today is expected to develop diabetes in their lifetime, if measures are not taken to reduce consumption of sugar sweetened beverages, we are increasing risks for youth in our community to face complications from diabetes such as heart disease, nerve damage, gum infections, kidney disease, hearing impairment, blindness, amputation of toes, feet, or legs, and increased risk of Alzheimer's disease;

**WHEREAS,** 85% of the people diagnosed with Diabetes in the Yukon Kuskokwim Delta experience obesity or excess weight;

Introduced by: PRAHSC Committee  
Introduction Date: August 25, 2020  
December 8, 2020  
Public Hearing Date: April 13, 2021  
Public Hearing Date: April 27, 2021  
Action:  
Vote:

**WHEREAS,** the Alaska Diabetes Coalition Strategic Plan 2020-2025 states:

- as of 2016, 7.5% of adults in Alaska have known diabetes and 11.1% of adults have known prediabetes and more than 100,000 Alaska adults have been diagnosed with diabetes or prediabetes, but more—over 80% are likely at risk and do not know it;
- diabetes is the 8th leading cause of death in Alaska, identified as a cause of death for 3,662 Alaskans between 2007 and 2016 – 889 as the underlying cause of death (i.e., direct cause), and 2,773 as a contributing cause of death;
- in total during 2016, diabetes contributed to the need for services in 70,487 hospital visits – 9,067 of these were inpatient visits, where the person was admitted to a hospital, and 7% indicated diabetes as the primary diagnosis, or reason care was needed;
- more Alaska Native people and Black or African American people have diabetes or prediabetes than Whites in Alaska;

**WHEREAS,** a review in the International Journal of Circumpolar Health finds evidence indicating that while Alaska Natives have a low prevalence of diabetes compared with other Native Americans, they are experiencing a more rapid rate of increase than other groups;

**WHEREAS,** the evidence shows three changes have occurred concurrently over the past few decades; an increased proportion of carbohydrate in the diet, increasing prevalence of obesity, and increasing prevalence of diabetes additionally, there is evidence that elements of the traditional diet, specifically frequent seal oil and salmon intake, correlate with a lesser risk of glucose intolerance

**WHEREAS,** there is overweighing evidence linking obesity and the consumption of sweetened beverages, such as soft drinks, energy drinks, sweet teas, and sports drinks and currently the Unites States as a 42%, this marks an increase of 26% since 2008;

**WHEREAS,** obesity rates have tripled for adolescents and quadrupled for children 6 to 11 years of age;

**WHEREAS,** an evaluation of risk factors for obesity at age 3 in Alaskan children, including the role of beverage consumption shows:

- obesity prevalence among all 3-year olds was 24.9% and among Alaska Native children 42.2%;
- among Alaska Native children, obesity risk was greater among residents of the Northern/Southwest region of the state in comparison with other areas, such as Anchorage (51.6% versus 32.4%; p = 0.04);
- adult obesity prevalence has more than doubled from 13% in 1991 to 31% in 2018, while overweight prevalence has remained relatively consistent;
- between 1991 and 2018, adult obesity prevalence increased among Alaska Native adults (16% to 34%) and White (non-Hispanic) adults (13% to 30%);
- overweight/obesity prevalence was not significantly different between any additional race groups, including Black adults (70%), Hispanic adults (70%), Alaska Native adults (67%), and White adults (66%);
- in 2019, about 2% of Alaska high school students were underweight, 68% were at a healthy weight, 15% were overweight, and 15% were obese;
- overweight/obesity prevalence was significantly lower among 3-year-old children of White mothers (27%) than among children of Alaska Native / American Indian mothers (57%);

**WHEREAS,** there is evidence that shows a positive relationship between sugar intake and cavities;

**WHEREAS,** drinking one or two sodas a day increases the risk of developing type 2 diabetes by 26 percent, drinking just one soda a day increases an adult's likelihood of being overweight by 27 percent, and for children, the likelihood doubles to 55 percent;

**WHEREAS,** evidence suggests that sugar sweetened beverage tax can reduce consumption of these harmful products, sugary drink taxes have led to a significant decline in sugary drink consumption in Mexico and Berkeley, CA;

Introduced by: PRAHSC Committee  
Introduction Date: August 25, 2020  
December 8, 2020  
Public Hearing Date: April 13, 2021  
Public Hearing Date: April 27, 2021  
Action:  
Vote:

**WHEREAS,** in 2012, 50,000 deaths were associated with drinking too many sugary drinks. Of that, 40,000 deaths in the U.S. were attributed to heart problems and 10,000 deaths were attributed to type 2 diabetes caused specifically by consuming too many sugary drinks;

**WHEREAS,** an excise tax on sugar-sweetened beverages is intended to protect the health, safety and well-being of the people in our community;

**WHEREAS,** the City of Bethel is focused on providing the best services to our community in the most responsible way;

**WHEREAS,** the goal of enhancing close-to-home outdoor recreation for Bethel citizens, improving park maintenance for current parks, and maintaining and extending the community's trail system is a priority for the City Council;

**WHEREAS,** the current City of Bethel Comprehensive plan has identified the following as priorities for the community of Bethel:

**Land Use Goal 4:** Create safe, livable neighborhoods centered around community facilities such as schools, parks, the teen center, and the senior center.

**Transportation Goal 3:** Provide a safe and efficient trail network to meet current and future needs, for year-round transportation and recreation use by Bethel residents and visitors.

**Economic Development Goal 7:** Maintain fair, competitive and sufficient local government taxes, fees and utility rates.

**Economic Development Goal 8:** Enhance the quality of life in Bethel to attract and retain individuals and businesses.

**Public Facilities and Services Goal 1 G.:** Provide and improve essential city services. Respond to current needs and plan for future demand. Link the extension of public facilities to land use development to ensure that growth occurs in a logical, planned and cost-effective manner. Youth and Adult Recreation. Sustain and enhance facilities and programs for youth and

Introduced by: PRAHSC Committee  
Introduction Date: August 25, 2020  
December 8, 2020  
Public Hearing Date: April 13, 2021  
Public Hearing Date: April 27, 2021  
Action:  
Vote:

adult recreation.

**WHEREAS,** addressing **Land Use Goal 4**, in an effort to create safe livable neighborhoods, we currently have four subdivisions (Uivik, Blueberry, Larson, Kasayuli) that do not meet this criteria and lack recreational opportunities;

**WHEREAS,** addressing **Transportation Goal 3**, the City has a local and regional trail system; however, expansion of that trail system is needed to improve community accessibility for residents and visitors;

**WHEREAS,** the Comprehensive Plan identifies the need to have a safe and efficient trail network to meet current and future needs, to allow for year-round transportation and recreation;

**WHEREAS,** the boardwalk transportation link is safer for pedestrians and bicyclists than using the streets and is less costly than the at-grade pathway attached to roadways;

**WHEREAS,** the development of our current one mile of boardwalk can focus on trails that connect parks to offer pedestrians access to the City away from roads, dust impacts, and connect key locations such as the post office, Pinky's Park, schools;

**WHEREAS,** **Economic Development Goal 7 and 8**, explains the majority of the cash economy of Bethel is derived from regional services such as government administration, transportation, fuel and freight distribution, education, health care and social services; and has the goal of enhancing the quality of life in Bethel to attract and retain individuals and businesses;

**WHEREAS,** many of the top employers within the community (Lower Kuskokwim School District, Yukon Kuskokwim Health Corporation, City of Bethel) face significant difficulty recruiting staff to support their operations;

**WHEREAS,** according to the Comprehensive Plan, it is important to improve recreational attractions that benefit both residents and visitors, improve the appearance and characteristic of areas of town as well as improving the opportunities to

Introduced by: PRAHSC Committee  
Introduction Date: August 25, 2020  
December 8, 2020  
Public Hearing Date: April 13, 2021  
Public Hearing Date: April 27, 2021  
Action:  
Vote:

share and learn about historic and contemporary cultures;

**WHEREAS,** it is challenging to retain and attract personnel; and it is important to invest in infrastructure that improves the quality of life of in our community and region;

**WHEREAS, Public Facilities and Services Goal 1 G.:** explains the need to create, sustain and enhance facilities and programs for youth and adult recreation;

**WHEREAS,** indoor recreation is a limited commodity for the community of Bethel and consists primarily of Lower Kuskokwim School District properties which support school sponsored activities which limit the availability for community use;

**WHEREAS,** there is an unmet need to develop an alternative space for widespread community use with year round availability for all ages;

**WHEREAS,** the City of Bethel is faced with significant budget constraints limiting the ability to meet the needs of the growing community;

**WHEREAS,** the organization has had to focus on essential services, due to this budget shortfall, placing a low priority on opportunities to increase the quality of life for our community members;

**WHEREAS,** it is clear that Bethel's operations are constrained by revenue projections of \$11,382,067 with estimated costs of operations \$11,300,950; when the City of Bethel, with a population of 6,135, covering an area of 50 square miles, with a staff of 99 Full Time Employees, is compared to other budgets among municipalities around the State of Alaska,

- City of Wasilla, population 8,801, with 13.13 square miles, 131 Full Time Employees, lists \$18,705,260 in projected revenues and \$19,138,047 in operation expenditures;
- City of Palmer, population 6,223, with 5.7 square miles, 79.5 Full Time Employees lists \$11,608,593 in projected revenues and \$12,051,022 in operation expenditures, as the closest revenue operating budget to the City of Bethel it is important to point out a

Introduced by: PRAHSC Committee  
Introduction Date: August 25, 2020  
December 8, 2020  
Public Hearing Date: April 13, 2021  
Public Hearing Date: April 27, 2021  
Action:  
Vote:

significant difference in their spending by comparing the streets and Roads budget for Palmer which totals \$653,358 to the City of Bethel's 2.7 million dollar budget;

- City of Kodiak, population 5,942, with 5.4 square miles, 134 Full Time Employees lists \$42,071,678 in projected revenues and 42,071,678 in operation expenditures;
- City of Homer, population 5,443, with 25 square miles, 101 Full Time Employees, lists \$25,306,581 in projected revenues and \$26,247,742 operation expenditures;
- City of Soldotna, population 4,327, with 7.4 square miles, 74 Full Time Employees has a projected revenue of \$13,198,836 with an operating budget of \$13,248,888;

**WHEREAS,** Bethel is limited in their opportunity to raise revenue compared to many other communities in the State that have a local property tax to help support the services provided by the local government;

**WHEREAS,** pursuing measures to increase revenues to support the community, will enable ourselves to reach the very reasonable and essential goals outlined in the Comprehensive Plan;

**WHEREAS,** continuing to maintain and grow our trail systems to provide transportation links between neighborhoods and business centers will support recreational activities and reduce pedestrian hazards from traffic and dust from the road system;

**WHEREAS,** improving our parks and expanding our park access to more neighborhoods will improve our community profile by supporting social, economic and physical well-being for our current and prospective residents and businesses;

**WHEREAS,** parks provide a gathering places for families, social groups, as well as for individuals of all ages and economic status, regardless of their ability to pay for access; additionally, recreational opportunities are also associated with a reduction in crime in communities;

**WHEREAS,** playgrounds are identified as one of the best investments citizens and cities

Introduced by: PRAHSC Committee  
Introduction Date: August 25, 2020  
December 8, 2020  
Public Hearing Date: April 13, 2021  
Public Hearing Date: April 27, 2021  
Action:  
Vote:

can make in their children as playgrounds provide children critical unstructured, outdoor, creative and active play;

**WHEREAS,** recreational opportunities have been shown to increase physical activity, improve physical and mental health, lower body mass index, reduce stress and anxiety, decreased morbidity and even increased longevity; they have also been associated with quality of life and have been identified as one of the most important factors on how livable communities are.

**NOW THEREFORE BE IT ENACTED BY THE CITY COUNCIL OF THE CITY OF BETHEL, ALASKA:**

**SECTION 1.** This is a codified Ordinance and shall become part of the Bethel Municipal Code.

**SECTION 2.** New Chapter 4.17a, Excise Tax on Sugar-Sweetened Beverage Product is added to the Bethel Municipal Code.

**4.17a.010 Definitions.**

For the purposes of this Chapter, unless the context otherwise requires:

~~"Beverage for Medical Use" means a beverage suitable for human consumption and manufactured for use as a:~~

- ~~1. Source of necessary nutrition due to a medical condition, or~~
- ~~2. For use as an oral rehydration electrolyte solution for infants and children formulated to prevent or treat dehydration due to illness.~~

~~It shall not include drinks commonly referred to as "Sports Drinks" or any other common names that are derivations thereof.~~

"Beverage for Medical Use" means a beverage suitable for human consumption and manufactured for use as an oral nutritional therapy for Persons who cannot absorb or metabolize dietary nutrients from food or beverages, or for use as an oral rehydration electrolyte solution for infants and children formulated to prevent or treat dehydration due to illness.

Introduced by: PRAHSC Committee  
Introduction Date: August 25, 2020  
December 8, 2020  
Public Hearing Date: April 13, 2021  
Public Hearing Date: April 27, 2021  
Action:  
Vote:

"Beverage for Medical Use" shall also mean a "medical food" as defined in section 5(b)(3) of the Orphan Drug Act (21 U.S.C. 360ee(b)(3); this Act defines medical food as "a food which is formulated to be consumed or administered externally under the supervision of a physician and which is intended for the specific dietary management of a disease or condition for which distinctive nutritional requirements, based on recognized scientific principles, are established by medical evaluation."

"Beverage for Medical Use" shall not include drinks commonly referred to as "sports drinks" or any other common names that are derivations thereof.

"Bottle" means any closed or sealed container regardless of size or shape, including, without limitation, those made of glass, metal, paper, plastic, or any other material or combination of materials.

"Bottled Sugar-Sweetened Beverage" means any sugar-sweetened beverage in a ~~container-bottle~~ that is ready for consumption without further processing, such as, and without limitation, dilution or carbonation.

"Caloric Sweetener" means a substance or combination of substances suitable for human consumption that adds calories to and is perceived as sweet to humans when consumed, including, but not limited to sucrose, dextrose, fructose, glucose, other mono and disaccharides; corn syrup or high-fructose corn syrup; or any other caloric sweetener designated by the city manager.

~~"Consumer" means a natural person who purchases a sugar-sweetened beverage product in the city for a purpose other than resale in the ordinary course of business.~~  
means a Person who purchases a Sugary Drink for consumption and not for sale to another.

"Distribution" or "distribute" means the transfer of title or possession:

1. From one business entity to another for consideration;
2. Within a single business entity, such as by a wholesale or warehousing unit to a retail outlet or between two or more employees or contractors; or
3. For products for which the tax imposed by this chapter has not been paid by a prior distributor, "distribution" or "distribute" also means the placement of a product with a retailer of sugar-sweetened beverage products.

Introduced by: PRAHSC Committee  
Introduction Date: August 25, 2020  
December 8, 2020  
Public Hearing Date: April 13, 2021  
Public Hearing Date: April 27, 2021  
Action:  
Vote:

"Distribution" or "Distribute" shall not mean the retail sale to a consumer.

~~"Distributor" means any person who distributes sugar sweetened beverage products in the city.~~ means any Person, including manufacturers and wholesale dealers, who receives, stores, manufactures, bottles, and/or distributes Bottled Sugary Drinks, Syrups, or Powders, for sale to Retailers doing business in the State, whether or not that Person also sells such products to Consumers.

"Milk Products" means natural fluid milk, regardless of animal source or butterfat content, natural milk concentrate, whether or not reconstituted, regardless of animal source or butterfat content, or dehydrated natural milk, whether or not reconstituted and regardless of animal source or butterfat content, and plant-based milk substitutes, that are marketed as milk, such as soy milk, coconut milk, rice milk and almond milk.

"Natural Fruit Juice" means the original liquid resulting from the pressing of fruits, or the liquid resulting from the dilution with water of dehydrated natural fruit juice.

"Natural Vegetable Juice" means the original liquid resulting from the pressing of vegetables, or the liquid resulting from the dilution with water of dehydrated natural vegetable juice.

"Non-nutritive Sweetener" means any non-nutritive substance suitable for human consumption that humans perceive as sweet and includes, without limitation, aspartame, acesulfame-K, neotame, saccharin, sucralose, stevia, and other artificial sweeteners. "Non-nutritive Sweetener" excludes Sugars. For purposes of this definition, "non-nutritive" means a substance that contains fewer than 5 calories per serving.

"Person" means any natural person, partnership, cooperative association, limited liability company, corporation, personal representative, receiver, trustee, assignee, or any other legal entity.

"Place of Business" means any place where Sugary Drinks, Syrups, or Powders are manufactured or received for Sale in the State.

~~"Powder" means any solid mixture, containing one or more caloric sweetener as an ingredient, intended to be used in making, mixing, or compounding a sugar sweetened beverage by combining the powder with one or more ingredients.~~

Introduced by: PRAHSC Committee  
Introduction Date: August 25, 2020  
December 8, 2020  
Public Hearing Date: April 13, 2021  
Public Hearing Date: April 27, 2021  
Action:  
Vote:

means any solid mixture of ingredients used in making, mixing, or compounding Sugary Drinks by mixing the powder with any one or more other ingredients, including without limitation water, ice, Syrup, simple Syrup, fruits, vegetables, fruit juice, vegetable juice, carbonation, or other gas.

~~"Retailer of Sugar-Sweetened Beverage Products" means a person, other than a distributor, manufacturer, or wholesaler who receives, stores, mixes, compounds, or manufactures a sugar-sweetened beverage and sells or otherwise dispenses the sugar-sweetened beverage to the ultimate consumer.~~

"Retailer" means any Person who sells or otherwise dispenses in the State a Sugary Drink to a Consumer whether or not that Person is also a Distributor as defined in this section.

"Sale" means the transfer of title or possession for valuable consideration regardless of the manner by which the transfer is completed.

~~"Simple Syrup" means a mixture of water and one or more natural or common sweeteners without any additional ingredients.~~ means a liquid mixture of ingredients used in making, mixing, or compounding Sugary Drinks using one or more other ingredients including, without limitation, water, ice, a Powder, simple Syrup, fruits, vegetables, fruit juice, vegetable juice, carbonation, or other gas.

"Sugars" means any monosaccharide or disaccharide nutritive sweetener such as glucose, fructose, lactose, and sucrose. Examples include, without limitation, cane sugar, beet sugar, high-fructose corn syrup, honey, fruit juice concentrate, and other caloric sweeteners. For purposes of this definition, "nutritive" means a substance that contains 5 or more calories per serving.

~~"Sugar-Sweetened Beverage" means any non-alcoholic beverage which contains at least 5 grams of caloric sweetener per 12 fluid ounces.~~

"Sugar-Sweetened Beverage " means any nonalcoholic beverage, carbonated or noncarbonated, which is intended for human consumption and contains any added Sugars. As used in this definition, "nonalcoholic beverage" means any beverage that contains less than one-half of one percent alcohol per volume. The term "Sugary-

Introduced by: PRAHSC Committee  
Introduction Date: August 25, 2020  
December 8, 2020  
Public Hearing Date: April 13, 2021  
Public Hearing Date: April 27, 2021  
Action:  
Vote:

sweetened beverage" does not include beverages sweetened solely with Non-nutritive Sweeteners; Natural Fruit or Vegetable Juice; Milk; infant formula, Beverages for Medical Use; or Water.

1. "Sugar-Sweetened Beverage" includes all drinks and beverages commonly referred to as "soda," "pop," "cola," "soft drinks," "sports drinks," "energy drinks," "sweetened ice teas," "sweetened coffees," or any other common names that are derivations thereof.
2. "Sugar-Sweetened Beverage" does not include any of the following:
  - a. Any beverage in which milk is the primary ingredient, i.e., the ingredient constituting a greater volume of the product than any other;
  - b. Any beverage for medical use;
  - c. Any liquid sold for use for weight reduction as a meal replacement;
  - d. Any product commonly referred to as "infant formula" or "baby formula";
  - e. Any alcoholic beverage;
  - f. Any beverage consisting of 100 percent natural fruit or vegetable juice with no added caloric sweetener. Natural fruit juice and natural vegetable juice is the original liquid with or without water added resulting from the pressing of fruits or vegetables;
  - g. Sweetened medication such as cough syrup, liquid pain relievers, fever reducers and similar products; or
  - h. Any product commonly used exclusively to mix with alcohol that may exceed 5 grams or more per serving of caloric sweetener per 12 ounces of fluid that is not a sugar sweetened beverage, including without limitation margarita mix, bloody mary mix, daiquiri mix or similar products.

"Sugar-Sweetened Beverage Product" means a bottled sugar-sweetened beverage or a sugar sweetened beverage made from the dilution of syrup or powder.

"Syrup" means any liquid mixture, containing one or more caloric sweeteners as an ingredient, intended to be used in making, mixing, or compounding a sugar-sweetened beverage by combining the syrup with one or more other ingredients.

#### **4.17a. 020 Excise tax on sugar-sweetened beverages.**

- A. In addition to any other taxes imposed by the city, the city hereby levies an excise tax of one cent (\$0.01) per fluid ounce on the privilege of distributing sugar-sweetened beverage products in the city. The tax is imposed only when

the supply, acquisition, delivery or transport is for the ultimate retail sale of the sugar-sweetened beverage products within the city.

- B. For the purposes of this Chapter, the volume, in ounces, of a sugar-sweetened beverage product shall be calculated as follows:
1. For a bottled sugar-sweetened beverage the tax shall be calculated on the volume, in fluid ounces, of sugar-sweetened beverages distributed to any person in the course of business in the city.
  2. For sugar-sweetened beverage made from syrups ~~and powders~~ the tax shall be calculated on:
    - a. The manufacturer's suggested serving size for the volume of fluid ounces of sugar-sweetened beverages produced from syrup ~~or powder~~ upon the initial distribution of syrup ~~or powder~~; or
    - b. If the labeling or packaging does not specify the recommended number of servings per container, the tax shall be calculated using the largest volume of fluid ounces of sugar-sweetened beverages that could be produced from syrup ~~or powder~~ upon the initial distribution of syrup or powder.
  3. For sugar-sweetened beverage made from powders the excise tax shall be \$.0025 per ounce.

#### **4.17a.030 Exemptions.**

The tax imposed by this Chapter shall not apply to:

- A. Any distribution of syrups and powders sold directly to a consumer and intended for personal use by a consumer that are not already pre-mixed into a sugar-sweetened beverage product such as granulated sugar, honey, agave and similar products;
- B. Any milk product.
- C. Infant formula.
- D. Any alcoholic beverage.
- E. Any beverage for medical use.
- F. Any product that does not meet the definition of a sugar sweetened beverage.

Introduced by: PRAHSC Committee  
Introduction Date: August 25, 2020  
December 8, 2020  
Public Hearing Date: April 13, 2021  
Public Hearing Date: April 27, 2021  
Action:  
Vote:

#### **4.17a.040 Registration of distributor**

- A. No person may sell, purchase, possess or bring sugar-sweetened beverage products into the city as a distributor without first registering with the City. The registration shall be on a form provided by the department and must include the information requested by the department.
- B. The registration required by this chapter is in addition to any other registration or license required by law.

#### **4.17a.050 Tax Collection and Returns**

- A. Prior to distributing any sugar-sweetened beverage products in the city, the distributor shall be registered with the city in accordance with BMC 4.17a.040.
- B. Each distributor of sugar-sweetened beverage products shall collect and every receiver of sugar-sweetened beverage products from a distributor shall pay the tax imposed in this chapter on each non-exempt distribution of a sugar-sweetened beverage product.
- C. The tax shall be levied on the first distributor subject to the jurisdiction of the city, if the tax is not paid by the first distributor for any reason, it shall be levied on subsequent distributors, provided that the distribution of sugar-sweetened beverage products may not be taxed more than once in the chain of commerce within the city.
- D. The receiver of any sugar-sweetened beverage product from a distributor shall include with its tax filing (BMC 4.16.240) of such product, the name of the distributor and amount of tax paid to the distributor.
- E. If the receiver is exempt from filing sales tax with the city in accordance with BMC 4.16.160, Tax exemptions, the receiver shall:
  - 1. Provide to the city evidence that the distributor from whom the sugar-sweetened beverage products were received has registered as a distributor with the city; or
  - 2. Report to the city all such transactions, the volume in ounces of sugar-sweetened beverage products received in each transaction, and the identity and contact information of any unregistered distributor from who

Introduced by: PRAHSC Committee  
Introduction Date: August 25, 2020  
December 8, 2020  
Public Hearing Date: April 13, 2021  
Public Hearing Date: April 27, 2021  
Action:  
Vote:

the sugar-sweetened beverage product was received and remit it to the city.

- F. The burden of proving that any transaction is not subject to the tax imposed by this chapter is upon the person whom the duty to collect the tax is imposed.
- G. The tax imposed by this chapter shall be due and payable in accordance with BMC 4.16.240, Tax Filing Schedule.

#### **4.17a.070 Enforcement.**

Except as otherwise provided by this Chapter, the tax imposed by this Chapter shall be administered in the same manner as taxes imposed pursuant to Chapter 4.16 and, without limitation, shall be subject to the same delinquency penalties, appeals processes and other enforcement provisions set forth in Chapter 4.16.

#### **4.17.080 Not a sales and use tax.**

The tax imposed by this Chapter is a tax upon the privilege of conducting business, specifically, distributing Sugar sweetened beverage products within the city. It is not a sales, or use tax on the sale, consumption or use of Sugar-sweetened beverage products. The tax imposed herein shall be in addition to any license fee or tax imposed or levied under any other law, statute or ordinance.

#### **4.17a.090 Dedicated Revenues.**

A. All revenues collected from the excise tax imposed by this chapter shall be deposited monthly in an interest bearing account dedicated to the park development fund and shall be designated for the funding of park and recreational design and development, park maintenance and other recreational opportunities in the City of Bethel.

**SECTION 3.** This Ordinance shall become effective sixty days following adoption by the Bethel City Council.

**ENACTED THIS \_\_\_\_ DAY OF \_\_\_\_\_ 2021 BY A VOTE OF \_ IN FAVOR AND \_ OPPOSED.**

---

Michelle DeWitt, Mayor

Introduced by: PRAHSC Committee  
Introduction Date August 25, 2020  
December 8, 2020  
Public Hearing Date: April 13, 2021  
Public Hearing Date: April 27, 2021  
Action:  
Vote:

ATTEST:

---

Lori Strickler, City Clerk

## SUGGESTED AMENDMENTS TO ORDINANCE 20-25

From Parks Recreation Aquatic Health and Safety Center Committee

---

### **Suggested Amendment Number 1:**

Amend Section 4.17a.010 Definitions to (new language is underlined removed language is stricken):

~~"Beverage for Medical Use" means a beverage suitable for human consumption and manufactured for use as a:~~

- ~~1. Source of necessary nutrition due to a medical condition, or~~
- ~~2. For use as an oral rehydration electrolyte solution for infants and children formulated to prevent or treat dehydration due to illness.~~

~~It shall not include drinks commonly referred to as "Sports Drinks" or any other common names that are derivations thereof.~~

"Beverage for Medical Use" means a beverage suitable for human consumption and manufactured for use as an oral nutritional therapy for Persons who cannot absorb or metabolize dietary nutrients from food or beverages, or for use as an oral rehydration electrolyte solution for infants and children formulated to prevent or treat dehydration due to illness.

"Beverage for Medical Use" shall also mean a "medical food" as defined in section 5(b)(3) of the Orphan Drug Act (21 U.S.C. 360ee(b)(3); this Act defines medical food as "a food which is formulated to be consumed or administered externally under the supervision of a physician and which is intended for the specific dietary management of a disease or condition for which distinctive nutritional requirements, based on recognized scientific principles, are established by medical evaluation."

"Beverage for Medical Use" shall not include drinks commonly referred to as "sports drinks" or any other common names that are derivations thereof.

"Bottle" means any closed or sealed container regardless of size or shape, including, without limitation, those made of glass, metal, paper, plastic, or any other material or combination of materials.

"Bottled Sugar-Sweetened Beverage" means any sugar-sweetened beverage in a container-bottle that is ready for consumption without further processing, such as, and without limitation, dilution or carbonation.

~~"Consumer" means a natural person who purchases a sugar-sweetened beverage product in the city for a purpose other than resale in the ordinary course of business.~~

means a Person who purchases a Sugary Drink for consumption and not for sale to another.

~~"Distributor" means any person who distributes sugar sweetened beverage products in the city.~~ means any Person, including manufacturers and wholesale dealers, who receives, stores, manufactures, bottles, and/or distributes Bottled Sugary Drinks, Syrups, or Powders, for sale to Retailers doing business in the State, whether or not that Person also sells such products to Consumers.

"Natural Fruit Juice" means the original liquid resulting from the pressing of fruits, or the liquid resulting from the dilution with water of dehydrated natural fruit juice.

"Natural Vegetable Juice" means the original liquid resulting from the pressing of vegetables, or the liquid resulting from the dilution with water of dehydrated natural vegetable juice.

"Non-nutritive Sweetener" means any non-nutritive substance suitable for human consumption that humans perceive as sweet and includes, without limitation, aspartame, acesulfame-K, neotame, saccharin, sucralose, stevia, and other artificial sweeteners. "Non-nutritive Sweetener" excludes Sugars. For purposes of this definition, "non-nutritive" means a substance that contains fewer than 5 calories per serving.

"Person" means any natural person, partnership, cooperative association, limited liability company, corporation, personal representative, receiver, trustee, assignee, or any other legal entity.

"Place of Business" means any place where Sugary Drinks, Syrups, or Powders are manufactured or received for Sale in the State.

~~"Powder" means any solid mixture, containing one or more caloric sweetener as an ingredient, intended to be used in making, mixing, or compounding a sugar sweetened beverage by combining the powder with one or more ingredients.~~  
means any solid mixture of ingredients used in making, mixing, or compounding Sugary Drinks by mixing the powder with any one or more other ingredients, including without limitation water, ice, Syrup, simple Syrup, fruits, vegetables, fruit juice, vegetable juice, carbonation, or other gas.

~~"Retailer of Sugar Sweetened Beverage Products" means a person, other than a distributor, manufacturer, or wholesaler who receives, stores, mixes, compounds, or manufactures a sugar sweetened beverage and sells or otherwise dispenses the sugar-sweetened beverage to the ultimate consumer.~~

"Retailer" means any Person who sells or otherwise dispenses in the State a Sugary Drink to a Consumer whether or not that Person is also a Distributor as defined in this section.

"Sale" means the transfer of title or possession for valuable consideration regardless of the manner by which the transfer is completed.

~~"Simple Syrup" means a mixture of water and one or more natural or common sweeteners without any additional ingredients.~~ means a liquid mixture of ingredients used in making, mixing, or compounding Sugary Drinks using one or more other ingredients including, without limitation, water, ice, a Powder, simple Syrup, fruits, vegetables, fruit juice, vegetable juice, carbonation, or other gas.

"Sugars" means any monosaccharide or disaccharide nutritive sweetener such as glucose, fructose, lactose, and sucrose. Examples include, without limitation, cane sugar, beet sugar, high-fructose corn syrup, honey, fruit juice concentrate, and other caloric sweeteners. For purposes of this definition, "nutritive" means a substance that contains 5 or more calories per serving.

~~"Sugar-Sweetened Beverage" means any non-alcoholic beverage which contains at least 5 grams of caloric sweetener per 12 fluid ounces.~~

"Sugar-Sweetened Beverage " means any nonalcoholic beverage, carbonated or noncarbonated, which is intended for human consumption and contains any added Sugars. As used in this definition, "nonalcoholic beverage" means any beverage that contains less than one-half of one percent alcohol per volume. The term "Sugary-sweetened beverage" does not include beverages sweetened solely with Non-nutritive Sweeteners; Natural Fruit or Vegetable Juice; Milk; infant formula, Beverages for Medical Use; or Water.

1. "Sugar-Sweetened Beverage" includes all drinks and beverages commonly referred to as "soda," "pop," "cola," "soft drinks," "sports drinks," "energy drinks," "sweetened ice teas," "sweetened coffees," or any other common names that are derivations thereof.

2. "Sugar-Sweetened Beverage" does not include any of the following:

- a. Any beverage in which milk is the primary ingredient, i.e., the ingredient constituting a greater volume of the product than any other;
- b. Any beverage for medical use;
- c. Any liquid sold for use for weight reduction as a meal replacement;
- d. Any product commonly referred to as "infant formula" or "baby formula";
- e. Any alcoholic beverage;
- f. Any beverage consisting of 100 percent natural fruit or vegetable juice with no added caloric sweetener. Natural fruit juice and natural vegetable juice is the original liquid with or without water added resulting from the pressing of fruits or vegetables;
- g. Sweetened medication such as cough syrup, liquid pain relievers, fever reducers and similar products; or

- h. Any product commonly used exclusively to mix with alcohol that may exceed 5 grams or more per serving of caloric sweetener per 12 ounces of fluid that is not a sugar sweetened beverage, including without limitation margarita mix, bloody mary mix, daiquiri mix or similar products.

## SUGGESTED AMENDMENTS TO ORDINANCE 20-25

From Parks Recreation Aquatic Health and Safety Center Committee

---

### **Suggested Amendment Number 2:**

Amend Section 4.17a.020 Excise tax on sugar-sweetened beverage to strike one cent and insert two cents.

#### **4.17a. 020 Excise tax on sugar-sweetened beverages.**

- A. In addition to any other taxes imposed by the city, the city hereby levies an excise tax of ~~one cent (\$0.01)~~ two cents (\$0.02) per fluid ounce on the privilege of distributing sugar-sweetened beverage products in the city. The tax is imposed only when the supply, acquisition, delivery or transport is for the ultimate retail sale of the sugar-sweetened beverage products within the city.

## SUGGESTED AMENDMENTS TO ORDINANCE 20-25

From Parks Recreation Aquatic Health and Safety Center Committee

---

### **Suggested Amendment Number 3:**

Amend Section 4.17a.020 Excise tax on sugar-sweetened beverage to insert a .0025 per ounce excise tax for sugar-sweetened beverages made from powders.

#### **4.17a. 020 Excise tax on sugar-sweetened beverages.**

- A. In addition to any other taxes imposed by the city, the city hereby levies an excise tax of one cent (\$0.01) per fluid ounce on the privilege of distributing sugar-sweetened beverage products in the city. The tax is imposed only when the supply, acquisition, delivery or transport is for the ultimate retail sale of the sugar-sweetened beverage products within the city.
- B. For the purposes of this Chapter, the volume, in ounces, of a sugar-sweetened beverage product shall be calculated as follows:
  - 1. For a bottled sugar-sweetened beverage the tax shall be calculated on the volume, in fluid ounces, of sugar-sweetened beverages distributed to any person in the course of business in the city.
  - 2. For sugar-sweetened beverage made from syrups ~~and powders~~ the tax shall be calculated on:
    - a. The manufacturer's suggested serving size for the volume of fluid ounces of sugar-sweetened beverages produced from syrup ~~or powder~~ upon the initial distribution of syrup ~~or powder~~; or
    - b. If the labeling or packaging does not specify the recommended number of servings per container, the tax shall be calculated using the largest volume of fluid ounces of sugar-sweetened beverages that could be produced from syrup ~~or powder~~ upon the initial distribution of syrup or powder.
  - 3. For sugar-sweetened beverage made from powders the excise tax shall be \$.0025 per ounce.

## SUGGESTED AMENDMENTS TO ORDINANCE 20-25

### From Parks Recreation Aquatic Health and Safety Center Committee

---

#### **Suggested Amendment Number 4:**

Amend Section 4.17a.090 Dedication of Revenue (old language is stricken and new language is underlined):

#### **4.17a.090 Dedicated Revenues.**

~~A. All revenues collected from the excise tax imposed by this chapter shall be deposited monthly in an interest-bearing account dedicated to the park development fund, and shall be designated for the funding of park and recreational design and development, park maintenance and other recreational opportunities in the City of Bethel.~~  
The revenue generated and held in the interest-bearing account shall be allocated to supplement the difference in sales tax revenue and operations revenue to support the operations and maintenance of the YK Fitness Center and planning and construction of YK Fitness Center Phase II. The remaining annual revenue shall be dedicated in the park development fund and shall be designated for the funding of park and recreational design and development, park maintenance, other recreational opportunities, and water projects in the City of Bethel.

## SUGGESTED AMENDMENTS TO ORDINANCE 20-25

From Parks Recreation Aquatic Health and Safety Center Committee

---

### **Suggested Amendment Number 5:**

Amend Ordinance 20-25 to insert whereas statements the reference health impacts sugary-sweetened beverage consumption.

**WHEREAS,** sugar-sweetened beverages are leading sources of added sugars in the American diet according to the Centers for Disease Control (CDC) and Prevention;

**WHEREAS,** the average American drinks nearly 42 gallons of sweetened beverages a year, the equivalent of 39 pounds of extra sugar, every year;

**WHEREAS,** the CDC states in 2011-2014, 6 in 10 youth and 5 in 10 adults drank a sugar-sweetened beverage on average each day;

**WHEREAS,** a study conducted in 2015 reviewing the association between added sugar intake and dental caries in Yup'ik children using a novel hair biomarker, showed:

- 49% of children consumed sugar-sweetened fruit drinks (e.g., Tank, Kool-Aide) 2-3 times per day and 15.7% of the respondents reported consuming sugar-sweetened beverages more than 4 times a day at home;
- Nearly 14% consumed soda 2-3 times per day, 43.1% consumed sodas 1-4 times per week;
- Over 45% consumed 100% juice drinks (e.g., orange, apple, grape) and 65%;

**WHEREAS,** another study conducted characterizing beverage patterns among Alaska Natives living in rural, remote communities found that, sugar-sweetened beverages contribute to more than 75% of beverage intake among Yup'ik youth who on average derive 328 kcals and 83 grams of added sugar from sugar-sweetened beverages;

**WHEREAS,** according to a study evaluating beverage consumption in an Alaska native village, consisting of 25 adults, 21 adolescents 12-17, 21 children 3-11:

- nearly half (46%) of all added sugars consumed by the U.S. population ages 2 and older come from sugary drinks;
- 72% of adults reported consuming sugar sweetened beverages at least once per week and 20% reported daily consumption;

- Sweetened just beverages such as Tank or Kool-aid were consumed most frequently with 100% of adolescents and 76% children reporting some consumption, 38% reported daily consumption;
- Children in the village were more than twice as likely as U.S. children to report ever consuming sweetened juice beverages (76% vs. 34%). as were adults (33% vs. 17%);
- children (29%) and adolescents (52%) in the village were more likely to report ever consuming sports and energy drinks than U.S. children (7%) or adolescents (12%);
- about 23% of Alaska adults and almost 50% of Alaska high school students drink one of more sugary beverages every day;
- 31% of Alaska 3-year-olds drink some amount of sugary beverages every day;

**WHEREAS,** a review of consumption of sugar-sweetened beverages among adults in rural Alaska finds:

- participants in communities with in-home piped water reported a mean sugar-sweetened beverage consumption frequency of 7.8 times per week while participants in communities without in-home piped water reported a mean frequency of 12.5 times per week;
- participants who lived in a community without in-home piped water reported consuming sugar-sweetened beverage 46% more often than those who lived in a community with in-home piped water;

**WHEREAS,** the Alaska Department of Health and Social Services found:

- overall, 23% of Alaska adults consumed 1 or more sugary drinks daily in 2017, including sugar-sweetened sodas as well as non-carbonated beverages;
- Alaska Native adults (40%) and adults from other races (32%) were more likely to drink 1 or more sugary drinks daily than White adults (18%);
- overall, 49% of Alaska high school students consumed a daily average of 1 or more sugary drink servings (glass, bottle or can) in 2019 (such as Gatorade or PowerAde), energy drink (such as Red Bull, Rockstar, or Monster), or another sugar-sweetened beverage (such as lemonade, sweetened tea or coffee drinks, flavored milk, Snapple, or Sunny Delight) with 15% drinking three or more services per day;
- Alaska Native students (58%) were significantly more likely than White students (43%) and those of other races (46%) to consume at least 1 sugary drink a day;

in 2016-2018, 13% of Alaska 3-year-olds drank soda daily, and 28% drank sweetened non-soda drinks daily, one in ten (10%) of Alaska 3-year-olds drank 2 or more cups of sweetened non-soda beverages on a given day;

- over one third of 3-year-olds (39%) drank more than 1 cup of 100% fruit juice, and 17% drank less than 1 cup;
- 3-year-old Children of Alaska Native mothers (53%) were significantly more likely than other children to drink any sugary drinks daily, and children of other non-Native race mothers (37%) were also significantly more likely than children of White mothers (19%) to drink any sugary drinks daily
- children in Northern (74%) and Southwest (70%) Alaska were more likely than those in other regions (range: 14% to 28%) to drink any sugary drinks daily;

**WHEREAS,** the American Heart Association suggests a daily added-sugar limit of no more than 100 calories per day which equates to about **6 teaspoons** or 24 grams of sugar for most women and children under 18, and no more than 150 calories per day which equates to about **9 teaspoons** or 36 grams of sugar for most men;

**WHEREAS,** drinking one 20-ounce bottle of soda which contains the equivalent of approximately **17 teaspoons of sugar**, results in almost three times the recommended limit of sugar for women and children, and almost twice the recommended limit of sugar for men;

**WHEREAS,** overconsumption of sugary drinks by people of all ages is associated with weight gain/obesity, type 2 diabetes, heart disease, kidney diseases, non-alcoholic liver disease, tooth decay and cavities, gout and rheumatoid arthritis;

**WHEREAS,** in Alaska 32 % among children 6 to 11 years of age, and 65 % among children 12 to 17 years of age;

## DIABETES FOCUS

**WHEREAS,** over the past 30 years, adult diabetes rates have nearly tripled in the United States with 9 percent of adults have diabetes and more than one-third have prediabetes, 14% of the people in the Yukon Kuskokwim Delta are diagnosed with diabetes or pre-diabetes;

**WHEREAS,** over the past 10 years, the number of people diagnosed with prediabetes has almost doubled;

**WHEREAS,** over the past 10 years, the percentage of teens nationwide that have diabetes or prediabetes has increased from 9 percent to 23 percent;

**WHEREAS,** by consuming one sugar-sweetened beverage a day increases the risk of developing Type Two Diabetes by 25%;

**WHEREAS,** one if five people with diabetes are under the age of 45;

**WHEREAS,** one in three children born today is expected to develop diabetes in their lifetime, if measures are not taken to reduce consumption of sugar sweetened beverages, we are increasing risks for youth in our community to face complications from diabetes such as heart disease, nerve damage, gum infections, kidney disease, hearing impairment, blindness, amputation of toes, feet, or legs, and increased risk of Alzheimer’s disease;

**WHEREAS,** 85% of the people diagnosed with Diabetes in the Yukon Kuskokwim Delta experience obesity or excess weight;

**WHEREAS,** the Alaska Diabetes Coalition Strategic Plan 2020-2025 states:

- as of 2016, 7.5% of adults in Alaska have known diabetes and 11.1% of adults have known prediabetes and more than 100,000 Alaska adults have been diagnosed with diabetes or prediabetes, but more—over 80% are likely at risk and do not know it;
- diabetes is the 8th leading cause of death in Alaska, identified as a cause of death for 3,662 Alaskans between 2007 and 2016 – 889 as the underlying cause of death (i.e., direct cause), and 2,773 as a contributing cause of death;
- in total during 2016, diabetes contributed to the need for services in 70,487 hospital visits – 9,067 of these were inpatient visits, where the person was admitted to a hospital, and 7% indicated diabetes as the primary diagnosis, or reason care was needed;
- more Alaska Native people and Black or African American people have diabetes or prediabetes than Whites in Alaska;

**WHEREAS,** a review in the International Journal of Circumpolar Health finds evidence indicating that while Alaska Natives have a low prevalence of diabetes compared with other Native Americans, they are experiencing a more rapid rate of increase than other groups;

**WHEREAS,** the evidence shows three changes have occurred concurrently over the past few decades; an increased proportion of carbohydrate in the diet, increasing prevalence of obesity, and increasing prevalence of diabetes additionally, there is evidence that elements of the traditional diet,

specifically frequent seal oil and salmon intake, correlate with a lesser risk of glucose intolerance

## OBESITY FOCUS

**WHEREAS,** there is overwhelming evidence linking obesity and the consumption of sweetened beverages, such as soft drinks, energy drinks, sweet teas, and sports drinks and currently the United States as a 42%, this marks an increase of 26% since 2008;

**WHEREAS,** obesity rates have tripled for adolescents and quadrupled for children 6 to 11 years of age;

**WHEREAS,** an evaluation of risk factors for obesity at age 3 in Alaskan children, including the role of beverage consumption shows:

- obesity prevalence among all 3-year olds was 24.9% and among Alaska Native children 42.2%;
- among Alaska Native children, obesity risk was greater among residents of the Northern/Southwest region of the state in comparison with other areas, such as Anchorage (51.6% versus 32.4%;  $p = 0.04$ );
- adult obesity prevalence has more than doubled from 13% in 1991 to 31% in 2018, while overweight prevalence has remained relatively consistent;
- between 1991 and 2018, adult obesity prevalence increased among Alaska Native adults (16% to 34%) and White (non-Hispanic) adults (13% to 30%);
- overweight/obesity prevalence was not significantly different between any additional race groups, including Black adults (70%), Hispanic adults (70%), Alaska Native adults (67%), and White adults (66%);
- in 2019, about 2% of Alaska high school students were underweight, 68% were at a healthy weight, 15% were overweight, and 15% were obese;
- overweight/obesity prevalence was significantly lower among 3-year-old children of White mothers (27%) than among children of Alaska Native / American Indian mothers (57%);

## DENTAL FOCUS

**WHEREAS,** there is evidence that shows a positive relationship between sugar intake and cavities;

## GENERAL CLOSING

**WHEREAS,** drinking one or two sodas a day increases the risk of developing type 2 diabetes by 26 percent, drinking just one soda a day increases an adult's likelihood of being overweight by 27 percent, and for children, the likelihood doubles to 55 percent;

**WHEREAS,** evidence suggests that sugar sweetened beverage tax can reduce consumption of these harmful products, sugary drink taxes have led to a significant decline in sugary drink consumption in Mexico and Berkeley, CA;

**WHEREAS,** in 2012, 50,000 deaths were associated with drinking too many sugary drinks. Of that, 40,000 deaths in the U.S. were attributed to heart problems and 10,000 deaths were attributed to type 2 diabetes caused specifically by consuming too many sugary drinks;

**WHEREAS,** an excise tax on sugar-sweetened beverages is intended to protect the health, safety and well-being of the people in our community;



# City of Bethel

## Committees and Commissions

### Recommendation to City Council

Committees and Commissions that wish to make a recommendation to City Council should turn this form in to the City Clerk or to the City Council representative on the committee or commission.

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                     |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
| <b>Committee/Commission:</b> PRAHC Committee                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>Chairman:</b> Brian Lefferts     |
| <b>Date Submitted:</b> 09/16/2020                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>Council Rep:</b> Michelle DeWitt |
| <b>Issue:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                     |
| <b>Recommendation:</b><br>Please take the following into consideration while reviewing the Sugar-Sweetened Beverage Tax:<br><br>Amend 04.07a90, clarify how to prioritize funds: "Prioritize making up the deficit in annual sales tax revenue to the Yukon Kuskokwim Fitness center and strategic planning for a Phase II gym, followed by trails and boardwalk development and other recreational operations."<br><br>Add indoor and outdoor in front of recreation in the second whereas.<br><br>Add verbiage in the ordinance after "Indoor Recreation is a limited commodity", "Funds from this will support the development and construction of Phase II, a Multipurpose Community Gym."<br><br>Add verbiage at the end of whereas statements on the ordinance, "Sustaining and expanding our current Fitness Center will improve social and physical well-being for current and prospective residents." |                                     |

***Passed unanimously by the PRAHSC Committee on September 14, 2020.***

Received by: \_\_\_\_\_  
Date: \_\_\_\_\_



# Alaska Remote Sellers Sales Tax Commission

REMITTANCE FOR JULY 1-31, 2020

All Dates

**NOTE FROM CITY CLERK'S OFFICE-** The Council postponed Ordinance 20-25 with the hope to see some revenue information from the Remote Sellers Sales Tax collection initiated on September 1, 2020.

| DATE         | TRANSACTION TYPE | NUM        | NAME           | MEMO/DESCRIPTION      | ACCOUNT # | ACCOUNT                         | DEBIT           | CREDIT          |
|--------------|------------------|------------|----------------|-----------------------|-----------|---------------------------------|-----------------|-----------------|
| 08/31/2020   | Bill             | 9008-20-07 | City of Bethel |                       | 2000      | 2000 Accounts Payable (A/P)     |                 | \$714.96        |
|              |                  |            |                | July Remote Sales Tax | 5010      | 5010 Member Tax Revenue Expense | \$749.52        |                 |
|              |                  |            |                |                       | 5020      | 5020 MUNIrevs Expense           | \$103.68        |                 |
|              |                  |            |                |                       | 5030      | 5030 TTR Fee Expense            | \$10.80         |                 |
|              |                  |            |                |                       | 2015      | 2015 MUNIRevs Fee Payable       |                 | \$103.68        |
|              |                  |            |                |                       | 2020      | 2020 TTR Fee Payable            |                 | \$10.80         |
|              |                  |            |                |                       | 4000      | 4000 Commission Fee Income      |                 | \$34.56         |
|              |                  |            |                |                       |           |                                 | <b>\$864.00</b> | <b>\$864.00</b> |
| <b>TOTAL</b> |                  |            |                |                       |           |                                 | <b>\$864.00</b> | <b>\$864.00</b> |

## Note

MUNIRevs: Based on a fixed % at different levels of sales tax collected, supports ongoing operations of the filing and remittance software. AML paid for the development costs.

TTR: Based on a fixed % at different levels of sales tax collected, this service provides the tax look up map and software for sellers to ensure correct rates and exemptions.

Commission Fee: This is based on the board-approved budget and reflected as a % of sales tax collected. The total % of the Commission, MUNIRevs and TTR is capped each fiscal year.



# Alaska Remote Sellers Sales Tax Commission

REMITTANCE FOR AUGUST 1-31, 2020

All Dates

| DATE         | TRANSACTION TYPE | NUM        | NAME           | MEMO/DESCRIPTION        | ACCOUNT # | ACCOUNT                                      | DEBIT              | CREDIT             |
|--------------|------------------|------------|----------------|-------------------------|-----------|----------------------------------------------|--------------------|--------------------|
| 09/30/2020   | Bill             | 9008-20-09 | City of Bethel |                         | 2000      | 2000 Accounts Payable (A/P)                  |                    | \$12,867.62        |
|              |                  |            |                | August Remote Sales Tax | 5010      | 5010 Member Tax Revenue Expense              | \$12,867.62        |                    |
|              |                  |            |                |                         | 5020      | 5020 MUNIrevs Expense                        | \$1,866.00         |                    |
|              |                  |            |                |                         | 5030      | 5030 TTR Fee Expense                         | \$194.38           |                    |
|              |                  |            |                |                         | 2015      | 2015 MUNIRevs Fee Payable                    |                    | \$1,866.00         |
|              |                  |            |                |                         | 2020      | 2020 TTR Fee Payable                         |                    | \$194.38           |
|              |                  |            |                |                         | 4000      | 4000 Commission Fee Income                   |                    | \$622.00           |
|              |                  |            |                |                         | 4005      | 4005 Gross Sales Tax collected from MUNIRevs | \$622.00           |                    |
|              |                  |            |                |                         |           |                                              | <b>\$15,550.00</b> | <b>\$15,550.00</b> |
| <b>TOTAL</b> |                  |            |                |                         |           |                                              | <b>\$15,550.00</b> | <b>\$15,550.00</b> |

## Note

MUNIRevs: Based on a fixed % at different levels of sales tax collected, supports ongoing operations of the filing and remittance software. AML paid for the development costs. TTR: Based on a fixed % at different levels of sales tax collected, this service provides the tax look up map and software for sellers to ensure correct rates and exemptions. Commission Fee: This is based on the board-approved budget and reflected as a % of sales tax collected. The total % of the Commission, MUNIRevs and TTR is capped each fiscal year.



# Alaska Remote Sellers Sales Tax Commission

REMITTANCE SEPTEMBER 1-30, 2020

All Dates

| DATE       | TRANSACTION<br>TYPE | NUM        | NAME           | MEMO/DESCRIPTION           | ACCOUNT<br># | ACCOUNT                                      | DEBIT       | CREDIT               |
|------------|---------------------|------------|----------------|----------------------------|--------------|----------------------------------------------|-------------|----------------------|
| 10/31/2020 | Bill                | 9008-20-10 | City of Bethel |                            | 2000         | 2000 Accounts Payable (A/P)                  |             | \$26,120.86          |
|            |                     |            |                | September Remote Sales Tax | 5010         | 5010 Member Tax Revenue Expense              | \$26,120.86 | amt of check         |
|            |                     |            |                |                            | 5020         | 5020 MUNIrevs Expense                        | \$3,787.92  | muni rev 12%         |
|            |                     |            |                |                            | 5030         | 5030 TTR Fee Expense                         | \$394.58    | 1.25% TTR            |
|            |                     |            |                |                            | 2015         | 2015 MUNIRevs Fee Payable                    |             | \$3,787.92           |
|            |                     |            |                |                            | 2020         | 2020 TTR Fee Payable                         |             | \$394.58             |
|            |                     |            |                |                            | 4000         | 4000 Commission Fee Income                   |             | \$1,262.64           |
|            |                     |            |                |                            | 4005         | 4005 Gross Sales Tax collected from MUNIRevs | \$1,262.64  | 4% fee to commission |
|            |                     |            |                |                            |              | gross sales tax                              | \$31,566.00 | \$31,566.00          |
| TOTAL      |                     |            |                |                            |              |                                              | \$31,566.00 | \$31,566.00          |

## Note

MUNIRevs: Based on a fixed % at different levels of sales tax collected, supports ongoing operations of the filing and remittance software. AML paid for the development costs. TTR: Based on a fixed % at different levels of sales tax collected, this service provides the tax look up map and software for sellers to ensure correct rates and exemptions. Commission Fee: This is based on the board-approved budget and reflected as a % of sales tax collected. The total % of the Commission, MUNIRevs and TTR is capped each fiscal year.

**From:** Brooke Sherick-Odom  
**Sent:** Tuesday, November 3, 2020 2:30 PM  
**To:** [pbarr@cityofbethel.net](mailto:pbarr@cityofbethel.net)  
**Subject:** Perry Barr: Bethel City Council: Council Member

Hi Perry,

I hope you're doing well & staying safe,

We're a local, family-owned business that started in Alaska in 1934. We employ **409** Team Members across **7** locations within the state.

I wanted to contact you regarding a current Bethel "City Ordinance" that we're concerned about related to Beverage Taxes:

- **What It Is**

- Ordinance #: 20-25 (Attached)
  - Proposing .01 Cent per ounce Tax on Sugar-sweetened beverage

- **Locations/Stores Affected**

- 17 Businesses
  - AC Quickstop (Alaska Commercial)
  - Alaska Commercial Co.
  - Alba's Coffee Shop & Convenience
  - Baba's Pizza & Sub
  - Brother's Pizza and Subs
  - Connie's Restaurant
  - Corina's Case Lot Groceries
  - Fill's Pizza
  - Front Street Café
  - Red Basket
  - Snack Shack
  - Suurvik Cinema at Kipusvik
  - Subway
  - Swanson's
  - Tundra Restaurant
  - Quick Food Center
  - Wasabi Bay
  - Zen

- **Our Business**

- We currently have **409** Team Members within Alaska & this tax would directly affect our business entirely
- The groups that oppose this ordinance are:
  - Alaska Beverage Association
  - Alaska Cabaret, Hotel, Restaurant & Retailers Association (CHARR)

We've repeatedly been highlighted on how much our local business has enhanced the local community, most recently being the 2x nominee for the "Business Excellence"-*Gold Pan Awards* & ranked #49 by "Alaska Business Corporate 100"-*Alaska Business Magazine*.

We'd like to discuss with you how this increase in tax will directly hinder our existing business, that has been dramatically adversely affected by an ongoing pandemic as restaurants/bars (our customers) have been completely shut down.

Thank you,



**Brooke Sherick-Odom**

Director of Government Affairs

6300 Changepoint Drive, Anchorage, AK 99518



(425) 890-9892



[Brooke.Sherick-Odom@odomcorp.com](mailto:Brooke.Sherick-Odom@odomcorp.com)



[www.odomcorp.com](http://www.odomcorp.com)

## Ordinance 20-25

For informational purposes only, WORKING DRAFT for future amendment.

Health Related Information to help show impacts of sugar sweetened beverages.

### GENERAL INFORMATION

**WHEREAS,** sugar-sweetened beverages are leading sources of added sugars in the American diet according to the Centers for Disease Control (CDC) and Prevention;

**WHEREAS,** the average American drinks nearly 42 gallons of sweetened beverages a year, the equivalent of 39 pounds of extra sugar, every year;

**WHEREAS,** the CDC states in 2011-2014, 6 in 10 youth and 5 in 10 adults drank a sugar-sweetened beverage on average each day;

**WHEREAS,** a study conducted in 2015 reviewing the association between added sugar intake and dental caries in Yup'ik children using a novel hair biomarker, showed:

- 49% of children consumed sugar-sweetened fruit drinks (e.g., Tank, Kool-Aide) 2-3 times per day and 15.7% of the respondents reported consuming sugar-sweetened beverages more than 4 times a day at home;
- Nearly 14% consumed soda 2-3 times per day, 43.1% consumed sodas 1-4 times per week;
- Over 45% consumed 100% juice drinks (e.g., orange, apple, grape) and 65%;

**WHEREAS,** another study conducted characterizing beverage patterns among Alaska Natives living in rural, remote communities found that, sugar-sweetened beverages contribute to more than 75% of beverage intake among Yup'ik youth who on average derive 328 kcals and 83 grams of added sugar from sugar-sweetened beverages;

**WHEREAS,** according to a study evaluating beverage consumption in an Alaska native village, consisting of 25 adults, 21 adolescents 12-17, 21 children 3-11:

- nearly half (46%) of all added sugars consumed by the U.S. population ages 2 and older come from sugary drinks;
- 72% of adults reported consuming sugar sweetened beverages at least once per week and 20% reported daily consumption;
- Sweetened just beverages such as Tank or Kool-aid were consumed most frequently with 100% of adolescents and 76% children reporting some consumption, 38% reported daily consumption;
- Children in the village were more than twice as likely as U.S. children to report ever consuming sweetened juice beverages (76% vs. 34%). as were adults (33% vs. 17%);
- children (29%) and adolescents (52%) in the village were more likely to report ever consuming sports and energy drinks than U.S. children (7%) or adolescents (12%);
- about 23% of Alaska adults and almost 50% of Alaska high school students drink one of more sugary beverages every day;
- 31% of Alaska 3-year-olds drink some amount of sugary beverages every day;

**WHEREAS,** a review of consumption of sugar-sweetened beverages among adults in rural Alaska finds:

- participants in communities with in-home piped water reported a mean sugar-sweetened beverage consumption frequency of 7.8 times per week while participants in communities without in-home piped water reported a mean frequency of 12.5 times per week;
- participants who lived in a community without in-home piped water reported consuming sugar-sweetened beverage 46% more often than those who lived in a community with in-home piped water;

**WHEREAS,** the Alaska Department of Health and Social Services found:

- overall, 23% of Alaska adults consumed 1 or more sugary drinks daily in 2017, including sugar-sweetened sodas as well as non-carbonated beverages;
- Alaska Native adults (40%) and adults from other races (32%) were more likely to drink 1 or more sugary drinks daily than White adults (18%);
- overall, 49% of Alaska high school students consumed a daily average of 1 or more sugary drink servings (glass, bottle or can) in 2019 (such as Gatorade or PowerAde), energy drink (such as Red Bull, Rockstar, or Monster), or another sugar-sweetened beverage (such as lemonade, sweetened tea or coffee drinks, flavored milk, Snapple, or Sunny Delight) with 15% drinking three or more services per day;

- Alaska Native students (58%) were significantly more likely than White students (43%) and those of other races (46%) to consume at least 1 sugary drink a day; in 2016-2018, 13% of Alaska 3-year-olds drank soda daily, and 28% drank sweetened non-soda drinks daily, one in ten (10%) of Alaska 3-year-olds drank 2 or more cups of sweetened non-soda beverages on a given day;
- over one third of 3-year-olds (39%) drank more than 1 cup of 100% fruit juice, and 17% drank less than 1 cup;
- 3-year-old Children of Alaska Native mothers (53%) were significantly more likely than other children to drink any sugary drinks daily, and children of other non-Native race mothers (37%) were also significantly more likely than children of White mothers (19%) to drink any sugary drinks daily
- children in Northern (74%) and Southwest (70%) Alaska were more likely than those in other regions (range: 14% to 28%) to drink any sugary drinks daily;

**WHEREAS,** the American Heart Association suggests a daily added-sugar limit of no more than 100 calories per day which equates to about **6 teaspoons** or 24 grams of sugar for most women and children under 18, and no more than 150 calories per day which equates to about **9 teaspoons** or 36 grams of sugar for most men;

**WHEREAS,** drinking one 20-ounce bottle of soda which contains the equivalent of approximately **17 teaspoons of sugar**, results in almost three times the recommended limit of sugar for women and children, and almost twice the recommended limit of sugar for men;

**WHEREAS,** overconsumption of sugary drinks by people of all ages is associated with weight gain/obesity, type 2 diabetes, heart disease, kidney diseases, non-alcoholic liver disease, tooth decay and cavities, gout and rheumatoid arthritis;

**WHEREAS,** in Alaska 32 % among children 6 to 11 years of age, and 65 % among children 12 to 17 years of age;

## DIABETES FOCUS

**WHEREAS,** over the past 30 years, adult diabetes rates have nearly tripled in the United States with 9 percent of adults have diabetes and more than one-third have prediabetes, 14% of the people in the Yukon Kuskokwim Delta are diagnosed with diabetes or pre-diabetes;

**WHEREAS,** over the past 10 years, the number of people diagnosed with prediabetes has almost doubled;

**WHEREAS,** over the past 10 years, the percentage of teens nationwide that have diabetes or prediabetes has increased from 9 percent to 23 percent;

**WHEREAS,** by consuming one sugar-sweetened beverage a day increases the risk of developing Type Two Diabetes by 25%;

**WHEREAS,** one if five people with diabetes are under the age of 45;

**WHEREAS,** one in three children born today is expected to develop diabetes in their lifetime, if measures are not taken to reduce consumption of sugar sweetened beverages, we are increasing risks for youth in our community to face complications from diabetes such as heart disease, nerve damage, gum infections, kidney disease, hearing impairment, blindness, amputation of toes, feet, or legs, and increased risk of Alzheimer’s disease;

**WHEREAS,** 85% of the people diagnosed with Diabetes in the Yukon Kuskokwim Delta experience obesity or excess weight;

**WHEREAS,** the Alaska Diabetes Coalition Strategic Plan 2020-2025 states:

- as of 2016, 7.5% of adults in Alaska have known diabetes and 11.1% of adults have known prediabetes and more than 100,000 Alaska adults have been diagnosed with diabetes or prediabetes, but more—over 80% are likely at risk and do not know it;
- diabetes is the 8th leading cause of death in Alaska, identified as a cause of death for 3,662 Alaskans between 2007 and 2016 – 889 as the underlying cause of death (i.e., direct cause), and 2,773 as a contributing cause of death;
- in total during 2016, diabetes contributed to the need for services in 70,487 hospital visits – 9,067 of these were inpatient visits, where the person was admitted to a hospital, and 7% indicated diabetes as the primary diagnosis, or reason care was needed;
- more Alaska Native people and Black or African American people have diabetes or prediabetes than Whites in Alaska;

**WHEREAS,** a review in the International Journal of Circumpolar Health finds evidence indicating that while Alaska Natives have a low prevalence of diabetes compared with other Native Americans, they are experiencing a more rapid rate of increase than other groups;

**WHEREAS,** the evidence shows three changes have occurred concurrently over the past few decades; an increased proportion of carbohydrate in the diet, increasing prevalence of obesity, and increasing prevalence of diabetes additionally, there is evidence that elements of the traditional diet, specifically frequent seal oil and salmon intake, correlate with a lesser risk of glucose intolerance

## OBESITY FOCUS

**WHEREAS,** there is overweighing evidence linking obesity and the consumption of sweetened beverages, such as soft drinks, energy drinks, sweet teas, and sports drinks and currently the Unites States as a 42%, this marks an increase of 26% since 2008;

**WHEREAS,** obesity rates have tripled for adolescents and quadrupled for children 6 to 11 years of age;

**WHEREAS,** an evaluation of risk factors for obesity at age 3 in Alaskan children, including the role of beverage consumption shows:

- obesity prevalence among all 3-year olds was 24.9% and among Alaska Native children 42.2%;
- among Alaska Native children, obesity risk was greater among residents of the Northern/Southwest region of the state in comparison with other areas, such as Anchorage (51.6% versus 32.4%;  $p = 0.04$ );
- adult obesity prevalence has more than doubled from 13% in 1991 to 31% in 2018, while overweight prevalence has remained relatively consistent;
- between 1991 and 2018, adult obesity prevalence increased among Alaska Native adults (16% to 34%) and White (non-Hispanic) adults (13% to 30%);
- overweight/obesity prevalence was not significantly different between any additional race groups, including Black adults (70%), Hispanic adults (70%), Alaska Native adults (67%), and White adults (66%);
- in 2019, about 2% of Alaska high school students were underweight, 68% were at a healthy weight, 15% were overweight, and 15% were obese;
- overweight/obesity prevalence was significantly lower among 3-year-old children of White mothers (27%) than among children of Alaska Native / American Indian mothers (57%);

## DENTAL FOCUS

**WHEREAS,** there is evidence that shows a positive relationship between sugar intake and cavities;

## GENERAL CLOSING

**WHEREAS,** drinking one or two sodas a day increases the risk of developing type 2 diabetes by 26 percent, drinking just one soda a day increases an adult's likelihood of being overweight by 27 percent, and for children, the likelihood doubles to 55 percent;

**WHEREAS,** evidence suggests that sugar sweetened beverage tax can reduce consumption of these harmful products, sugary drink taxes have led to a significant decline in sugary drink consumption in Mexico and Berkeley, CA;

**WHEREAS,** in 2012, 50,000 deaths were associated with drinking too many sugary drinks. Of that, 40,000 deaths in the U.S. were attributed to heart problems and 10,000 deaths were attributed to type 2 diabetes caused specifically by consuming too many sugary drinks;

**WHEREAS,** an excise tax on sugar-sweetened beverages is intended to protect the health, safety and well-being of the people in our community;

RESEARCH ARTICLE

Open Access



# Association between added sugar intake and dental caries in Yup'ik children using a novel hair biomarker

Donald L. Chi<sup>1\*</sup>, Scarlett Hopkins<sup>2</sup>, Diane O'Brien<sup>2</sup>, Lloyd Mancil<sup>1</sup>, Eliza Orr<sup>2</sup> and Dane Lenaker<sup>3</sup>

## Abstract

**Background:** Dental caries (tooth decay) is a significant public health problem in Alaska Native children. Dietary added sugars are considered one of the main risk factors. In this cross-sectional pilot study, we used a validated hair-based biomarker to measure added sugar intake in Alaska Native Yup'ik children ages 6–17 years (N = 51). We hypothesized that added sugar intake would be positively associated with tooth decay.

**Methods:** A 66-item parent survey was administered, a hair sample was collected from each child, and a dental exam was conducted. Added sugar intake (grams/day) was measured from hair samples using a linear combination of carbon and nitrogen ratios. We used linear and log-linear regression models with robust standard errors to test our hypothesis that children with higher added sugar intake would have a higher proportion of carious tooth surfaces.

**Results:** The mean proportion of carious tooth surfaces was 30.8 % (standard deviation: 23.2 %). Hair biomarker-based added sugar intake was associated with absolute (6.4 %; 95 % CI: 1.2 %, 11.6 %;  $P = .02$ ) and relative increases in the proportion of carious tooth surfaces (24.2 %; 95 % CI: 10.6 %, 39.4 %;  $P < .01$ ). There were no associations between self-reported measures of sugar-sweetened food and beverage intake and tooth decay.

**Conclusions:** Added sugar intake as assessed by hair biomarker was significantly and positively associated with tooth decay in our sample of Yup'ik children. Self-reported dietary measures were not associated tooth decay. Most added sugars were from sugar-sweetened fruit drinks consumed at home. Future dietary interventions aimed at improving the oral health of Alaska Native children should consider use of objective biomarkers to assess and measure changes in home-based added sugar intake, particularly sugar-sweetened fruit drinks.

**Keywords:** Added sugars, Dietary biomarkers, Sugar-sweetened beverages, Dental caries, Alaska Native children, Oral health disparities, Oral health interventions

## Background

The Alaska Natives Commission released a Final Report in 1994 that included an assessment of the physical health of Alaska Natives [1]. The Commission cited pediatric dental caries as one of the “new health problems facing Alaska’s Native people”. Twenty years later, the pediatric caries epidemic in Alaska Native communities has not abated. Dental caries is the most common disease worldwide [2]. Alaska Native children are disproportionately more likely than other children to

experience tooth decay, with prevalence rates ranging from 87 to 98 % [3, 4]. For example, Alaska Native and American Indian children ages 2 to 5 years had 4.13 decayed, missing, or filled primary teeth (dmft) compared to 1.17 dmft for U.S. children ages 2 to 5 years [4, 5]. When left untreated, dental caries can lead to pain, infection, missed school days, hospitalization, poor quality-of-life, and in rare cases death [6–9]. Furthermore, childhood tooth decay is one of the strongest predictors of tooth decay in adulthood [10], underscoring the importance of preventing dental disease in children.

There are three behaviors involved in caries prevention. The first is regular dental visits, which give dentists an opportunity to assess a child’s risk for developing

\* Correspondence: dchi@uw.edu

<sup>1</sup>Department of Oral Health Sciences, University of Washington School of Dentistry, Box 357475, Seattle, WA 98195, USA

Full list of author information is available at the end of the article



caries, provide risk-based anticipatory guidance, identify strategies to mitigate risk factors, and deliver preventive care (e.g., topical fluoride treatments, pit-and-fissure sealants). In an observational study,  $\geq 4$  fluoride varnish treatments provided during medical well baby visits reduced tooth decay rates in American Indian children [11]. Dental care is limited in many rural Alaska Native communities, which are geographically isolated and not connected by roads to larger population centers.

The second is exposure to topical fluorides. Fluoridated community water is the most cost-effective population-level dental caries prevention strategy, but most Alaska Native communities do not have piped-in water, which reduces the scalability and feasibility of water fluoridation [3, 12]. There are also local concerns in Alaska Native communities related to Hooper Bay in which a water supply was inadvertently hyperfluoridated, leading to the only documented death related to fluoridation [13]. Most Alaska Native children do not receive fluoride supplementation as recommended for children without access to fluoridated water and do not brush their teeth regularly with fluoridated toothpaste [14, 15].

The third is limiting carbohydrate intake. Dietary sources of caries-causing carbohydrates include sugar-sweetened beverages, juices, candies, crackers, and chips, and to a lesser extent breads, rice, and pastas [16–18]. Sugar-sweetened beverages, which contain high concentrations of added sugars, are a major source of dietary carbohydrates in U.S. children and adolescents [19, 20]. Over 25 % of U.S. children consume  $\geq 1$  non-diet sodas/week and 16 % consume other sugar-sweetened beverages [21]. A recent study of Alaska Native Yup'ik individuals found flavored drinks (like sugar-sweetened fruit drinks) and soda were among the most commonly consumed foods [22]. Numerous studies indicate a positive relationship between sugar-sweetened beverages and tooth decay in children, particularly in low-income children [23, 24].

The American Academy of Pediatrics policy statement called for research to identify public health strategies to address the caries epidemic in Alaska Native communities, but few oral health interventions have been tested [25, 26]. Based on the unresolved tooth decay epidemic among low-income children and minorities in the U.S., the president of the American Dental Association has called for additional research focusing specifically on the oral health effects of added sugar [27]. Anecdotal evidence from health providers and parents in Alaska Native communities indicate carbohydrate intake, particularly added sugars from beverages, as an important intervention target for children.

Public health interventions aimed at reducing carbohydrate intake require valid and objective measures. Self-reported measures of dietary intake are susceptible to

high levels of error and bias, making it difficult to detect dietary associations with health outcomes [28, 29]. Sugar intake is particularly subject to misreporting [30, 31]. This problem has created interest in several new approaches to measuring sugar intake using objective biomarkers [32–37]. One approach measures the carbon isotope ratio, which is elevated in corn and sugar cane, the source of 75 % of sugars consumed in the U.S. [38–40] and nearly all of the sugars consumed in rural Alaska Native communities. Previous work indicates a linear combination of red blood cell carbon and nitrogen isotope ratios is strongly predictive of total sugar, added sugar, and sugar-sweetened beverage intake in an Alaska Native population, validated against repeated 24-h recalls, the gold standard of dietary self-report data [41]. This objective measure has been used to assess associations between sugar intake and risk factors for chronic disease in the same Alaska Native population [42], but has not yet been used with children or in studies of oral health.

In this pilot study, we evaluated the feasibility of collecting hair samples from Yup'ik children and tested the association between our hair biomarker-based measure of added sugar intake and tooth decay. We hypothesized there would be a positive relationship between our biomarker measure of added sugar and tooth decay. This investigation is the first step in evaluating how an objective added sugar biomarker can be used in future public health interventions aimed at preventing tooth decay in Alaska Native children.

## Methods

### Study location

The study was conducted in Bethel, Alaska, the largest city in the Yukon-Kuskokwim (YK) Delta. Bethel is located 400 miles west of Anchorage and is the regional hub for 58 villages. The Bethel Census Area has about 18,000 residents and 81.8 % of the population is Alaska Native, the majority of whom are of Yup'ik descent [43]. Thirty-six percent of the population is under age 18 years, the per capita income is \$19,055, and 21.8 % of the population lives below poverty [43].

### Study design and population

We recruited a convenience sample of Alaska Native children in 2014 who sought dental care at the Yukon-Kuskokwim Health Corporation (YKHC) Dental Clinic in Bethel. This was a pilot study and there were no *a priori* sample size calculations. The recruitment goal was 50 children and adolescents but we had approval to enroll up to 60 participants. Inclusion criteria were: 1) ages 6 to 17 years; 2) self-identified as Yup'ik; 3)  $\geq 2$  cm of hair length (to allow for collection of an adequate hair sample); and 4) assent from the minor and parental consent. Children received a \$10 grocery store gift card

and parents received a \$20 grocery store gift card. Both received a toothbrush, toothpaste, and floss. The study was approved by the YKHC Board of Directors, the University of Washington Institutional Review Board (IRB), and the University of Alaska Fairbanks IRB.

### Study procedures

A clinic receptionist approached and pre-screened potential participants. For interested families, a study staff member verified inclusion criteria, explained the study and procedures, and answered questions. After obtaining consent from the parent and assent from the child, there was a three-step study process.

First, a 66-item survey was administered verbally by a Yup'ik member of the research team in either English or Yup'ik based on parent preference. The survey was developed specifically for this study and we ensured that all questions were culturally appropriate by pre-testing the survey with a Yup'ik parent. We asked questions on child and family demographics (e.g., age, sex, residence, household income) and child oral health behaviors (e.g., sugar-sweetened food and beverage intake, toothbrushing, fluoride access). The food and beverage intake questions were adapted from the Beverage and Snack Questionnaire previously developed for use in school settings and asked about intake frequency of popular items consumed by children as well as place in which the items were consumed [44]. If a parent was unable to answer a question, the child was asked to provide a response.

Second, we cut about 20 strands of hair from the back of each child's head. Each hair sample was taped so the 2 cm segment of hair closest to the scalp could undergo isotope analyses. One centimeter of hair corresponds to approximately 1 month of growth and reflects added sugar intake from the previous 1–2 months. Each hair sample was stored in a plastic bag and transported for processing and analysis. The 1 cm section of the hair sample most proximal to the scalp was cleaned, prepared, and analyzed for carbon and nitrogen isotope ratios using continuous flow isotope ratio mass spectrometry at the Alaska Stable Isotope Facility [43]. Added sugar intake was generated from  $\delta^{13}\text{C}$  and  $\delta^{15}\text{N}$  using previously estimated coefficients for the Yup'ik population [45–47].

Third, each participant received a tooth surface-level dental exam based on World Health Organization criteria [48]. A board-certified pediatric dentist conducted the exams in a private dental operator. The teeth were cleaned with a dry toothbrush and dried with gauze and air, and exams were completed using a mouth mirror and light. No dental explorers were used. Visible tooth surface were classified as present and sound, decayed (non-cavitated or cavitated), missing due to caries, or restored (filled or crowned). Non-cavitated carious lesions

were assessed visually consistent with published recommendations [49]. To assess intrarater reliability, 10 % of the participants were randomly selected for a second exam (ICC = 0.92). A random number generator was used to select participants for repeat exams. Clinical findings were summarized to parents. Children requiring treatment were referred for follow-up care.

### Variables

The outcome variable was the proportion of carious tooth surfaces, measured as the number of decayed (non-cavitated and cavitated), missing, and restored primary and permanent tooth surfaces divided by the total number of tooth surfaces present. Added sugar intake (g/day) was a continuous predictor variable measured using the hair sample. Child's age was modeled as a confounder based on previous studies [21, 50]. There were no other model covariates.

### Data analyses

We generated demographic statistics and summarized survey data on oral health behaviors. Next, we evaluated distributional assumptions for the outcome. Because the mean and median proportions of carious tooth surfaces were similar and the distributions were not skewed, we used linear regression analyses to assess the association between added sugar intake and tooth decay. To facilitate the interpretation of the regression models, added sugar intake/day was divided by 40 g, corresponding to the difference in the proportion of carious tooth surfaces associated with a 40-gram increase in added sugar intake (i.e., amount of sugar in a 12-ounce soda). We observed a quadratic association between age and the outcome, with a minimum observed around age 12 years (corresponding to exfoliation of primary teeth and eruption of permanent teeth). Thus, we centered age at 12 years and included a quadratic effect for age. To confirm the linear regression results, we used log-linear regression models and included an offset equal to the logarithm of the total number of surfaces present. The log-linear regression models were fit using generalized estimating equations with robust standard errors [51]. As part of the sensitivity analyses, we ran our regression models with and without non-cavitated lesions as part of the outcome. The results were identical. Therefore, we reported findings from models including non-cavitated lesions. All analyses were completed using statistical software R version 3.0 (R Foundation for Statistical Computing, Vienna, Austria) and SAS version 9.3 (SAS Institute, Cary, NC).

## Results

### Demographic statistics

We enrolled 51 participants. The study population was 50 % female and the mean age was 10.8 years (standard deviation: 3.3 years). Forty-three percent lived in Bethel

and the remaining 57 % children lived elsewhere in the YK Delta. About 30 % of children lived in families with a total annual household income < \$20,000, 17.6 % had an income \$20,000-\$29,999, 21.6 % had an income \$30,000-\$49,999, and 19.6 % had an income > \$49,999.

### Oral health behaviors

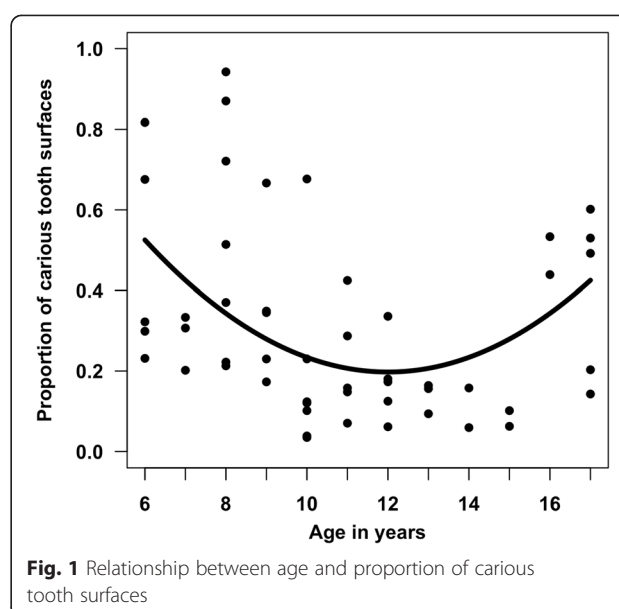
Regarding beverage consumption data collected via parent survey, 49 % of children were reported to consume sugar-sweetened fruit drinks (e.g., Tang, Kool-Aide) 2–3 times/day and 15.7 % reported consuming sugar-sweetened beverages  $\geq 4$  times/day at home. Nearly 14 % consumed soda 2–3 times/day, 43.1 % consumed sodas 1–4 times/week, and 33.3 % never consumed soda. Over 45 % consumed 100 % juice (e.g., orange, apple, grape) and 65 % of children drank water.

In terms of home-based snack and food consumption, 70.6 % of children consumed sweets (e.g., candies, Sour Patch Kids, gummy bears, Life Savers) and 78 % consumed salty snacks (e.g., chips, Chex Mix, Gold Fish) at least once/week. Less than 30 % of children had a serving of vegetables at least once/day and 15.7 % never ate vegetables at home. Less than 14 % had a serving of fruit at least once/day and 17.6 % never ate fruit.

Nearly 30 % of parents reported their child brushed their teeth more than once/day, 37.3 % brushed once/day, and 29.4 % brushed 1–3 times/week. All parents reported their child used commercially available toothpaste (e.g., Crest, Aim, Colgate), but 52.9 % did not know whether the toothpaste contained fluoride. Over 94 % reported their child had never been prescribed fluoride by a dentist or physician and 23.5 % of parents reported their child had not received a fluoride treatment in the past year from a dentist.

### Dental caries and added sugar intake

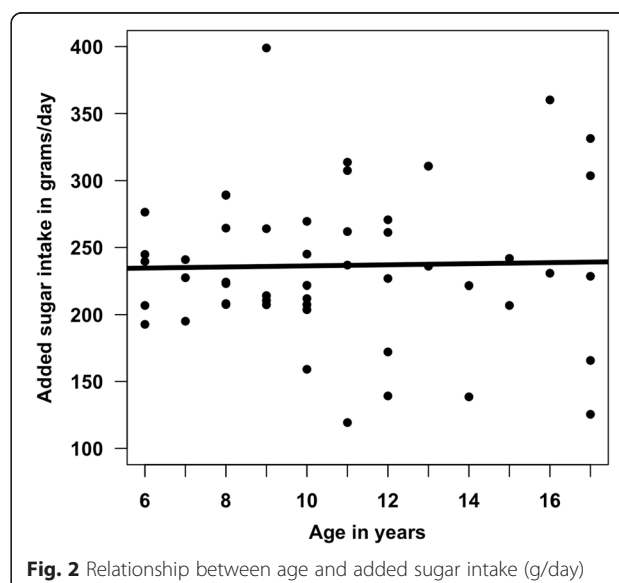
The mean proportion of carious tooth surfaces was 30.8 % (standard deviation: 23 %; range: 3 % to 94 %). Most carious tooth surfaces were filled (mean number of filled surfaces: 12.3; standard deviation: 12.7), followed by non-cavitated decayed surfaces (mean: 9.0; standard deviation: 8.3), crowned surfaces (mean: 5.8; standard deviation: 10.6), cavitated decayed surfaces (mean: 4.3; standard deviation: 7.1), and missing surfaces (mean: 1.6; standard deviation: 4.6). Caries rates followed a U-shaped curve, decreasing from ages 6–12 years and then increasing from ages 13–17 years (Fig. 1). The mean added sugar intake was 193 g/day (standard deviation: 43.6; range: 105.6 to 324.3 g/day). Added sugar intake was constant across age (Fig. 2). There was a positive, significant relationship between our biomarker measure of added sugar intake and dental caries (Fig. 3). There were no significant associations between self-reported measures of sugary foods and beverage intake and tooth decay.



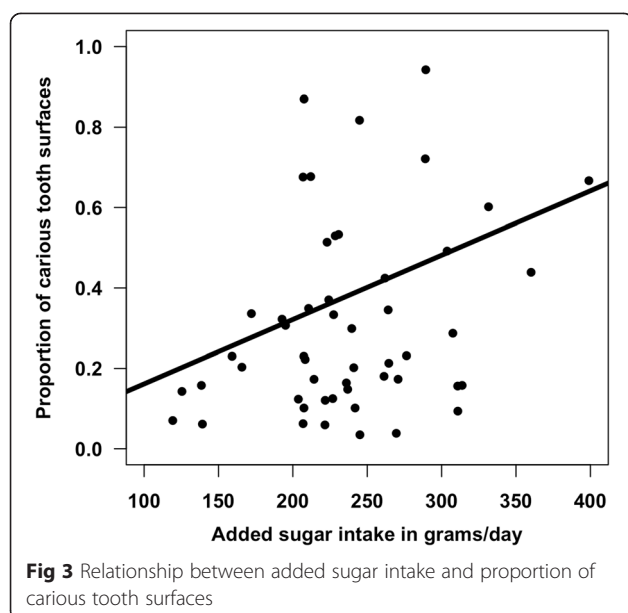
**Fig. 1** Relationship between age and proportion of carious tooth surfaces

### Regression models

In the age-adjusted linear regression model, a 40-gram/day increase in added sugar intake was associated with a 6.4 % absolute increase in the proportion of carious tooth surfaces (95 % confidence interval: 1.2 %, 11.6 %;  $P = .02$ ). In the log-linear regression model, a 40 g/day increase in added sugar intake was associated with a 24.2 % relative increase in the proportion of carious tooth surfaces (95 % CI: 10.6 %, 39.4 %;  $P < .01$ ). Findings were similar when the analyses were restricted to children with  $\geq 15$  primary tooth surfaces and children with only permanent teeth.



**Fig. 2** Relationship between age and added sugar intake (g/day)



## Discussion

We found a positive association between biomarker-assessed added sugar intake and dental caries in Yup'ik children and adolescents, but not with self-reported intake of sugar-sweetened foods and beverages. The association between added sugar intake and caries is consistent with previous studies [52]. Participants also reported consuming high level of sugar-sweetened fruit drinks (e.g., Tang, Kool-Aide) relative to soda and other sources of dietary sugar. Most of these beverages were consumed at home. These findings are consistent with recent studies showing high intakes of sugar-sweetened fruit drinks and soda by Yup'ik adults [22], and suggest that public health efforts focusing on reducing sugar-sweetened fruit drinks could significantly improve children's oral health in this population.

This is the first study to use an objective biomarker of sugar intake to evaluate the relationship between dietary sugar intake and caries in children. Biomarkers of sugar intake have only been developed and validated within the last 10 years, and several of them, specifically measures based on blood [32] or 24-h urine collection [35], would be difficult to use in studies involving children. The hair-based biomarker used in this study was collected easily and non-invasively, and detected significant associations with tooth decay despite the small sample size of the study and despite the fact that the biomarker was calibrated in Yup'ik adolescents and adults ages 14–79 years [45–47, 53]. This is a promising finding that warrants future research focusing specifically on children of Yup'ik descent.

The stable isotope biomarker indicated that children and adolescents in this study consumed an average of

193 g of added sugar/day (equivalent to the amount of sugar in 5, 12-ounce sodas). The American Heart Association recommends no more than three teaspoons of sugar (or 12 grams) for children each day [54]. Study participants consumed 16 times the maximum daily added sugar intake recommended for children. We interpret this value with some caution, because as noted above, the biomarker was calibrated specifically in Yup'ik adolescents and adults. However, it is clear from this study that added sugar intake is very high and is contributing significantly to dental disease. Based on our survey data, sugar-sweetened fruit drinks are likely to be the main source of added sugars among Yup'ik children, with most of these beverages consumed at home.

There is a need for home-based interventions that reduce added sugar intake to help prevent tooth decay as well as other systemic diseases linked to sugar like obesity, diabetes, hypertension, and cardiovascular disease [55–58]. Reducing sugar-sweetened beverage intake among Alaska Native children is likely to require culturally relevant public health interventions that educate communities on the high amount of sugar found in common sugar-sweetened beverages and increase access to acceptable alternatives like water or drinks with non-nutritive sweeteners [26]. Community-centered educational interventions could be implemented within stores, homes, and clinical settings [59, 60].

Yup'ik children and their families were enthusiastic about participating in this study, which we attribute to three factors. First, our study team involved a co-investigator who grew up in the YK Delta and is fluent in Yup'ik, which made parents and children comfortable and gave potential participants the opportunity to ask questions in their native language. We achieved our recruitment goals in one-third the anticipated time period (about 1 week to recruit 50 participants). Second, the study took place in a dental clinic, which did not require participants to travel specifically for the study. Third, oral health was highly salient to parents. Most parents described their own experiences with dental disease and were interested in ways to prevent tooth decay. In addition, we encountered no resistance from children in providing a hair sample, presumably because the amount required was minimal and hair was collected from a non-noticeable location on the head. Collectively, these findings indicate hair-based oral health studies are feasible in the YK Delta.

In addition to targeting sugar-sweetened beverage intake, future interventions could also identify cost-effective and scalable ways to improve access to preventive care. Alaska Native communities are small and geographically isolated, which make it possible to test innovative prevention strategies. One example is a home visitor or school-based program in which trained personnel from the community brush young children's teeth with fluoride toothpaste

and lead group toothbrushing activities with older children and adolescents [61]. This would address the irregular oral hygiene behaviors identified from our survey data. Additional research is needed to identify the feasibility and acceptability of such community-based oral health interventions.

Our study has public health, policy, research, and clinical significance. The public health significance of our study is that sugar-sweetened beverages in Alaska Native communities lead to diseases that place demands on a fragile health care system, which calls for community-based interventions aimed at reducing sugar-sweetened beverage intake. In addition to community-based interventions, upstream changes to the U.S. Supplemental Nutrition Assistance Program (SNAP), Women, Infants, and Children (WIC) Program, and Postal Bypass Program may be needed to reduce sugar-sweetened beverage purchases and eliminate subsidies for transport of unhealthy beverages to communities in rural Alaska. Although beverage taxes are likely to reduce demand for sugar-sweetened beverages [62], there is likely to be strong local resistance as demonstrated by the Bethel Finance Committee's decision to unanimously oppose a \$0.08/ounce sugar sweetened beverage tax in January 2013. Our biomarker-based measure of added sugar overcomes costs associated with self-reported measures of dietary sugars as well as the potential for individuals to underreport sugar intake. In fact, we found no statistically significant relationships between survey-based sugar-sweetened food and beverage intake and caries, highlighting limitations associated with self-reported dietary measures. Biomarkers could be used as surveillance tools to identify communities with the greatest need for public health interventions and to measure behavioral changes associated with implemented interventions.

There were four main study limitations. First, our analyses were cross-sectional, whereas the relationship between added sugar intake and dental caries is dynamic and modified by exposure to fluorides [63]. Second, the hair biomarker was specifically validated in a Yup'ik population ages 14–79 years [46], which does not cover the younger age range of participants in our study. However, added sugar intake was constant across age, which increases the likelihood that our biomarker accurately measures added sugar intake in younger children. Third, we recruited a small convenience sample of Alaska Native children seeking dental care, which is the population to which we can generalize our findings. Future studies should enroll a larger, community-based sample of study participants, to allow for a more comprehensive analysis of the risk factors associated with tooth decay in Yup'ik children. Fourth, we did not conduct a reliability assessment of survey items. However, none of

our primary variables of interest were obtained through survey. Future research should assess the reliability and validity of oral health survey items in regards to Alaska Native populations.

## Conclusions

The tooth decay epidemic in Alaska Native communities underscores the importance of community-centered, prevention-oriented interventions aimed at improving health behaviors like reducing sugar-sweetened beverage intake. Preventive efforts should target the deleterious effects of added sugars by providing viable alternatives to sugar-sweetened beverages and making it easier for individuals to access fluorides and other types of preventive care that helps to control tooth decay. Future interventions should focus on educating communities about added sugars through stores, homes, and clinical settings, empowering parents and families to reinforce children's exposure to fluoride through daily toothbrushing, and providing individuals with regular preventive care. Efforts to improve diet are likely to address the disease burden associated with pediatric tooth decay as well as reduce other childhood diseases linked to added sugars and sugar-sweetened beverages.

## Competing interests

The authors declare no competing interests.

## Authors' contributions

DLC conceptualized the study, collected data, conducted the dental exams, and wrote the first draft of the manuscript. SH conceptualized the study, collected data, and helped revise the manuscript. DO conceptualized the study, processed and interpreted the biomarker data, and helped revise the manuscript. LM conceptualized the study, analyzed the biomarker and dental caries data, and helped revise the manuscript. EO collected data, interpreted study findings, and helped revised the manuscript. DL conceptualized the study, helped interpret study findings, and helped revised the manuscript. All authors read and approved the final manuscript.

## Acknowledgements

This study was funded by the University of Washington Royalty Research Fund, the National Institute of Dental and Craniofacial Research Grant Number K08DE020856, and the William T. Grant Foundation Scholars Program. The authors have no perceived or actual conflicts of interest.

## Author details

<sup>1</sup>Department of Oral Health Sciences, University of Washington School of Dentistry, Box 357475, Seattle, WA 98195, USA. <sup>2</sup>University of Alaska Fairbanks, Center for Alaska Native Health Research, Fairbanks, AK, USA. <sup>3</sup>Yukon Kuskokwim Health Corporation, Dentistry Department, Bethel, AK, USA.

Received: 21 July 2015 Accepted: 1 October 2015

Published online: 09 October 2015

## References

1. Alaska Natives Commission (ANC). Alaska natives commission, final report, volume II. 1994. Available at [http://www.alaskool.org/resources/anc2/anc2\\_toc.html#top](http://www.alaskool.org/resources/anc2/anc2_toc.html#top). Accessed on November 25, 2014.
2. Marcenes W, Kassebaum NJ, Bernabé E, Flaxman A, Naghavi M, Lopez A, et al. Global burden of oral conditions in 1990–2010: a systematic analysis. *J Dent Res*. 2013;92(7):592–7.
3. Centers for Disease Control and Prevention (CDC). Dental caries in rural Alaska Native children – Alaska, 2008. *MMWR Morb Mortal Wkly Rep*. 2011;60:1275–8.

4. Indian Health Service (IHS). The 2010 Indian health service oral health survey of American Indian and Alaska native preschool children. Rockville, MD: U.S. Department of Health and Human Services, Indian Health Service; 2013.
5. Dye BA, Tan S, Smith V, Lewis BG, Barker LK, Thornton-Evans G, et al. Trends in oral health status: United States, 1988–1994 and 1999–2004. *Vital Health Stat* 11. 2007;248:1–92.
6. Casamassimo PS, Thikkurissy S, Edelstein BL, Maiorini E. Beyond the dmft: the human and economic cost of early childhood caries. *J Am Dent Assoc*. 2009;140:650–7.
7. Chi DL, Masterson EE. A serial cross-sectional study of pediatric inpatient hospitalizations for non-traumatic dental conditions. *J Dent Res*. 2013;92:682–8.
8. Hollister MC, Weintraub JA. The association of oral status with systemic health, quality of life, and economic productivity. *J Dent Educ*. 1993;57:901–12.
9. Horowitz AM, Kleinman DV. Oral health literacy: a pathway to reducing oral health disparities in Maryland. *J Public Health Dent*. 2012;72:S26–30.
10. Li Y, Wang W. Predicting caries in permanent teeth from caries in primary teeth: an eight-year cohort study. *J Dent Res*. 2002;81:561–6.
11. Holve S. An observational study of the association of fluoride varnish applied during well child visits and the prevention of early childhood caries in American Indian children. *Matern Child Health J*. 2008;12 Suppl 1:64–7.
12. Griffin SO, Jones K, Tomar SL. An economic evaluation of community water fluoridation. *J Public Health Dent*. 2001;61:78–86.
13. Gessner BD, Beller M, Middaugh JP, Whitford GM. Acute fluoride poisoning from a public water system. *N Engl J Med*. 1994;330:95–9.
14. Tiwari T, Quissell DO, Henderson WG, et al. Factors associated with oral health status in American Indian children. *J Racial Ethn Health Disparities*. 2014;1:148–56.
15. Moyer VA, US Preventive Services Task Force. Prevention of dental caries in children from birth through age 5 years: US Preventive Services Task Force recommendation statement. *Pediatrics*. 2014;133:1102–11.
16. Touger-Decker R, Mobley CC, American Dietetic Association. Position of the American Dietetic Association: oral health and nutrition. *J Am Diet Assoc*. 2007;107:1418–28.
17. Pollard MA. Potential cariogenicity of starches and fruits as assessed by the plaque-sampling method and an intraoral cariogenicity test. *Caries Res*. 1995;29:68–74.
18. Lingström P, van Houte J, Kashket S. Food starches and dental caries. *Crit Rev Oral Biol Med*. 2000;11:366–80.
19. Reedy J, Krebs-Smith SM. Dietary sources of energy, solid fats, and added sugars among children and adolescents in the United States. *J Am Diet Assoc*. 2010;110:1477–84.
20. Slining MM, Mathias KC, Popkin BM. Trends in food and beverage sources among US children and adolescents: 1989–2010. *J Acad Nutr Diet*. 2013;113:1683–94.
21. Wang YC, Bleich SN, Gortmaker SL. Increasing caloric contribution from sugar-sweetened beverages and 100 % fruit juices among US children and adolescents, 1988–2004. *Pediatrics*. 2008;121:e1604–14.
22. Kolahdooz F, Simeon D, Ferguson G, Sharma S. Development of a quantitative food frequency questionnaire for use among the Yup'ik people of Western Alaska. *PLoS ONE*. 2014;9:e100412.
23. Evans EW, Hayes C, Palmer CA, Bermudez OI, Cohen SA, Must A. Dietary intake and severe early childhood caries in low-income, young children. *J Acad Nutr Diet*. 2013;113(8):1057–61.
24. Marshall TA, Levy SM, Broffitt B, Warren JJ, Eichenberger-Gilmore JM, Burns TL, et al. Dental caries and beverage consumption in young children. *Pediatrics*. 2003;112(3 Pt 1):e184–91.
25. American Academy of Pediatrics, Committee on Native American Child Health, Canadian Paediatric Society, First Nations, Inuit and Métis Committee. Early childhood caries in indigenous communities. *Pediatrics*. 2011;127:11908.
26. Chi DL. Reducing Alaska Native paediatric oral health disparities: a systematic review of oral health interventions and a case study on multilevel strategies to reduce sugar-sweetened beverage intake. *Int J Circumpolar Health*. 2013;72:21066.
27. American Dental Association News. ADA urges more sugars, oral health research. <http://www.ada.org/en/publications/ada-news/2015-archive/april/ada-urges-more-sugars-oral-health-research?nav=news>. Accessed on May 13, 2015.
28. Prentice RL, Mossavar-Rahmani Y, Huang Y, Van Horn L, Beresford SA, et al. Evaluation and comparison of food records, recalls, and frequencies for energy and protein assessment by using recovery biomarkers. *Am J Epidemiol*. 2011;174:591–603.
29. Subar AF, Kipnis V, Troiano RP, Midthune D, Schoeller DA, et al. Using intake biomarkers to evaluate the extent of dietary misreporting in a large sample of adults: the OPEN study. *Am J Epidemiol*. 2003;158:1–13.
30. Bingham S, Luben R, Welch A, Tasevska N, Wareham N, Khaw KT. Epidemiologic assessment of sugars consumption using biomarkers: comparisons of obese and nonobese individuals in the European Prospective Investigation of cancer Norfolk. *Cancer Epidemiol Biomarkers Prev*. 2007;16:1651–4.
31. Davy BM, Jähren AH, Hedrick VE, Comber DL. Association of  $\delta^{13}\text{C}$  in fingerstick blood with added-sugar and sugar-sweetened beverage intake. *J Am Diet Assoc*. 2011;111:874–8.
32. Fakhouri TH, Jähren AH, Appel LJ, Chen LW, Alavi R, Anderson CAM. Serum carbon isotope values change in adults in response to changes in sugar-sweetened beverage intake. *J Nutr*. 2014;144:902–5.
33. Jähren A, Saudek C, Yeung E, Kao W, Kraft R, Caballero B. An isotopic method for quantifying sweeteners derived from corn and sugar cane. *Am J Clin Nutr*. 2006;84:1380–4.
34. Tasevska N, Runswick SA, McTaggart A, Bingham SA. Urinary sucrose and fructose as biomarkers for sugar consumption. *Cancer Epidemiol Biomarkers Prev*. 2005;14:1287–94.
35. Tasevska N, Runswick SA, Welch AA, McTaggart A, Bingham SA. Urinary sugars biomarker relates better to extrinsic than to intrinsic sugars intake in a metabolic study with volunteers consuming their normal diet. *Eur J Clin Nutr*. 2009;63:653–9.
36. Yeung EH, Saudek CD, Jähren AH, Kao WHL, Islas M, et al. Evaluation of a novel isotope biomarker for dietary consumption of sweets. *Am J Epidemiol*. 2010;172:1045–52.
37. Haley S. 2013. Sugar and Sweeteners Outlook/SSS-M-293. ed. USDO Agriculture: Electronic Outlook Report from the Economic Research Service
38. Jähren AH, Bostic JN, Davy BM. The potential for a carbon stable isotope biomarker of dietary sugar intake. *J Anal At Spectrom*. 2014;29:795–816.
39. O'Brien DM. Stable Isotope Ratios as Biomarkers of Diet for Health Research. *Annu Rev Nutr*. Epub 2015 Jul 17.
40. Thompson FE, Subar AF. Dietary assessment methodology. In: Coulston AM, Boushey CJ, editors. *Nutrition in the prevention and treatment of disease*. San Diego, CA: Academic Press; 2008.
41. Nash S, Kristal A, Bersamin A, Choy K, Hopkins S, et al. Isotopic estimates of sugar intake are related to chronic disease risk factors but not obesity in an Alaska native (Yup'ik) study population. *Eur J Clin Nutr*. 2014;68:91–6.
42. U.S. Census Bureau. State and County QuickFacts. Bethel Census Area, Alaska. Available at <http://quickfacts.census.gov/qfd/states/02/02050.html>. Accessed on November 28, 2014.
43. Neuhouser ML, Lilley S, Lund A, Johnson DB. Development and validation of a beverage and snack questionnaire for use in evaluation of school nutrition policies. *J Am Diet Assoc*. 2009;109:1587–92.
44. Nash SH, Kristal AR, Bersamin A, Hopkins SE, Boyer BB, O'Brien DM. Carbon and nitrogen stable isotope ratios predict intake of sweeteners in a Yup'ik study population. *J Nutr*. 2013;143:161–5.
45. Nash SH, Kristal AR, Hopkins SE, Boyer BB, O'Brien DM. Stable isotope models of sugar intake using hair, red blood cells, and plasma, but not fasting plasma glucose, predict sugar intake in a Yup'ik study population. *J Nutr*. 2014;144:75–80.
46. Choy K, Nash SH, Kristal AR, Hopkins S, Boyer BB, O'Brien DM. The carbon isotope ratio of alanine in red blood cells is a new candidate biomarker of sugar-sweetened beverage intake. *J Nutr*. 2013;143:878–84.
47. World Health Organization (WHO). A guide to oral health epidemiological investigations. Geneva: WHO; 1979.
48. Gomez J, Tellez M, Pretty IA, Ellwood RP, Ismail AI. Non-cavitated carious lesions detection methods: a systematic review. *Community Dent Oral Epidemiol*. 2013;41(1):54–66.
49. Dye BA, Tan S, Smith V, et al. Trends in oral health status: United States, 1988–1994 and 1999–2004. *Vital Health Stat*. 2007;11:1–92.
50. Zenger SL, Liang KY. Longitudinal data analysis for discrete and continuous outcomes. *Biometrics*. 1986;42:121–30.
51. Chankanka O, Levy SM, Marshall TA, et al. The associations between dietary intakes from 36 to 60 months of age and primary dentition non-cavitated caries and cavitated caries. *J Public Health Dent*. Epub 2012 Nov 8.
52. Nash SH, Kristal AR, Boyer BB, King IB, Metzgar JS, O'Brien DM. Relation between stable isotope ratios in human red blood cells and hair: implications for using the nitrogen isotope ratio of hair as a biomarker of eicosapentaenoic acid and docosahexaenoic acid. *Am J Clin Nutr*. 2009;90:1642–7.

54. Johnson RK, Appel LJ, Brands M, et al. Dietary sugars intake and cardiovascular health: a scientific statement from the American Heart Association. *Circulation*. 2009;120:1011–20.
55. Pan L, Li R, Park S, Galuska DA, Sherry B, Freedman DS. A longitudinal analysis of sugar-sweetened beverage intake in infancy and obesity at 6 years. *Pediatrics*. 2014;134 Suppl 1:S29–35.
56. Nguyen S, Choi HK, Lustig RH, Hsu CY. Sugar-sweetened beverages, serum uric acid, and blood pressure in adolescents. *J Pediatr*. 2009;154:807–13.
57. Kosova EC, Auinger P, Bremer AA. The relationships between sugar-sweetened beverage intake and cardiometabolic markers in young children. *J Acad Nutr Diet*. 2013;113:219–27.
58. Xi B, Li S, Liu Z, et al. Intake of fruit juice and incidence of type 2 diabetes: a systematic review and meta-analysis. *PLoS ONE*. 2014;9:e93471.
59. Avery A, Bostock L, McCullough F. A systematic review investigating interventions that can help reduce consumption of sugar-sweetened beverages in children leading to changes in body fatness. *Hum Nutr Diet*. Epub 2014 Sep 19.
60. Gittelsohn J, Laska MN, Karpyn A, Klingler K, Ayala GX. Lessons learned from small store programs to increase healthy food access. *Am J Health Behav*. 2014;38:307–15.
61. Brickhouse TH, Haldiman RR, Evani B. The impact of a home visiting program on children's utilization of dental services. *Pediatrics*. 2013;132 Suppl 2:S147–52.
62. Zhen C, Brissette IF, Ruff RR. By ounce or by calorie: the differential effects of alternative sugar-sweetened beverage tax strategies. *Am J Agric Econ*. 2014;96:1070–83.
63. Chi DL, Masterson EE, Carle AC, Mancini LA, Coldwell SE. Socioeconomic status, food security, and dental caries in US children: mediation analyses of data from the National Health and Nutrition Examination Survey, 2007–2008. *Am J Public Health*. 2014;104:860–4.

**Submit your next manuscript to BioMed Central and take full advantage of:**

- Convenient online submission
- Thorough peer review
- No space constraints or color figure charges
- Immediate publication on acceptance
- Inclusion in PubMed, CAS, Scopus and Google Scholar
- Research which is freely available for redistribution

Submit your manuscript at  
[www.biomedcentral.com/submit](http://www.biomedcentral.com/submit)



## ORIGINAL RESEARCH ARTICLE

# Beverage consumption in an Alaska Native village: a mixed-methods study of behaviour, attitudes and access

Deena Elwan<sup>1</sup>, Peter de Schweinitz<sup>2</sup> and Janet M. Wojcicki<sup>1\*</sup><sup>1</sup>Department of Pediatrics, University of California, San Francisco, San Francisco, CA, USA;<sup>2</sup>Chief Andrew Isaac Health Center, Tanana Chiefs Conference, Fairbanks, AK, USA

**Background.** American Indians/Alaska Natives (AI/AN) have the highest prevalence of obesity for any racial/ethnic group. Previous studies examining risk factors for obesity have identified excessive sugar-sweetened beverage (SSB) and inadequate water consumption as major risk factors for this population group. The historical scarcity of water in rural Alaska may explain consumption patterns including reliance on SSBs and other packaged drinks.

**Methods.** Our study was designed to assess SSB, water and other beverage consumption and attitudes towards consumption in Alaska Native children and adults residing in rural Alaska. During summer 2014, 2 focus groups were conducted employing community members in a small rural village more than 200 air miles west of Fairbanks, Alaska. Interviews were completed with shop owners, Early Head Start and Head Start program instructors (n = 7). SSB and total beverage intakes were measured using a modified version of the BEVQ-15, (n = 69).

**Results.** High rates of SSB consumption (defined as sweetened juice beverages, soda, sweet tea, energy drink or sports drinks) and low rates of water consumption were reported for all age groups in the village. All adolescents and 81% of children reported drinking SSBs at least once per week in the last month, and 48% of adolescents and 29% of younger children reported daily consumption. Fifty-two per cent of adults reported consuming SSBs at least once per week and 20% reported daily consumption. Twenty-five per cent of adolescents reported never drinking water in the past month, and 19% of younger children and 21% of adults did not consume water daily.

**Conclusion.** Alaska Native children and adults living in the Interior Alaska consume high amounts of SSBs including energy drinks and insufficient amounts of water. Interventions targeting beverage consumption are urgently needed for the Alaska Native population in rural Alaska.

Keywords: sugar-sweetened beverages; water; Alaska Native; obesity; nutrition

\*Correspondence to: Janet M. Wojcicki, Department of Pediatrics (GI and Nutrition), University of California, San Francisco, San Francisco, CA 94116, USA, Email: Wojcicki@gmail.com

Received: 29 September 2015; Revised: 31 January 2016; Accepted: 31 January 2016; Published: 24 February 2016

The prevalence of overweight and obesity in the United States has steadily increased since the 1970s (1,2) with the current prevalence of combined overweight and obesity (BMI  $\geq 25$  for adults and BMI percentile  $\geq 85\%$  for children) equal to 22.8% for young children (aged 2–5), 34% for older children (aged 6–11), 34.5% for adolescents (aged 12–19) and 69% for adults (3). Previous studies show that overweight and obese children are more likely to become obese adults (4). On the national level, the prevalence of extreme obesity (BMI  $\geq 120\%$  of the 95th percentile for children of the same sex and age) fell among every ethnic group except the American Indian/Alaska Native (AI/AN) population from 1998 to 2010 (5).

Nationally, the AI/AN population has the highest prevalence of obesity of any racial/ethnic group (6). According to a 2011 Indian Health Service (IHS) report, over 80% of AI/AN adults are overweight or obese (7). In Alaska Native adults, between 1991 and 2012, obesity increased from 16 to 35% (8). Alaska Native adolescents are also significantly more likely than white adolescents to be obese, with 16% of Alaska Native Alaskan high school students considered obese compared with 10% of white ones in Alaska (8). AI/AN preschoolers were almost twice as likely (31.2%) as their U.S. counterparts to be obese (18.4%) (9), and data from the Alaska Native Epidemiology Center shows comparable rates of obesity among Alaska Native children aged 2–5 (30%) (10).

Similarly, Pregnancy Risk Assessment Monitoring System (PRAMS) data indicate that obesity prevalence among Alaska Native 3-year olds is higher than any other preschool group in the United States (42.2%) (11).

### Sugar-sweetened beverages and water consumption

Sugar-sweetened beverage (SSB) consumption has been previously identified as a risk factor for overweight and obesity in children and adults (12–15). Children who drink at least 1 SSB per day have 55% increased odds of becoming overweight or obese compared with children who rarely consume SSBs (16). Alaska Native adults are more than 3 times as likely (34%) as U.S. whites (12%) to consume 3 or more sugary drinks each day (8), and those living in rural locations in Alaska are significantly more likely to consume 3 or more sugary drinks each day (51%) compared with other regions of the state (8).

The reasons for these discrepancies in SSB consumption between rural versus urban residents and Alaska Native versus non-Alaska Native populations are unknown, but previous studies suggest several possibilities: (a) historical distrust of water sources (17,18); (b) a higher prevalence of lactose intolerance in Alaska Native adults, which may shape cultural expectations for milk consumption among children (19); and (c) poor access to healthy alternatives to SSBs and juices (20). The objectives of the current study were 3-fold: (a) to assess the frequency of SSB, water and milk consumption; (b) to ascertain the attitudes towards consumption of water, milk and SSB of residents of a rural, Interior Alaska Native (Athabascan) community; and (c) to assess rural access to water, milk and SSBs. As of 2014, although there were rough, epidemiological data about consumption patterns, there were no published research describing attitudes, the details of daily consumption and access to beverages in Alaska Natives among the Athabascan peoples of Interior Alaska. Our research attempts to expand upon these data.

## Methods

### Population

In 2014, the authors of this study assessed the eating and drinking habits of a rural community located over 200 air miles west of Fairbanks in the interior of Alaska. The village has a population less than 300 persons, comprised of 92% American Indian/Alaska Native (50.5% female). The median age of the population in the village is approximately 26, with more than 35% under the age of 18. One of this study's authors (PDS) is employed as a physician and researcher for the U.S. government recognized non-profit, Tanana Chiefs Conference, of which the village tribe is a member. Before the initiation of this study, he made frequent visits to the village to establish wellness

teams and a structure for community-based research. Village residents prioritized obesity and diabetes mellitus as important health topics to be addressed.

In the small village examined in this article, food and beverage options were limited. Local shops in the village purchase food from larger grocery and wholesale stores located in Fairbanks, and individuals occasionally order directly from these Fairbanks retailers, which is expensive, as the purchases need to be flown in on private charters. Alternatively, when village residents go to Fairbanks for medical visits, they bring food and beverages back with them on the plane. Most families rely partially on subsistence, in the form of moose meat or fish.

### Recruitment

In 2014, we visited rural Alaska to conduct focus groups and administer beverage questionnaires to assess consumption patterns. Using the village's Citizen Band (CB) radio system, the tribal administrative assistant invited village members to participate in each focus group and complete questionnaires. Flyers were also posted at local stores, the health clinic, the village post office and the village tribal centre.

Individuals who were recruited for the focus groups were also invited to fill out the beverage questionnaires. We also recruited participants at the community centre, clinic and local shops when we were introduced to village members. Any participant who completed a questionnaire, attended a focus group or completed an interview was entered into a raffle to win 1 of 3 modest door prizes valued under \$60.00. We provided all focus group and questionnaire participants with 2 cookbooks produced by Alaska WIC and a sheet of children's stickers for younger participants. Fresh fruit and sandwiches were also provided at each focus group. The study was approved by Alaska Institutional Review Board (IRB), the Executive Board of Tanana Chiefs Conference, and organized under the auspices of the Tribal Wellness Teams program. All study subjects provided signed, written consent.

### Beverage questionnaire

We administered a modified version of a previously validated questionnaire, the BEVQ-15, which asks about daily and weekly beverage consumption based on consumption patterns during the last month (21). From the questionnaire, we removed 3 questions on alcohol consumption and 1 question on tea or coffee with or without artificial sweetener (no cream or sugar) consumption. These changes reduced the questionnaire to 11 items. To ensure accuracy, parents completed the questionnaire on behalf of their young children (ages 3–11), and participants 12 years and older completed their own questionnaire. We modified the questionnaire as per the Alaska IRB recommendation to remove alcohol consumption patterns, and as our initial aim was to focus on children,

we removed the question about consumption of coffee and tea without added sugar or cream.

### Focus groups and interviews

We conducted 2 focus groups with community members ( $n=8$  from first group and  $n=13$  from second) and individual interviews with Head Start and Early Head Start program instructors as well as shop owners ( $n=7$ ). Both focus groups and individual interviews used open-ended interviewing techniques with questions centred on beverage consumption in the village. Only adults were included in focus group discussions. The purpose of the focus groups was to better understand the attitudes towards SSBs, nutrition and obesity. No formal interview guide was used. Rather, the discussion during each focus group was guided by study personnel to address general themes of beverage consumption, fast food, popular items in stores, nutrition at home and at school, possible interventions and recommendations for the community.

### Shop inventory

We performed a comprehensive food and beverage inventory of all 3 shops located in the village in order to assess the availability of different beverages in the village. The authors visited the shops, assessed all items on the shelves and spoke with the storeowners to compile a list of the items being sold and the price of each item.

### Analysis

We audio recorded and transcribed all interviews and focus groups. One interviewee (a shopkeeper) declined to be recorded, so we took notes while the interview was conducted. We then performed thematic analysis to identify common beliefs and responses. We did not code the data and elected to have only 1 author perform thematic analysis to control for inter-rater reliability. We examined each of the transcripts and identified any common responses to individual questions posed by the researchers. As per our initial interests, we focused on SSB consumption habits, timing of the introduction of SSBs into children's diets, availability and restrictions on SSBs, beverage purchasing habits observed by store owners, as well as water consumption habits and attitudes towards the drinkability of village tap water.

Results from the beverage questionnaire were stratified into 3 age groups children (3–11 years), adolescents (12–17 years) and adults ( $\geq 18$  years), as obesity prevalence and SSB consumption data from other studies have been stratified into these age groupings or similar ones (3,22–25) and dividing into age groups would allow us to more appropriately target future interventions. We defined total and any SSB consumption including the following beverages: sweetened juice beverages (fruitades, Tang or Kool-Aid), regular soda, sweet tea and sports/energy drinks. We did not include tea or coffee, as it was unclear whether or not sugar was added based on how the

question is asked. In order to identify any possible differences in consumption patterns between young children and adolescents, we compared the results across age groups using *t*-tests for continuous variables and chi-squared tests for categorical ones. We did not compare adult consumption patterns to young children or adolescents as the dietary recommendations for intake differ for children and adults (26). Serving size was computed as a discrete variable using the beverage questionnaire. Participants had the option to select "less than 6, 8, 12, 16 or more than 20 oz." We calculated an average serving size based on all responses for a given beverage respective of each age group. We computed the daily intake of water and milk using the average serving size and frequency of consumption reported on the beverage questionnaire for all participants that reported daily consumption of a given beverage, qualifying that this included only those participants who had greater than or equal to daily intake.

## Results

### Survey data

We obtained beverage survey data on approximately 25% of the population—25 adults (76% female), 21 adolescents (48% female) and 21 children (48% female). All adolescents and 81% of children reported drinking SSBs at least once per week in the last month, with 48% of adolescents and 29% of children reporting daily consumption,  $p=0.08$  (Table I). Seventy-two per cent of adults reported consuming SSBs at least once per week and 20% reported daily consumption (Table III). Despite differences in body mass, mean serving size of sugary beverages was comparable between children and adolescents with a mean serving size of  $286 \pm 79$  mL for adolescents and  $253 \pm 86$  for children,  $p=0.27$  (Table II). Adults consumed a slightly higher amount than adolescents (mean serving size =  $297 \pm 96$  mL) (Table IV). Of all the SSBs, sweetened juice beverages such as Tang or Kool-Aid were consumed most frequently with 100% of adolescents and 76% children reporting some consumption (Table I). Furthermore, 38% of adolescents and 28% of children reported drinking these beverages daily. Adolescents were more than 3 times as likely as children to report ever drinking soda, 48% versus 15% respectively,  $p=0.029$  (Table I). Forty-four per cent of adults reported drinking soda at least once per week, and 8% reported daily consumption (Table III). For adults and adolescents, mean serving size was highest for soda of all sugary beverages with the exception of sweetened teas (mean =  $302 \pm 71$  mL and  $315 \pm 98$  mL for adults and adolescents respectively) (Table VI and Table II). Fifty-two per cent of adolescents and 29% of children reported consuming sports drinks (such as Gatorade or Powerade) or energy drinks (Rockstar, Redbull, etc.) at least once per week (Table I).

**Table I.** Child and adolescent beverage consumption pattern in an Alaskan village, 2014

| Type of beverage                                                                  |            |                                 |                       |                           | <i>p</i> <sup>a</sup> |
|-----------------------------------------------------------------------------------|------------|---------------------------------|-----------------------|---------------------------|-----------------------|
| Child (3–11), n = 21                                                              |            | At least once per week but less |                       |                           |                       |
| Adolescent (12–17), n = 21                                                        |            | Never (%)                       | than once per day (%) | At least once per day (%) |                       |
|                                                                                   |            |                                 |                       |                           |                       |
| Sugar-sweetened beverages                                                         |            |                                 |                       |                           |                       |
| Any sugary beverage                                                               | Child      | 19                              | 52                    | 29                        | 0.08                  |
|                                                                                   | Adolescent | 0                               | 52                    | 48                        |                       |
| Sweetened juice beverage/drink (Kool-Aid, Tang, fruitades, lemonade, punch, etc.) | Child      | 24                              | 48                    | 28                        | 0.06                  |
|                                                                                   | Adolescent | 0                               | 62                    | 38                        |                       |
| Soda/pop                                                                          | Child      | 85                              | 15                    | 0                         | 0.06                  |
|                                                                                   | Adolescent | 53                              | 32                    | 16                        |                       |
| 100% fruit juice                                                                  | Child      | 5                               | 86                    | 10                        | 0.04                  |
|                                                                                   | Adolescent | 21                              | 47                    | 32                        |                       |
| Energy and sports drink                                                           | Child      | 71                              | 29                    | 0                         | 0.12                  |
|                                                                                   | Adolescent | 48                              | 38                    | 14                        |                       |
| Sweetened tea                                                                     | Child      | 100                             | 0                     | 0                         | 0.01                  |
|                                                                                   | Adolescent | 65                              | 30                    | 5                         |                       |
| Coffee and tea (with cream and or sugar, includes non-dairy creamer)              | Child      | 100                             | 0                     | 0                         | 0.01                  |
|                                                                                   | Adolescent | 52                              | 24                    | 24                        |                       |
| Water                                                                             | Child      | 0                               | 19                    | 81                        | 0.01                  |
|                                                                                   | Adolescent | 25                              | 0                     | 75                        |                       |
| Milk                                                                              |            |                                 |                       |                           |                       |
| Any milk                                                                          | Child      | 9                               | 29                    | 62                        | 0.26                  |
|                                                                                   | Adolescent | 9                               | 52                    | 38                        |                       |
| Whole milk                                                                        | Child      | 67                              | 19                    | 14                        | 0.23                  |
|                                                                                   | Adolescent | 40                              | 35                    | 25                        |                       |
| Low-fat (2%) milk                                                                 | Child      | 24                              | 19                    | 57                        | 0.04                  |
|                                                                                   | Adolescent | 55                              | 25                    | 20                        |                       |
| Non-fat milk                                                                      | Child      | 90                              | 10                    | 0                         | <0.01                 |
|                                                                                   | Adolescent | 43                              | 29                    | 29                        |                       |

<sup>a</sup>Comparison made using chi-square test.**Table II.** Child and adolescent mean serving size

|                                | Total<br>Mean ± SD (mL) | Adolescents<br>Mean ± SD (mL) | Children<br>Mean ± SD (mL) | <i>p</i> <sup>a</sup> |
|--------------------------------|-------------------------|-------------------------------|----------------------------|-----------------------|
| Sugar-sweetened beverages      |                         |                               |                            |                       |
| Any sugary beverage            | 270 ± 83                | 286 ± 79                      | 253 ± 86                   | 0.27                  |
| Sweetened juice beverage/drink | 240 ± 62                | 247 ± 67                      | 233 ± 57                   | 0.5                   |
| Soda/pop                       | 286 ± 100               | 315 ± 98                      | 197 ± 34                   | 0.07                  |
| 100% fruit juice               | 258 ± 87                | 278 ± 128                     | 246 ± 55                   | 0.4                   |
| Energy and sports drink        | 337 ± 145               | 328 ± 131                     | 355 ± 180                  | 0.7                   |
| Sweetened tea                  | 315 ± 57                | 315 ± 57                      | 0 ± 0                      | NA                    |
| Coffee and tea                 | 287 ± 110               | 287 ± 110                     | 0 ± 0                      | NA                    |
| Water                          | 294 ± 127               | 345 ± 153                     | 263 ± 101                  | 0.07                  |
| Milk                           |                         |                               |                            |                       |
| Any milk                       | 263 ± 80                | 278 ± 91                      | 250 ± 69                   | 0.3                   |
| Whole milk                     | 274 ± 80                | 289 ± 100                     | 253 ± 45                   | 0.4                   |
| Low-fat (2%) milk              | 253 ± 80                | 262 ± 96                      | 248 ± 75                   | 0.7                   |
| Non-fat milk                   | 268 ± 89                | 274 ± 96                      | 237 ± 0                    | 0.6                   |

<sup>a</sup>Comparison made using *t*-test.

**Table III.** Adult beverage consumption patterns, n = 25

| Type of beverage                                                              | Never | At least once<br>per week but<br>less than once<br>per day (%) | At least<br>once<br>per day<br>(%) |
|-------------------------------------------------------------------------------|-------|----------------------------------------------------------------|------------------------------------|
| Adult, n = 25                                                                 | (%)   |                                                                |                                    |
| Any sugary beverage                                                           | 28    | 52                                                             | 20                                 |
| Sweetened juice beverage/<br>drink                                            | 67    | 25                                                             | 8                                  |
| Soda/pop                                                                      | 56    | 36                                                             | 8                                  |
| 100% fruit juice                                                              | 48    | 40                                                             | 12                                 |
| Energy and sports drink                                                       | 92    | 8                                                              | 0                                  |
| Water                                                                         | 0     | 21                                                             | 79                                 |
| Sweetened tea                                                                 | 74    | 22                                                             | 4                                  |
| Coffee and tea (with<br>cream and/or sugar,<br>includes non-dairy<br>creamer) | 12    | 28                                                             | 60                                 |

Beverage questionnaire data indicated low levels of water consumption among residents of the village with 25% of adolescents reporting never drinking water in the past week (Table I). A significant percentage of adults (21%), adolescents (25%) and children (19%) reported not drinking water on a daily basis (Tables I and III). Forty-eight per cent of adults, 43% of adolescents and 57% of children reported drinking water at least 3 times per day. For those that reported daily consumption, mean total daily intake was  $725 \pm 395$  mL for children,  $853 \pm 440$  mL for adolescents and  $890 \pm 483$  mL for adults.

Because of participation in WIC and the long-term storage potential of powdered milk, access to milk in this rural village was not an issue and there were no concerns about shortages. However, the questionnaire responses suggested that not all children had daily consumption with only 62% of children and 38% of adolescents reporting daily consumption of any type of milk (Table I). Mean total daily milk intake among those reporting daily consumption was  $250 \pm 69$  mL in children and  $278 \pm 91$  mL in adolescents.

#### Focus group and interview data

Focus group and interview responses indicated that while many young children frequently drank Tang, Kool-Aid and even sodas, many people in the village recognized that SSB consumption was unhealthy. Nonetheless, Head Start instructors noted Kool-Aid or Tang consumption was quite common among children in the Head Start program and “pretty much the only thing [the kids drank].” Most children drank these beverages at home as federal guidelines prohibit consumption of these beverages in the Head Start or Early Head Start programs. In focus groups, parents reported trying to limit children’s intake or replacing Tang or Kool-Aid with 100% juice. Study

**Table IV.** Adult mean serving size

|                                | Mean serving size<br>Mean $\pm$ SD (mL) |
|--------------------------------|-----------------------------------------|
| Sugary beverage (any)          | 297 $\pm$ 96                            |
| Sweetened juice beverage/drink | 237 $\pm$ 55                            |
| Soda                           | 302 $\pm$ 71                            |
| 100% fruit juice               | 231 $\pm$ 49                            |
| Energy and sports drink        | 237 $\pm$ 0                             |
| Water                          | 339 $\pm$ 139                           |
| Sweetened tea                  | 338 $\pm$ 143                           |
| Coffee and tea                 | 336 $\pm$ 143                           |

participants also indicated that SSB consumption begins early, with children as young as 1 year of age drinking SSBs in the village, and that they received no instruction in nutritional practices from healthcare providers. Young children regularly visit village shops without a guardian and are allowed to purchase soda and all SSBs.

**Shop owner** – the little ones, if they are by themselves they buy pop [soda]. If they are with their parents, they buy Gatorade. Little kids that can barely look over the counter will buy pop.

Shop owners and consumers reported that soda was usually the first product to disappear from shelves. It was not unusual for the entire village to run out of soda.

**Interviewer** – And does the store here ever run out of things? Like shortages?

**Female focus group participant** – Oh yeah.

**Interviewer** – What things go first?

**Multiple focus group participants** (in unison) – soda pop.

In individual interviews, 2 of the 3 shop owners indicated that people in the village would not come into the store if no soda were available and that soda is responsible for generating human traffic into the stores. The owner of this shop reported that people rarely purchased 100% fruit juices unless they bought them through the Women, Infants and Children’s Program. Focus group participants indicated that adolescents were buying energy drinks such as Rockstar, Redbull or Monster.

Focus group and interview participants suggested that efforts to curb SSB consumption worked well in the federally mandated Head Start and Early Head Start program, but were ineffective at maintaining low levels of SSB consumption when children were away from the programs. Similarly, research participants opined that a soda ban in schools prevented children from consuming soda in schools, but that the lack of regulations concerning children purchasing sodas in the shops undermined these efforts. Head Start teachers reported educating children in the program on nutrition, specifically soda and SSBs, but that nutritional education was

not provided to all community members. At the time of the investigation, there were no initiatives in place to reduce community level soda or SSB consumption. Further, focus group responses indicated that healthcare providers failed to counsel patients on diet or nutrition and that only diabetes patients were counselled regarding nutrition.

Focus group and interview responses also indicated that village residents were not accustomed to drinking adequate amounts of water. Concern about the quality and taste of tap water was cited as reasons, and many people filtered the water to improve the taste.

**Interviewer** – Do you turn on the tap and do you drink a glass of water?

**Male focus group participant** – Myself, I use two Brita filters. I put it through one and then I run it through another one.

**Interviewer** – What's the water quality like here? When you get it out of the tap do you feel comfortable or do you feel like you need to filter it?

**Female interviewee** – I drink it ... before maybe like when I was pregnant with \*\*\*\* – 9 years ago – it was ... orange ... it was almost like 3rd world country bad looking. I'm sure it was okay to drink but it didn't [look okay] ... I think it was just the rust in the pipes or something.

### Inventory of stores

SSBs were sold in every store in the village. Kool-Aid or Tang were priced 75% cheaper per serving than healthier beverages such as bottled water or milk. Sixteen different varieties of sodas were sold between the 3 shops: 7-Up, Sierra Mist, Coke, Pepsi, Diet Pepsi, Wild Cherry Pepsi, Shasta Cola, Shasta Orange, Orange Crush, Strawberry Crush, Sunkist Grape, Dr. Pepper, Mtn Dew, Mtn Dew Kickstart, Mug Cream Soda and Mug Root Beer. Each shop offered between 7 and 8 different soda varieties, and there was no difference in cost based on the type of soda within a given store. Soda prices varied between the 3 stores, with the smallest store selling 12 oz. cans for \$1.25, the middle-sized store charging \$1.35 per can and the largest store charging \$1.50 for a 12 oz. can and \$3.50 for a 20 oz. bottle. Only the largest store in the village sold 100% juice, and prices ranged from \$2.00 for a 10 oz. bottle to \$20.00 for a 64 oz. bottle of apple juice, nearly double the price of a can of soda or half the price of a bottle of water. Bottled water was available for purchase at 2 of the village's 3 shops, but was comparably priced with soda, ranging from \$1.50 for a 16.9 oz. bottle to \$3.50 for a 23.7 oz. bottle compared to soda for \$1.25–1.50 per 12 oz. can or juice for \$2.00 per 10–11.5 oz. bottle.

### Discussion

All rural Alaska Native participants surveyed were more likely to report ever consuming SSBs than U.S. children,

adolescents and adults from national survey data (2005 and 2008), with 100% of children and adolescents and 72% of adults in the village reporting consumption compared with 66% of U.S. children, 77% of U.S. adolescents and 61% of U.S. adults (22). Adolescents in the village were even more likely than Alaska high school students to report daily consumption of SSBs (48% vs. 42%) (8). We found very high rates of sweetened juice beverage consumption such as Tang, Kool-Aid or Sunny Delight in comparison with overall U.S. consumption patterns for all ages. Adolescents were nearly 5 times as likely to report ever consuming these beverages than their U.S. counterparts reported (100% vs. 23%). Similarly, children in the village were more than twice as likely as U.S. children to report ever consuming sweetened juice beverages (76% vs. 34%). as were adults (33% vs. 17%) (22). Additionally, children (29%) and adolescents (52%) in the village were more likely to report ever consuming sports and energy drinks than U.S. children (7%) or adolescents (12%) (22), or adolescents in a 2010 study on sports and energy drink consumption (37.9%) (27). The prevalence of sports and energy drink consumption we observed in the village is likely more comparable to more recent national consumption rates the percentage of American children consuming sports and energy drinks has been significantly increasing (28,29).

Overall we found a lower percentage of water consumption in the village compared with population-based surveys for adults and children, with a particular concern for adults and adolescents. A significantly greater number of adults reported no daily consumption of water (21%) than in the population-based Food Attitudes and Behavior Survey (7%) (30). Adults in the village drank less water per day ( $890 \pm 483$  mL) than U.S. adults (1,138 mL) (31). While the percentage of village adolescents reporting daily consumption (75%) was comparable to that reported for U.S. high schools students in 2010 (72%), we had a high percentage of adolescents that reported never drinking water (25%) (32). It is possible that we found issues of low water consumption more problematic among adults and adolescents as adults remember the historical issues with water problems in the village in contrast with younger children.

Access to running water has been a challenge for many years in much of rural Alaska. In 1994, only 37% of households had access to running water (33). Between 1996 and 2010, the Environmental Protection Agency (EPA) funded projects to increase water availability in rural Alaskan villages, and, by 2010, 92% of homes had access to clean drinking water (34). This was still, however, well below the national average of 99% (34). The percentage of homes in rural Alaskan villages that had in-home piped water service was much lower, with only 73% of homes reporting in-home water service as of April 2004 (35). There are currently over 6,000 year-round

occupied homes in rural Alaska that do not have running water or flush toilets (36). Further, as of 2000, one third of rural Alaska residents lacked piped water and had to obtain water from community-based water points and bring the water home in 5-gallon plastic containers. Some families have to travel long distances, even crossing rivers to obtain water from these centralized locations (35). According to the Environmental Protection Agency, the lack of safe water service poses an “extreme public health challenge” (37).

Distrust of the local water supply has also been seen in other Northern Native communities, such as First Nation communities in Canada, that have had poor historical access to water, leading residents to express health concerns associated with tap water consumption (17). The limited water availability and the historical distrust of the water supply has resulted in consumption of other, bottled or packaged beverages (18).

We also found children in the village consumed less milk per day ( $250 \pm 91$  mL) compared with 2–4-year-old WIC participants in 2005–2010 (332 mL) (38) or U.S. children (295 mL), well below the USDA recommendations of 2 cups (473 mL) per day (39,40). In particular, adequate milk consumption is necessary for children for both calcium and vitamin D intake and has been shown to protect against obesity (41). One possible explanation for the low milk consumption may be that milk is not the best source of calcium in this population since some Alaska Native tribes have a high prevalence of lactose intolerance (19). They may have adequate calcium intake secondary to other sources in their diets; however, we did not assess calcium intake from other foods such as cheese, yogurts, ice cream or other non-dairy sources.

### Future interventions

#### Health education

Our focus groups suggest the need for health professionals to provide education on nutrition. Similarly, other studies suggest that only 43% of Alaskan adults reported ever receiving advice about their eating habits from a healthcare provider (8). While most participants in the study did recognize that soda could cause excessive weight gain and did not provide vitamins or minerals, many did not realize that other drinks such as 100% juice and juice drinks could contribute to excessive caloric intake. Ensuring patients in rural Alaska receive adequate nutritional counselling could improve patient’s nutritional habits (42).

Peer-led nutritional counselling could be a viable option to decrease obesity and increase healthy living knowledge in this resource-limited environment. This approach would tie in well with the region’s reliance on health aides, members of the community who serve as healthcare practitioners at the local clinics, with telemedicine support from Fairbanks, but without any formal

health professional training. A First Nations community in Manitoba, Canada, had success with a peer-led intervention facilitated by high school mentors. The intervention resulted in decreased BMI and waist circumference compared with controls following the 5-month intervention. The program consisted of a 90-minute after-school program that provided a “holistic approach to physical activity, nutrition and education programming” that built upon the “strengths of the Aboriginal youths as they assume leadership roles in the community” (43). Nutritional education interventions have also had success in reducing soda consumption among Alaska Native teens. Soft drink consumption decreased by 10% following a 2-year intervention in participating Yupik villages, resulting in an 18% decrease in soda consumption in intervention villages compared with a 20% increase in control villages (44).

### School-based interventions

School-based interventions that focus on bringing nutritional education from the schools into the home and community could be another option for this region, given the high percentage of SSB consumption and low water and milk consumption, particularly in adolescence (45). Bright Start is a school-based intervention in American Indian children that increased physical activity at school, promoted healthy eating and included family focused interventions to improve the home food environment. The intervention resulted in an overall decreased prevalence of overweight among students in the intervention group compared with controls, as well as decreased SSB consumption (46). While many schools in rural Alaska limit SSB consumption, this type of comprehensive intervention that includes the home and community environment could bridge the intervention from the schools to communities.

Similarly, the *Sodabriety Challenge*, a 30-day intervention with rural Appalachian high school students, challenged students to consume only unsweetened beverages such as water, unsweetened tea or diet soda. During the intervention, participants were also given facts about the benefits of limiting sugar-sweetened beverages on a daily basis. The intervention resulted in decreased total SSB consumption at home and school both immediately following the intervention and during follow-up 30 days later. Water consumption also increased following the intervention (25). Another successful SSB initiative, *Drop the Pop*, in the Nunavut, Northwest and Yukon territories in Canada was designed to increase awareness of the effects of SSB consumption on health by promoting healthy food days, providing instruction on how to prepare healthy drinks, meals and snacks or implementing a nutritional curriculum into the science curriculum at the school. Seventy-six per cent of schools that participated in *Drop the Pop* indicated that children were more likely to

bring healthy beverages to school, and 69.8% of parents reported that the children consumed less SSBs both at school and at home following the initiative (47).

### Structural interventions

Interventions, which change the structure of beverage availability in the schools, homes or products available in stores, may have a longer lifespan than the duration of the intervention. A school-based intervention in Germany, where water fountains were installed in schools and teachers gave classroom lessons to promote water consumption, increased water consumption among students. Further, the school participating in the intervention had lower rates of obesity compared with the control school following the intervention (48). Similarly, a home-based intervention of U.S. adolescents in which participants received weekly deliveries of non-caloric beverages (e.g. bottled water, diet beverages including soft drinks, iced teas, lemonades and punches selected by participants) for 25 weeks saw greatly reduced SSB consumption among participants in the intervention group compared with the control group (23).

Finally, an intervention focusing on products available for sale in stores could be a viable model. A 14-month intervention in the Navajo Nation that sought to increase the availability of healthy foods by implementing an intervention within supermarkets, convenience stores and trading posts and to promote these foods both at the time of purchase and through community media showed promising results. During each intervention, study personnel demonstrated healthy cooking techniques, allowed residents to taste-test healthy food options, gave away promotional items and responded to questions. Greater exposure to the intervention was associated with reduced BMI and increased healthy food intentions 15–20 months following the intervention (49). Implementing an initiative to improve the nutritional habits in the village is the next step in addressing the obesity problem.

### Research strengths and limitations

This village-based study is one of the first of its kind performed in a rural, Alaska Native village (50). We used a multi-prong approach utilizing 3 forms of research in order to paint a detailed picture of an Athabascan village in Interior Alaska, elucidating potential historical, structural and attitudinal reasons for higher SSB consumption and lower milk and water consumption patterns. These data could be a starting point for multi-village observational studies in rural Alaska or for interventional work in the Athabascan Interior.

The research reported in this article has several limitations. First, the soda consumption levels obtained from the questionnaire were much lower than we predicted based on focus group and interview responses, which suggested that soda was commonly consumed at even higher rates. We believe the rates were likely underestimated in the

questionnaire data, as the beverage questionnaire referred to soda as “soft drinks” and soda is better understood as “pop” in rural Alaska. Also, studies relying on recalls are limited by the vagueness of memory and estimation but we attempted to compensate for this limitation by including the focus groups to allow for qualitative study. Finally, the study took place in a single village with a relatively homogeneous Athabascan population. Other Alaska Native ethnic groups and Athabascan villages may differ substantially.

### Conclusion

Alaska Native adults, adolescents and children living in the rural interior of Alaska consume high amounts of sugar-sweetened beverages including energy drinks and insufficient amounts of water. Of all sugar-sweetened beverages, sweetened juice beverages such as Tang or Kool-Aid are consumed most frequently. Community-driven interventions targeting modified beverage consumption are needed.

### Conflict of interest and funding

Support for this project was provided by the NASPGHAN Mentored Summer Student Research Program (DE) and the University of California Pacific Rim Research Program (JMW and PDS).

### References

1. Kuczmarski RJ, Flegal KM, Campbell SM, Johnson CL. Increasing prevalence of overweight among US adults. The national health and nutrition examination surveys. 1960 to 1991. *JAMA J Am Med Assoc.* 1994;272:205–11.
2. Overweight and obesity in the United States: prevalence and trends, 1960–1994. 1997; 22. [cited 2014 Jul 28]. Available from: <http://www.nature.com/ijo/journal/v22/n1/abs/0800541a.html>
3. Ogden CL, Carroll MD, Kit BK, Flegal KM. Prevalence of childhood and adult obesity in the United States, 2011–2012. *JAMA.* 2014;311:806–14.
4. Whitaker RC, Wright JA, Pepe MS, Seidel KD, Dietz WH. Predicting obesity in young adulthood from childhood and parental obesity. *N Engl J Med.* 1997;337:869–73.
5. Pan L, Blanck HM, Sherry B, Dalenius K, Grummer-Strawn LM. Trends in the prevalence of extreme obesity among us preschool-aged children living in low-income families, 1998–2010. *JAMA.* 2012;308:2563–5.
6. Hutchinson RN, Shin S. Systematic review of health disparities for cardiovascular diseases and associated factors among American Indian and Alaska Native populations. *PLoS One.* 2014;9:e80973.
7. Indian Health Service. “Healthy Weight for Life: A Vision for Healthy Weight Across the Lifespan of American Indians and Alaska Natives, Actions for Health Care Teams and Leaders”. Rockville, MD: U.S. Department of Health and Human Services, Indian Health Services; 2011.
8. Alaska Department of Health and Social Services. Alaska Obesity Facts Report — 2014. Anchorage, AK: Section of Chronic Disease Prevention and Health Promotion, Division of Public Health, Alaska Department of Health and Social Services; 2014.

9. Anderson SE, Whitaker RC. Prevalence of obesity among us preschool children in different racial and ethnic groups. *Arch Pediatr Adolesc Med*. 2009;163:344–8.
10. Fenaughty AM, Fink K, Peck D, Utermohle CJ. Childhood obesity in Alaska. Alaska Department of Health and Social Services, Division of Public Health, Section of Chronic Disease Prevention and Health Promotion; 2009.
11. Wojcicki JM, Young MB, Perham-Hester KA, de Schweinitz P, Gessner BD. Risk factors for obesity at age 3 in Alaskan children, including the role of beverage consumption: results from Alaska PRAMS 2005–2006 and Its three-year follow-up survey, CUBS, 2008–2009. *PLoS One*. 2015;10:e0118711.
12. Ludwig DS, Peterson KE, Gortmaker SL. Relation between consumption of sugar-sweetened drinks and childhood obesity: a prospective, observational analysis. *Lancet*. 2001;357:505–8.
13. Wojcicki JM, Heyman MB. Reducing childhood obesity by eliminating 100% fruit juice. *Am J Public Health*. 2012;102:1630–3.
14. De Ruyter JC, Olthof MR, Seidell JC, Katan MB. A trial of sugar-free or sugar-sweetened beverages and body weight in children. *N Engl J Med*. 2012;367:1397–406.
15. LaRowe TL, Adams AK, Jobe JB, Cronin KA, Vannatter SM, Prince RJ. Dietary intakes and physical activity among preschool-aged children living in rural American Indian communities before a family-based healthy lifestyle intervention. *J Am Diet Assoc*. 2010;110:1049–57.
16. Te Morenga L, Mallard S, Mann J. Dietary sugars and body weight: systematic review and meta-analyses of randomised controlled trials and cohort studies. *BMJ*. 2012;346:e7492.
17. Dupont D, Waldner C, Bharadwaj L, Plummer R, Carter B, Cave K, et al. Drinking water management: health risk perceptions and choices in first nations and non-first nations communities in Canada. *Int J Environ Res Public Health*. 2014;11:5889–903.
18. Onufrak SJ, Park S, Sharkey JR, Sherry B. The relationship of perceptions of tap water safety with intake of sugar-sweetened beverages and plain water among US adults. *Public Health Nutr*. 2014;17:179–85.
19. Suchy F, Brannon P, Carpenter T, Fernandez J, Gilsanz V, Gould J, et al. NIH consensus development conference statement: lactose intolerance and health. *NIH Consens State Sci Statements*. 2010;27:1–27.
20. Fenaughty A, Fink K, Peck D, Wells R, Utermohle C, Peterson E. The burden of overweight and obesity in Alaska, summary report. [Internet]. Section of Chronic Disease Prevention and Health Promotion, Division of Public Health, Alaska Department of Health and Social Services; 2009 [cited 2015 Oct 25]. Available from: [http://dhss.alaska.gov/dph/Chronic/Documents/Obesity/pubs/obesityburden\\_2009.pdf](http://dhss.alaska.gov/dph/Chronic/Documents/Obesity/pubs/obesityburden_2009.pdf)
21. Hedrick VE, Savla J, Comber DL, Flack KD, Estabrooks PA, Nsiah-Kumi PA, et al. Development of a brief questionnaire to assess habitual beverage intake (BEVQ–15): sugar-sweetened beverages and total beverage energy intake. *J Acad Nutr Diet*. 2012;112:840–9.
22. Han E, Powell LM. Consumption patterns of sugar sweetened beverages in the United States. *J Acad Nutr Diet*. 2013;113:43–53.
23. Ebbeling CB, Feldman HA, Osganian SK, Chomitz VR, Ellenbogen SJ, Ludwig DS. Effects of decreasing sugar-sweetened beverage consumption on body weight in adolescents: a randomized, controlled pilot study. *Pediatrics*. 2006;117:673–80.
24. Mathias KC, Slining MM, Popkin BM. Foods and beverages associated with higher intake of sugar-sweetened beverages. *Am J Prev Med*. 2013;44:351–7.
25. Smith LH, Holloman C. “Piloting “sodabriety”: a school-based intervention to impact sugar-sweetened beverage consumption in rural Appalachian high schools. *J Sch Health*. 2014;84:177–84.
26. Dietary Reference Intakes (DRIs): recommended dietary allowances and adequate intakes, total water and macronutrients [Internet]. Food and Nutrition Board, Institute of Medicine, National Academies [cited 2016 February 19]. Available from: [https://fnic.nal.usda.gov/sites/fnic.nal.usda.gov/files/uploads/DRI\\_RDAs\\_Adequate\\_Intakes\\_Total\\_Water\\_Macronutrients.pdf](https://fnic.nal.usda.gov/sites/fnic.nal.usda.gov/files/uploads/DRI_RDAs_Adequate_Intakes_Total_Water_Macronutrients.pdf)
27. Larson N, DeWolfe J, Story M, Neumark-Sztainer D. Adolescent consumption of sports and energy drinks: linkages to higher physical activity, unhealthy beverage patterns, cigarette smoking, and screen media use. *J Nutr Educ Behav*. 2014;46:181–7.
28. Story M, Klein L. Consumption of sports and energy drinks by children and adolescents [Internet]. Robert Wood Johnson Foundation; 2012 [cited 2016 February 19]. Available from: <http://healthyeatingresearch.org/wp-content/uploads/2013/12/HER-Sports-Drinks-Research-Review-6-2012.pdf>
29. Lasater G, Piernas C, Popkin BM. Beverage patterns and trends among school-aged children in the US, 1989–2008. *Nutr J*. 2011;10:103.
30. Goodman AB, Blanck HM, Sherry B, Park S, Nebeling L, Yaroch AL. Behaviors and attitudes associated with low drinking water intake among US Adults, food attitudes and behaviors survey, 2007. *Prev Chronic Dis*. 2013;10:E51.
31. Drewnowski A, Rehm CD, Constant F. Water and beverage consumption among adults in the United States: cross-sectional study using data from NHANES 2005–2010. *BMC Public Health*. 2013;13:1068.
32. Brener N, Merlo C, Eaton D, Kann L, Park S, Blanck HM. Beverage consumption among high school students – United States, 2010 [Internet]. Center for Disease Control and Prevention; 2011 [cited 2014 Jul 24]: [p. 778–80]. Available from: [http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6023a2.htm?s\\_cid=mm6023a2\\_w#Tab](http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6023a2.htm?s_cid=mm6023a2_w#Tab)
33. Magee G. Village Safe Water Program Brief [Internet]. Alaska Department of Environmental Conservation. [cited 2014 Aug 6]. Available from: <http://dec.alaska.gov/water/vsw/pdfs/vswbrief.pdf>
34. Alaska Native villages annual report [Internet]. United States Environmental Protection Agency; 2012 [cited 2016 February 19]. Available from: <https://owpubauthor.epa.gov/type/watersheds/wastewater/upload/EPA-Alaska-Native-Villages-Annual-Report-2012.pdf>
35. Hennessy TW, Ritter T, Holman RC, Bruden DL, Yorita KL, Bulkow L, et al. The relationship between in-home water service and the risk of respiratory tract, skin, and gastrointestinal tract infections among rural Alaska natives. *Am J Public Health*. 2008;98:2072–8.
36. Alaska department of environmental conservation: division of water [Internet]. Frequently Asked Questions. 2013 [cited 2014 Nov 11]. Available from: <http://dec.alaska.gov/water/R&D/R&DFAQs.htm#>
37. Alaska Native villages program annual report 2013 [Internet]. Environmental Protection Agency. 2013 [cited 2014 Sep 23]. Available from: [http://water.epa.gov/type/watersheds/wastewater/upload/ANV-Annual-Report-2013\\_508.pdf](http://water.epa.gov/type/watersheds/wastewater/upload/ANV-Annual-Report-2013_508.pdf)
38. Watowicz RP, Taylor CA. A comparison of beverage intakes in US children based on WIC participation and eligibility. *J Nutr Educ Behav*. 2014;46(3 Suppl):S59–64.
39. Sebastian RS, Goldman JD, Wilkinson Enns C, LaComb RP. Fluid milk consumption in the United States: what we eat in America, NHANES 2005–2006 [Internet]. Food Surveys

- Research Group. 2010. Report No: Dietary Data Brief No. 3. [cited 2016 February 19]. Available from: [http://www.ars.usda.gov/SP2UserFiles/Place/80400530/pdf/DBrief/3\\_milk\\_consumption\\_0506.pdf](http://www.ars.usda.gov/SP2UserFiles/Place/80400530/pdf/DBrief/3_milk_consumption_0506.pdf)
40. How much food from the dairy group is needed daily? [Internet]. U.S. Department of Agriculture. [cited 2015 Mar 23]. Available from: <http://www.choosemyplate.gov/food-groups/dairy-amount.html>
41. Song Q, Sergeev IN. Calcium and vitamin D in obesity. *Nutr Res Rev*. 2012;25:130–41.
42. Information NC for B, Pike USNL of M 8600 R, MD B, USA 20894. Behavioral Counseling to Promote Physical Activity and A Healthful Diet to Prevent Cardiovascular Disease in Adults – NCBI Bookshelf [Internet]. [cited 2014 Jul 26]. Available from: <https://vpn.ucsf.edu/books/NBK51030/DanaInfo=www.ncbi.nlm.nih.gov+>
43. Eskicioglu P, Halas J, Sénéchal M, Wood L, McKay E, Villeneuve S, et al. Peer mentoring for type 2 diabetes prevention in first nations children. *Pediatrics*. 2014;133:e1624–31.
44. Thiele MC, Boushey CJ. Soft drink consumption among Yup'ik Eskimo teenagers. *Alaska Med*. 1989;31:1–3.
45. Caballero B, Clay T, Davis SM, Ethelbah B, Rock BH, Lohman T, et al. Pathways: a school-based, randomized controlled trial for the prevention of obesity in American Indian schoolchildren. *Am J Clin Nutr*. 2003;78:1030–8.
46. Story M, Hannan PJ, Fulkerson JA, Rock BH, Smyth M, Arcan C, et al. Bright start: description and main outcomes from a group-randomized obesity prevention trial in American Indian children. *Obesity*. 2012;20:2241–9.
47. Glacken JB. Pan Territorial Evaluation of Drop the Pop [Internet]; 2011. Available from: [http://dropthepopnwt.hss.gov.nt.ca/pdf/pan\\_territorial\\_evaluation\\_of\\_drop\\_the\\_pop\\_2011.pdf](http://dropthepopnwt.hss.gov.nt.ca/pdf/pan_territorial_evaluation_of_drop_the_pop_2011.pdf)
48. Muckelbauer R, Libuda L, Clausen K, Toschke AM, Reinehr T, Kersting M. Promotion and provision of drinking water in schools for overweight prevention: randomized, controlled cluster trial. *Pediatrics*. 2009;123:e661–7.
49. Gittelsohn J, Kim EM, He S, Pardilla M. A food store-based environmental intervention is associated with reduced BMI and improved psychosocial factors and food-related behaviors on the Navajo nation. *J Nutr*. 2013;143:1494–500.
50. Johnson JS, Nobmann ED, Asay E. Factors related to fruit, vegetable and traditional food consumption which may affect health among Alaska Native People in Western Alaska. *Int J Circumpolar Health* [Internet]; 2012 [cited 2015 Nov 29]: [71]. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3417710/>



Published in final edited form as:

*Public Health Nutr.* 2020 April ; 23(5): 861–868. doi:10.1017/S1368980019002477.

## Lack of in-home piped water and reported consumption of sugar-sweetened beverages among adults in rural Alaska

Emily Mosites<sup>1</sup>, Sara Seeman<sup>1</sup>, Andrea Fenaughty<sup>2</sup>, Karol Fink<sup>2</sup>, Laura Eichelberger<sup>3</sup>, Peter Holck<sup>4</sup>, Timothy K. Thomas<sup>4</sup>, Michael G. Bruce<sup>1</sup>, Thomas W. Hennessy<sup>1</sup>

<sup>1</sup>Arctic Investigations Program, Division of Preparedness and Emerging Infections, National Center for Emerging and Zoonotic Infectious Diseases, Centers for Disease Control and Prevention, Anchorage, Alaska

<sup>2</sup>Section of Chronic Disease Prevention and Health Promotion, Division of Public Health, Alaska Department of Health and Social Services, Anchorage, Alaska

<sup>3</sup>National Tribal Water Center, Division of Environmental Health and Engineering, Alaska Native Tribal Health Consortium, Anchorage, Alaska

<sup>4</sup>Clinical and Research Services, Alaska Native Tribal Health Consortium, Anchorage, Alaska

### Abstract

**Objective:** To assess whether community water service is associated with the frequency of sugar-sweetened beverage (SSB) consumption, obesity, or perceived health status in rural Alaska.

**Design:** We examined the cross sectional associations between community water access and frequency of SSB consumption, body mass index categories, and perceived health status using data from the 2013 and 2015 Alaska Behavioral Risk Factor Surveillance System (BRFSS). Participants were categorized by zip code to “in-home piped water service” or “no in-home piped water service” based on water utility data. We evaluated the univariable and multivariable (adjusting for age, household income and education) associations between water service and outcomes using log-linear survey-weighted generalized linear models.

**Setting:** Rural Alaska, USA

**Subjects:** 887 adults, aged 25 years and older

**Results:** In unadjusted models, participants without in-home water reported consuming SSBs more often than participants with in-home water (1.46, 95% CI 1.06, 2.00). After adjustment for potential confounders, the effect decreased but remained borderline significant (1.29, 95% CI 1.00, 1.67). Obesity was not significantly associated with water service but self-reported poor health was higher in those communities without in-home water (1.63, 95% CI 1.05–2.54)

---

**Corresponding author:** Emily Mosites, PhD, CDC Arctic Investigations Program, 4055 Tudor Centre Dr., Anchorage, Alaska 99508, Telephone: 907-346-0570, Fax: 907-729-3429, Lwx7@cdc.gov.

**Authorship:** EM, SS, AF, KF, LE, PH, TT, MB, and TH conceptualized the study. SS, AF, and KF managed the study data. EM, SS, and PH conducted the analysis and wrote the manuscript. SS, AF, KF, LE, PH, TT, MB, and TH reviewed and contributed to the manuscript.

**Conflicts of interest:** None

**Ethical Standards Disclosure:** Not applicable

**Conclusions:** Not having access to in-home piped water could affect behaviors surrounding SSB consumption and general perception of health in rural Alaska.

### Keywords

Sugar-sweetened beverage; water; rural health; Arctic

### Introduction:

According to the World Health Organization, 29% of people in the world did not have access to safely managed drinking water in 2015.<sup>(1)</sup> In low- and middle- income countries, lack of access to improved water sources and sanitation has been associated with infectious disease and poor child growth.<sup>(2, 3)</sup> Even in the United States, some areas do not have full coverage of in-home piped water. In 2017, at least 15% of occupied housing units in rural Alaska lacked in-home plumbing.<sup>(4)</sup> The lack of access to piped water service is a particular problem in remote communities that are reachable only by airplane or boat. In these communities, not having piped water has been associated with added risk of numerous infectious diseases, including respiratory hospitalizations in children, skin infections, gastrointestinal infections, and invasive pneumococcal disease.<sup>(5-7)</sup> In addition to infectious diseases, there may be additional unknown health risks associated with not having access to in-home drinking water. Studies in other regions have found associations between inadequate water supply and stress,<sup>(8)</sup> musculoskeletal injuries,<sup>(9)</sup> and gastric cancer risk.<sup>(10)</sup>

Qualitative research has shown that individuals experiencing water scarcity may conserve water by consuming sugar-sweetened beverages (SSBs).<sup>(11)</sup> SSBs are defined as any beverage with added caloric sweetener, including regular soda, sweetened juices (eg. Tang® or Kool-Aid®), sweet tea and sports/energy drinks.<sup>(12, 13)</sup> In the United States, 30.1% of respondents report consuming at least one SSB per day, with the prevalence ranging from under 20% in some states in the northeast to over 40% in the southeast.<sup>(14)</sup> In several large and repeated studies, frequent consumption of SSBs has been associated with obesity, cardiovascular disease, metabolic disorders, dental decay, and other chronic conditions.<sup>(15-18)</sup>

In rural Alaska, studies have found that over 50% of adults consume sugar sweetened beverages at least once per week.<sup>(19)</sup> However, to our knowledge, the association between lack of water access and SSB consumption has not been studied quantitatively. In this analysis of Behavioral Risk Factor Surveillance System (BRFSS) and water utility data, we evaluated whether rural Alaska residents in communities without in-home piped water service reported different frequencies of SSB consumption than residents of communities with in-home service. We also assessed if residents without in-home piped water service had a different prevalence of health outcomes that could be related to SSB consumption, including obesity or self-reported poor health.

## Methods:

### Study population:

Rural Alaska spans a large geographic area with a population of approximately 240,000 people. Communities are often geographically isolated and can only be reached by boat, airplane, or snowmobile. Food and other supplies can be gathered through subsistence activities (such as hunting) or through air or boat cargo. Larger communities (called “hub towns”) serve as transportation and administrative centers for surrounding smaller communities. For this analysis, data were restricted to those participants who lived in communities that were not externally accessible by the statewide road system or the Alaska Marine Highway ferry system and were not hub towns.

Water access is variable in these remote areas. Some households have piped water from a centralized treated water source while some have piped water from wells. Communities without piped water from either of these sources may have a closed haul system, where water is hauled to and sewage is hauled away from the house. Other communities have a community clean water access point where individuals haul their own water to their house. In these areas, households usually self-haul limited amounts of water in 5-32 gallon containers by hand or with the assistance of a sled, wheelbarrow, or vehicle. Families often supplement this treated water with water from traditional sources such as springs, tundra ponds, and rainwater. (20, 21)

### Measures:

We used self-reported SSB consumption and chronic disease measures from the BRFSS, years 2013 and 2015. The BRFSS is a telephone survey that gathers data about the health behaviors of adults across the United States. (22) In Alaska, rural areas are oversampled to enhance the adequacy of sample size for analysis. BRFSS participants are required to be 18 years of age or older. In this analysis, data were restricted to participants aged 25 years or older, because education level was a confounder of interest and this question is only answered by those who are 25 years or older. Answers to the following questions were used as outcomes: (23)

“During the past 30 days, how often did you drink regular soda or pop that contains sugar? Do not include diet soda or diet pop.”

“During the past 30 days, how often did you drink sugar-sweetened fruit drinks (such as Kool-aid and lemonade), sweet tea, and sports or energy drinks (such as Gatorade and Red Bull)? Do not include 100% fruit juice, diet drinks, or artificially sweetened drinks.”

“Would you say that in general your health is (Options: Excellent, Very good, Good, Fair, Poor)?”

A weekly estimate of the frequency of SSB consumption was calculated according to the BRFSS data usage recommendations. (24) Participants were assigned weight categories (neither overweight nor obese [body mass index (BMI) < 25 kg/m<sup>2</sup>], overweight [25 ≤ BMI < 30 kg/m<sup>2</sup>], or obese [BMI ≥ 30 kg/m<sup>2</sup>]) based on BMI calculated from participant-

reported height and weight. Other variables of interest included reported annual household income (<\$25,000, \$25,000-\$49,000, or  $\geq$ \$50,000), formal education level (less than high school, high school graduate, or some college or higher), race, and age (in years).

We obtained 2016 water service data from the Alaska Infrastructure Programs, United States Environmental Protection Agency. BRFSS participants were categorized by zip code as having water piped to their home if their community had piped water either from centralized water service or from wells. Participants were considered to *not* have piped water if their community had a closed haul system, a washeteria, or other community watering points where individuals bring their own water to their home.<sup>(25)</sup> Some zip codes included communities with differing water service status (“mixed” zip codes). For example, one zip code could include two small communities, one with in-home piped water service and one without in-home piped water service. In these instances, the zip code was attributed the water status of the community with the larger population.

All data were publically available.

### Statistical analysis:

We described participant demographics according to water service status based on their zip code. Reported percentages were survey-weighted according to the BRFSS weighting formula<sup>(26)</sup> Weights were provided in the BRFSS dataset. Before analyzing the primary question, we developed a causal model to determine the minimum number of potential confounders in the relationship between residence in a community with piped water and SSB consumption. We used a survey-weighted log-linear generalized linear model (GLM) to compare the frequency of reported SSB consumption between participants in zip codes with and without in-home piped water service. After assessing the univariable associations, we controlled for annual household income, formal education level, American Indian/Alaska Native race, and age. For the binary outcomes of obesity and fair/poor health, we used a survey-weighted log binomial GLM. After assessing univariable associations, we also controlled for age, sex, race, and income in the obesity analysis, and age, race, and income in the self-reported poor health analysis. Model outputs are expressed as exponentiated (exp)  $\beta$ , which we called a frequency ratio. A frequency ratio can be interpreted as the percent higher or lower that one group reported drinking SSBs per week compared to another group. Using  $\alpha=0.05$ , ratios were considered to be significant if the 95% confidence interval did not include 1. We conducted a sensitivity analysis by removing participants with mixed zip codes to identify whether these participants affected the model results. Data were analyzed using SUDAAN (RTI International, NC).

### Results:

After excluding urban areas, hub communities, and communities on the statewide road or marine highway system, 887 rural Alaskans over age 25 years participated in the 2013 and 2015 BRFSS. Slightly more participants were female (430, 52%) and the mean age was 48 years. Of these participants, 733 (83%) lived in 102 zip codes with piped water and 154 (17%) lived in 28 zip codes without piped water. Among participants with in-home piped water, 43% reported completing some college or higher and 39% reported household annual

income of over \$50,000 (Table 1). Among participants without in-home piped water, 27% reported completing some college or higher and 22% reported household annual income of over \$50,000 (Table 1).

Overall, 37% of participants reported drinking SSBs at least once per day, and participants reported drinking SSBs a mean of 8.5 times per week. Participants in communities with in-home piped water reported a mean SSB consumption frequency of 7.8 times per week while participants in communities without in-home piped water reported a mean frequency of 12.5 times per week. Overall, those who reported higher frequency of SSB consumption were younger, had lower household income, and lower formal education (Table 2).

In the unadjusted model, respondents who lived in a community without in-home piped water reported consuming SSBs 46% more often than those who lived in a community with in-home piped water (unadjusted exp  $\beta$  1.46, 95% CI 1.29, 1.67,  $p=0.02$ ). After adjustment for age, income, and education, the size of the effect decreased (adjusted exp  $\beta$  1.29, 95% CI 1.00, 1.67,  $p=0.05$ ; Table 3).

In an unadjusted overall model, residence in a community without in-home piped water was not associated with obesity (adjusted exp  $\beta$  1.22, 95% CI 0.81, 1.83,  $p=0.36$ ; Table 3). This did not change after adjustment for confounders. In unadjusted and adjusted models, participants in communities without in-home piped water were significantly more likely to report fair/poor general health (adjusted exp  $\beta$  1.63, 95% CI 1.05, 2.54,  $p=0.04$ ).

Three zip codes with 31 participants were considered to have “mixed” service. All three were coded as having in-home piped water based on the criteria listed above, but included some participants in communities with washeterias or watering points. In sensitivity analyses where we removed these zip codes, no meaningful changes were observed in the models described above (data not shown).

## Discussion:

Within the United States, rural Alaskans have the lowest access to in-home piped water service and experience a concordantly high burden of infectious disease.<sup>(6)</sup> However, the burden of infectious disease might not capture the full picture of the outcomes of lack of water access within rural Alaska or elsewhere. We evaluated whether a lack of water service in rural Alaska was also associated with frequency of SSB consumption and other chronic disease outcomes. We found that rural Alaskans who lived in communities without in-home piped water may consume SSBs more frequently than those who lived in communities with in-home piped water service. Our findings contribute to the growing literature on the non-infectious disease risk factors associated with inadequate access to reliable, clean, water within the home<sup>(8,9,27)</sup>

The linkage between lack of in-home water service and infectious disease risk in Alaska has been well described.<sup>(28)</sup> However, the relationship between in-home water service and SSB consumption is not well documented. There are several potential reasons that residents of communities without in-home piped water service might drink SSBs more often than those in communities with in-home piped water. Self-hauling water is time-consuming, and the

amount brought into the home is often directly related to a household's access to a vehicle and the presence of an able-bodied male household member.<sup>(29, 30)</sup> If water is not easily accessible, people may decrease their water consumption and increase their consumption of other beverages. Recently a quasi-experimental study in schools in New York City showed that providing accessible water jet dispensers led to decreases in student BMI, ostensibly due to the consumption of water rather than other beverages.<sup>(31)</sup> However, more research is necessary to evaluate the precise reasons that residents of communities without in-home piped water service consumed SSBs more frequently than those in communities with in-home piped water.

In this analysis, frequency of SSB consumption was associated with age, household income, and education level. Other studies of SSBs have found similar patterns, demonstrating that younger people, men, those with lower income, and those with less formal educational attainment are likely to drink SSBs more frequently.<sup>(14, 32, 33)</sup> In rural Alaska, several factors could also influence the choice to drink SSBs, regardless of water accessibility. For example, prior studies have shown that some residents in these communities distrust the safety of treated water and/or are not satisfied with its quality (including color and taste).<sup>(20, 21)</sup> Across the United States, trust of water sources has been shown to impact behavior around water consumption, especially among minorities<sup>(34-36)</sup>. Therefore, rural residents might perceive that consuming beverages from bottles or cans is safer than consuming tap water. The use of sugar-sweetened mixes such as Tang ® could offer a more palatable way to consume treated water. Further, SSBs may be cheaper than bottled water in these communities, possibly contributing to higher consumption.

Not having in-home piped water service was not significantly associated with obesity in this analysis. Although the association between drinking SSBs and obesity has been well-described in other contexts,<sup>(15)</sup> there could be aspects of living in communities without piped water that are protective against weight gain. For example, in Yupik communities, hauling water is conducted primarily by men and boys and could serve as a form of physical activity.<sup>(20)</sup> Communities without piped water could also differ from those with piped water by other activities related to exercise and diet, such as the types and frequencies of hunting or other physically-demanding subsistence activities. Unfortunately we were not able to assess these other factors in the current analysis. Further research on obesity in communities without piped water is warranted.

Living in a community without in-home water was associated with a higher proportion of respondents reporting fair or poor general health in this analysis. This association could reflect that residents experienced a variety of poor health outcomes associated with lack of water access, including infectious diseases.

This analysis has a few limitations. First, these data sources are cross sectional, which affects the interpretability of temporal associations. Second, there may be some misclassification of water service exposure on the individual level. For example, in communities that have a piped water system, some households might still use point water sources. Therefore, the exposure in this analysis only represents a community-wide exposure to water service infrastructure. Additionally, the BRFSS data are self-reported, so responses

are subject to inaccuracies. For example, self-reported height and weight often result in an underestimate of obesity.<sup>(37)</sup> However, we would not expect this underestimate to be differential between communities with and without piped water. Furthermore, the BRFSS requests information on the frequency of SSB consumption, but does not include an estimate of volume. Similarly, sugar-sweetened coffee drinks are not included in the measure. These issues could lead to a misrepresentation of the amount of SSBs consumed, although we also do not expect this to be differential between communities. Additionally, although rural Alaska was oversampled in the BRFSS, the number of participants who were classified as living in a community without piped water was small. The small sample size likely resulted in insufficient power to detect some significant differences, and possibly the borderline significance in the overall result.

Confounding is an important consideration illuminated by this analysis. Respondents from communities with and without piped water were markedly different according to their reported demographics. Furthermore, the changes to the effect estimates after adjustment demonstrated that confounding by socio-economic status, age, and race existed in the association between piped water and drinking SSBs. There may be residual confounding or additional confounding by other factors that were not measured. Accordingly, the associations seen here warrant further investigation in other datasets and prospective analyses.

## Conclusions

Recent studies have shown that disparities exist across the United States in terms of clean tap water access and consumption.<sup>(38, 39)</sup> Our analysis suggests that residents who lived in communities without in-home piped water may drink SSBs more frequently than those who lived in communities with in-home piped water. Although lacking piped water was not significantly associated with obesity in this analysis, a higher frequency of SSB consumption could lead to a number of other chronic disease outcomes and may have contributed to the association between lack of water and reported poor health. Access to in-home clean water is a key component to maintain optimal health in rural Alaska.

## Acknowledgments

**Financial support:** This research received no specific grant from any funding agency, commercial or not-for-profit sectors.

Disclaimer:

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention/the Agency for Toxic Substances and Disease Registry. Use of trade names is for identification only and does not imply endorsement by the Public Health Service or by the U.S. Department of Health and Human Services.

## References:

1. Progress on drinking water, sanitation, and hygiene: 2017 update and SDG baselines. Geneva: World Health Organization(WHO) and the United Nations Children's Fund (UNICEF); 2017. Contract No.: License: CC BY-NC-SA 3.0 IGO.

2. Wolf J, Pruss-Ustun A, Cumming O, et al. (2014) Assessing the impact of drinking water and sanitation on diarrhoeal disease in low- and middle-income settings: systematic review and meta-regression. *Trop Med Int Health* 19:928–42. [PubMed: 24811732]
3. Hossain M, Choudhury N, Adib Binte Abdullah K, et al. (2017) Evidence-based approaches to childhood stunting in low and middle income countries: a systematic review. *Arch Dis Child* 102:903–9. [PubMed: 28468870]
4. Alaska Department of Health and Social Services. Healthy Alaskans 2020 Scorecard. [http://hss.state.ak.us/ha2020/assets/HA2020\\_Scorecard.pdf](http://hss.state.ak.us/ha2020/assets/HA2020_Scorecard.pdf) (Accessed February 26, 2018); 2017.
5. Thomas TK, Ritter T, Bruden D, et al. (2016) Impact of providing in-home water service on the rates of infectious diseases: results from four communities in Western Alaska. *Journal of water and health* 14:132–41. [PubMed: 26837837]
6. Hennessy TW, Ritter T, Holman RC, et al. (2008) The relationship between in-home water service and the risk of respiratory tract, skin, and gastrointestinal tract infections among rural Alaska natives. *Am J Public Health* 98:2072–8. [PubMed: 18382002]
7. Bulkow LR, Singleton RJ, DeByle C, et al. (2012) Risk factors for hospitalization with lower respiratory tract infections in children in rural Alaska. *Pediatrics* 129:e1220–7. [PubMed: 22508919]
8. Wutich A, Ragsdale K. (2008) Water insecurity and emotional distress: Coping with supply, access, and seasonal variability of water in a Bolivian squatter settlement. *Social Science & Medicine* 67:2116–25. [PubMed: 18954928]
9. Geere JA, Bartram J, Bates L, et al. (2018) Carrying water may be a major contributor to disability from musculoskeletal disorders in low income countries: a cross-sectional survey in South Africa, Ghana and Vietnam. *J Glob Health* 8:010406. [PubMed: 29497503]
10. Eichelberger L, Murphy G, Etemadi A, et al. (2015) Risk of gastric cancer by water source: evidence from the Golestan case-control study. *PloS one* 10:e0128491. [PubMed: 26023788]
11. Sarkar A, Hanrahan M, Hudson A. (2015) Water insecurity in Canadian Indigenous communities: some inconvenient truths. *Rural Remote Health* 15:3354. [PubMed: 26498673]
12. Services. UDoHaH, Agriculture. UDo. 2015–2020 Dietary Guidelines for Americans. 2015.
13. Prevention. CfDCA. Get the Facts: Sugar-Sweetened Beverages and Consumption 2017 [Available from: <https://www.cdc.gov/nutrition/data-statistics/sugar-sweetened-beverages-intake.html>.
14. Park S, Xu F, Town M, et al. (2016) Prevalence of Sugar-Sweetened Beverage Intake Among Adults—23 States and the District of Columbia, 2013. *MMWR Morb Mortal Wkly Rep* 65:169–74. [PubMed: 26914018]
15. Ruanpeng D, Thongprayoon C, Cheungpasitporn W, et al. (2017) Sugar and artificially sweetened beverages linked to obesity: a systematic review and meta-analysis. *QJM* 110:513–20. [PubMed: 28402535]
16. Greenwood DC, Threapleton DE, Evans CE, et al. (2014) Association between sugar-sweetened and artificially sweetened soft drinks and type 2 diabetes: systematic review and dose-response meta-analysis of prospective studies. *Br J Nutr* 112:725–34. [PubMed: 24932880]
17. Schwingshackl L, Schwedhelm C, Hoffmann G, et al. (2017) Food Groups and Risk of Hypertension: A Systematic Review and Dose-Response Meta-Analysis of Prospective Studies. *Adv Nutr* 8:793–803.
18. Bernabe E, Vehkalahti MM, Sheiham A, et al. (2014) Sugar-sweetened beverages and dental caries in adults: a 4-year prospective study. *J Dent* 42:952–8. [PubMed: 24813370]
19. Elwan D, Schweinitz P, Wojcicki JM. (2016) Beverage consumption in an Alaska Native village: a mixed-methods study of behaviour, attitudes and access. *Int J Circumpolar Health* 75:29905. [PubMed: 26928369]
20. Eichelberger L. (2017) Household water insecurity and its cultural dimensions: preliminary results from Newtok, Alaska. *Environmental science and pollution research international*.
21. Ritter TL, Lopez ED, Goldberger R et al. (2014) Consuming untreated water in four southwestern Alaska Native communities: reasons revealed and recommendations for change. *J Environ Health* 77:8–13.
22. Centers for Disease Control and Prevention. About BRFSS 2014 [Available from: <https://www.cdc.gov/brfss/about/index.htm>.

23. Centers for Disease Control and Prevention. BRFSS Questionnaires 2013 [Available from: <https://www.cdc.gov/brfss/questionnaires/index.htm>].
24. Park S, Pan L. A Data User's Guide to the BRFSS Sugar-Sweetened Beverage Questions: How to Analyze Consumption of Sugar-Sweetened Beverages. Centers for Disease Control and Prevention; 2013.
25. Hickel KA, Dotson A, Thomas TK, et al. (2017) The search for an alternative to piped water and sewer systems in the Alaskan Arctic. *Environmental science and pollution research international*.
26. Centers for Disease Control and Prevention. BRFSS 2013 Survey Data and Documentation 2013 [Available from: [https://wwwdev.cdc.gov/brfss/annual\\_data/annual\\_2013.html](https://wwwdev.cdc.gov/brfss/annual_data/annual_2013.html)].
27. Ennis-McMillan MC. (2001) Suffering from Water: Social Origins of Bodily Distress in a Mexican Community. *Medical Anthropology Quarterly* 15:368–90. [PubMed: 11693037]
28. Bressler JM, Hennessy TW. (2018) Results of an Arctic Council survey on water and sanitation services in the Arctic. *Int J Circumpolar Health* 77:1421368. [PubMed: 29383987]
29. Eichelberger L. (2010) Living in utility scarcity: energy and water insecurity in Northwest Alaska. *American Journal of Public Health* 100:1010–18. [PubMed: 20403886]
30. Eichelberger LP. Manufacturing insecurity: Power, water, waste, and the silences of sustainability and suffering in northwest Alaska. ProQuest Dissertations Publishing: University of Arizona; 2011.
31. Schwartz AE, Leardo M, Aneja S, et al. (2016) Effect of a School-Based Water Intervention on Child Body Mass Index and Obesity. *JAMA Pediatr* 170:220–6. [PubMed: 26784336]
32. Bolt-Evensen K, Vik FN, Stea TH, et al. (2018) Consumption of sugar-sweetened beverages and artificially sweetened beverages from childhood to adulthood in relation to socioeconomic status - 15 years follow-up in Norway. *Int J Behav Nutr Phys Act* 15:8. [PubMed: 29343247]
33. Mendy VL, Vargas R, Payton M, et al. (2017) Association Between Consumption of Sugar-Sweetened Beverages and Sociodemographic Characteristics Among Mississippi Adults. *Prev Chronic Dis* 14:E137. [PubMed: 29267157]
34. Javidi A, Pierce G. (2018) U.S. Households' Perception of Drinking Water as Unsafe and its Consequences: Examining Alternative Choices to the Tap. *American Geophysical Union* 54:6100–013.
35. Pierce G, Gonzalez S. (2016) Mistrust at the tap? Factors contributing to public drinking water (mis)perception across US households. *Water Policy* 19:1–12.
36. Rosinger AY, Herrick KA, Wutich AY, et al. (2018) Disparities in plain, tap and bottled water consumption among US adults: National Health and Nutrition Examination Survey (NHANES) 2007-2014. *Public Health Nutr* 21:1455–64. [PubMed: 29388529]
37. Yun S, Zhu BP, Black W, et al. (2006) A comparison of national estimates of obesity prevalence from the behavioral risk factor surveillance system and the National Health and Nutrition Examination Survey. *International journal of obesity* (2005) 30:164–70. [PubMed: 16231026]
38. Brooks CJ, Gortmaker SL, Long MW, et al. (2017) Racial/Ethnic and Socioeconomic Disparities in Hydration Status Among US Adults and the Role of Tap Water and Other Beverage Intake. *Am J Public Health* 107:1387–94. [PubMed: 28727528]
39. Stillo F, MacDonald Gibson J. (2017) Exposure to Contaminated Drinking Water and Health Disparities in North Carolina. *Am J Public Health* 107:180–5. [PubMed: 27854523]

**Table 1:**

Characteristics of adult participants by in-home piped water access, rural Alaska <sup>b</sup>, 2013 and 2015

| Characteristic                | Residence in zip code with |                               |                |                               |
|-------------------------------|----------------------------|-------------------------------|----------------|-------------------------------|
|                               | Piped water                |                               | No piped water |                               |
|                               | Sample N                   | Survey-weighted %<br>(95% CI) | Sample N       | Survey-weighted %<br>(95% CI) |
| Sex                           |                            |                               |                |                               |
| Male                          | 355                        | 62% (57%-67%)                 | 75             | 53% (41%-64%)                 |
| Female                        | 378                        | 38% (33%-43%)                 | 79             | 47% (36%-59%)                 |
| Age (years)                   |                            |                               |                |                               |
| 25-34                         | 113                        | 20% (16%-25%)                 | 37             | 44% (32%-56%)                 |
| 35-49                         | 213                        | 31% (27%-37%)                 | 41             | 18% (12%-26%)                 |
| 50-64                         | 278                        | 36% (30%-41%)                 | 46             | 21% (14%-30%)                 |
| 65+                           | 129                        | 13% (10%-16%)                 | 30             | 17% (11%-27%)                 |
| American Indian/Alaska Native |                            |                               |                |                               |
| Yes                           | 442                        | 52% (47%-58%)                 | 125            | 74% (59%-85%)                 |
| No                            | 291                        | 48% (42%-53%)                 | 29             | 26% (15%-41%)                 |
| Education                     |                            |                               |                |                               |
| Less than high school         | 82                         | 18% (13%-23%)                 | 34             | 31% (22%-43%)                 |
| High school graduate or GED   | 300                        | 39% (34%-45%)                 | 65             | 42% (31%-54%)                 |
| Some college or higher        | 345                        | 43% (38%-49%)                 | 55             | 27% (18%-38%)                 |
| Household Income              |                            |                               |                |                               |
| <\$25,000                     | 260                        | 33% (29%-39%)                 | 67             | 52% (40%-64%)                 |
| \$25,000-\$49,999             | 160                        | 28% (23%-33%)                 | 35             | 26% (17%-37%)                 |
| ≥\$50,000                     | 257                        | 39% (33%-44%)                 | 31             | 22% (13%-35%)                 |
| Self-reported health          |                            |                               |                |                               |
| Excellent                     | 104                        | 14% (10%-18%)                 | 20             | 10% (6%-16%)                  |
| Very good                     | 200                        | 27% (22%-31%)                 | 30             | 23% (14%-36%)                 |
| Good                          | 288                        | 41% (36%-47%)                 | 61             | 39% (28%-52%)                 |
| Fair or poor                  | 138                        | 18% (14%-22%)                 | 42             | 27% (19%-28%)                 |
| Overweight or Obese           | 504                        | 73% (68%-78%)                 | 90             | 66% (54%-76%)                 |
| Obese                         | 231                        | 51% (44%-58%)                 | 43             | 47% (33%-61%)                 |
| ≥1 SSB <sup>a</sup> per day   | 214                        | 34% (28%-39%)                 | 67             | 55% (43%-66%)                 |
| Total                         | 733                        | 83% (79%-86%)                 | 154            | 17% (13%-21%)                 |

<sup>a</sup>SSB= Sugar-sweetened beverage

<sup>b</sup>Data were restricted to those participants who lived in communities that were not externally accessible by the statewide road system or the Alaska Marine Highway ferry system and were not hub towns.

Sum of data may not equal total due to missing values.

**Table 2:**

Characteristics of adult participants by sugar-sweetened beverage consumption, rural Alaska<sup>a</sup>, 2013 and 2015

| Characteristic                | <1 Sugar-sweetened beverage/day |                            | ≥1 Sugar-sweetened beverage/day |                            |
|-------------------------------|---------------------------------|----------------------------|---------------------------------|----------------------------|
|                               | Sample N                        | Survey-weighted % (95% CI) | Sample N                        | Survey-weighted % (95% CI) |
| Sex                           |                                 |                            |                                 |                            |
| Male                          | 287                             | 60% (54%-65%)              | 143                             | 63% (54%-70%)              |
| Female                        | 319                             | 40% (35%-46%)              | 138                             | 37% (30%-46%)              |
| Age (years)                   |                                 |                            |                                 |                            |
| 25-34                         | 81                              | 19% (15%-25%)              | 69                              | 32% (25%-41%)              |
| 35-49                         | 161                             | 27% (23%-33%)              | 93                              | 32% (25%-40%)              |
| 50-64                         | 234                             | 36% (30%-41%)              | 90                              | 29% (21%-38%)              |
| 65+                           | 130                             | 18% (14%-22%)              | 29                              | 7% (4%-11%)                |
| American Indian/Alaska Native |                                 |                            |                                 |                            |
| Yes                           | 336                             | 47% (41%-52%)              | 231                             | 72% (62%-80%)              |
| No                            | 270                             | 53% (48%-59%)              | 50                              | 28% (20%-38%)              |
| Formal education              |                                 |                            |                                 |                            |
| Less than high school         | 73                              | 17% (13%-23%)              | 43                              | 24% (17%-33%)              |
| High school graduate or GED   | 213                             | 34% (29%-40%)              | 152                             | 49% (40%-57%)              |
| Some college or higher        | 315                             | 49% (43%-54%)              | 85                              | 27% (20%-35%)              |
| Household Income              |                                 |                            |                                 |                            |
| <\$25,000                     | 197                             | 30% (25%-36%)              | 130                             | 46% (37%-55%)              |
| \$25,000-\$49,999             | 133                             | 29% (23%-35%)              | 62                              | 25% (18%-33%)              |
| ≥\$50,000                     | 222                             | 41% (35%-47%)              | 66                              | 29% (21%-39%)              |
| Self-reported health          |                                 |                            |                                 |                            |
| Excellent                     | 86                              | 13% (7%-17%)               | 38                              | 13% (9%-20%)               |
| Very good                     | 167                             | 30% (25%-36%)              | 63                              | 20% (14%-27%)              |
| Good                          | 229                             | 39% (33%-45%)              | 120                             | 45% (36%-54%)              |
| Fair or poor                  | 120                             | 18% (14%-23%)              | 60                              | 22% (16%-30%)              |
| Overweight or obese           | 409                             | 73% (67%-78%)              | 185                             | 71% (63%-78%)              |
| Obese                         | 183                             | 50% (42%-58%)              | 91                              | 51% (41%-61%)              |
| Total                         | 606                             | 63% (58%-68%)              | 281                             | 37% (32%-42%)              |

<sup>a</sup>Data were restricted to those participants who lived in communities that were not externally accessible by the statewide road system or the Alaska Marine Highway ferry system and were not hub towns.

Sum of data may not equal total due to missing values.

**Table 3:**Generalized linear models of health outcomes and piped water service, rural Alaska<sup>b</sup>, 2013 and 2015

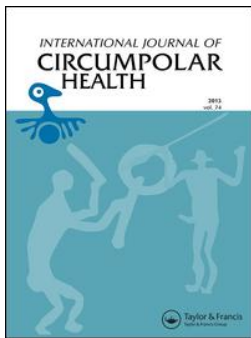
| Characteristic                   | Unadjusted ratio (95% CI)  | Adjusted ratio (95% CI)    |
|----------------------------------|----------------------------|----------------------------|
| <b>SSB frequency<sup>a</sup></b> | <b>(n<sup>c</sup>=783)</b> | <b>(n<sup>c</sup>=719)</b> |
| No piped water                   | 1.46 (1.06-2.00)           | 1.29 (1.00-1.67)           |
| Age group (years)                |                            |                            |
| 25-34                            |                            | Ref                        |
| 35-49                            |                            | 0.82 (0.58-1.15)           |
| 50-64                            |                            | 0.80 (0.46-1.39)           |
| 65+                              |                            | 0.37 (0.21-0.63)           |
| Annual household income level    |                            |                            |
| <\$25,000                        |                            | Ref                        |
| \$25,000-\$49,999                |                            | 0.75 (0.52-1.09)           |
| ≥\$50,000                        |                            | 0.80 (0.44-1.43)           |
| Formal education level           |                            |                            |
| Less than high school            |                            | Ref                        |
| High school graduate or GED      |                            | 0.76 (0.41-1.42)           |
| Some college or higher           |                            | 0.63 (0.24-1.65)           |
| American Indian/Alaska Native    |                            | 1.62 (1.05-2.50)           |
| <b>Obesity</b>                   | <b>(n<sup>c</sup>=846)</b> | <b>(n<sup>c</sup>=784)</b> |
| No piped water                   | 1.08 (0.73-1.61)           | 1.22 (0.81-1.83)           |
| Age group (years)                |                            |                            |
| 25-34                            |                            | Ref                        |
| 35-49                            |                            | 1.60 (0.97-2.65)           |
| 50-64                            |                            | 1.49 (0.89-2.50)           |
| 65+                              |                            | 1.50 (0.86-2.61)           |
| Female                           |                            | 1.25 (0.92-1.69)           |
| Annual household income level    |                            |                            |
| <\$25,000                        |                            | Ref                        |
| \$25,000-\$49,999                |                            | 0.76 (0.48-1.20)           |
| ≥\$50,000                        |                            | 1.13 (0.72-1.78)           |
| American Indian/Alaska Native    |                            | 1.04 (0.68-1.57)           |
| <b>Fair/poor health</b>          | <b>(n<sup>c</sup>=883)</b> | <b>(n<sup>c</sup>=807)</b> |
| No piped water                   | 1.50 (0.98-2.30)           | 1.63 (1.05-2.54)           |
| Age group (years)                |                            |                            |
| 25-34                            |                            | Ref                        |
| 35-49                            |                            | 2.96 (1.34-6.54)           |
| 50-64                            |                            | 4.55 (2.20-9.43)           |
| 65+                              |                            | 3.96 (1.82-8.61)           |
| Annual household income level    |                            |                            |
| <\$25,000                        |                            | Ref                        |

| Characteristic                | Unadjusted ratio (95% CI) | Adjusted ratio (95% CI) |
|-------------------------------|---------------------------|-------------------------|
| SSB frequency <sup>a</sup>    | (n <sup>c</sup> =783)     | (n <sup>c</sup> =719)   |
| \$25,000-\$49,999             |                           | 0.58 (0.36-0.92)        |
| ≥\$50,000                     |                           | 0.22 (0.12-0.39)        |
| American Indian/Alaska Native |                           | 0.90 (0.54-1.50)        |

<sup>a</sup>SSB= Sugar-sweetened beverage

<sup>b</sup>Data were restricted to those participants who lived in communities that were not externally accessible by the statewide road system or the Alaska Marine Highway ferry system and were not hub towns

<sup>c</sup>Unweighted model sample size used in analysis.



## Diabetes among Alaska Natives: a review

J. L. Naylor, C. D. Schraer, A. M. Mayer, A. P. Lanier, C. A. Treat & N. J. Murphy

To cite this article: J. L. Naylor, C. D. Schraer, A. M. Mayer, A. P. Lanier, C. A. Treat & N. J. Murphy (2003) Diabetes among Alaska Natives: a review, International Journal of Circumpolar Health, 62:4, 363-387, DOI: [10.3402/ijch.v62i4.17581](https://doi.org/10.3402/ijch.v62i4.17581)

To link to this article: <https://doi.org/10.3402/ijch.v62i4.17581>



© 2003 The Author(s). Published by Taylor & Francis.



Published online: 01 Dec 2003.



Submit your article to this journal [↗](#)



Article views: 498



View related articles [↗](#)



Citing articles: 43 View citing articles [↗](#)

## DIABETES AMONG ALASKA NATIVES: A REVIEW

dedicated to the memory of Dr. Edward Scott and Dr. George Mouratoff,  
and to those who participated in their studies – the pioneers

### ABSTRACT

This review summarizes the published information on diabetes mellitus and gestational diabetes among Alaska Natives. The most recently published age-adjusted prevalence was 28.3/1000 in 1998. There is evidence of a steadily increasing prevalence, documented both by cross sectional screening studies and patient registry methods. The overall incidence rates in 1986-1998 of lower extremity amputation (6.1/1000) and renal replacement therapy (2.1/1000) appear to be lower than those in other Native American populations in the United States. Incidence of stroke and MI in 1986-1998 varied widely by ethnic group and gender with Eskimo women having the highest rate of stroke (19.6/1000), and Aleut men the highest rate of MI (14/1000). The overall mortality among diabetic Alaska Native people in 1986-1993 (43.2/1000) was somewhat lower than that in other US diabetic populations, with heart disease being the most common cause of death. A high rate of gestational diabetes (6.7%) was reported in one region in 1987-88, but this appeared to decline following nutritional education intervention. In screening studies, the prevalence of abnormal glucose tolerance has been found to be positively associated with body mass index and negatively associated with daily seal oil or salmon consumption and higher levels of physical activity. Observations on the prevalence and relationships among other factors in the insulin resistance syndrome are summarized. Suggestions for prevention of diabetes and further studies are presented.

**Keywords:** diabetes, Alaska Natives, Alaskan Indian, Aleut, gestational diabetes, complications

*Naylor JL<sup>1</sup>, Schraer CD<sup>1</sup>,  
Mayer AM<sup>1</sup>, Lanier AP<sup>1</sup>,  
Treat CA<sup>1</sup>, Murphy NJ<sup>2</sup>*

<sup>1</sup>Alaska Native Tribal  
Health Consortium,  
Anchorage, Alaska

<sup>2</sup>South Central Foundation,  
Anchorage, Alaska

## INTRODUCTION

In the 1950s and 1960s diabetes was thought to be a rare condition among Alaska Natives. However, in the 1980s, health care providers suspected that the condition was becoming increasingly common. In 1985, the Indian Health Service Diabetes Program conducted a conference for health care providers in the Alaska Native health care system. At this conference, the high prevalence of diabetes among American Indians and the aspects of care deemed important for optimum treatment were presented. However, it became apparent that information on the prevalence of diabetes among Alaska Natives and the level of care provided were only anecdotal.

In response to those observations, the Indian Health Service and the tribal health care facilities initiated a program to review records and identify those individuals who had evidence of glucose intolerance. This review led to the establishment of a registry of patients with diabetes and other degrees of glucose intolerance. From this registry, the prevalence of diagnosed diabetes was determined and efforts to optimize care for these individuals were undertaken. As interest in the problem grew, several research projects to screen adults in selected regions were carried out. The purposes of this paper are to summarize the published data on diabetes among Alaska Natives, to elucidate the strengths and limitations of the information, and to suggest directions for future endeavors.

## METHODS

The authors of this article have been involved in every study of glucose tolerance among Alaska Natives conducted since 1985 and maintain a file of publications resulting from these studies. This file and the reference lists were reviewed. In addition, the published literature on diabetes and Alaska Natives was searched using PubMed.

### Early Studies

The earliest survey for diabetes among Alaska Natives was conducted in 1957 (1). This survey among Eskimos from all parts of Alaska tested 869 National Guardsmen and 358 urban residents over the age of 35 years. A variety of screening tests were used, including capillary glucose determinations using different laboratory methods. Selected

individuals received follow-up fasting and/or glucose tolerance testing. A survey of all health care facilities serving the 16,000 Eskimo residents of Alaska was performed, though the details of methodology were not described. Results of this study indicated that three to six cases of diabetes were present in the population; all were over the age of 35 years, for a prevalence of 0.8-1.6/1000 in this age group and an overall crude prevalence of 0.2-0.4/1000, depending on diagnostic criteria. A review of vital statistics revealed no deaths due to diabetes among Eskimos from 1949 to 1954.

Over the next 15 years four more studies among Alaska Natives were conducted, two among Eskimos, one among Athabascan Indians, and one among Aleuts of St. Paul Island (2-5). A survey in 1962 stated that 8 Eskimo individuals were known to have "clinical diabetes mellitus" while a screening study in Yupik residents of 10 villages in the Yukon-Kuskokwim region revealed 8 of 705 people  $\geq 20$  years of age (11.3/1000) probably had diabetes based on glucose tolerance tests reinterpreted by World Health Organization (WHO) 1985 criteria (2,6). Among those  $\geq 40$  years, 5 of 296 (16.9/1000) had type 2 diabetes. A decade later the same researchers studied 320 people from six of the same villages (4). While they did not publish results of individual glucose tolerance tests, they concluded that "4.5% more were intolerant of glucose" and that "about 6% more persons were overweight". They observed that a 10 kg change in weight was associated with an average change in the 2-hour glucose level of 20 mg/dl in men and 16 mg/dl in women. Among those tested in both studies, a 10-year increase in age resulted in an average increase of 4 mg/dl in the fasting and 2 hour glucose values. They made the interesting observations that there were so few obese Eskimos that the relationship of obesity to glucose tolerance could not be assessed, and speculated that the rare occurrence of diabetes was related to "a high degree of physical fitness."

The same researchers carried out a glucose tolerance survey among 306 Alaskan Athabascan Indians  $\geq 20$  years of age in 1965 (3). They were interested in comparing this group to Alaskan Eskimos because they noted that the diets of both groups were "of similar composition—high in protein, low in carbohydrate, and moderate in fat content. The average daily sugar consumption by Eskimos is 32 grams, and that by Indians 56 grams." Interpreted by 1985 WHO criteria, three people (9.8/1000) had diabetes. All the individuals with diabetes were  $\geq 40$  years old for a prevalence of 18.4/1000 in this age

group. In spite of the diet differences, this prevalence was similar to that among Yupiks  $\geq 40$  years in 1962 (16.9/1000) (2).

In 1973 a different group of researchers performed glucose tolerance tests on 335 Aleut residents of the Pribilof Islands of ages  $\geq 10$  years (5). The goal of the study was to evaluate the relationship between Coxsackie B4 virus (an epidemic had occurred in 1967) and glucose tolerance. One adult man and 3 adult women were excluded due to a diagnosis of diabetes predating the Coxsackie epidemic. Overall, 20 people of the 335 screened (59.7/1000) had 2-hour values  $\geq 200$ mg/dl, while among those  $\geq 35$  years, 18 of 156 (115.4/1000) had diabetes, prevalences vastly higher than those observed among Athabaskan and Yupik people. No association of serologic markers for prior Coxsackie infection was found, and the fact was noted that no cases of "juvenile" or type 1 diabetes existed.

It is notable that all the estimates based on Mouratoff and Scott's screening studies among Yupik Eskimos and Athabascans in the 1960s indicated higher prevalences of diabetes than did their surveys of health care facilities and limited screening among Eskimos in general a decade earlier. The differences may be due to changes over time, different populations studied, or different laboratory methods. However, it is more likely that it demonstrates a greater sensitivity of screening studies as compared to compilation of clinically recognized cases, especially in the pre-computerized records era. This must be considered when comparing prevalence data derived from screening studies as compared to clinical registries and database searches.

There were several limitations to these early studies. There were no consistent definitions of diabetes or impaired glucose tolerance, screening methods and criteria for follow-up testing varied, and several different laboratory techniques for the determination of glucose were employed. Some of these involved venous whole blood, some involved plasma, and some utilized capillary blood. The earliest study (1) screened many National Guardsmen, who were unlikely to have diabetes, although this probably was not realized at the time. The objectives of the studies do not appear to have been focused on determination of prevalence of diabetes, but rather on the correlation of glucose levels with other factors such as age, weight, gender, and parity of women. There were no computerized medical records systems in place at that time, so surveys for clinically recognized cases depended on local knowledge and extensive reviews of unselected

records. Nevertheless, these researchers and the participants in these studies provided us with valuable background information against which future clinicians and researchers would be able to evaluate an evolving picture of this complex condition.

Prior to the mid 1980s, the only other published information on the occurrence of diabetes among Alaska Natives consists of two letters to the editors of JAMA from physicians at the Alaska Native Medical Center and the Public Health Service Hospital in Barrow in 1974 (7,8). These physicians attested to the rarity of diabetes; one pointed out that seven cases, all over 44 years of age, were known among the Native residents of Barrow. The letter claimed that the 1970 census showed 315 residents over 44 years of age; this would indicate that the prevalence was 22/1000 in this age group. The other physician claimed that most diabetic patients had some European or Russian ancestry, often individuals who themselves were diabetic. He noted that he had never seen type 1 diabetes among full-blooded Alaska Natives.

#### **Prevalence information from the mid-1980s until present**

The lack of any further studies of diabetes among Alaska Natives in the nearly 20 years following Mouratoff's and Scott's work seemed reasonable, given its low prevalence in most of the early studies and its rarity as a recognized clinical problem. However, by the 1980s, evidence clearly showed that diabetes and its complications had become a devastating condition for many tribes of American Indians. In 1979, a computerized patient care information system (PCIS) was begun in the Alaska Native health care systems. It stored International Classification of Disease, Ninth Edition, (ICD-9) coded information on outpatient visits, admissions, and problem list entries for all people using the Native health care system.

An initial search of the PCIS system and case reports from health care providers revealed that 1607 patients' records contained ICD-9 codes for diabetes and other diagnoses of glucose intolerance (9). The authors reviewed the records of these patients and found that 610 Alaska Natives residing in Alaska at the end of 1985 met WHO 1985 criteria for diabetes (6). Of these, 564 (92.5%) had type 2 diabetes, 15 (2.5%) had type 1 diabetes, and 31 (5.1%) had diabetes secondary to other conditions or inadequate data to determine the type.

The overall crude prevalence of diagnosed diabetes among Alaska Natives in 1985 was determined to be 8.3/1000 (610 cases, 73,798

total population; 15.7/1000 age-adjusted to the US 1980 population). There was a wide range of age-adjusted prevalences among the three major ethnic groups; 8.8/1000 among Eskimos, 22.0/1000 among Indians, and 27.2/1000 among Aleuts. There was an even wider range by geographic area (which largely corresponds to ethnic sub-divisions of the population) from 5.8/1000 in the Yukon Kuskokwim Delta region (primarily Yupik Eskimo) to 31.1/1000 among the Tsimshian Indians of Annette Island in southeastern Alaska.

It was noted at that time that the population referred to as "Aleut" in the medical records system actually consisted of sub-populations of people indigenous to the Aleutian and Pribiloff Islands, the Kodiak area, parts of the Alaska Peninsula, Cook Inlet, and Prince William Sound regions. The people of the Alaska Peninsula, Kodiak Islands, Cook Inlet, and Prince William Sound have a separate ancestry from those of the Aleutian and Pribiloff Islands and today are referred to as Alutiiq or Suqpiq (10). The age-adjusted prevalence of diabetes in "Aleut" sub-groups ranged from 69.2/1000 on St. Paul Island to 20.0/1000 for the Aleuts of the Aleutian Islands while the "Aleuts" not residing in the Aleutians or Pribilofs (primarily Alutiiq or Suqpiq people) had a prevalence of 24.4/1000. Thus in 1985, the populations with the highest prevalence of diabetes were several ethnicities from the Aleutian Islands through the southeast panhandle. These populations had the earliest contact with Caucasian cultural influence (9).

Following the initial publication of 1985 prevalence, an update described the prevalence in 1987 (11). This updated information was used as the basis for a comparison of prevalences of diagnosed diabetes in several circumpolar populations. The data on those indigenous to the Chukotka Peninsula and Canada were based also on patient care registries (12). All prevalences were age standardized to the hypothetical world population used by the International Agency for Research on Cancer (13). This comparative review demonstrated that the lowest prevalence of diagnosed diabetes occurred among the Chukotka Native people (1.8/1000) and the highest among Alaskan Aleuts (22.7/1000). Young pointed out the east to west gradient of increasing prevalence across the Canadian Arctic and Alaska. He noted that this corresponded to the history of influence by Euro-American culture, a pattern consistent with our observations within Alaska (9).

In most Alaska Native ethnic groups, the prevalence was lower than that in Non-Alaskan American Indians, among whom many have an

exceptionally high occurrence of type 2 diabetes. The Pima Indians of Arizona had a prevalence as high as 341/1000 in 1977 (14). However, Alaska Natives had a lower prevalence than the US general population of 24.7/1000 as recorded in 1985 (15).

Only two studies among Alaska Natives have reported the prevalence of diabetes based on oral glucose tolerance tests (OGTT) given to all participants. These were conducted among the Eskimos of the Bering Straits region. The first survey, a small pilot study done in 1992 among Siberian Yupik people (Yupik people indigenous to St. Lawrence Island), examined participants  $\geq 40$  years of age. Participants received a fasting determination of lipids, insulin, and glucose, and a 2-hour 75 gm OGTT (16). Among the 65 participants  $\geq 40$  years of age, 9% met WHO criteria for diabetes and 12% met criteria for impaired glucose tolerance (IGT). This diabetes prevalence was considerably higher than that among all Alaskan Eskimos ages  $\geq 45$  of 3.3% in 1993 based on the clinical registry (17).

In 1994, this study was expanded to include four villages in the Bering Straits region; two Siberian Yupik Eskimo, one Central Yupik and one Inupiat village. (The term "Central Yupik" refers to Yupik Eskimo populations indigenous to regions of Alaska other than St. Lawrence Island). In this expanded study all residents  $\geq 25$  years of age were invited to participate (18). Of the 497 eligible men and 402 women, 43% of the men and 60% of the women participated, with a higher proportion of the  $\geq 55$  age group participating. The prevalence of diabetes among the Siberian Yupik was significantly higher than in either of the other two groups (Siberian Yupik 9.6%, Inupiat, 3.7%, Central Yupik 2.8%). The prevalence of IGT ranged from 6.4% to 14.2% and did not differ significantly vary by ethnic group. Overall, women had a higher prevalence of abnormal glucose tolerance (diabetes and IGT: women 20.4%, men 8.9%) and obesity (women 47.3%, men 25.5%) than men.

Type 1 diabetes is rare in Native Americans (19) and is also rare in Alaska Natives. In 1985, a review of 610 Alaska Natives residing in Alaska showed fifteen (2.5%) had type 1 diabetes. However, only one was an Alaska Native with full blood quantum (9). Data from two of the Eskimo villages studied by Ebbesson in 1994 showed that the presence of type 1 related autoantibodies GAD65Ab and IA-2Ab had no relationship to glucose tolerance status (20). The investigators concluded that these populations were affected by type 2 diabetes and not by latent autoimmune diabetes of adulthood (LADA).

### **Evidence for an increase in prevalence of diabetes**

Prevalence based on cases in the same patient care management registry was reassessed in 1993 and 1998 and showed a steady increase (17,21). Overall, the prevalence increased from 15.7/1000 in 1985 to 28.3/1000 in 1998, an 80% increase. A steady increase was seen in all regions and sub-populations. However, among the major ethnic groups, Eskimos, who consistently had the lowest prevalence, showed the highest rate of increase from 1985 to 1998 (Eskimos 110%, Aleuts 81%, Indian 57%). During a similar time period, 1985 to 1996, the US had an increase in prevalence from 26.7/1000 to 30.1/1000, a 13% increase (22).

Further evidence of this change in prevalence was provided by a study done in the Yukon-Kuskokwim Delta Region in 1987-88 (23). In this study residents  $\geq 40$  years of age of the same Yupik villages surveyed by Mouratoff and Scott in 1962 were invited to participate in screening for elevated glucose, which consisted of a random glucose determination by fingerstick and venous blood sample. If the random glucose value was  $\geq 120$  mg/dl (6.72 mM) on the fingerstick or the venous sample, the participant was asked to return on a later day for a 2-hour 75 gram oral glucose tolerance test (OGTT). The results were interpreted according to the 1985 WHO criteria. In addition to the 10 Yupik villages, four Athabascan villages participated (different villages from those screened by Mouratoff). Among Yupik participants  $\geq 40$  years of age, the prevalence of diabetes had increased from 1.7% in 1962 to 4.7% over the 25-year time interval. Among the Athabascans  $>40$  years, the prevalence was 10.0%, compared to 1.8% in the earlier study. The 1987 study found that the prevalence of diabetes was higher for women than men in both ethnic groups (Eskimo: women, 6.3%, men 2.8%; Athabascan: women 12.5%, men 7.4%). Overall, the difference between men and women in both ethnic groups was statistically significant. In this study, 2.3% of the Eskimo and 4.5% of the Athabascan participants met criteria for IGT.

A national study based on medical records addressed the increase in prevalence of diabetes among Alaska Natives compared to that among other Native Americans (24). The national Indian Health Service computerized medical record database, which includes the Alaska Native computerized records, was searched for patients with a diagnosis of diabetes based on ICD-9-CM codes. These records were then grouped into geographic areas rather than tribes. Age-adjusted prevalence was calculated for each year from 1990 to 1997. The Alaska Native

prevalence was calculated to be 3% (age adjusted to the 1980 US population), the lowest among Native American geographic groups (highest: Atlantic region 17.4%). However, Alaska Natives had the highest rate of increase at 76% (lowest: Northern Plains region 16%). There are two important differences in methods between this study and the Alaska Native studies based on individual medical record review. The national study included all Native Americans living in Alaska while the Alaska studies reported data only on Alaska Natives. The national study did not review records to determine which patients met diagnostic criteria for diabetes based on laboratory values. In spite of these differences, the overall conclusions are consistent: that Alaska Natives have a lower prevalence of diabetes than other Native Americans but are experiencing a rapid increase.

**Table I.** Diabetes prevalence at various points in time, Alaska Natives.

| Ethnicity          | Year of Study | Age | Cases  | Population | Prevalence* | Study Method** | Reference          |
|--------------------|---------------|-----|--------|------------|-------------|----------------|--------------------|
| <b>ESKIMO</b>      |               |     |        |            |             |                |                    |
| All Eskimo         | 1957          | ≥35 | 3 to 6 | 3680       | 0.8 to 1.6  | C              | Scott 1957 (1)     |
| All Eskimo         | 1985          | ≥35 | 166    | 10082      | 16,5        | C              | Schraer 1988 (9)   |
| All Eskimo         | 1993          | ≥35 | 297    | 13578      | 21,9        | C              | Schraer 1997 (17)  |
| All Eskimo         | 1985          | ≥45 | 148    | 6481       | 22,8        | C              | Schraer 1988 (9)   |
| All Eskimo         | 1993          | ≥45 | 269    | 8048       | 33,4        | C              | Schraer 1997 (17)  |
| Central Yupik***   | 1962          | ≥40 | 5      | 296        | 16,9        | S              | Mouratoff 1967 (2) |
| Central Yupik      | 1987          | ≥40 | 26     | 556        | 46,8        | S              | Murphy 1992 (23)   |
| Central Yupik      | 1994          | ≥45 | 2      | 47         | 42,6        | S              | Ebbesson 1998 (18) |
| Siberian Yupik**** | 1992          | ≥40 | 6      | 65         | 92,3        | S              | Schraer 1998 (16)  |
| Siberian Yupik     | 1994          | ≥45 | 19     | 126        | 150,8       | S              | Ebbesson 1998 (18) |
| Inupiat            | 1974          | ≥45 | 7      | 315        | 22,2        | C              | Fisher 1974 (8)    |
| Inupiat            | 1994          | ≥45 | 4      | 57         | 70,2        | S              | Ebbesson 1998 (18) |
| <b>INDIAN</b>      |               |     |        |            |             |                |                    |
| All Indian         | 1985          | ≥45 | 257    | 4273       | 60,1        | C              | Schraer 1988 (9)   |
| All Indian         | 1993          | ≥45 | 413    | 6394       | 64,6        | C              | Schraer 1997 (17)  |
| Athabascan         | 1965          | ≥40 | 3      | 163        | 18,4        | S              | Mouratoff 1969 (3) |
| Athabascan         | 1987          | ≥40 | 11     | 110        | 100,0       | S              | Murphy 1992 (23)   |
| <b>ALEUT</b>       |               |     |        |            |             |                |                    |
| Aleut, St. Paul Is | 1973          | ≥35 | 18     | 156        | 115,4       | S              | Dippe 1975 (5)     |
| All Aleut          | 1985          | ≥35 | 129    | 2686       | 48,0        | C              | Schraer 1988 (9)   |
| All Aleut          | 1993          | ≥35 | 211    | 3598       | 58,6        | C              | Schraer 1997 (17)  |
| All Aleut          | 1985          | ≥45 | 110    | 1706       | 64,5        | C              | Schraer 1988 (9)   |
| All Aleut          | 1993          | ≥45 | 183    | 2132       | 85,8        | C              | Schraer 1997 (17)  |

\* per 1000

\*\* S=screening study, C=clinically recognized cases

\*\*\* Yupik Eskimo populations indigenous to regions of Alaska other than St. Lawrence Island

\*\*\*\* Yupik Eskimo population indigenous to St. Lawrence Island

Table I summarizes the estimates of the prevalence of diabetes among Alaska Natives at different points in time until 1994. The table was devised by looking at published numbers of cases and populations, and computing prevalences based on those data. This summary suggests that prior to 1980 diabetes may not have been as rare among Eskimos as previously thought, compared to our data in 1985 based on clinically recognized cases. For example, the prevalence of diabetes in Eskimos >45 years of age in 1985 was 22.8/1000, almost identical to that reported in Barrow in 1974 (9,8). Mouratoff's publication of cases among the Central Yupik in 1962 indicated a prevalence of 16.9/1000 in those aged  $\geq 40$  years (2). The overall Eskimo prevalence in 1985 among those  $\geq 35$  years was 16.5/1000.

Comparison of these studies over time has some limitations. As noted above, the earlier studies were not designed primarily to determine prevalence. The only studies in which every participant received an OGTT were those in the Bering Straits region in 1992 and 1994. In all the others, some individuals were selected to receive an OGTT based on screening values that were above certain cut-off points. The data based on the clinical registry cannot be directly compared to that in research studies since the registry includes only those people with diabetes diagnosed in the course of routine care. Nevertheless, some comparisons are meaningful. Murphy's 1987 data compared to that of Mouratoff in the 1960s probably indicates a true increase among Central Yupiks and Athabascans. Comparison over time of clinical registry data can be made because this data was collected by consistent methods over the 13 years of reporting, and no major changes in the routine screening for diabetes were known to have taken place during the years reported. The national study (24) showing a 76% increase over seven years likewise had consistent methods applied over time.

Data based on patient care registries may underestimate prevalence because of undiagnosed cases. Conversely, screening studies may overestimate prevalence, if those at higher risk are more likely to participate. In reviewing available information from three screening projects in separate regions of Alaska (17), we found that the proportion of new cases to previously diagnosed ranged from 1:3 to 1:12. However, our experience in screening activities is that people who believe they are at risk to develop diabetes or cardiovascular disease for reasons such as family history, or prior diagnoses of elevated glucose levels, tend to seek out opportunities to be screened. For example, in

the study in the Bering Straits villages, 80% of the people already known to have diabetes participated, while the overall participation rate was 50.5% (18). This has two potential effects on the study results; one is a falsely high estimate of prevalence, and the other is that the ratio of new to previously diagnosed cases may be falsely low.

The State of Alaska Section of Epidemiology analyzed data from the Alaska Behavioral Risk Factor Surveillance System (BRFSS), which is an ongoing telephone survey of residents age 18 and older (25). Data compiled from 1991-2000 showed that Alaska Natives had a prevalence of 38/1000. This was lower than the prevalence for African-Americans (48/1000) and Hispanics (43/1000) but slightly higher than that for whites (33/1000). The fact that Alaska Natives now have a higher prevalence than whites is of concern.

### **Incidence**

Only one publication has addressed the incidence of diabetes among Alaska Natives (17). Overall, the incidence in the years 1986 to 1993 was 15.0/10,000. Aleuts experienced the highest incidence at 22.2/10,000 while Eskimos had the lowest at 10.0/10,000 and Indians were intermediate at 18.5/10,000 (age-adjusted to the US 1980 population). Among regions, only Annette Island (Tsimshian Indian) had an incidence in excess of that reported for the US (Annette Island: 31.7/10,000, US: 24.2/10,000, (26)).

It may seem paradoxical that the Alaska Native prevalence of diabetes increased rapidly over a period of time when the incidence was relatively low compared to the US rate. However, at baseline, the prevalence was low compared to that of the US, so a relatively small increase in the number of cases could raise the prevalence by a high percentage from the baseline. Furthermore, there is a limitation in this incidence data because it is based on clinically recognized cases rather than systematic repeated screening of the population. Some patients diagnosed in 1986 through 1993 may have had the disease onset prior to 1986 but this was not recognized.

### **Complications of diabetes**

Data on complications of diabetes derives from the Alaska Native diabetes registry and has been published in two articles (17, 21). The first article describes the incidence of myocardial infarction (MI) and stroke for the period 1986-1991, and the incidence of end-stage renal di-

sease (ESRD) and lower extremity amputation (LEA) for the period 1986-1993, and compares the rates in the different ethnic groups. The second publication extends the observations on ESRD and LEA for Alaska Natives with diabetes as a group through 1998.

#### *Amputation*

Amputation incidence overall for 1986-1998 was 6.1/1000 (21). This is lower than rates for other Native Americans with diabetes, which have been reported to range from 7.3 to 29/1000 (21,27,28), and within the range reported for the US (3.7 to 8.8/1,000 (29)). For years 1986-93, the rates were calculated for each major ethnic group and gender. Men and Aleuts had the highest rates (all men 7.5/1000, all women 3.4/1000, Aleuts 10.5/1000, Indians 4/1000, Eskimos 3/1000). The differences between Aleuts and each of the other groups were significant, as was the difference between men and women. Of note was the fact that Aleuts also had a higher risk of repeat amputation. The incidence of amputation declined by over 50% following the initiation of a foot care program that involved education of providers, including village health aides, and institution of a specialized foot clinic (17). The lower amputation rate among Alaska Natives compared to other Native Americans may be the result of clinical programs, a shorter duration of diabetes, or as yet unidentified intrinsic factors.

#### *End Stage Renal Disease*

The overall dialysis incidence for diabetic ESRD for 1986-1998 was 2.1/1000 (21) which was substantially lower than rates reported for other Native American diabetic populations (30,31). For the period 1986-93, the rates were reported for each major ethnic group and gender (17). Indians had the highest rate (2.6/1000) followed by Aleuts (1.9/1000) and Eskimos (1.0/1000). Indians of southeastern Alaska had the highest rate at 4.4/1000, significantly higher than other Alaska Indians. Overall, including all ethnic groups, women had a slightly higher rate (2.3/1000) than men (1.6/1000). However, the gender difference was not statistically significant. As for amputations, the incidence of renal replacement fell with time during the 1986-93, which may have been a result of improved care practices, including the use of renal-protective agents in blood pressure control. However, the overall lower rate compared to other Native Americans may also be due to a shorter duration of diabetes or other intrinsic factors.

### *Myocardial infarction and stroke*

Between 1986 and 1991, the overall incidence of confirmed MI was 8.1/1000 (confirmed by EKG and/or enzyme criteria, age adjusted to the US diabetic population). Eskimos had the lowest rate of MI (6.2/1000 person-years), Indians were intermediate (8.4/1000) and Aleuts had the highest rate (10.2/1000) (17). Overall, men had a higher rate than women (men, 11.4/1000, women 5.8/1000). For stroke the picture was different. The overall incidence was 10.6/1000; Eskimos had the highest rate at 17.6/1000, Aleuts were intermediate at 11.5/1000, and Indians had the lowest incidence at 5.7/1000. The Eskimo-Indian difference was significant. Women had a higher stroke incidence than men (women, 12.8/1000, men, 7.2/1000). Of all the ethnic and gender groups of diabetic people, Aleut men had the highest rate of MI (14/1000) and Eskimo women had the highest rate of stroke (19.6/1000). Compared to reports of stroke and MI in other diabetic populations, the overall stroke rate was comparable to that reported from the Mayo Clinic in earlier years (10.1/1000 (32)). However, Alaska Native women had a stroke rate much higher than that reported for a group of Caucasian diabetic nurses who were somewhat younger (Native women, 13.1/1000, Caucasians, 1.5/1000, (33)). Incidence of confirmed MI for Alaska Native women (5.7/1000) exceeded rates reported for diabetic women in the Nurses Health Study Cohort of 4.2/1000 (33) and overall for southwestern American Indians in earlier years of 1.7/1000 (34).

In summary, the incidence of stroke and MI varies considerably by ethnicity and gender, with some groups experiencing rates higher than those for other diabetic populations in the United States.

### **Gestational Diabetes**

Routine screening for gestational diabetes among pregnant Alaska Native women was not done prior to 1986 as this condition, as well as type 2 diabetes, was believed to be rare. In 1987 several regions began screening and follow-up testing according to guidelines generally used at the time. A 1-hour 50-gram OGTT was given at 24-28 weeks gestation without regard to time since last meal; a result of  $\geq 140$  mg/dl (7.8 mM) was followed on a subsequent date by a 3-hour 100 gram OGTT interpreted by O'Sullivan criteria (35). Results of tests were tabulated for Alaska Native women who were residents of the Yukon-Kuskokwim Delta region (predominantly a Yupik Eskimo

population) and delivered during a 12-month period in 1987-88 (36). Among 605 women, 545 (90%) were screened, 35 had a positive OGTT, and two had previously documented diabetes, for a total of 6.1% with diabetes in pregnancy, or a total of 6.7% of those screened. This was noted to be about twice the rate for the US population and to exceed the rate of many other populations, including one American Indian population. In response to these results, an intensive effort at nutrition education, with an emphasis on reduction of sweetened beverage consumption, was initiated among pregnant women in the region. The rate of diabetes in pregnancy was reassessed in two 6-month periods in 1991 and 1993 (37). It declined to 2.3% in 1991 ( $p=0.03$ ) with no change in the proportion of women tested overall or in the third trimester. In 1993, the rate had declined still further to 1.6% but the proportion of women tested in the third trimester had declined significantly, raising the possibility that detection of late onset cases was less likely.

The data on gestational diabetes in the Yukon Kuskokwim region suggests two points. One is that the high rate may indicate a potential for a further increase in type 2 diabetes, as has occurred among the Navajo Indians (38). It is notable that Yupiks had a higher rate of GDM yet a lower rate of type 2 diabetes. However, Eskimos have shown the highest rate of increase in type 2 diabetes (17). The second is that nutritional education emphasizing a reduction in sweetened beverage intake; a straightforward, discreet change in dietary habits, may hold promise in helping women to avoid this condition. However, this data was based on a limited time period and number of women, and needs further investigation to verify its applicability.

The only other report of GDM among Alaska Native women showed a prevalence of 2.5% in Southeast Alaska, predominantly Tlinget and Haida (39).

### **Mortality**

Mortality among Alaska Natives with diabetes follows similar patterns to that of other diabetic populations (17). Heart disease is the most common cause of death. In the time period 1986-1993, the overall mortality rate among Alaska Natives with diabetes was 43.2/1000 person-years of observation, a rate somewhat lower than that observed in studies of diabetic populations in the US (40). The overall mortality rate was similar for the major ethnic groups and both genders.

However, Aleuts were more likely to die from ischemic heart disease than Eskimos, while Eskimos were more likely to die from cerebrovascular disease.

### **Factors associated with diabetes among Alaska Natives**

#### *Insulin resistance*

Insulin resistance is believed to be the underlying condition leading to type 2 diabetes. The development of insulin resistance is partly genetically determined but is worsened by centripetal obesity and lack of physical activity. The insulin resistance syndrome (IRS) consists of a number of characteristics associated with a high risk of coronary artery disease (CAD). These include obesity, abnormal cholesterol with elevated triglycerides, low HDL-C, high insulin levels, glucose intolerance, and hypertension (41). Whether or not IRS is present in Alaska Natives and especially among Eskimos has been the subject of debate. However, several studies provide evidence bearing on the presence or absence of these factors associated with insulin resistance.

#### *Obesity and Body Fat Distribution*

In other populations, obesity and centripetal body fat distribution as measured by waist: hip ratios (WHR) are well-documented risk factors for type 2 diabetes. Several studies provide information on obesity in the Alaska Native population. The Yupik residents of villages studied in 1962, 1972, and 1987 documented a steady increase in the percentage of the population  $\geq 40$  years weighing  $\geq 13.6$  kg above the Caucasian average for the same age, height, and gender (2, 4, 23). The proportion increased from 3.0% to 16.3% among men and 6.1% to 27% among women. Controlling for age, the participants in Murphy's study who had IGT or diabetes were significantly more likely to be overweight by National Center for Health Statistics criteria at that time ( $\text{BMI} \geq 27.8$  for men and  $\geq 27.3$  for women, (42)) than those with normal glucose tolerance. By these criteria, 34% of Eskimo men and 56% of the women were overweight; among Athabascans, 29% of the men and 55% of the women were overweight.

The Murphy study also included participants  $\geq 20$  years. However, those 20-39 years had a lower participation rate, and were excluded from analyses summarized above. Analyses of data from this study that included the entire sample found that prevalence of overweight significantly increased with age for all groups except Indian men and

confirmed the finding that those with IGT or diabetes were significantly more likely to be overweight (43). As with the older age category, the younger group of Yupiks when compared with Mouratoff's participants showed a striking increase from 1962 to 1987 in the prevalence of those overweight by the earlier criteria (men, 4% to 14.9%, women, 10.1% to 28.8%) (43).

The fact that obesity correlates with abnormal glucose tolerance in Alaska Natives is especially concerning in view of the data from Eskimo participants in Ebbesson's 1994 study in the Bering Straits region. In that study, 27.9% of the women and 36.2% of the men had a BMI of  $\geq 25$  but  $< 30$  (WHO definition of overweight, (44)); while an additional 32.8% of the women and 15.6% of the men had a BMI  $\geq 30$  (WHO definition of obese) (45).

Waist: hip ratios were also examined in the 1994 study (18). Women in all ethnic groups in this study were found to have mean WHR  $> .90$  and over 90% of the women in each BMI group (normal, overweight, obese) had a WHR  $\geq 0.8$ , which was defined as "high" for purposes of comparison to other populations (46). In contrast, among men high WHR was associated with overweight status. High WHR ( $\geq 0.9$ ) was found in 42% of normal weight, 85% of overweight, and 100% of male obese participants. Since high WHR and BMI are associated with glucose intolerance, it is of concern that over 60% of women were overweight or obese and a large percentage of women had a high WHR regardless of BMI.

#### *Other Associations*

The 1992 pilot study among 65 Siberian Yupiks measured fasting insulin, glycated hemoglobin, percent body fat by bioelectric impedance, and blood pressure in addition to fasting lipids (16). Analysis showed that the participants had lower mean systolic and diastolic blood pressure, lower triglycerides, and higher HDL cholesterol compared to the US all races sample aged 45-74 years in the NHANES II survey. However, a significant positive linear correlation was noted for fasting insulin and BMI, and patients with diabetes had higher mean systolic blood pressure. The authors noted that fasting insulin levels were found to be lower than those of US Caucasians, implying greater insulin sensitivity among the Yupik participants, although several features of the insulin resistance syndrome were present. Fasting insulin was significantly and positively associated with diastolic blood pressure and fas-

ting triglycerides, even after adjustment for age, percent body fat, WHR, gender, and antihypertensive medication. However, it was emphasized that the small sample size was a limitation in the study (16).

Murphy's 1987 study also shed some light on the components of insulin resistance syndrome among Central Yupiks and Athabascans of the Yukon-Kuskokwim Delta region. Hypertension (systolic blood pressure  $\geq 140$  and/or diastolic  $\geq 90$ ) was significantly associated with glucose intolerance and overweight in both genders (47).

#### *Genetics and Environment*

Higher fasting insulin levels have been found to be predictive of type 2 diabetes (48). In the 1994 study among the three Eskimo populations in the Bering Straits region (18), the insulin levels were determined in the same laboratory using the same technique as those in the Strong Heart Study (49). The fasting insulin levels were compared after exclusion of all participants in either study who had either IGT or diabetes by WHO criteria, or who had inadequate data to determine glucose tolerance status. Fasting insulin did not differ significantly by age or by ethnicity among the three Eskimo populations (Siberian Yupik, Central Yupik, and Inupiat) but was significantly higher for women than for men and was higher with increasing BMI (50). In a regression model adjusting for age and BMI, Eskimo men and women had significantly lower insulin levels than American Indian men and women. The lower insulin levels in Eskimos could indicate a lesser degree or prevalence of insulin resistance as compared with other Native Americans and would be consistent with the observation that Alaskan Eskimos have a lower prevalence of diabetes compared with other Alaska Natives. However, it is also possible that dietary factors and physical activity are playing a protective role.

In the 1994 Bering Straits study, participants from the three Eskimo populations were asked about a history of diabetes in parents, aunts or uncles, siblings, and children (18). In statistical models containing age, family history and obesity, all three variables were significantly associated with total abnormal glucose tolerance and with diabetes. The authors concluded that as in many populations, genetic and environmental factors play a significant role. In an effort to further examine the relative roles of these factors, a comparison was made of the diabetes prevalence among Siberian Yupik people in Alaska and those living on Russia's Chukotka Peninsula, just across the Bering

Straits. Before the cold war, these two populations traveled back and forth frequently and some families had members living on both sides of the Straits. While among Siberian Yupik people in Chukotka, ages 25-64, the prevalence of diabetes was 1.5%; it was 6.6% among the Siberian Yupik people in Alaska. Further study among these populations may elucidate the role of diet, physical activity and other factors in the development of diabetes.

A study in Canada raised other questions about the role of insulin resistance in the health of northern people. Among Canadian Inuit, obesity was not found to correlate with glucose or insulin levels (51). Young did find however that one or more of the lipids showed a relationship to BMI. He postulated a type of selective insulin resistance among Inuit whose metabolism may reflect a traditional diet consisting almost entirely of fat and protein.

In summary, there is evidence that in spite of the lower prevalence of diabetes among Alaska Natives as compared with other Native Americans, there is some evidence of the insulin resistance syndrome in the northern indigenous populations studied. However, further observations would be needed to elucidate the role of genetic factors in different groups, and environmental factors such as diet and physical activity.

#### *Dietary Factors*

Murphy's 1987 study in the Yukon-Kuskokwim Delta region has contributed information on the possible relationships between dietary factors and glucose intolerance among Alaska Natives. In this study, participants were given a food frequency questionnaire asking them about the 10 most common indigenous and 15 most common nonindigenous foods consumed in the region. Participants were asked whether they ate each food daily, weekly, monthly, or never, and how many times in the stated time period they ate the food (43). Among participants  $\geq 40$  years of age, daily consumption of seal oil suggested a protective effect against glucose intolerance with an odds ratio of 0.2 (95% CI 0.1-0.7) (52). This association was not confounded by ethnicity, age, BMI, or gender. Daily salmon consumption was also associated with protection when limited to newly diagnosed cases of glucose intolerance. The authors speculated that the fatty acid content of these indigenous foods, which are high in polyunsaturated fatty acids (PUFAs) and omega-3 fatty acids, may be protective (52).

Further observations on the possible role of fatty acids in the development of glucose intolerance were based on an analysis of fatty acid profiles in the plasma of the participants of Ebbesson's 1994 survey in the Bering Straits region. It was reported that the 68 people with glucose intolerance had lower concentrations of some omega-3 and omega-6 fatty acids (PUFAs) and higher concentrations of palmitic and oleic acid than those with normal glucose tolerance (53). It has been postulated that omega-3 fatty acids play a role in cell membrane phospholipids and thus affect insulin secretion and action (54). Ebbesson's data emphasize the importance of understanding the roles of dietary factors in serum fatty acid levels and their relationship to insulin resistance.

Other analyses of Murphy's data in the Yukon-Kuskokwim Delta region, which included responses of all participants  $\geq 20$  years, found many associations of frequency of indigenous foods vs. non-indigenous foods with age ethnicity, glucose tolerance status and obesity (43). No clear or consistent pattern emerged with regard to glucose tolerance. For example, with Athabascans and Yupiks included, controlling for age and ethnicity, those with euglycemia had significantly higher frequencies of intake of seal oil. However, among Yupiks only, controlling for age, those with euglycemia had lower frequencies for salmon/fish and seal oil. In general, participants with glucose intolerance reported a significantly more frequent consumption of protein from nonindigenous sources. The findings regarding associations between elements of glucose intolerance and dietary intake appear to be complex, and are strongly influenced by the specific foods, ages, genders and ethnic groups involved in the analyses.

A review of dietary patterns before contact with non-indigenous societies found, in summary, that the pre-contact diet of Arctic and sub-Arctic peoples probably contained very small amounts of carbohydrate and that the major changes with contact were an increase in carbohydrates, and a decrease in total fat and protein (55). A survey of the diets of Alaska Native adults in 11 communities in several different regions of the state was conducted in 1987-88 (56). Alaska Natives in this sample consumed twice the amount of table sugar and slightly more sweetened soft drinks (not artificially sweetened) than a national sample in the NHANES II survey. Similarly, a 1985 survey of dietary intake of teenagers in the Yukon-Kuskokwim region indicated that the participants consumed three to four times the amount of sweetened soft drinks consumed by teens in the U.S. general population (57).

Some evidence suggests a possible association between dietary carbohydrate and the occurrence of diabetes among Alaska Natives. First, comparison of the dietary data gathered from Alaska Native adults in several regions and in Chukotka tundra and coastal residents indicated that Chukotka residents, who have a much lower prevalence of diabetes, ate less carbohydrate (58). Second, as dietary carbohydrate intake has increased over time so has the prevalence of diabetes among Alaska Natives. Thirdly, unpublished data from the 1994 study in the Bering Straits region found that higher carbohydrate in the diet correlated with higher waist: hip ratio (Risica, unpublished data). However, an association between high carbohydrate intake and the development of diabetes is not well supported in the literature. Further study of this issue is important in order to formulate scientifically sound recommendations for diabetes prevention.

#### *Physical activity*

Murphy's 1987 study provided some evidence that physical activity may help protect against glucose intolerance (59). In this study, participants were given examples of common tasks in the region and asked whether they usually performed these activities using mechanized means or carried them out without mechanical assistance (for example, cutting wood by chainsaw or handsaw, using a motor versus paddling a boat, etc). Points were assigned to each activity based on frequency and whether or not mechanized methods were used. The points were summed for each participant and the scores were classified by tertiles into low, moderate and high levels of activity. The analysis was applied to those  $\geq 40$  years of age. A higher level of activity was associated with lower odds ratios for glucose intolerance when controlling for age, ethnicity, BMI, gender, and seal oil consumption. Overall, a greater percentage of Eskimos than Athabascans had high (31.6% vs. 6.7%) and moderate (33.4% vs. 24.8%) levels of activity.

The 1992 pilot study in one Eskimo village in the Bering Straits region also assessed physical activity by asking participants "How often do you exercise vigorously enough to work up a sweat or breathe hard?" Those who reported exertion of this magnitude less often than once a week were designated as sedentary in the analysis (16). Among those with diabetes, IGT and normal glucose tolerance, 50%, 25%, and 10% respectively, were sedentary.

## FUTURE DIRECTIONS

There is much to be learned about the occurrence of diabetes and its determinants among northern indigenous people. All research studies to date have been cross-sectional and therefore have major limitations in terms of examining risk factors and effectiveness of possible interventions in the area of primary prevention. There exists a strong need for longitudinal studies using population-based cohorts to establish better prevalence and incidence data, and to examine the roles of life-style factors in the genesis of type 2 diabetes. While there is a need to further elucidate the basic physiologic ramifications of insulin resistance, diet, exercise, and body fat distribution among northern indigenous people, the real frontier is the translation of knowledge of basic physiologic processes into healthy life style choices. Therefore, it is especially important that such studies involve partnerships with social scientists, behavioral and mental health specialists, and village leaders, especially the elders.

Studies involving screening in villages face several challenges. One is that village populations are small and geographically distant from each other. More statistical power could be obtained by coordinated efforts by various groups of investigators using consistent methods and case definitions among different groups of participants. Another challenge is that studies in rural circumpolar regions are expensive and logistically difficult. Obtaining blood samples, storing, processing, and shipping them under precise conditions necessary for laboratory analysis is usually quite difficult. A study conducted by Murphy in 1987 demonstrated that a fingerstick method of glucose determination was practical and quite accurate for determination of glucose tolerance status. The Accu-check II performed with a sensitivity of 75%, a specificity of 93%, and a positive predictive value of 63.1% to detect a glucose of  $>126$  mg/dl (6.72 mM) as determined by the hexokinase method on venous plasma (60). Gastrointestinal intolerance of glucose test beverages also presents difficulties with screening efforts in rural settings. However, a study in southeast Alaska showed polymer beverages were better tolerated than monomer beverages (61).

Funding decisions regarding studies in northern populations, especially in village settings, need to take into account the costs of travel and housing of workers, securing adequate exam facilities, difficulties of using computerized systems in settings where a steady electric supp-

ly is not guaranteed, and other such obstacles. Furthermore, studies should be viewed not only as an opportunity to obtain data, but also as a pathway for the involvement of village residents in the research process. Their observations are crucial to meaningful design of studies. Their involvement also offers potential steps into careers in the fields of research, health care delivery, and community development.

## CONCLUSIONS

In summary, the evidence indicates that while Alaska Natives have a low prevalence of diabetes compared with other Native Americans, they are experiencing a more rapid rate of increase than other groups. It appears that in the Alaska Native populations studied, three changes have occurred concurrently over the past few decades; an increased proportion of carbohydrate in the diet, increasing prevalence of obesity, and increasing prevalence of diabetes.

On the positive side, traditional lifestyles in Alaska Native communities are still an intrinsic part of every day life and may be providing some protection. There is evidence that elements of the traditional diet, specifically frequent seal oil and salmon intake, correlate with a lesser risk of glucose intolerance. Alaska Natives are consuming fish six times more frequently and in larger amounts when compared to the US general population (56). Thus, promoting the continued consumption of traditional foods through nutrition education may protect against the development of diabetes. There is also evidence that physical activity may be protective among Alaska Natives as it is in other populations. Murphy's 1987 study showed that 65% of Yupik and 32% of Athabascan participants engaged in high or moderate levels of physical activity (59).

While there is much to be learned about the occurrence of insulin resistance among Alaska Natives and other northern indigenous people, it appears that we know enough to make some recommendations. Native foods are to be promoted over diets high in simple carbohydrates; physical activity and weight management need to be encouraged. Further research is needed on factors involved in insulin resistance, the occurrence and implications of gestational diabetes, and the translation of information into life style practice. Those involved in health care and research among northern peoples should search for ways to form partnerships that will assist populations in their own quest for better health.

## REFERENCES

1. Scott EM, Griffith IV. Diabetes mellitus in Eskimos. *Metabolism* 1957; 6:320-25.
2. Mouratoff GJ, Carroll NV, Scott EM. Diabetes mellitus in Eskimos. *JAMA* 1967; 199:107-12.
3. Mouratoff GJ, Berkeley MD, Carroll NV, Scott EM. Diabetes mellitus in Athabascan Indians in Alaska. *Diabetes* 1969; 18:29-32.
4. Mouratoff GJ, Scott EM. Diabetes mellitus in Eskimos after a decade. *JAMA* 1973; 226:1345-46.
5. Dippe SE, Miller M, Bennett PH, Maynard JE, Berquist KR. Lack of causal association between Coxsackie B4 virus infection and diabetes. *Lancet* 1975; 1:1314-17.
6. World Health Organization Study Group: Diabetes mellitus. Geneva, World Health Organization, 1985 (Tech. Rep. Ser., no. 727).
7. Quick WW. Diabetes in Eskimos. Letters to the editor. *JAMA* 1974; 227:1383.
8. Fisher QA. Diabetes in Eskimos. Letters to the editor. *JAMA* 1974; 227:1383.
9. Schraer CD, Lanier AP, Boyko EJ, Gohdes D, Murphy NJ. Prevalence of diabetes mellitus in Alaskan Eskimos, Indians, and Aleuts. *Diabetes Care* 1988; 11:693-700.
10. Leer J. The Alutiiq Language. In: Crowell AL, Steffian AF, Pullar GL eds: *Looking Both Ways. Heritage and Identity of the Alutiiq People*. Fairbanks, Alaska: University of Alaska Press 2001; 31.
11. Schraer CD, Bulkow LR, Murphy NJ, Lanier AP. Diabetes Prevalence, incidence, and complications among Alaska Natives, 1987. *Diabetes Care* 1993; 16, suppl.1: 257-259.
12. Young TK, Schraer CD, Shubnikoff EV, Szathmary EJ, Nikitin YP. Prevalence of diagnosed diabetes in circumpolar indigenous populations. *Int J Epidemiol* 1992; 21: 730-36.
13. Muir C, Waterhouse J, Mack T, Powell J, Whelan S (eds.). *Cancer Incidence in five continents*. Vol 5 Lyon: International Agency for Research on Cancer, 1987 (IARC Pub. No. 88).
14. Bennett H, Knowler WC. Increasing Prevalence of Diabetes in the Pima (American) Indians Over A Ten-Year Period. In *Pro 10th Int Diabetes Fed*, Vienna, Austria, September 9-14, 1976. Waldhausl WK, Ed. Amsterdam, Excerpta Med., 1979; 507-11
15. Harris MI, Hamman RF (Eds.). *Diabetes in America*. Washington, DC, U. S. Govt. Printing Office, 1985, PVI-4, NIH publ. No. 85-1468.
16. Schraer CD, Ebbesson SO, Adler AI, Cohen JS, Boyko EJ, Nobmann ED. Glucose tolerance and insulin-resistance syndrome among St. Lawrence Island Eskimos. *Int J Circumpolar Health* 1998; 57, suppl. 1:348-354.
17. Schraer CD, Adler AI, Mayer AM, Halderson KR, Trimble BA. Diabetes complications and mortality among Alaska Natives: eight years of observation. *Diabetes Care* 1997; 20:314-321.
18. Ebbesson SO, Schraer CD, Risica PM. Diabetes and Impaired glucose tolerance in three Alaskan Eskimo populations. The Alaska Siberia Project. *Diabetes Care* 1998; 21:563-569.
19. Gohdes D. Diabetes in North American Indians and Alaska Natives. In: *Diabetes in America*. Washington, DC, U.S. Govt. Printing Office, (NIH publ. No. 95-1468) 1995, p. 683.
20. Mohatt J, Gilliam LK, Bekris L, Ebbesson S, Lernmark A. Type 1 diabetes-related autoantibodies are rare in Alaska Native populations. *Int J Circumpolar Health* 2002; 61:21-31.
21. Schraer CD, Mayer AM, Vogt AM et al. The Alaska Native Diabetes Program. *Int J Circumpolar Health* 2001; 60:487-494.
22. Center for Disease Control and Prevention, National Center for Health Statistics, Division of Health Interview Statistics, 1999 Diabetes Surveillance. Available from <http://www.cdc.gov/diabetes/statistics/surv199/chap2/table08.htm>.
23. Murphy NJ, Schraer CD, Bulkow LR, Boyko EJ, Lanier AP. Diabetes mellitus in Alaskan Yup'ik Eskimos and Athabascan Indians after 25 years. *Diabetes Care* 1992; 15:1390-1392.
24. Burrows NR, Geiss LS, Engelgau MM, and Acton, KJ. Prevalence of Diabetes Among Native American and Alaska Natives, 1990-1997. *Diabetes Care* 2000; 23:1786-1790.
25. Hall LD, Sberna J, Utermohle C. Diabetes in Alaska, 1991-2000. Results from the Behavioral Risk Factor Surveillance System. State of Alaska Epidemiology Bulletin December 2001 5: Data from the Alaska Division of Public Health. Behavioral Risk Factor Surveillance System (BRFSS), 1991-2000. Juneau, AK: Alaska Department of Health and Social Services. 1991-2000.
26. Kenny SJ, Aubert RE, Geiss LS. Prevalence and incidence of non-insulin-dependent diabetes: In *Diabetes in America*. Washington, DC, U.S. Govt. Printing Office, (NIH publ. No. 95-1468) 1995:47.

27. Rith-Najarian S, Branchaud C, Beaulieu O, Gohdes D, Simonson G, Mazze R. Reducing lower-extremity amputations due to diabetes. Application of staged diabetes management approach in a primary care setting. *J Fam Pract* 1998; 47:127-132.
28. Rith-Najarian S, Dannels E, Acton K. Preventing amputations from diabetes: the Indian Health Service Experience. *West Indian Med J* 2001; 50:41-44.
29. Reiber GE, Boyko EJ, Smith DG. Lower extremity foot ulcers and amputations in diabetes. In: *Diabetes in America*. Washington, DC, U.S. Govt. Printing Office, (NIH publ. No. 95-1468) 1995:414.
30. Nelson RG, Newman JM, Knowler WC et al. Incidence of end-stage renal disease in type 2 (non-insulin-dependent) diabetes mellitus in Pima Indians. *Diabetologia* 1988; 31:730-736.
31. Lee ET, Lee VS, Lu M, Lee JS, Russell D, Yeh J. Incidence of renal failure in NIDDM: the Oklahoma Indian Diabetes Study. *Diabetes* 1994; 43:572-579.
32. Roemholdt ME, Palumbo PJ, Whisnant JP, Elveback LR. Transient ischemic attack and stroke in a community-based diabetic cohort. *Mayo Clin Proc* 1983; 58:56-58.
33. Manson JE, Colditz GA, Stampfer MJ et al. A prospective study of maturity-onset diabetes mellitus and risk of coronary heart disease and stroke in women. *Arch Intern Med* 1991; 151: 1141-1147.
34. Sievers ML, Fisher JR. Increasing rate of acute myocardial infarction in Southwestern American Indians. *Ariz Med* 1979; 36:739-742.
35. O'Sullivan JB, Mahan CM. Criteria for the oral glucose tolerance test in pregnancy. *Diabetes* 1964; 13:278-85.
36. Murphy NJ, Bulkow LR, Schraer CD, Lanier AP. Prevalence of diabetes mellitus in pregnancy among Yup'ik Eskimos, 1987-1988. *Diabetes Care* 1993; 16 suppl. 1:315-317.
37. Schraer CD, Murphy NJ, Jarin E, Jay A: Decreased rate of gestational diabetes mellitus following nutrition education in Alaska Natives. Abstract 126, Proceedings of the Third International Conference on Diabetes and Indigenous Peoples, Winnipeg, Manitoba, Canada, May 1995.
38. Steinhart JR, Sugarman JR, Connell FA. Gestational diabetes is a herald of NIDDM in Navajo women. High rate of abnormal glucose tolerance after GDM. *Diabetes Care* 1997; 20:943-947.
39. Murphy NJ, Bulkow LR, Schraer CD, Lanier AP. Prevalence of Diabetes Mellitus in Pregnancy Among Yup'ik Eskimo and Alaska Coastal Indians, 1987-1988. *Arctic Med Res* 1991; Suppl., 423-6.
40. Geiss LS, Herman WH, Smith PJ. Mortality in non-insulin-dependent diabetes. In *Diabetes in America*. Washington, DC, U.S. Govt. Printing Office (NIH publ. No. 95-1468) 1995:236-237.
41. DeFronzo RA, Ferrannini E. Insulin resistance. A multifaceted syndrome responsible for NIDDM, obesity, hypertension, dyslipidemia, and atherosclerotic cardiovascular disease. *Diabetes Care* 1991; 14:173-94.
42. National Center for Health Statistics, Najjar MF, Rowland M. Anthropometric reference data and prevalence of overweight, United States, 1976-80. *Vital Health Stat. Series 11, No. 238*. Washington, DC, U.S. Govt. Printing Office, 1987 (DHHS publ. no. 87-1688).
43. Murphy NJ, Schraer CD, Thiele MC et al. Dietary change and obesity associated with glucose intolerance in Alaska Natives. *J Am Diet Assoc.* 1995; 95:676-682.
44. World Health Organization. Physical status: the use and interpretation of anthropometry: Report of a WHO expert committee, WHO Technical Report Series, no. 854, WHO: Geneva, 1995 pp 321-344.
45. Risica PM, Schraer C, Ebbesson SOE, Nobmann ED, Caballero B. Overweight and obesity among Alaska Eskimos of the Bering Straits region: the Alaska Siberia Project. *Int J Obes Relat Metab Discord* 2000; 24:939-944.
46. Risica PM, Ebbesson SOE, Schraer CD, Nobmann ED, Caballero BH. Body fat distribution in Alaskan Eskimos of the Bering Straits region: the Alaskan Siberia Project. *Int J Obes Relat Metab Discord* 2000; 24:171-179.
47. Murphy NJ, Schraer CD, Thiele MC et al. Hypertension in Alaska Natives: association with overweight, glucose intolerance, diet and mechanized activity. *Ethn Health* 1997; 2(4):267-275
48. Saad MF, Knowler WC, Pettitt DJ, Nelson RG, Mott DM, Bennett PH. The natural history of impaired glucose tolerance in the Pima Indians. *N Engl J Med* 1988; 319: 1500-1506.
49. Lee ET, Welty TK, Fabsitz R et al. The Strong Heart Study. A study of cardiovascular disease in American Indians: design and methods. *Am J Epidemiol* 1990; 132:141-1155.
50. Schraer CD, Risica PM, Ebbesson SOE, Go OT, Howard BV, Mayer AM. Low fasting insulin levels in Eskimos compared to American Indians: are Eskimos less insulin resistant? *Int J Circumpolar Health* 1999; 58:272-281.

51. Young TK. Obesity, central fat patterning, and their metabolic correlates among the Inuit of the Central Canadian Arctic. *Hum Biol* 1996;68:245-263.
52. Adler AI, Boyko EJ, Schraer CD, Murphy NJ. Lower prevalence of impaired glucose tolerance and diabetes associated with daily seal oil or salmon consumption among Alaska Natives. *Diabetes Care* 1994; 17:1498-1501.
53. Ebbesson SOE, Kennish J, Ebbesson L, Go O, Yeh J. Diabetes is related to fatty acid imbalance in Eskimos. *Int J Circumpolar Health* 1999; 58:108-119.
54. Lardinois CK. The Role of Omega 3 Fatty Acids on Insulin Secretion and Insulin Sensitivity. *Med Hypothesis* 1987; Nov 24 (3):243-8.
55. Schraer CD. Diabetes among the Alaska Natives—The emergence of a chronic disease with changing life-styles. In: Joe JR and Young RS, eds. *Diabetes as a Disease of Civilization. The Impact of Culture Change on Indigenous Peoples*. Berlin: Mouton de Gruyter 1993;169-193.
56. Nobmann ED, Byers T, Lanier AP, Hankin JH, Jackson MY. The diet of Alaska Native adults: 1987-1988. *Am J Clin Nutr* 1992; 55:1024-32.
57. Thiele MC, Boushey CJ. Soft drink consumption among Yupiq Eskimo teenagers. *Alaska Medicine* 1989; 31:1-3.
58. Nobmann ED, Mamleeva FR, Klachkova EV. A comparison of the diets of Siberian Chukotka and Alaska Natives adults and recommendations for improved nutrition, a survey of selected previous studies. *Arctic Med Res* 1994; 53:123-129.
59. Adler AI, Boyko EJ, Schraer CD, Murphy NJ. The negative association between traditional physical activities and the prevalence of glucose intolerance in Alaska Natives. *Diabetic Medicine* 1996; 13:555-560.
60. Murphy NJ, Boyko EJ, Schraer CD, Bulkow LR, Lanier, AP. Use of a Reflectance Photometer as a Diabetes Mellitus Screening Tool Under Field Conditions. *Arctic Med Res* 1993; 52:170-174.
61. Bergus GR, Murphy NJ. Screening for Gestational Diabetes Mellitus: Comparison of a Glucose Polymer and a Glucose Monomer Test Beverage. *J Am Board Fam Pract* 1992; 5:241-7.

Naylor JL, MD, MPH  
Alaska Area Diabetes Consultant  
Alaska Area Diabetes Program  
Alaska Native Medical Center  
4315 Diplomacy Drive  
Anchorage, Alaska 99508  
USA  
Email: [jnaylor@anmc.org](mailto:jnaylor@anmc.org)

RESEARCH ARTICLE

# Risk Factors for Obesity at Age 3 in Alaskan Children, Including the Role of Beverage Consumption: Results from Alaska PRAMS 2005-2006 and Its Three-Year Follow-Up Survey, CUBS, 2008-2009

Janet M. Wojcicki<sup>1\*</sup>, Margaret B. Young<sup>2</sup>, Katherine A. Perham-Hester<sup>2</sup>, Peter de Schweinitz<sup>3</sup>, Bradford D. Gessner<sup>4</sup>

**1** Department of Pediatrics (GI and Nutrition), University of California San Francisco, San Francisco, California, United States of America, **2** Maternal and Child Health Epidemiology Unit, Alaska Division of Public Health, Section of Women's, Children's and Family Health, Anchorage, Alaska, United States of America, **3** Tanana Chiefs Conference, Fairbanks, Alaska, United States of America, **4** Agence de Medicin Preventive, Paris, France

\* [Wojcicki@gmail.com](mailto:Wojcicki@gmail.com)



## OPEN ACCESS

**Citation:** Wojcicki JM, Young MB, Perham-Hester KA, de Schweinitz P, Gessner BD (2015) Risk Factors for Obesity at Age 3 in Alaskan Children, Including the Role of Beverage Consumption: Results from Alaska PRAMS 2005-2006 and Its Three-Year Follow-Up Survey, CUBS, 2008-2009. PLoS ONE 10(3): e0118711. doi:10.1371/journal.pone.0118711

**Academic Editor:** David Meyre, McMaster University, CANADA

**Received:** July 16, 2014

**Accepted:** January 8, 2015

**Published:** March 20, 2015

**Copyright:** © 2015 Wojcicki et al. This is an open access article distributed under the terms of the [Creative Commons Attribution License](https://creativecommons.org/licenses/by/4.0/), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

**Data Availability Statement:** Data are available from the Alaska Department of Public Health for researchers who meet the criteria for access to confidential data. Contact details are as follows: Kathy Perham-Hester, Alaska Department of Health and Social Services, Maternal Child Health Epidemiology, 3601 C Street, Suite 358, Anchorage, AK 99503, USA. Phone #: (907) 269-3447, Fax #: (907) 269-3493. The dataset is owned by the Alaska Department of Public Health.

## Abstract

### Background

Prenatal and early life risk factors are associated with childhood obesity. Alaska Native children have one of the highest prevalences of childhood obesity of all US racial/ethnic groups.

### Methods

Using the Pregnancy Risk Assessment Monitoring System (PRAMS) and the follow-up survey at 3 years of age (CUBS), we evaluated health, behavioral, lifestyle and nutritional variables in relation to obesity (95th percentile for body mass index (BMI)) at 3 years of age. Multivariate logistic regression modeling was conducted using Stata 12.0 to evaluate independent risk factors for obesity in non-Native and Alaska Native children.

### Results

We found an obesity prevalence of 24.9% in all Alaskan and 42.2% in Alaska Native 3 year olds. Among Alaska Native children, obesity prevalence was highest in the Northern/South-west part of the state (51.6%, 95%CI (42.6-60.5)). Independent predictive factors for obesity at age 3 years in Alaska non-Native children were low income (<\$10,000 in the year before the child was born (OR 3.94, 95%CI 1.22–17.03) and maternal pre-pregnancy obesity (OR 2.01, 95%CI 1.01-4.01) and longer duration of breastfeeding was protective (OR 0.95, 95% CI 0.91-0.995). Among Alaska Native children, predictive factors were witnessing domestic violence/abuse as a 3 year-old (OR 2.28, 95%CI 1.17-7.60). Among obese Alaska Native children, there was an increased daily consumption of energy dense beverages in the

**Funding:** Janet Wojcicki is supported by an National Institutes of Health NIDDK 080825 award. Alaska PRAMS is supported by grant number 5U01DP003114 from the Centers for Disease Control and Prevention. Alaska PRAMS and Alaska CUBS are supported by project B04MC26649 from the Maternal and Child Health Bureau (Title V, Social Security Act), Health Resources and Services Administration, Alaska DHHS. The funders had no role in study design, data collection and analysis, decision to publish or preparation of the manuscript.

**Competing Interests:** The authors have declared that no competing interests exist.

Northern/Southwest region of the state, which may explain higher rates of obesity in this part of the state.

## Conclusions

The high prevalence of obesity in Alaska Native children may be explained by differences in lifestyle patterns and food consumption in certain parts of the state, specifically the Northern/Southwest region, which have higher consumption of energy dense beverages.

## Background

Childhood overweight and obesity affect 31.8% and 16.9%, respectively, of American youth ages 2–19 years [1] (Ogden et al., 2012). While overweight and obesity are problems in all communities in the United States, American Indian and Alaska Native (AI/AN) groups have the highest prevalence among US racial groups. A study with nationally representative preschool-age children found that 31.2% of AI/AN children were obese at age 4 years, with the prevalence among all US children being 18.4% [2]. In Alaska, approximately one third of children entering kindergarten and first grade in the Anchorage School District (ASD) are overweight or obese [3]; 36% of pre-K to 12<sup>th</sup> grade students in the Kenai Peninsula Borough School District are overweight or obese [4]; and close to 20% of students in grades 5 and 7 in two Anchorage-area school districts are obese [5]. The prevalence of overweight and obesity among low income children ages 2–4 years participating in the Special Supplemental Nutrition Program for Women, Infants and Children (WIC) in Alaska is similarly high at 40% [3].

As the problem of obesity in children starts early and there are few interventions that successfully treat obesity, some have focused prevention efforts on the prenatal period and first year of life [6]. Previous studies have identified in utero and early life risk factors that increase future risk for childhood obesity. These risk factors include maternal tobacco cigarette use during pregnancy [7], excessive maternal prenatal weight gain [8,9], shorter duration of breastfeeding, and, possibly, maternal postpartum depressive symptoms [10]. For preschool children, increased sugar-sweetened beverage consumption has been associated with obesity [11], and previous data from Alaska has found a high overall consumption of sugar-sweetened beverages (SSBs), with 31% of 3-year-olds drinking SSBs daily [12].

Using data from the Alaska Pregnancy Risk Assessment Monitoring System (PRAMS) and the follow-up of this cohort titled the Alaska Childhood Understanding Behaviors Survey (CUBS), we sought to evaluate the potential role of exposures just prior to pregnancy, during pregnancy, in early infancy and before age 3 years with risk for obesity at age 3 years. In particular, we were interested to evaluate the role of previous known risk factors for obesity in this population including maternal pre-pregnancy obesity, SSB consumption including 100% fruit juice consumption and the protective role of breastfeeding. Given the high prevalence of obesity among Alaska Native children, we also sought to delineate risk factors for Alaska Native children and compare these risk factors with those for non-Native Alaska children to better understand what places Alaska Native children at higher risk.

## Methods

The authors used a retrospective observational cohort study design, linking weighted data for Alaska PRAMS 2005–2006 birth year respondents (Phase 5 survey) to CUBS respondents in 2008 (Phase 2) and 2009 (Phase 3). PRAMS is population-based survey, which provides

weighted estimates for sample design, nonresponse and non-coverage to create statewide estimates to accurately reflect Alaska's population demographics [13].

## Data Sources

1. **Pregnancy Risk Assessment Monitoring System:** PRAMS is a retrospective and cross-sectional population based survey, which collects maternal self-reported information on attitudes and experiences before, during, and after the delivery of a live-born infant with information collected at one time-point during the postpartum period (approximately 2 to 6 months after delivery). Alaska PRAMS samples about one of every six live births through a stratified random sample of birth certificates, with stratification conducted according to maternal Alaska Native race and infant birth weight. All sampled respondents are linked to birth certificate information. The PRAMS unweighted response rates (or raw number not adjusting for Alaska's population demographics) for 2005 and 2006 were 77% and 75%, respectively. The full methodology of PRAMS is described elsewhere [14]. We had 2,802 mothers who participated in PRAMS in 2005 and 2006.
2. **Alaska Childhood Understanding Behaviors Survey (CUBS):** CUBS collects data about the health status and care of Alaskan children at 3 years of age. Mothers who completed a PRAMS survey and are still living in Alaska receive up to two copies of the CUBS survey in the mail soon after their child's third birthday. PRAMS phone respondents whose child was born in the last six months of 2006 also had the option of completing the CUBS survey by phone. The CUBS survey includes questions on the child's current height and weight, nutrition and eating habits, health care utilization and access, and child development and behaviors as previously described [15]. CUBS unweighted response rates among women eligible in 2008 and 2009 were 49% and 50% (or 1,136 of the 2,802).

## Data analysis

Our outcome was obesity defined as BMI  $\geq 95^{\text{th}}$  percentile (age and sex specific) at age 3 years and was calculated from the child's height and weight as self-reported by the mother on CUBS. All non-obese children, including those who were underweight (5.2% of non-Native children and 3.5% of Alaska Native children), were compared to obese children.

We analyzed obesity by maternal Alaska Native vs. non-Native race. The terms "Alaska Native children" and "non-Native children" are based on maternal race only, as reported on the birth certificate. Risk factors for childhood obesity were assessed using t-tests for continuous variables and chi-square tests for categorical variables. Pre-pregnancy, prenatal, postnatal (from 2–8 months postpartum), and childhood predictors at age 3 years were included for evaluation of risk for obesity. Variables that were significant at  $p < 0.05$  in bivariate analysis were included in the multivariate model. When variables were highly correlated with one another with  $r > 0.5$  (such as prenatal and postnatal maternal cigarette smoking, income status from the time of the birth of the child and at 3 years of age, and location of residence and urban/rural) we included in multivariate analysis either the variable more strongly associated with obesity in bivariate analysis or the variable most important to elucidate obesity trends in the state of Alaska (region of residence).

Variables that were known from previous studies to be associated with increased risk for obesity in early childhood were also included in the multivariate model process including maternal pre-pregnancy weight category (obese versus non-obese), breastfeeding duration (continuous), maternal age (continuous) and consumption of sugar-sweetened beverages including 100% fruit juice. Beverage frequency variables were analyzed both ordinally (how the questions

were originally asked on the CUBS questionnaire), as well as dichotomously, with the cut point used corresponding to the approximate mean or median of the variable for the population. The cut point for beverages was either  $\geq 1$  cup/day or  $> 1$  cup/day. Food consumption questions were analyzed dichotomously with the cut point similarly corresponding to the approximate mean, with cut-points reflective of the number of times per day the item was consumed. All food and beverage questions were based on questions that asked about consumption yesterday with the exception of the milk consumption question, which asked about usual consumption.

Because of the high percentage of missing data for paternal education (10.5%), we did not include paternal education in the multivariate models even though they were significant in bivariate  $< 0.05$  for Alaska Native children. Due to a high percentage of respondents who were missing data on child BMI (16.5%), we compared the percentage of selective socio-demographic factors (maternal age, paternal education, maternal education and location of residence) in those who were missing for BMI compared with non-missing participants (for BMI) (as 16.5% was also missing for BMI).

Subsequently, an analysis was conducted to compare daily consumption of milk, 100% fruit juice, soda and SSB, as well as usual type of milk child drank, based on regional residence (Anchorage, Interior, Northern/Southwest and Gulf Coast/Southeast). This analysis was conducted so as to better understand the protective association found between fruit juice consumption and obesity in multivariate analysis for Alaska Native children only and not non-Native children. Residence was obtained from the mother's address at the time she completed the CUBS survey, and regional groups were a modified version of those defined by the Alaska Department of Labor (<http://labor.alaska.gov/research/index.htm>)—Northern and Southwest regions, and Gulf Coast and Southeast regions, respectively, were combined due to small numbers and because these regions are geographically contiguous. We also evaluated associations between 100% fruit juice consumption and consumption of other beverages and food using chi-squared tests to better understand the protective relationship between 100% fruit juice consumption and obesity. Additionally, we examined differences in bivariate associations for non-Native and Alaska Native children using an interaction term between the predictor of interest and being either Native or Non-Native and child obesity at age 3 in logistic models. All data analysis used Stata 13.0 using "svy" statements to allow for the sampling weights provided by PRAMS. Sampling weights are necessary in survey analysis to get the survey weighting, clustering and stratification accounted for so as to get standard errors of estimates correct. Data are expressed as means  $\pm$  standard errors (SE). Specific details about the PRAMS and CUBS variables used in the analysis are included as a supplement to this article ([S1 Appendix: Additional Methodological Details on PRAMS and CUBS Variables](#)).

This was primarily a hypothesis-generating study and we did not do any multiple comparisons to reduce the chance of Type II errors [16].

## Results

The mean age of the children when the PRAMS survey was conducted was 118.1 (standard error [SE],  $\pm 28.6$ ) days (range 68–243) or approximately 4 months of age with a range from 2 to 8 months. The mean age when the CUBS survey was conducted was  $36.8 \pm 1.0$  months (range 35–42). The total number of children followed to 3 years was 1,136 as part of CUBS with 947 (83.5%) having a non-missing weight and height measurement for the child thus allowing calculation of BMI and obesity and 833 (73.3%) having a non-missing BMI and race/ethnicity ([Table 1](#)). Basic frequencies of selected variables for the cohort as a whole and stratified by Alaska Native and non-Native race are presented in [Table 1](#). Obesity prevalence among all 3 year olds was 24.9%, 95%CI (21.5–28.6) and among Alaska Native children 42.2%, 95%CI

**Table 1. Weighted Frequencies of selected variables in PRAMS and CUBS Sample (n = 833).**

|                                                                                 | Total population % or mean | Alaska Native* (% or mean±SE)<br>(N = 277) | Alaska Non-Native* (% or mean±SE)<br>(N = 556) |
|---------------------------------------------------------------------------------|----------------------------|--------------------------------------------|------------------------------------------------|
| <u>Maternal and paternal specific variables</u>                                 |                            |                                            |                                                |
| <u>Socio-demographics</u>                                                       |                            |                                            |                                                |
| Alaska Native                                                                   | 22.1                       |                                            |                                                |
| Alaska Non-Native                                                               | 77.9                       |                                            |                                                |
| Maternal Age                                                                    | 27.8±0.25                  | 26.1± 0.38                                 | 28.2±0.31                                      |
| <u>Place of Residence</u>                                                       |                            |                                            |                                                |
| Anchorage (region)                                                              | 51.3                       | 23.9                                       | 58.4                                           |
| Interior                                                                        | 16.6                       | 13.9                                       | 17.5                                           |
| Northern/Southwest                                                              | 11.6                       | 46.9                                       | 1.7                                            |
| Gulf Coast/Southeast                                                            | 20.5                       | 15.3                                       | 22.4                                           |
| <u>Maternal Education</u>                                                       |                            |                                            |                                                |
| <12 years                                                                       | 10.3                       | 22.8                                       | 6.7                                            |
| 12 years                                                                        | 42.8                       | 52.5                                       | 40.2                                           |
| >12 years                                                                       | 45.4                       | 22.7                                       | 51.9                                           |
| Missing                                                                         | 1.5                        | 2.1                                        | 1.1                                            |
| <u>Paternal Education</u>                                                       |                            |                                            |                                                |
| <12 years                                                                       | 6.8                        | 11.1                                       | 5.5                                            |
| 12 years                                                                        | 42.7                       | 53.9                                       | 39.6                                           |
| >12 years                                                                       | 40.0                       | 15.9                                       | 46.8                                           |
| Missing                                                                         | 10.6                       | 19.1                                       | 8.1                                            |
| <u>Married at birth</u>                                                         |                            |                                            |                                                |
| Yes                                                                             | 72.2                       | 52.7                                       | 77.4                                           |
| No                                                                              | 27.8                       | 47.3                                       | 22.6                                           |
| <u>Maternal Pre-pregnancy body mass index (BMI) category (kg/m<sup>2</sup>)</u> |                            |                                            |                                                |
| Underweight <18.5                                                               | 3.1                        | 1.7                                        | 3.5                                            |
| Normal ≥18.5 & <25                                                              | 51.4                       | 41.0                                       | 54.4                                           |
| Overweight ≥25 & <30                                                            | 25.3                       | 29.4                                       | 24.0                                           |
| Obese ≥30                                                                       | 20.3                       | 27.8                                       | 18.2                                           |
| <u>Child BMI Category</u>                                                       |                            |                                            |                                                |
| Obese ≥95 <sup>th</sup> %ile                                                    | 24.9                       | 42.2                                       | 19.9                                           |
| Overweight <95 & ≥85 <sup>th</sup> %ile                                         | 16.0                       | 15.9                                       | 16.1                                           |
| Normal Weight<85 <sup>th</sup> & ≥5 <sup>th</sup> %ile                          | 54.3                       | 38.4                                       | 58.9                                           |
| Underweight <5 <sup>th</sup> %ile                                               | 4.8                        | 3.5                                        | 5.2                                            |
| BMI                                                                             | 18.1±0.2                   | 17.4±0.4                                   | 18.3±0.2                                       |

\*Note: As determined by maternal race.

Among Alaska Native 3 year olds, the Northern/Southwest had the highest obesity prevalence (51.6%, 95%CI (42.6–60.5)) (Table 2; S1 Fig. for visual image of different regions).

doi:10.1371/journal.pone.0118711.t001

(36.3–48.4) (Table 1), similar to what was previously reported for CUBS 2009 (Alaska Department of Health and Social Services, 2012).

## Childhood Obesity Risk Factors in Alaska non-Native Children

**Maternal and Family Socio-Demographic Variables.** Among non-Native children, maternal and family socio-demographic variables that were associated with risk for childhood

obesity at age 3 years included non-white maternal race (33.1% versus 18.0%;  $p = 0.04$ , [Table 2](#)) and less paternal education ( $<12$  years versus  $>12$  years; 28.6% versus 13.5% and 22.7% for 12 years;  $p = 0.014$ ). Not being married compared to being married at the time of the child's birth was associated with increased risk for obesity (31.0% versus 16.0%;  $p < 0.01$ ) as was total income in the 12 months before the child was born ( $p < 0.01$ ) but not when the child was 3 years of age ( $p = 0.51$ ; [Table 2](#)). Income by number of dependents was lower at age 3 (in prior 12 months) in relation to child's obesity (\$11,547.53 $\pm$ 720.32 for obesity versus \$13,001.10 $\pm$ 362.80 for non-obese,  $p = 0.07$ ; results not shown) and in the 12 months prior to the child's birth (\$12,216.4 $\pm$ 895.86 for obesity versus \$14,735.82 $\pm$ 488.81 for non-obese;  $p = 0.01$ ; results not shown).

**Prenatal and postnatal health.** We found few differences in the prevalence of obesity among 3-year-olds based on the prenatal health of mothers. Factors most strongly correlated with obesity included smoking during the postpartum period (32.5% versus 18.0%;  $p = 0.02$ ) ([Table 3](#)),  $>40$  lbs maternal weight gain during pregnancy (24.4% versus 16.0%;  $p = 0.06$ ) and maternal smoking 3 months before pregnancy (28.1% versus 17.6%;  $p = 0.06$ ) ([Table 3](#)), although the last two factors were not statistically significant but trended towards significance.

**Infant Delivery and Feeding Variables.** Children who were small for gestational age (SGA) at delivery were less likely than non-SGA children to be obese at age 3 years (9.7% versus 21.4%;  $p = 0.056$ ) and children who were breastfed for  $\geq 6$  months were less likely to be obese than children who were not breastfed or who were breastfed for  $<6$  months (15.9% versus 26.6%;  $p = 0.01$ ) ([Table 3](#)). Obese children were breastfed for a shorter number of months compared to non-obese children (mean of 6.60 $\pm$ 0.74 months vs. 10.52 $\pm$ 0.48 months, respectively;  $p < 0.01$ ).

**Maternal and Child Psychosocial Variables.** Among psychosocial variables, the strongest associations with obesity were found for children born to mothers who were not trying to get pregnant compared to those who were trying (38.5% versus 17.9%;  $p < 0.01$ ) ([Table 4](#)) and the mother experiencing a greater mean number of life stressors during the 12 months before the child was born, (range 0–11) (mean 1.98 $\pm$ 0.22 stressors among obese children versus 1.55 $\pm$ 0.10 among non-obese children;  $p = 0.07$ ) (results not shown), although mean number of stressors trended towards statistical significance.

**Child Dietary and Lifestyle at 3 years of age.** The prevalence of obesity was higher among children who drank more than one cup of 100% fruit juice a day compared to children who drank one cup or less (25.7% versus 16.8%;  $p = 0.06$ ) although the results were not statistically significant ([Table 4](#)). Other dietary variables were less strongly associated with obesity.

**Multivariate Analysis for Obesity at age 3 years among non-Native Children.** After conducting a multivariate analysis process with all variables with a  $p < 0.05$  in bivariate analysis and other variables previously associated with increased risk for obesity based on other study findings (e.g. maternal obesity, breastfeeding and 100% juice consumption), increased breastfeeding duration (months) (OR 0.95, 95%CI 0.91–0.91) was protective against childhood obesity at age 3 years in non-Native 3 year old children and low income ( $< \$10,000$  in the 12 months before the child was born) was associated with increased risk (OR 2.01, 95%CI 1.01–4.01; [Table 5](#)). Maternal pre-pregnancy obesity was also associated with increased risk (OR 2.01, 95%CI 1.01–4.01; [Table 5](#)).

## Childhood Obesity Risk Factors among Alaska Native Children

**Maternal and Family Socio-Demographic Variables.** Among Alaska Native children, obesity risk was greater among residents of the Northern/Southwest region of the state in comparison with other areas, such as Anchorage (51.6% versus 32.4%;  $p = 0.04$ ). Other variables associated with obesity included rural vs. non-rural birth residence (47.4% versus 32.7%;  $p =$

**Table 2. Percent Obese at Age 3 ( $\geq 95^{\text{th}}$  percentile) by Maternal Socio-demographic Variables.**

| Variable                                                                | Non-Native Population<br>Obese $\geq 95^{\text{th}}$ %ile<br>(N = 96) | p-value | Alaska Native<br>Population<br>Obese $\geq 95^{\text{th}}$ %ile<br>(N = 109) | p-value | p-value<br>comparing<br>groups |
|-------------------------------------------------------------------------|-----------------------------------------------------------------------|---------|------------------------------------------------------------------------------|---------|--------------------------------|
| <u>Place of Current Residence</u>                                       |                                                                       |         |                                                                              |         |                                |
| Anchorage (region)                                                      | 16.8                                                                  | 0.24    | 32.4                                                                         | 0.04    | 0.04                           |
| Interior                                                                | 25.5                                                                  |         | 38.2                                                                         |         |                                |
| Northern/Southwest                                                      | 12.9                                                                  |         | 51.6                                                                         |         |                                |
| Gulf Coast/Southeast                                                    | 24.9                                                                  |         | 32.3                                                                         |         |                                |
| <u>Urban/Rural Residence at Time of Birth</u>                           |                                                                       |         |                                                                              |         |                                |
| Urban residence                                                         | 16.1                                                                  | 0.40    | 32.7                                                                         | 0.02    |                                |
| Rural residence                                                         | 21.0                                                                  |         | 47.4                                                                         |         |                                |
| <u>Maternal Race</u>                                                    |                                                                       |         |                                                                              |         |                                |
| White                                                                   | 18.0                                                                  |         |                                                                              |         |                                |
| Non-White                                                               | 33.1                                                                  | 0.04    |                                                                              |         |                                |
| <u>Maternal and Paternal Education and Age at Time of Child's Birth</u> |                                                                       |         |                                                                              |         |                                |
| <u>Maternal Education</u>                                               |                                                                       |         |                                                                              |         |                                |
| <12 years                                                               | 23.4                                                                  | 0.55    | 47.9                                                                         | 0.06    | 0.48                           |
| 12 years                                                                | 21.7                                                                  |         | 46.2                                                                         |         |                                |
| >12 years                                                               | 18.4                                                                  |         | 26.6                                                                         |         |                                |
| Missing                                                                 | 4.14                                                                  |         | 47.5                                                                         |         |                                |
| <u>Paternal Education</u>                                               |                                                                       |         |                                                                              |         |                                |
| <12 years                                                               | 28.6                                                                  | 0.014   | 55.2                                                                         | 0.02    | 0.74                           |
| 12 years                                                                | 22.7                                                                  |         | 43.8                                                                         |         |                                |
| >12 years                                                               | 13.5                                                                  |         | 21.4                                                                         |         |                                |
| Missing                                                                 | 36.6                                                                  |         | 47.3                                                                         |         |                                |
| <u>Maternal Age</u>                                                     |                                                                       |         |                                                                              |         |                                |
| $\leq 19$ years                                                         | 13.3                                                                  | 0.43    | 60.7                                                                         | 0.16    | 0.73                           |
| 20–24                                                                   | 24.4                                                                  |         | 41.1                                                                         |         |                                |
| 25–29                                                                   | 17.5                                                                  |         | 38.4                                                                         |         |                                |
| 30–34                                                                   | 24.5                                                                  |         | 34.0                                                                         |         |                                |
| $\geq 35$                                                               | 15.6                                                                  |         | 44.6                                                                         |         |                                |
| <u>Marital Status at time of child's birth</u>                          |                                                                       |         |                                                                              |         |                                |
| Married (yes)                                                           | 16.0                                                                  | <0.01   | 39.4                                                                         | 0.44    | 0.10                           |
| Married (no)                                                            | 31.0                                                                  |         | 44.3                                                                         |         |                                |
| <u>Income, 12 mos before child born</u>                                 |                                                                       |         |                                                                              |         |                                |
| <\$10,000                                                               | 47.6                                                                  | <0.01   | 38.8                                                                         | 0.45    | <0.01                          |
| $\geq$ \$10,000                                                         | 17.7                                                                  |         | 44.1                                                                         |         |                                |
| <u>Income when child is 3 years of age (last 12 months)</u>             |                                                                       |         |                                                                              |         |                                |
| <\$17,500                                                               | 24.8                                                                  | 0.51    | 33.1                                                                         | 0.57    |                                |
| $\geq$ \$17,500                                                         | 20.0                                                                  |         | 11.2                                                                         |         | ND                             |
| <u>Prenatal WIC participation</u>                                       |                                                                       |         |                                                                              |         |                                |
| Yes                                                                     | 21.5                                                                  | 0.57    | 47.1                                                                         | 0.02    | 0.19                           |
| No                                                                      | 19.0                                                                  |         | 31.5                                                                         |         |                                |

doi:10.1371/journal.pone.0118711.t002

**Table 3. Percent Obese at Age 3 ( $\geq 95^{\text{th}}$  percentile) by Maternal Prenatal/ Postnatal Health Variables and Infant Feeding/Delivery Variables.**

| Variables                                                                  | Non-Native Population Obese $\geq 95^{\text{th}}$ %ile (N = 96) | p-value | Alaska Native Population Obese $\geq 95^{\text{th}}$ %ile (N = 109) | p-value | p-value comparing groups |
|----------------------------------------------------------------------------|-----------------------------------------------------------------|---------|---------------------------------------------------------------------|---------|--------------------------|
| <u>Gestational diabetes mellitus</u>                                       |                                                                 |         |                                                                     |         |                          |
| Yes                                                                        | 28.9                                                            | 0.26    | 29.1                                                                | 0.23    | 0.10                     |
| No                                                                         | 19.1                                                            |         | 43.1                                                                |         |                          |
| <u>Pre-existing diabetes mellitus</u>                                      |                                                                 |         |                                                                     |         |                          |
| Yes                                                                        | 24.5                                                            | 0.76    | 40.2                                                                | 0.89    | 0.06                     |
| No                                                                         | 19.6                                                            |         | 42.3                                                                |         |                          |
| <u>&gt;40 lbs wt gain in pregnancy</u>                                     |                                                                 |         |                                                                     |         |                          |
| Yes                                                                        | 24.4                                                            | 0.06    | 41.1                                                                | 0.20    | 0.21                     |
| No                                                                         | 16.0                                                            |         | 43.8                                                                |         |                          |
| <u>Mom Pre-pregnancy Body Mass Index (BMI) category (kg/m<sup>2</sup>)</u> |                                                                 |         |                                                                     |         |                          |
| Underweight                                                                | 24.6                                                            | 0.09    | 34.7                                                                | 0.35    | 0.63                     |
| <18.5                                                                      |                                                                 |         |                                                                     |         |                          |
| Normal                                                                     | 16.3                                                            |         | 37.5                                                                |         |                          |
| $\geq 18.5$ & <25                                                          |                                                                 |         |                                                                     |         |                          |
| Overweight                                                                 | 19.4                                                            |         | 40.6                                                                |         |                          |
| $\geq 25$ & <30                                                            |                                                                 |         |                                                                     |         |                          |
| Obese $\geq 30$                                                            | 31.1                                                            |         | 51.0                                                                |         |                          |
| <u>Mom smoked 3 months before pregnancy</u>                                |                                                                 |         |                                                                     |         |                          |
| Yes                                                                        | 28.1                                                            | 0.06    | 45.7                                                                | 0.32    | 0.89                     |
| No                                                                         | 17.6                                                            |         | 39.3                                                                |         |                          |
| <u>Mom smoked during pregnancy</u>                                         |                                                                 |         |                                                                     |         |                          |
| Yes                                                                        | 24.7                                                            | 0.47    | 50.0                                                                | 0.19    | 0.38                     |
| No                                                                         | 19.1                                                            |         | 40.0                                                                |         |                          |
| <u>Mom smoked in post-partum</u>                                           |                                                                 |         |                                                                     |         |                          |
| Yes                                                                        | 32.5                                                            | 0.02    | 48.2                                                                | 0.19    | 0.34                     |
| No                                                                         | 18.0                                                            |         | 39.2                                                                |         |                          |
| <u>Chew/spit tobacco (traditional plus regular) during pregnancy</u>       |                                                                 |         |                                                                     |         |                          |
| Yes                                                                        | Numbers too small                                               |         | 55.2                                                                | 0.046   |                          |
| No                                                                         |                                                                 |         | 39.7                                                                |         |                          |
| <u>Multivitamin or Prenatal vitamin use—one month before pregnancy</u>     |                                                                 |         |                                                                     |         |                          |
| None                                                                       | 22.6                                                            | 0.32    | 44.7                                                                | 0.46    | 0.91                     |
| 1–3/week                                                                   | 18.0                                                            |         | 42.0                                                                |         |                          |
| 4–6/week                                                                   | 27.3                                                            |         | 25.1                                                                |         |                          |
| Daily                                                                      | 15.3                                                            |         | 35.9                                                                |         |                          |
| <u>Macrosomic <math>\geq 4500</math>grams</u>                              |                                                                 |         |                                                                     |         |                          |
| Yes                                                                        | 17.1                                                            | 0.84    | 51.7                                                                | 0.46    | ND                       |
| No                                                                         | 20.0                                                            |         | 41.7                                                                |         |                          |
| <u>Small for Gestational Age (SGA) (&lt;10<sup>th</sup>%ile)</u>           |                                                                 |         |                                                                     |         |                          |
| Yes                                                                        | 9.7                                                             | 0.056   | 44.7                                                                | 0.87    | ND                       |
| No                                                                         | 21.4                                                            |         | 42.6                                                                |         |                          |
| <u>Child ever Breastfed</u>                                                |                                                                 |         |                                                                     |         |                          |
| Yes                                                                        | 19.4                                                            | 0.16    | 42.4                                                                | 0.88    | 0.27                     |
| No                                                                         | 33.9                                                            |         | 40.7                                                                |         |                          |

(Continued)

Table 3. (Continued)

| Variables                            | Non-Native Population Obese $\geq$ 95 <sup>th</sup> %ile (N = 96) | p-value | Alaska Native Population Obese $\geq$ 95 <sup>th</sup> %ile (N = 109) | p-value | p-value comparing groups |
|--------------------------------------|-------------------------------------------------------------------|---------|-----------------------------------------------------------------------|---------|--------------------------|
| Child Breastfed (duration in months) |                                                                   |         |                                                                       |         |                          |
| <6 mo.                               | 22.6                                                              | 0.01    | 47.4                                                                  | 0.09    | 0.10                     |
| $\geq$ 6 mo.                         | 15.9                                                              |         | 36.7                                                                  |         |                          |

doi:10.1371/journal.pone.0118711.t003

0.02); paternal education <12 versus >12 years (55.2% versus 21.4%;  $p = 0.02$ ) (Table 2) and prenatal WIC participation vs. no participation (47.1% versus 31.5%;  $p = 0.02$ ). A decreased ratio of income/dependents in the 12 months prior to the child's birth (\$8,003.05/dependent  $\pm$ 735.41 among obese children versus \$8,971.76/dependent  $\pm$ 544.94 among non-obese children although results were not statistically significant ( $p < 0.29$ ; results not shown). At 3 years of age, the income by dependent ratio was lower in the families of obese children (for prior 12 months) \$7099.82  $\pm$ 539.36 versus \$8826.84  $\pm$ 578.29;  $p = 0.03$ ; results not shown).

**Prenatal Maternal Health and Infant Feeding.** Prenatal maternal use of chew/spit tobacco vs. no use (55.2% versus 39.7%;  $p = 0.046$ ) (Table 3) and fewer months of breastfeeding (7.78  $\pm$ 0.91 among obese children versus 11.07  $\pm$ 0.92 months among non-obese children,  $p < 0.01$ ) (results not shown) were associated with increased risk for obesity at age 3.

**Child Dietary and Lifestyle at 3 years of age.** Among Alaska Native 3 year olds, children who witnessed violence or abuse before age 3 years versus not witnessing either outcome had a greater risk for obesity (59.3% versus 39.6%;  $p = 0.03$ ) (Table 4) as did those who consumed > 1 cup/day of 100% fruit juice (34.8% compared to 47.3% among children that drank  $\leq$  1 cup/day ( $p = 0.053$ ) although results did not meet statistical significance (Table 4)). Children that consumed one or more servings of fried potatoes a day also had an increased obesity prevalence (49.9% versus 35.8%;  $p = 0.02$ ) (Table 4). When beverage consumption patterns were stratified by region in relation to child obesity status, with beverages defined as milk, soda, water, sweetened drinks and 100% fruit juices, we found much higher consumption patterns of all beverages among residents of the Northern/Southwest region, although only sweetened drinks ( $p < 0.01$ ) and milk ( $p = 0.03$ ) were significant at the 95% confidence level (Table 6) for Alaska Natives and soda ( $p = 0.03$ ) and sweetened drinks ( $p < 0.01$ ) for Alaska Natives and Alaska non-Natives (Table 7).

**Multivariate Analysis for Obesity at age 3 years among Native Children.** During multivariate analysis, with those variables significant in bivariate at a  $p < 0.05$ , variables associated with obesity among Alaska Native children were witnessing abuse/domestic violence as a 3 year old (OR 2.98, 95% CI 1.17–7.60; Table 8). Consuming more than 1 cup of 100% fruit juice per day was associated with reduced risk for obesity at age 3 (OR 0.53, 95%CI 0.29–0.99; Table 8).

## Discussion

This cohort of Alaskan children followed from birth through age 3 years provided an opportunity to evaluate early life risk factors for obesity. This is the first statewide study to evaluate factors associated with increased odds of childhood obesity in Alaska and among Alaska Native children, a population group at high risk for obesity [3, 5]. We found a similar percentage of obesity at three years of age (24.9%) to that reported by the Alaska WIC program (which serves low-income children age 2–4 years) (21%) and higher than that reported for kindergarteners during the 2010–11 oral health survey (approximately age 5 years; 16%) [3, 17]. We found a higher percentage of Alaska Native 3 year old children who were obese (42.5%) than the survey

**Table 4. Percent Obese at Age 3 ( $\geq 95^{\text{th}}$  percentile) by Psychosocial Variables, Dietary Intake and Lifestyle Variables.**

| <u>Lifestyle Variables</u>                                  | <u>Non-Native</u>                                      |                | <u>Alaska Native Population</u>     |                | <u>p-value</u>                    |
|-------------------------------------------------------------|--------------------------------------------------------|----------------|-------------------------------------|----------------|-----------------------------------|
|                                                             | <u>Population</u>                                      |                | <u>Obese ≥ 95<sup>th</sup> %ile</u> |                | <u>comparing</u><br><u>groups</u> |
|                                                             | <u>Obese ≥ 95<sup>th</sup> %ile</u><br><u>(N = 96)</u> | <u>p-value</u> | <u>(N = 109)</u>                    | <u>p-value</u> |                                   |
| <u>Psychosocial variables</u>                               |                                                        |                |                                     |                |                                   |
| <u>Maternal postpartum depression diagnosis</u>             |                                                        |                |                                     |                |                                   |
| Yes                                                         | 11.6                                                   |                | 36.7                                |                |                                   |
| No                                                          | 20.2                                                   | 0.34           | 43.2                                | 0.66           | 0.70                              |
| <u>Mom diagnosed depression since 3-year-old was born</u>   |                                                        |                |                                     |                |                                   |
| Yes                                                         | 22.4                                                   | 0.25           | 31.9                                | 0.56           | 0.92                              |
| No                                                          | 17.5                                                   |                | 43.1                                |                |                                   |
| <u>Child witnessed violence or physical abuse in person</u> |                                                        |                |                                     |                |                                   |
| Yes                                                         | 29.9                                                   | 0.62           | 59.3                                | 0.03           | 0.85                              |
| No                                                          | 19.8                                                   |                | 39.6                                |                |                                   |
| <u>Mother was trying to get pregnant</u>                    |                                                        |                |                                     |                |                                   |
| Yes                                                         | 17.9                                                   | <0.01          | 43.7                                | 0.70           | 0.27                              |
| No                                                          | 38.5                                                   |                | 41.3                                |                |                                   |
| <u>Child beverage consumption at age 3</u>                  |                                                        |                |                                     |                |                                   |
| <u>Soda consumption ≥1 cup/day</u>                          |                                                        |                |                                     |                |                                   |
| Yes                                                         | 32.0                                                   | 0.30           | 41.0                                | 0.24           | 0.78                              |
| No                                                          | 20.3                                                   |                | 57.6                                |                |                                   |
| <u>Soda consumption, cups/day</u>                           |                                                        |                |                                     |                |                                   |
| 0                                                           | 19.8                                                   | 0.68           | 39.2                                | 0.36           | 0.80                              |
| <1 cup                                                      | 23.9                                                   |                | 50.9                                |                |                                   |
| 1 cup                                                       | 35.2                                                   |                | 37.1                                |                |                                   |
| ≥2 cups                                                     | 27.4                                                   |                | 57.5                                |                |                                   |
| <u>100% fruit juice consumption &gt;1 cup/day</u>           |                                                        |                |                                     |                |                                   |
| Yes                                                         | 25.7                                                   | 0.06           | 34.8                                | 0.053          | 0.01                              |
| No                                                          | 16.8                                                   |                | 47.3                                |                |                                   |
| <u>Sweetened or fruit drink ≥1 cup/day</u>                  |                                                        |                |                                     |                |                                   |
| Yes                                                         | 21.0                                                   | 0.91           | 46.8                                | 0.24           | 0.50                              |
| No                                                          | 20.5                                                   |                | 39.2                                |                |                                   |
| <u>Usually drinks whole milk</u>                            |                                                        |                |                                     |                |                                   |
| Yes                                                         | 20.2                                                   | 0.80           | 39.3                                | 0.99           | 0.87                              |
| No                                                          | 19.1                                                   |                | 39.4                                |                |                                   |
| <u>Child Food Consumption at Age 3</u>                      |                                                        |                |                                     |                |                                   |
| <u>&gt;2x Candy, cookies or other sweets /day</u>           |                                                        |                |                                     |                |                                   |
| Yes                                                         | 15.2                                                   | 0.26           | 48.2                                | 0.38           | 0.15                              |
| No                                                          | 20.8                                                   |                | 41.3                                |                |                                   |
| <u>≥2x vegetables or salad/day</u>                          |                                                        |                |                                     |                |                                   |
| Yes                                                         | 17.9                                                   | 0.24           | 40.1                                | 0.66           | 0.60                              |
| No                                                          | 22.9                                                   |                | 42.8                                |                |                                   |
| <u>≥2x Fresh, canned, frozen or dried fruit/ day</u>        |                                                        |                |                                     |                |                                   |
| Yes                                                         | 19.6                                                   | 0.86           | 38.2                                | 0.18           | 0.45                              |
| No                                                          | 20.4                                                   |                | 46.7                                |                |                                   |

(Continued)

Table 4. (Continued)

| <u>Lifestyle Variables</u>                              | <u>Non-Native</u>                   |                | <u>Alaska Native Population</u>     |                | <u>p-value</u><br><u>comparing</u><br><u>groups</u> |
|---------------------------------------------------------|-------------------------------------|----------------|-------------------------------------|----------------|-----------------------------------------------------|
|                                                         | <u>Population</u>                   |                | <u>Obese ≥ 95<sup>th</sup> %ile</u> |                |                                                     |
|                                                         | <u>Obese ≥ 95<sup>th</sup> %ile</u> | <u>p-value</u> |                                     | <u>p-value</u> |                                                     |
|                                                         | <u>(N = 96)</u>                     |                | <u>(N = 109)</u>                    |                |                                                     |
| <u>≥1x French fries/tator tots or potato chips/ day</u> |                                     |                |                                     |                |                                                     |
| Yes                                                     | 21.8                                | 0.49           | 49.9                                | 0.02           | 0.04                                                |
| No                                                      | 19.0                                |                | 35.8                                |                |                                                     |
| <u>Child TV viewing</u>                                 |                                     |                |                                     |                |                                                     |
| ≤1 hour                                                 | 20.6                                | 0.80           | 46.7                                | 0.15           | 0.43                                                |
| >1 hour                                                 | 19.5                                |                | 37.9                                |                |                                                     |

doi:10.1371/journal.pone.0118711.t004

conducted by Eberling (24.6%, 95% CI (17.4–33.1), although the latter included a relatively small number of Alaska Native or American Indian subjects ( $n = 126$ ) so the estimate may not have been as precise and the subjects were older. Other previous reports have not provided estimates of obesity prevalence by race/ethnicity in 3-year old children in Alaska [3]. Previous studies have found that 3 and 4 year old children may have a slighter higher risk for obesity than kindergarten or 5–6 year olds [18] which may explain in part the higher percentage in our 3 year old sample than the study by Eberling et al. Ours is also the first study to document a regional difference in obesity prevalence in 3 year olds with the highest prevalence in the Northern/Southwest part of the state.

## Breastfeeding

Similar to other studies that have focused on early life exposures and risk for obesity in the pre-school years [19,20], we found increased breastfeeding duration was associated with lower odds of obesity. In Alaska Native children, however, the relationship between obesity and

Table 5. Multivariate Logistic Regression for Obesity at Age 3 among Alaska Non- Native\* Children ( $n = 474$ ).

| Variable                                      | Odds Ratio (OR) 95%CI | P value |
|-----------------------------------------------|-----------------------|---------|
| White race                                    | 1.00                  |         |
| Non-white race                                | 1.46 (0.73–2.92)      | 0.37    |
| Maternal Pre-pregnancy BMI Category           |                       |         |
| Non-obese ( $<30$ )                           | 1.00                  |         |
| Obese ( $\geq 30$ )                           | 1.77 (0.90–3.47)      | 0.10    |
| Maternal age, years                           | 1.22 (0.93–1.61)      | 0.15    |
| Trying to get pregnant, pregnancy intention   | 1.43 (0.71–2.89)      | 0.31    |
| Breastfeeding, months                         | 0.95 (0.91–0.995)     | 0.03    |
| Income $< \$10,000$ in 12 months before birth | 3.93 (1.22–12.70)     | 0.02    |
| Mom smoked during post-partum period          | 1.09 (0.3–2.92)       | 0.28    |
| Married at birth of child                     | 2.16 (0.93–5.04)      | 0.07    |
| 100% fruit juice consumption $> 1$ cup/day    | 1.72 (0.91–3.24)      | 0.10    |

\*Note: As determined by maternal race.

doi:10.1371/journal.pone.0118711.t005

**Table 6. Percentage of beverage consumption among obese Alaska Native 3 year-olds, by residence region.**

|                              | Anchorage | Interior | Northern/Southwest | Gulf Coast/Southeast | P value |
|------------------------------|-----------|----------|--------------------|----------------------|---------|
| <b>Type of Beverage</b>      |           |          |                    |                      |         |
| Whole milk                   | 30.4      | 27.8     | 37.8               | 32.9                 | 0.90    |
| ≥1 cup any milk              | 12.6      | 61.8     | 71.3               | 32.0                 | 0.03    |
| ≥1 cup soda                  | 0.0       | 0.0      | 13.7               | 0.0                  | 0.12    |
| >1 cup water                 | 89.5      | 61.8     | 76.4               | 89.1                 | 0.52    |
| ≥1 cup sweetened fruit drink | 42.3      | 17.7     | 73.8               | 22.8                 | <0.01   |
| >1 cup 100% fruit juice      | 45.4      | 40.3     | 37.1               | 35.8                 | 0.92    |

doi:10.1371/journal.pone.0118711.t006

**Table 7. Percentage of beverage consumption among all obese Alaskan 3-year-olds (Alaskan Native and Alaskan non-Native), by residence region.**

|                              | Anchorage | Interior | Northern/Southwest | Gulf Coast/Southeast | P value |
|------------------------------|-----------|----------|--------------------|----------------------|---------|
| <b>Type of beverage</b>      |           |          |                    |                      |         |
| Any whole milk               | 33.1      | 28.5     | 40.0               | 36.4                 | 0.83    |
| ≥1 cup any milk              | 26.7      | 52.4     | 71.0               | 53.6                 | 0.06    |
| ≥1 cup soda                  | 0.2       | 7.5      | 13.2               | 0.0                  | 0.03    |
| >1 cup water                 | 81.4      | 51.2     | 76.5               | 54.7                 | 0.12    |
| ≥1 cup sweetened fruit drink | 22.0      | 19.3     | 71.4               | 11.3                 | <0.01   |
| >1 cup 100% fruit juice      | 55.8      | 64.7     | 37.0               | 71.0                 | 0.045   |

doi:10.1371/journal.pone.0118711.t007

**Table 8. Multivariate Logistic Regression for Obesity at Age 3 among Alaska Native \* Children (n = 226).**

| Variable                                      | Odds Ratio (OR) 95%CI      |       |
|-----------------------------------------------|----------------------------|-------|
| Maternal age, years                           | 0.83 (0.63–1.11)           | 0.21  |
| Child witnessed abuse before age 3            | 2.98 (1.17–7.60)           | 0.02  |
| Geographical Location                         |                            |       |
| Anchorage                                     | 1.00                       |       |
| Interior                                      | 1.11 (0.43–2.89)           | 0.83  |
| Northern/Southwest                            | 1.43 (0.63–3.22)           | 0.39  |
| Gulf Coast/Southeast                          | 0.65 (0.24–1.80)           | 0.41  |
| Participation in WIC Program Prenatally       | 1.51 (0.71–3.19)           | 0.28  |
| Maternal Pre-pregnancy BMI Category           |                            |       |
| Non-Obese (<30)                               | 1.00                       |       |
| Obese (≥30)                                   | 1.87 (0.94–3.72)           | 0.07  |
| Eating fried potatoes at age 3 (yes, any)     | 1.63 (0.89–2.98)           | 0.11  |
| Breastfeeding (months)                        | 0.99 (0.96–1.02)           | 0.44  |
| Maternal chew/spit tobacco use (any) prenatal | 1.34 (0.55–3.24)           | 0.52  |
| Income by dependents at 3 years               | 0.999986 (0.99993–1.00005) | 0.67  |
| 100% fruit juice consumption >1 cup/day       | 0.54 (0.29–0.99)           | 0.047 |

**\*Note: As determined by maternal race.**

doi:10.1371/journal.pone.0118711.t008

duration of breastfeeding was no longer statistically significant controlling for other confounders in the multivariate model. It is possible that we lacked statistical power in the multivariate model of Alaska Native children to demonstrate the association of obesity with early termination of breast-feeding found in studies of American Indian children [21]. An alternative hypothesis is that the higher prevalence of obesity in Alaska Native compared to non-Native children results from unmeasured differences in eating patterns and that these may overwhelm any potential benefit from breastfeeding. While we investigated some feeding practices (e.g. fried potato and beverage consumption patterns), future studies should conduct more detailed dietary analysis of early feeding practices in Alaskan families and could consider the contribution of traditional foods as well as non-traditional or modern foods.

## Domestic Violence

We also evaluated the role of exposure to domestic violence and other forms of violence on odds for obesity in early childhood. Our study found an association for a child witnessing abuse or violence in person prior to age 3 years among Alaska Native children in bivariate and multivariate analysis. Other studies have found an association between exposure to chronic intimate partner violence and risk of later childhood obesity at age 5 years [22, 23], including a study, which found that boys exposed to domestic violence before age 5 years, were twice as likely to be obese as adolescents [24]. Exposure to violence may directly impact obesity by causing depression, hopelessness, and subsequently lack of exercise or interest in overall health [25, 26]. Alternatively, this may be a marker for the type of food choices available in that house, the possible presence of fast foods and the overall level of disorder in a child's life. Future obesity interventions with Alaska Native children, in addition to focusing on diet and exercise alone, may take into consideration the psychosocial context of the family so as to potentially reduce obesity risk.

## Maternal Prenatal Obesity

Among Alaska Native and non-Native children, we found that pre-pregnancy maternal obesity was associated with significantly increased odds for obesity at age 3 years in bivariate analysis although the relationship was attenuated in multivariate and non longer reached statistical significance in Alaska Natives but maintained statistical significance in non-Native children. Previous studies have found that maternal obesity is a significant risk factor for obesity in young children [27, 28]. Our study may have been underpowered to assess any difference based on maternal BMI pre-pregnancy category in Alaska Natives. Addressing maternal obesity prior to pregnancy and even during pregnancy can have inter-generational benefits in terms of reducing overall odds of obesity.

## Sugar Sweetened Beverages, Food Consumption Patterns and Obesity

In bivariate analysis, increased consumption of 100% fruit juice was associated with obesity at age 3 in Alaska non-Natives but protective against obesity in Alaska Natives with similar results in multivariate analysis for Alaskan Native children. It is not clear why 100% fruit juice consumption was protective against obesity in Alaska Native children, although there may have been unmeasured confounding factors or interaction with region of residence that explain this relationship. We did find that increased 100% fruit juice consumption was associated with higher reported intake of fruits and vegetables in Alaska Native children but not non-Natives. It is possible that in this population the consumption of fruit juice may be a marker for reduced caloric intake of energy dense, low nutrient value foods. Increased consumption of fruits and

vegetables is associated with reduced risk for obesity in adults, through potentially healthy overall lifestyles [29].

Our findings in Alaska non-Natives are consistent with previous studies that have found increased odds of childhood obesity with higher liquid calorie intake, including 100% fruit juice [30, 11]. On further investigation of the contribution of all energy-dense beverages (including 100% fruit juice), we found a higher frequency of consumption of all beverages in the Northern/Southwest region of the state where obesity prevalence was highest in Alaska Natives, which doesn't correspond with our finding of a protective association between 100% fruit juice and obesity risk at age 3. Increased energy dense beverage consumption occurred among both obese and non-obese Alaska Native children from this region.

Previous studies suggest that all children [30], including those among indigenous populations [31] should avoid excessive consumption of energy dense, low nutrient value beverages and foods replace these with water and other healthier options. Consumption of water has been found to increase the resting energy expenditure in overweight and obese children [32]. Unfortunately, the Northern/Southwest region has a large number of villages that lack piped water to households [33, 34], and many residents rely on community wells or relatively expensive bottled water.

### Low income

We found a significance increase in risk for obesity among non-Native Alaska children based on low-income status in the 12 months prior to birth. Previous studies in high risk populations have found an association between low household income and increased risk for childhood obesity [35, 36] and studies have warned that interventions that simply counsel individuals on which food types or physical activity regimens are appropriate will not be sustainable in communities that do not have access to these types of foods/beverages or opportunities for physical activity due to poverty [37]. The role of income and family livelihood likely permeates many risk factors for obesity including types of foods and beverages consumed. It is possible we did not find any independent association in Alaska Native children for income status after adjusting for other factors including WIC participation and location of residence, because the distribution of income is narrower in Alaska Native families with most families having a low income at birth (mean for Alaska Natives  $\$22,993.90 \pm 814.35$  versus  $\$35,657 \pm 762.65$  for non-Natives) and at 3 years of age (mean for Alaska Natives  $\$30,207.72 \pm 1237.16$  versus  $\$49,72.34 \pm 1145.80$  for non-Natives).

### Limitations

Limitations of our study include recall bias (questions were asked retrospectively, both in the postnatal period for PRAMS and for CUBS) as well as self-report and mode bias—some mothers may report certain behaviors more or less willingly than other mothers based on their experiences or they may be more or less willing to disclose certain behaviors during a mail survey [38, 39]. Our outcome of childhood obesity was based on self-reported measurements by the mother and previous studies have found some misclassification of child weight category based on parental report, with under estimates of child heights resulting in upward bias in obesity prevalence estimates [40, 41]. Some factors that we examined had missing values, including 16.5% of respondents missing information on the outcome of childhood BMI and 10.5% missing information on paternal education. When we compared percentages of socio-demographics between those who were missing BMI measurements and those that were not there were no differences in paternal education or child sex, but those who were missing BMI measurements were more likely to have less maternal education, live in rural areas and the Northern/

Southwest part of the state and be Alaska Native. There may have been systematic error introduced to our models due to missing information for non-respondents to both surveys (although the analysis weights did attempt to incorporate non-response), and individual question non-response. The number of respondents to both surveys was small, limiting the statistical power of our study to identify significant associations. As both surveys are on-going, further analysis using additional years of data could help to address some of these limitations.

Our sample size to compare differences in risk factors between non-Native and Alaska Native was also small so may not have had sufficient power to detect differences in many cases. Also, as we preformed many statistical tests and many of these statistical associations would be diminished or disappear after multiple comparison adjustment, some associations may have been found by chance and should be replicated in larger studies. As this was a hypothesis generating study with a limited sample size, we chose not to do multiple comparison testing [16], but follow-up studies with larger sample sizes conducted in Alaska that test a high number of predictors should use multiple comparison testing.

## Supporting Information

**S1 Appendix. Additional Methodological Details on PRAMS and CUBS Variables.**  
(DOC)

**S1 Fig. Regions of Alaska.**  
(DOCX)

## Author Contributions

Conceived and designed the experiments: JMW MBY KAPH PDS BDG. Analyzed the data: JMW MBY KAPH. Wrote the paper: JMW MBY KAPH PDS BDG.

## References

1. Ogden CL, Carroll MD, Kit BK, Flegal KM. Prevalence of Obesity and Trends in Body Mass Index Among US Children and Adolescents, 1999–2010. *JAMA* 2012; 307(5): 483–490. doi: [10.1001/jama.2012.40](https://doi.org/10.1001/jama.2012.40) PMID: [22253364](https://pubmed.ncbi.nlm.nih.gov/22253364/)
2. Anderson SE, Whitaker RC. Prevalence of obesity among US preschool children in different racial and ethnic groups. *Arch Pediatr Adolesc Med* 2009 April; 163(3): 344–8.
3. Fenaughty AM, Fink K, Peck D, Utermohle CJ. Childhood Obesity in Alaska. Alaska Department of Health and Social Services, Division of Public Health, Section of Chronic Disease Prevention and Health Promotion. March 2009. Available: [http://dhss.alaska.gov/dph/Chronic/Documents/Obesity/pubs/Childhood\\_Obesity.pdf](http://dhss.alaska.gov/dph/Chronic/Documents/Obesity/pubs/Childhood_Obesity.pdf). Accessed: 2015 Feb 5.
4. Boles M, Fenaughty AM, Fink KJ, Utermohle CJ. Prevalence of Overweight and Obesity among students in the Kenai Peninsula Borough School District, 2011–2012. Alaska Department of Health and Social Services, Division of Public Health, Section of Chronic Disease Prevention and Health Promotion, Chronicles, Volume 4, Issue 3, November 2012. Available: <http://dhss.alaska.gov/dph/Chronic/Pages/Publications/assets/ChroniclesV4-3.pdf>. Accessed: 2014 Feb 4.
5. Centers for Disease Control and Prevention. Morbidity and Mortality Weekly Report (MMWR) (2013): Obesity in K-7 Students, Anchorage, Alaska 2003–4 to 2010–11 School Years. May 31, 2013 / 62-(21);426–430. Available: <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6221a4.htm>. Accessed: 2015 Feb 5.
6. Wojcicki JM, Heyman MB. Let's Move—Childhood Obesity Prevention from Pregnancy and Infancy Onward. *New England Journal of Medicine* 2010 April 22; 362(16): 1457–1459. doi: [10.1056/NEJMp1001857](https://doi.org/10.1056/NEJMp1001857) PMID: [20393165](https://pubmed.ncbi.nlm.nih.gov/20393165/)
7. Oken E, Levitan EB, Gillman MW. Maternal smoking during pregnancy and child overweight: systematic review and meta-analysis. *International Journal of Obesity* 2008b; 32: 201–210. doi: [10.1038/sj.ijo.0803760](https://doi.org/10.1038/sj.ijo.0803760) PMID: [18278059](https://pubmed.ncbi.nlm.nih.gov/18278059/)
8. Ludwig DS, Currie J. The association between pregnancy weight gain and birthweight: a within-family comparison. *The Lancet* 2010; 984–990.

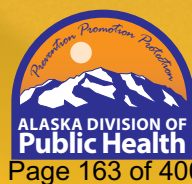
9. Oken E, Rifas-Shiman SL, Field AE, Frazier AL, Gillman MW. Maternal gestational weight gain and offspring weight in adolescence. *Obstetrics and Gynecology* 2008a; 112(5): 999–1006.
10. Surkan PJ, Kawachi I, Peterson KE. Childhood overweight and maternal depressive symptoms. *Journal of Epidemiology and Community Health* 2008; 62: e11 PMID: [18431837](#)
11. Wojcicki JM, Heyman MB. Reducing childhood obesity by eliminating 100% fruit juice. *American Journal of Public Health* 2012 Sep; 102(9): 1630–3. doi: [10.2105/AJPH.2012.300719](#) PMID: [22813423](#)
12. Alaska Department of Health and Social Services, Obesity Prevention and Control Program, October 2013. Alaska Obesity Facts: Sugary Drinks. Available: [dhss.alaska.gov/dph/Chronic/Pages/Obesity/default.aspx](#). Accessed: 2015 Feb 4.
13. Beck LF, Morrow B, Lipscomb LE, Johnson CH, Gaffield ME, Rogers M, et al. Prevalence of Selected Maternal Behaviors and Experiences, Pregnancy Risk Assessment Monitoring System (PRAMS), 1999. *MMWR*; April 26, 2001/ 51(SS02); 1–26.
14. Shulman HB, Gilbert BC, Lansky A. The Pregnancy Risk Assessment Monitoring System (PRAMS): current methods and evaluation of 2001 response rates. *Public Health Rep* 2006; 121(1): 74–83. PMID: [16416701](#)
15. Young MB, Perham-Hester KA, Kemberling MM. Alaska Maternal and Child Health Data Book 2011: Alaska Native Edition. Anchorage, AK: A collaboration of the Alaska Department of Health and Social Services, Division of Public Health, and the Alaska Native Tribal Health Consortium, Alaska Native Epidemiology Center. October 2011. Available: [http://www.anthctoday.org/epicenter/publications/prams/pramsFullVersion.pdf](#). Accessed: 2015 Feb 4.
16. Feise RJ. Do multiple outcome measures require p-value adjustments? *BMC Med Res Methodol* 2002; 2:8. PMID: [12069695](#)
17. Eberling S. Results of the 2010/2011 Survey of Alaska Kindergarten Children, A Report Prepared for the Alaska Oral Health Program, July 2011. Available: [http://dhss.alaska.gov/dph/wcfh/Documents/oralhealth/docs/OH\\_Survey\\_Kindergarten\\_2010-11.pdf](#). Accessed: 2015 Feb 4.
18. Irigoyen M, Glassman ME, Chen S, Findley SE. Early Onset of Overweight and Obesity among Low-Income 1 to 5-Year Olds in New York City. *Journal of Urban Health* July 2008; 85(4): 545–554. doi: [10.1007/s11524-008-9285-8](#) PMID: [18470622](#)
19. Kitsantas P, Gaffney KF. Risk profiles for overweight/obesity among preschoolers. *Early Hum Dev* 2010 Sep; 86(9): 563–8. Epub 2010 Aug 15 doi: [10.1016/j.earlhumdev.2010.07.006](#) PMID: [20716472](#)
20. Grummer-Strawn LM, Mei Z, Centers for Disease Control and Prevention Pediatric Nutrition Surveillance System. Does breastfeeding protect against pediatric overweight? Analysis of longitudinal data from the Centers for Disease Control and Prevention Pediatric Nutrition Surveillance System. *Pediatrics* 2004 Feb; 113(2): e81–6 PMID: [14754976](#)
21. Lindberg SM, Adams AK, Prince RJ. Early Predictors of Obesity and Cardiovascular Risk Among American Indian Children. *Matern Child Health J* 2012 Dec; 16(9): 1879–86. doi: [10.1007/s10995-012-1024-9](#) PMID: [22527771](#)
22. Boynton-Jarrett R, Fagnoli J, Suglia SF, Zuckerman B, Wright RJ. Association between maternal intimate partner violence and incident obesity in preschool-aged children: results from the Fragile Families and Child Well-being Study. *Arch Pediatr Adolesc Med* 2010 Jun; 164(6): 540–6. doi: [10.1001/archpediatrics.2010.94](#) PMID: [20530304](#)
23. Suglia SF, Duarte CS, Chambers EC, Boynton-Jarrett R. Cumulative Social Risk and Obesity in Early Childhood. *Pediatrics* 2012 May; 129(5): e1173–9. doi: [10.1542/peds.2011-2456](#) PMID: [22508921](#)
24. Jun HJ, Corliss HL, Boynton-Jarrett R, Spiegelman D, Auston SB, Wright RJ. Growing up in a domestic violence environment: relationship with developmental trajectories of body mass index during adolescence into young adults. *J Epidemiol Community Health* 2012; 66: 629–635. doi: [10.1136/jech.2010.110932](#) PMID: [21296904](#)
25. Schiff M, Plotnikova M, Dingle K, Williams GM, Najman J, Clavarino A. Does adolescent's exposure to parental intimate partner conflict and violence predict psychological distress and substance use in young adulthood? A longitudinal study. *Child Abuse Negl* 2014 July 28.
26. McFarlane JM, Groff JY, O'Brien JA, Watson K. Behaviors of children who are exposed and not exposed to intimate partner violence: An analysis of 330 black, white and Hispanic children. *Pediatrics* 2003 Sep; 112(3 Pt 1): e202–7. PMID: [12949313](#)
27. Flores G, Lin H. Factors predicting severe childhood obesity in kindergarteners. *International Journal of Obesity (Lond)* 2013 Jan; 37(1): 31–9. Epub 2012 Nov 13 doi: [10.1038/ijo.2012.168](#) PMID: [23147114](#)
28. Ehrenthal DB, Maiden K, Rao A, West DW, Gidding SS, Bartoshesky L, et al. Independent relation of maternal prenatal factors to early childhood obesity in the offspring. *Obstet Gynecol* 2013 Jan; 121(1): 115–121. doi: [http://10.1097/AOG.0b013e318278f56a](#) PMID: [23262935](#)

29. Heo M, Kim RS, Wylie-Rosset J, Allison DB, Heymsfield SB, Faith MS. Inverse association between fruit and vegetable intake and BMI even after controlling for socioeconomic and lifestyle variables. *Obes Facts* 2011; 4(6): 449–55. doi: [10.1159/000335279](https://doi.org/10.1159/000335279) PMID: [22248995](https://pubmed.ncbi.nlm.nih.gov/22248995/)
30. Dennison BA, Rockwell HL, Baker SL. Excess fruit juice Consumption by Preschool-aged Children is Associated with Short Stature and Obesity. *Pediatrics* 99(1): January 1997.
31. LaRowe TL, Adama AK, Jobe JB, Cronin KA, Vannatter SM, Prince RJ. Dietary Intake and Physical Activity Among Preschool-Aged Children Living in Rural American Indian Communities Before a Family-Based Healthy Lifestyle Intervention. *J AM Diet Assoc* 2010 Jul; 110(7): 1059–57.
32. Dubnov-Raz G, Constantini NW, Yariv H, Nice S and Shapira N. Influence of water drinking on resting energy expenditure in overweight children. *International Journal of Obesity* 2011 35, 1295–1300. doi: [10.1038/ijo.2011.130](https://doi.org/10.1038/ijo.2011.130) PMID: [21750519](https://pubmed.ncbi.nlm.nih.gov/21750519/)
33. Hennessy TW, Ritter T, Holman RC, Bruden DK, Yorita KL, Bulkow L, et al. The relationship between in-home water service and the risk of respiratory track, skin and gastrointestinal tract infections among rural Alaska natives. *Am J Public Health* 2008 Nov; 98(11): 2072–8. doi: [10.2105/AJPH.2007.115618](https://doi.org/10.2105/AJPH.2007.115618) PMID: [18382002](https://pubmed.ncbi.nlm.nih.gov/18382002/)
34. Gessner BD. Lack of piped water and sewage services is associated with pediatric lower respiratory track infection in Alaska. *J Pediatr* 2008 May; 152(5): 666–70. doi: [10.1016/j.jpeds.2007.10.049](https://doi.org/10.1016/j.jpeds.2007.10.049) PMID: [18410771](https://pubmed.ncbi.nlm.nih.gov/18410771/)
35. Li Y, Robinson LE, Carter WM, Gupta R. Childhood obesity and community food environments in Alabama's Black Belt Region. *Child Care Health Dev* 2014 Oct 16.
36. Demment MM, Haas JD, Olson CM. Changes in family income status and the development of obesity from 2 to 15 years: a longitudinal study. *BMC Public Health* 2014 May 1; 14: 417. doi: [10.1186/1471-2458-14-417](https://doi.org/10.1186/1471-2458-14-417) PMID: [24886200](https://pubmed.ncbi.nlm.nih.gov/24886200/)
37. Halpern P. Obesity and American Indian/Alaska Native. US Department of Health and Human Services, Washington DC, April, 2007.
38. Choi BCK, Pak AWP. A Catalog of Biases in Questionnaires. *Preventing Chronic Disease* 2005; 2(1): 1–13.
39. Cook C. Mode of administration bias. *The Journal of Manual and Manipulative Therapy* June 2010; 18(2); 61–3. doi: [10.1179/106698110X12640740712617](https://doi.org/10.1179/106698110X12640740712617) PMID: [21655386](https://pubmed.ncbi.nlm.nih.gov/21655386/)
40. Skinner AC, Miles D, Perrin EM, Coyne-Beasley T, Ford C. Source of Parental Reports of Child Height and Weight During Phone Interviews and Influence on Obesity Prevalence Estimates Among Children Aged 3–17. *Public Health Reports* 2013 Jan-Feb; 128(1). PMID: [23277662](https://pubmed.ncbi.nlm.nih.gov/23277662/)
41. Weden MM, Brownell PB, Rendall MS, Lau C, Fernandes M, Nazarov V. Parent-reported height and weight as sources of bias in survey estimates of childhood obesity. *Am J Epidemiol* 2013 Aug 1; 178(3): 461–73. doi: [10.1093/aje/kws477](https://doi.org/10.1093/aje/kws477) PMID: [23785115](https://pubmed.ncbi.nlm.nih.gov/23785115/)

ALASKA

# Physical Activity, Nutrition and Obesity Facts Report

## 2020 UPDATE



Alaska Physical Activity, Nutrition and Obesity Facts Report  
Published November 2020

Michael J Dunleavy, Governor

Adam Crum, MSPH, Commissioner, Department of Health and Social Services

Anne Zink, MD, Chief Medical Officer, Department of Health and Social Services

Heidi Hedberg, Director, Division of Public Health

Karol Fink, MS RDN, Section Chief, Chronic Disease Prevention & Health Promotion

**Suggested Citation:**

Alaska Department of Health and Social Services. Alaska Physical Activity, Nutrition and Obesity Facts Report – 2020. Anchorage, Alaska: Section of Chronic Disease Prevention and Health Promotion, Division of Public Health. November 2020.

**Copyright Information:**

All material in this document is in the public domain and may be reproduced or copied without permission; citation as to source, however, is appreciated.

## Dear Alaskans,

When we started putting the information together for this physical activity, nutrition and obesity data report late in 2019, we were focusing on identifying behaviors to reduce the chances of getting chronic conditions such as type 2 diabetes, heart disease and many types of cancer. We were developing a routine public health report when a once in a lifetime pandemic struck and delayed our report.

The response to the pandemic has stretched our team in many ways. We have worked long hours, taken on new and challenging assignments, changed our service delivery, expanded our public education efforts, improved our community outreach and come up with creative solutions to continue protecting the health of Alaskans.

Our staff and partners have not stopped working on physical activity and nutrition despite the focus of public health and the media on the pandemic. Never had we identified our health promotion efforts as important to infectious diseases – but it is clear - healthy people get less ill from COVID-19. Our team saw the connection and immediately focused on minimizing the negative impact of the pandemic on physical activity and nutrition.

Since physical activity can improve mental health and help prevent the diseases that increase the chances of severe illness from COVID-19, we increased our physical activity public education efforts. We launched TV public service announcements, a social media campaign and a series of articles to inform families. We also helped childcare centers, sports teams and PE teachers develop COVID-19 mitigation plans to promote safe physical activity.

The reason I love data and reports like this, is that these numbers paint a picture of our community. It shows me who is missing out on the opportunities to be physically active, who does not have access to healthy affordable foods and who is not growing up or living at a healthy weight. The picture displays the need, helps us imagine the solutions and gives us the reasons to invest in a healthier Alaska. As we monitor the results years after year, we slowly touch up the canvas one section at a time to create a healthier Alaska.

While the COVID-19 pandemic has changed many things about the world we live in and the way we do our work, it has not changed the importance of the fact that every Alaskan deserves access to affordable healthy food and safe physical activity opportunities. We will continue to go forth and do good work and this report will help guide our actions. We hope it guides and inspires your actions too.

Sincerely,



Karol Fink, MS RDN  
Chronic Disease Prevention and Health Promotion  
Section Chief

## Acknowledgements

The Alaska Physical Activity, Nutrition and Obesity Facts Report was produced for the Physical Activity and Nutrition unit, Section of Chronic Disease Prevention and Health Promotion, Division of Public Health, Alaska Department of Health and Social Services in part by Program Design and Evaluation Services, Multnomah County Health Department and Oregon Public Health Division.

Major contributors to the development of this report include:

Program Design and Evaluation Services:

- Kathy Pickle, MPH
- Myde Boles, PhD

Physical Activity and Nutrition unit

- Karol Fink, MS, RDN, Manager
- Lauren Kelsey, MPH, Physical Activity & Nutrition Specialist
- Diane Peck, MPH, RDN, Early Care and Education Specialist

We would like to acknowledge the following individuals and organizations for their contributions to this report:

### **Alaska Department of Health and Social Services**

Division of Public Health

Section of Chronic Disease Prevention and Health Promotion

Andrea Fenaughty, PhD, Deputy Section Chief

Tazlina Mannix, MPH, Alaska Youth Risk Behavior Survey Data Manager

Jodi Barnett, MA, Alaska BRFSS Coordinator

Section of Women's Children's and Family Health

Kathy Perham-Hester, MS, MPH, PRAMS Coordinator

Margaret B. Young, MPH, CUBS Coordinator

# Contents

|                                                           |    |
|-----------------------------------------------------------|----|
| Dear Alaskan's letter.....                                | i  |
| Acknowledgements .....                                    | ii |
| Table of Figures.....                                     | iv |
| I. Introduction.....                                      | 1  |
| Report Highlights .....                                   | 2  |
| II. Key Definitions .....                                 | 3  |
| A. Classifying Weight Status.....                         | 3  |
| B. Race and Ethnicity.....                                | 4  |
| C. Socio-economic Status.....                             | 4  |
| III. Adults.....                                          | 6  |
| A. Adult Weight Status.....                               | 6  |
| B. Adult Physical Activity .....                          | 11 |
| C. Adult Nutrition .....                                  | 16 |
| IV. Children and Adolescents .....                        | 21 |
| A. Weight Status of Children and Adolescents.....         | 21 |
| B. Physical Activity among Children and Adolescents ..... | 26 |
| C. Nutrition among Children and Adolescents .....         | 32 |
| V. Breastfeeding.....                                     | 40 |
| A. Initiation and Duration of Any Breastfeeding.....      | 40 |
| B. Duration and Exclusivity .....                         | 41 |
| VI. Strategies and Interventions to Reduce Obesity .....  | 43 |
| A. School-Based Nutrition Strategies.....                 | 43 |
| VII. Data Sources .....                                   | 48 |
| Behavioral Risk Factor Surveillance System (BRFSS).....   | 48 |
| Childhood Understanding Behaviors Survey (CUBS).....      | 52 |
| Pregnancy Risk Assessment Monitoring System (PRAMS).....  | 52 |
| School Health Profiles .....                              | 52 |
| Student Weight Status Surveillance System (SWSSS).....    | 53 |
| Youth Risk Behavior Survey (YRBS) .....                   | 53 |
| Women, Infants and Children (WIC) Nutrition Program.....  | 55 |

## Table of Figures

|                                                                                                                                                               |    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| Figure 1: Trend in prevalence of healthy weight, by sex, Alaska adults, 1991-2018.....                                                                        | 6  |
| Figure 2: Overview of weight status changes, Alaska adults, 1991-2018.....                                                                                    | 7  |
| Figure 3: Trend in prevalence of overweight and obesity, by sex, Alaska adults, 1991-2018.....                                                                | 8  |
| Figure 4: Trend in prevalence of overweight and obesity, by race, Alaska adults, 1991-2018.....                                                               | 9  |
| Figure 5: Overweight/obesity among Alaska adults, by demographic groups, 2018.....                                                                            | 10 |
| Figure 6: Percentage of Alaska adults meeting physical activity recommendations, 2017 .....                                                                   | 11 |
| Figure 7: Percentage of Alaska adults meeting aerobic activity recommendations, by demographic groups, 2017.....                                              | 12 |
| Figure 8: Percentage of Alaska adults meeting muscle strengthening activity recommendations, by demographic groups, 2017 .....                                | 13 |
| Figure 9: Number of hours of recreational screen time* per day, Alaska adults, 2017 .....                                                                     | 14 |
| Figure 10: Percentage of Alaska adults who spend $\geq 2$ hours daily on recreational screen time, by demographic groups, 2017 .....                          | 15 |
| Figure 11: Percentage of Alaska adults meeting recommendations for fruit and vegetable consumption, 2017.....                                                 | 16 |
| Figure 12: Percentage of Alaska adults who meet recommendations for fruit consumption, by demographic groups, 2017.....                                       | 17 |
| Figure 13: Percentage of Alaska adults who meet recommendations for vegetable consumption, by demographic groups, 2017 .....                                  | 18 |
| Figure 14: Average number of sugary drinks (cans/glasses) consumed per day, Alaska adults, 2017 .....                                                         | 19 |
| Figure 15: Percentage of Alaska adults who drink 1 or more sugary drinks daily, by demographic groups, 2017 .....                                             | 20 |
| Figure 16: Overview of weight status changes among Alaska high school students, 2003, 2011 and 2019.....                                                      | 21 |
| Figure 17: Overweight/obesity prevalence among Alaska high school students, by demographic groups, 2019 .....                                                 | 22 |
| Figure 18: Trend in percent of students in kindergarten through 8 <sup>th</sup> grade who are at Healthy Weight, by school years 2011-12 through 2018-19..... | 23 |

|                                                                                                                                                        |    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| Figure 19. Trend in overweight/obesity prevalence among Alaska 3-year-olds, by mother's age at birth of child, 2012-2018.....                          | 24 |
| Figure 20. Overweight/obesity prevalence among Alaska 3-year-olds, by maternal demographic groups, 2018 .....                                          | 25 |
| Figure 21: Percentage of Alaska high school students meeting selected physical activity recommendations, 2019 .....                                    | 26 |
| Figure 22: Percentage of Alaska high school students participating in daily physical activity for 60 or more minutes, by demographic groups, 2019..... | 27 |
| Figure 23: Percentage of Alaska high school students participating in muscle strengthening activity 3+ days per week, by demographic groups, 2019..... | 28 |
| Figure 24: Percentage of Alaska high school students by non-academic screen time spent per day, 2019.....                                              | 29 |
| Figure 25: Percentage of Alaska high school students who spend $\geq 3$ hours daily on non-academic screen time, by demographic groups, 2019.....      | 30 |
| Figure 26: Daily time spent in front of a screen, 3-year-olds, Alaska, 2016-2018.....                                                                  | 31 |
| Figure 27: Percentage of Alaska high school students meeting guidelines for daily fruit and vegetable consumption, 2019 .....                          | 32 |
| Figure 28: Percentage of Alaska high school students who consumed 2 or more daily servings of fruit, by demographic groups, 2019.....                  | 33 |
| Figure 29: Percentage of Alaska high school students who consumed 3 or more daily servings of vegetables, by demographic groups, 2019 .....            | 34 |
| Figure 30: Average number of sugary drinks (cans/glasses) consumed per day, Alaska high school students, 2019.....                                     | 35 |
| Figure 31: Percentage of Alaska high school students who drank 1 or more sugary drinks daily, by demographic groups, 2019 .....                        | 36 |
| Figure 32: Trend in percentage of 3-year-olds with daily healthier beverage consumption, Alaska, 2008 to 2018 .....                                    | 37 |
| Figure 33: Average number of selected drinks servings consumed per day by Alaska 3-year-olds, 2016-2018 .....                                          | 38 |
| Figure 34: Percentage of Alaska 3-year-olds who drank any sugary drinks daily, by maternal demographic groups, 2016-2018.....                          | 39 |
| Figure 35. Trend in breastfeeding initiation and duration, Alaska, 1991-2018.....                                                                      | 40 |
| Figure 36. Percent of mothers reporting breastfeeding duration and exclusivity, Alaska, 2018.....                                                      | 41 |

Figure 37. Exclusive breastfeeding at 8 weeks by maternal demographic groups, Alaska, 201842

Figure 38: Trend in percentage of schools in which students can purchase chocolate, candy and salty snacks, Alaska secondary schools, 2002-2018.....43

Figure 39: Trend in percentage of schools in which students can purchase selected beverages, Alaska secondary schools, 2006-2018.....44

Figure 40: Percentage of schools adopting selected nutrition policies, Alaska secondary schools, 2018.....45

Figure 41: Percentage of schools reporting selected physical activity opportunities, Alaska secondary schools, 2018.....46

Figure 42: Percentage of schools reporting selected school wellness policy activities, Alaska secondary schools, 2018.....47

# I. Introduction

Alaskans can prevent many diseases and early deaths if they are physically active, eat a healthy diet and maintain a healthy weight throughout their life. About 1 out of 3 Alaska children is overweight or obese, as are 2 out of 3 adults.

Many Alaskans drink too many sugary drinks, eat too few fruits and vegetables, and are not meeting physical activity recommendations. These behaviors and having an unhealthy weight increase their chances of getting serious health conditions, like type 2 diabetes, high blood pressure, high cholesterol and several types of cancer.

Overweight and obesity affect individuals of all ages, from all areas of the state, of all racial and ethnic backgrounds, and with all levels of education and income. Both conditions increase the risk of a number of health problems, including chronic diseases, which can lead to reduced quality of life and premature death.<sup>1</sup>

No single strategy alone will increase physical activity, improve nutrition nor reduce obesity and its associated health consequences. Meaningful improvements in population-level physical activity and nutrition and a reduction of obesity prevalence will only occur when a set of sustained, comprehensive prevention strategies are implemented by child care centers, schools, worksites, within the community, the health care sector, private industry, NGOs, governmental agencies, and individual families. These strategies will need to address policy issues; alter where we live, work, play and eat; modify the systems to make the healthy choice the easy choice; and increase the knowledge and change the behaviors of families, children and adults.<sup>1,2</sup>

In an effort to support health improvement efforts statewide, we have created this report as a way of succinctly communicating the most commonly requested information regarding physical activity, nutrition and weight status in Alaska. Data also include information on behavior, attitudes and strategies that could support healthy living and help prevent obesity.

Healthy Alaskans 2030 is the State of Alaska health improvement plan aligning tribal and other public health partners around 30 health priorities and promoting improvement of health status and systems. Healthy Alaskans 2030 targets are included in this report for reference when they relate to physical activity, nutrition and weight status.

Those interested in more information are encouraged to access the Physical Activity and Nutrition Publications and Materials webpage <http://dhss.alaska.gov/dph/Chronic/Pages/Obesity/resources.aspx>, which houses additional data reports, fact sheets, contacts, and other resources.

---

<sup>1</sup> U.S. Department of Health and Human Services. The Surgeon General's call to action to prevent and decrease overweight and obesity. [Rockville, MD]: U.S. Department of Health and Human Services, Public Health Service, Office of the Surgeon General; [2001]. Available from: U.S. GPO, Washington. Accessed at <https://www.ncbi.nlm.nih.gov/books/NBK44206/>, June 2017.

<sup>2</sup> U.S. Department of Health and Human Services. The Surgeon General's Vision for a Healthy and Fit Nation. Rockville, MD: U.S. Department of Health and Human Services, Office of the Surgeon General, January 2010. Accessed at <https://www.ncbi.nlm.nih.gov/books/NBK44660/>, June 2017.

## Report Highlights

- Among Alaska adults:
  - The prevalence of obesity has more than doubled from 13% in 1991 to 31% in 2018.
  - Only 33% of Alaska adults are at a healthy weight; 2% are underweight, 34% are overweight, and 31% are obese.
  - 78% do not get the recommended amount of physical activity.
  - 48% spend 3 or more non-work hours in front of a screen each day.
  - 88% are eating less than the recommended daily servings of fruit and vegetables
  - 23% drink 1 or more sugary drinks each day.
  - While obesity prevalence has historically been significantly higher among Alaska Native adults than White adults, in 2018 there was no difference.
  - Alaska Native adults and adults with less education are less likely than their peers to meet nutrition and physical activity recommendations for good health.
- Among Alaska high school students:
  - 68% of students are in the healthy weight range, but 30% are either overweight or obese
  - As with adults, the decrease in healthy weight is due to an increase in obesity prevalence, while overweight prevalence remained the same.
  - 82% do not get the recommended 60 minutes of daily physical activity.
  - 90% are eating less than the recommended daily servings of fruit and vegetables
  - 49% drink a sugary drink every day.
  - 57% spend 3 or more hours per day using social media, watching TV, or playing video or computer games.
  - Information about school wellness policies and other school-based support for physical activity and nutrition are included in this report.
- Among Alaska students in Kindergarten through 8<sup>th</sup> grade:
  - Among K-8 students in selected school districts, 63% are in the healthy weight range.
  - There are disparities in healthy weight; White students are more likely than Alaska Native students to be in the healthy range (69% vs. 57%).
- Among Alaska 3-year-olds:
  - 38% are either overweight or obese.
  - 73% spend an hour or more each day in front of a screen.
  - 31% drink a sugary drink every day.
  - There are disparities in consumption of sugary drinks; 3-year-olds in Northern and Southwest Alaska are more likely than those in other regions to be given any sugary drinks on a given day (70-74% vs. 14-28%).

More detailed information about Alaska's youngest children can be found in the 2019 publication "[Early Childhood Physical Activity, Nutrition and Obesity Data Facts Report](#)".

## II. Key Definitions

### A. Classifying Weight Status

For the purposes of this report, weight status for people of at least 2 years of age is indicated by body mass index, or BMI. BMI correlates with amount of body fat and can be used to estimate risk of weight-related health problems. BMI is a useful measure because the calculation requires only height and weight, is easy to analyze, and provides a good approximation of obesity and overweight prevalence across the population.<sup>3</sup>

BMI is calculated using the formula:  $BMI = \text{weight (in kg)} / [\text{height (in m)}]^2$ . Classifications of *underweight*, *healthy weight*, *overweight*, and *obese* are determined by BMI levels for adults:

#### Weight Classification for Adults

| BMI                    | Classification |
|------------------------|----------------|
| < 18.5                 | Underweight    |
| 18.5 to less than 25.0 | Healthy Weight |
| 25.0 to less than 30.0 | Overweight     |
| ≥ 30.0                 | Obese          |

Because children and adolescents are still growing, their weight status is determined by referencing calculated BMI to age- and sex-specific growth charts. Percentiles are the most commonly used indicator to assess the size and growth patterns of individual children in the United States. The percentile indicates the relative position of the child's BMI number among a standardized set of children of the same sex and age. For 2- to 20-year-olds, the resulting percentile is used to identify weight status, according to the following:

#### Weight Classification for 2- to 20-Year-Olds

| BMI for Age Percentile | Classification |
|------------------------|----------------|
| < 5th                  | Underweight    |
| 5th to less than 85th  | Healthy Weight |
| 85th to less than 95th | Overweight     |
| ≥ 95th                 | Obese          |

#### Weight Classification for under 2-Years-Old

For children under 2 years of age, this report includes the classification of high weight-for-length. High weight-for-length is defined as ≥2 standard deviations above the sex- and age-specific median in the World Health Organization (WHO) growth standards.<sup>4</sup>

---

<sup>3</sup> Additional information about BMI can be found at this site: <https://www.cdc.gov/healthyweight/assessing/index.html>

<sup>4</sup> Information on WHO growth charts can be found at this site: [https://www.cdc.gov/growthcharts/who\\_charts.htm](https://www.cdc.gov/growthcharts/who_charts.htm)

## B. Race and Ethnicity

This report describes results by race and ethnicity. In surveys included here, race and ethnicity are assessed using US Census terminology. That includes the category “American Indian/Alaska Native” (AIAN). However, this report uses the term “Alaska Native” to describe respondents characterized as AIAN because the majority of Alaska residents in this group are Alaska Native.

There are some differences in how each of the four main Alaska survey data sources used in this report define race and ethnicity, as described below. More general information about the data sources is available in Section VII.

- Youth Risk Behavior Survey (YRBS) asks separate questions about race and ethnicity. Students can answer that they identify with multiple races. Students who report being AIAN, either alone or in combination with other race groups, are characterized as being “Alaska Native”, regardless of Hispanic/Latino ethnicity. Students who report being White alone, and not Hispanic/Latino, are categorized as “White.” Students who report any other combination of race and ethnicity are categorized as “Other race.”
- Behavioral Risk Factor Surveillance System (BRFSS) asks separate questions about race and ethnicity like YRBS, although BRFSS allows people who select multiple races to additionally report their “preferred” or primary race group. In this report, race and ethnicity groups are defined similarly to YRBS. BRFSS respondents who report being AIAN alone or in combination with other race groups, regardless of their Hispanic/Latino ethnicity, are characterized as being “Alaska Native”. Those who select White race alone, and not Hispanic/Latino ethnicity, are characterized as “White”. Adults who selected any other combination of race and ethnicity are categorized as “Other race”.
- The Pregnancy Risk Assessment Monitoring System (PRAMS) and Childhood Understanding Behaviors Survey (CUBS) rely on the mother’s race as reported on the birth certificate of their infant to identify the race of the child. “Alaska Native” refers to women who identify as AIAN alone or in combination with other race groups. “White” refers to women who identify as white alone. “Other” refers to women who identify as any other race than Alaska Native (alone or in combination) or White (alone). Ethnicity is not included in the PRAMS/CUBS definition of race.

## C. Socio-economic Status

We also report results by socio-economic status (SES), based on information available from each survey.

- For the BRFSS data, “low income” individuals are those with resources less than or equal to 185% of the US Department of Health and Human Services (USDHHS) Federal Poverty Guidelines, and “higher income” individuals .<sup>5</sup> Guidelines are based on self-reported household income and number of people in the household. More detailed information about this measure is available in Section VII.

---

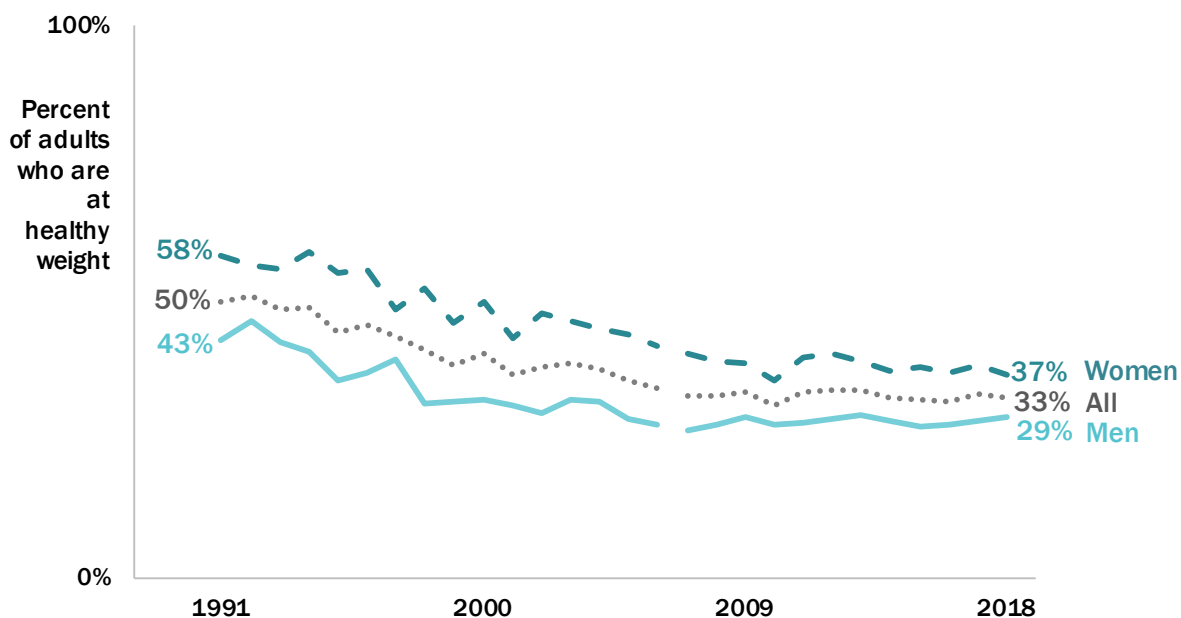
<sup>5</sup> More information about the poverty guideline can be found here: <https://aspe.hhs.gov/poverty-guidelines>

- For PRAMS and CUBS data, current child enrollment in Medicaid was used as a proxy measure for SES. “Low SES” includes children enrolled in Medicaid at the time of each survey, and “higher SES” includes children not enrolled in Medicaid.
- YRBS data are not reported by any measure of SES.

### III. Adults

#### A. Adult Weight Status

Figure 1: Trend in prevalence of healthy weight, by sex, Alaska adults, 1991-2018



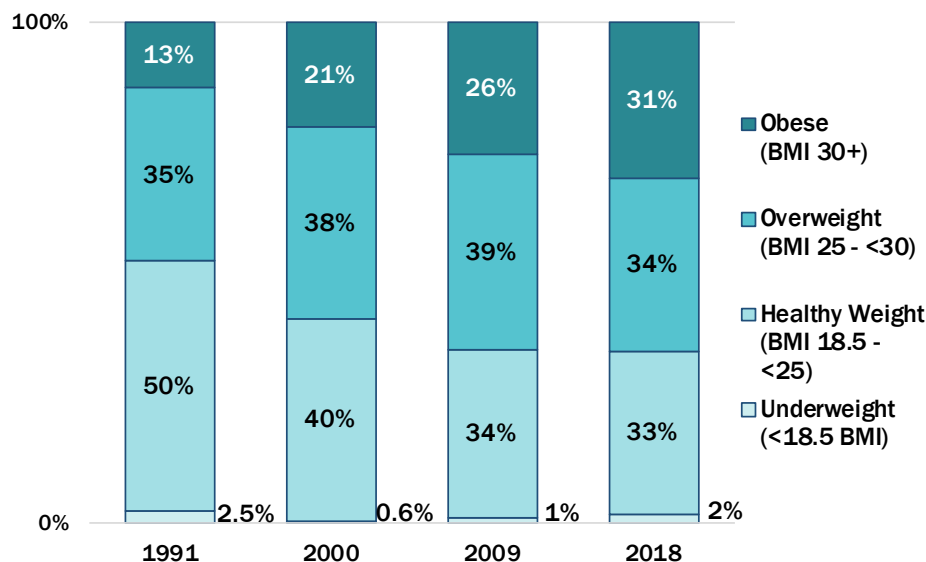
Source: AK BRFSS Combined File. Healthy weight is measured as body mass index (BMI)  $\geq 18.5$  and  $< 25.0$ . Estimates for 2007 and later use raking to adjust sample data to reflect the total adult population of Alaska. See Section VII, Data Sources for more information.

- The percentage of Alaska adults who are in the healthy weight range (BMI  $\geq 18.5$  and  $< 25.0$ ) decreased significantly from 50% in 1991 to 33% in 2018. In the past ten years (2009-2018), the trend has been flat.<sup>6</sup>
- This decrease occurred in both men and women, with consistently lower prevalence among men.
- The decrease in healthy weight occurred across age groups, race/ethnicity groups, region of residence, level of educational attainment and income status<sup>7</sup>.

<sup>6</sup> The trend remained significant after controlling for age. Although obesity and overweight are higher among older adults and the overall Alaska population has been aging since 1991, that change does not account for the decline in healthy weight prevalence.

<sup>7</sup> See Section VII, Data Sources for more information about subpopulation group definitions used in this report.

Figure 2: Overview of weight status changes, Alaska adults, 1991-2018



Source: AK BRFSS Combined File. Sum may not equal 100% due to rounding

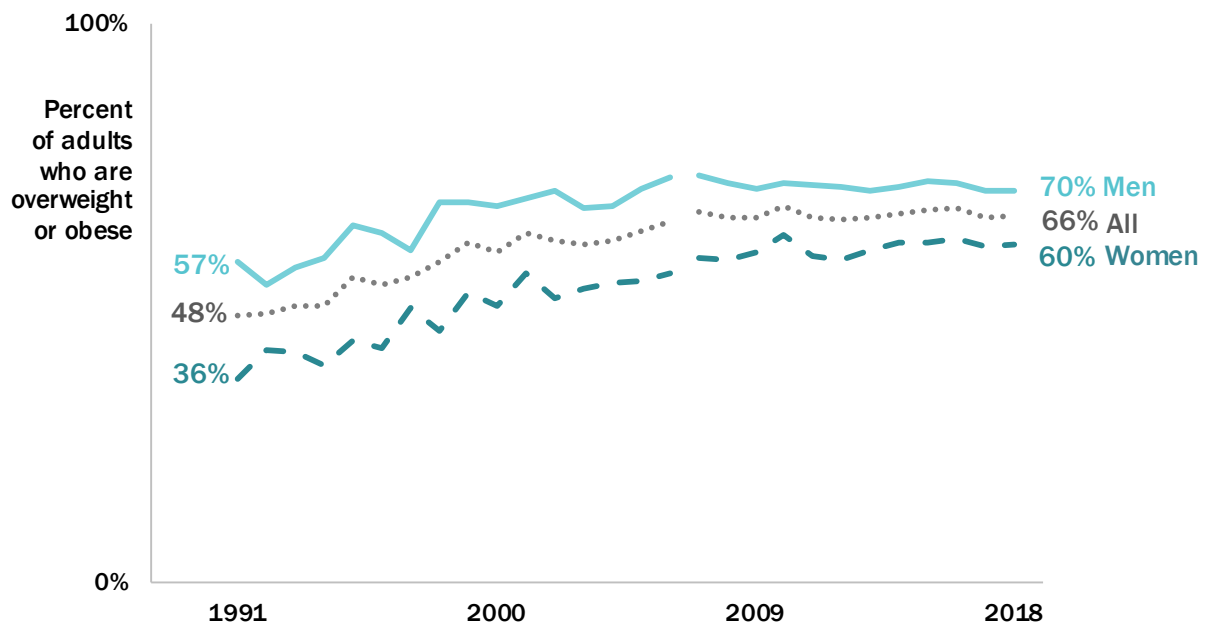
- In 2018, 2% of Alaska adults were underweight, 33% were at a healthy weight, 34% were overweight, and 31% were obese. Severe obesity (Class III, BMI  $\geq 40.0$ ) increased from 1.4% to 5.0% (data not shown).
- The decreasing trend in healthy weight is largely due to a significant increase in obesity. Adult obesity prevalence has more than doubled from 13% in 1991 to 31% in 2018, while overweight prevalence has remained relatively consistent.

### Obesity Trend Statistics

- Between 1991 and 2018, adult **obesity** prevalence increased among:
  - Men (14% to 31%)
  - Women (13% to 31%)
  - Alaska Native<sup>8</sup> adults (16% to 34%)
  - White (non-Hispanic) adults (13% to 30%)
  - All education groups (among adults age 25 and older):
    - a college degree or more education (9% to 28%)
    - some college or technical school training (12% to 33%)
    - a high school degree or less education (22% to 36%)
  - Adults from all income groups:
    - lower income households (17% in 1993 to 32%)
    - higher income households (13% in 1993 to 31%)

<sup>8</sup> Alaska Native refers to all respondents who reported being American Indian or Alaska Native alone or in combination; see Section VII, Data Sources for more information about subpopulation definitions.

**Figure 3: Trend in prevalence of overweight and obesity, by sex, Alaska adults, 1991-2018**

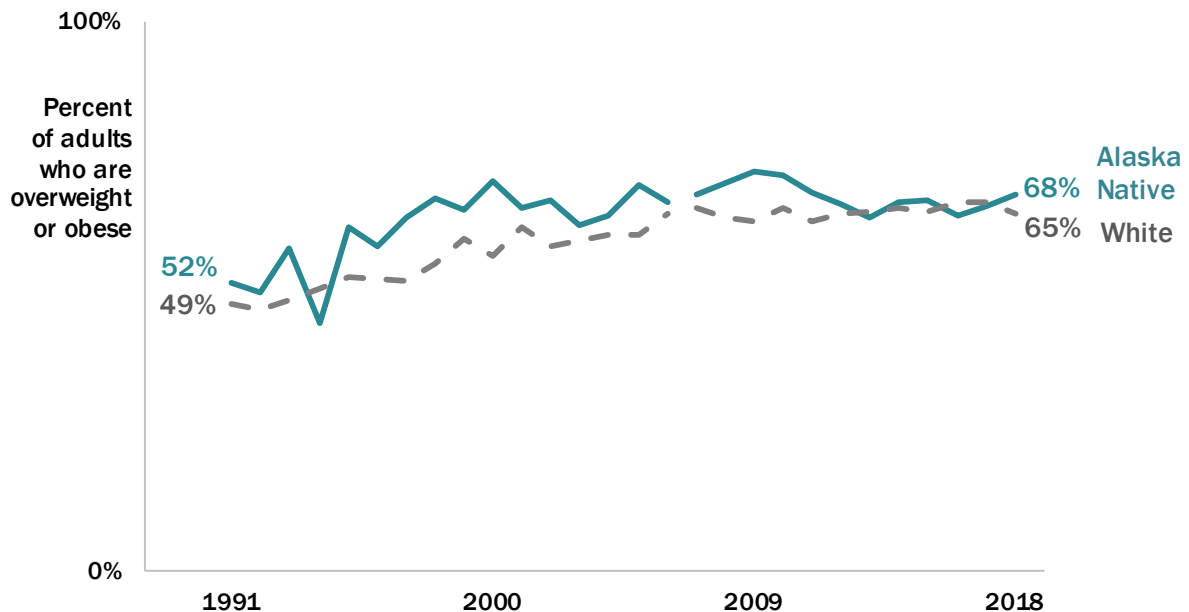


Source: AK BRFSS Combined File. Overweight/obesity is measured as  $\geq 25.0$  BMI. Estimates for 2007 and later use raking to adjust sample data to reflect the total adult population of Alaska. See Section VII, Data Sources for more information.

- The percentage of Alaska adults who are overweight or obese has increased from 48% in 1991 to 66% in 2018.<sup>9</sup> As noted on the previous page, this increase is driven by an increase in the proportion of adults who meet the definition of obesity ( $\text{BMI} \geq 30.0$ ).
- In 2018, men were significantly more likely than women to be overweight (39% versus 29%, respectively) but there were no significant differences in prevalence of obesity by sex (both 31%, data not shown).
- Overweight/obesity prevalence has increased among Alaska adults of all ages, from all areas of the state, across race groups, levels of educational attainment, and income status (data not shown).

<sup>9</sup> In 2018, prevalence for overweight/obese is 65.5%, rounding to 66%.

**Figure 4: Trend in prevalence of overweight/obesity, by race, Alaska adults, 1991-2018**



Source: AK BRFSS Combined File. Overweight/obesity is measured as  $\geq 25.0$  BMI. Results for adults of other races not shown in trend graph due to small numbers and unstable estimates in some earlier years. Estimates for 2007 and later use raking to adjust sample data to reflect total population. See Section VII, Data Sources for more information.

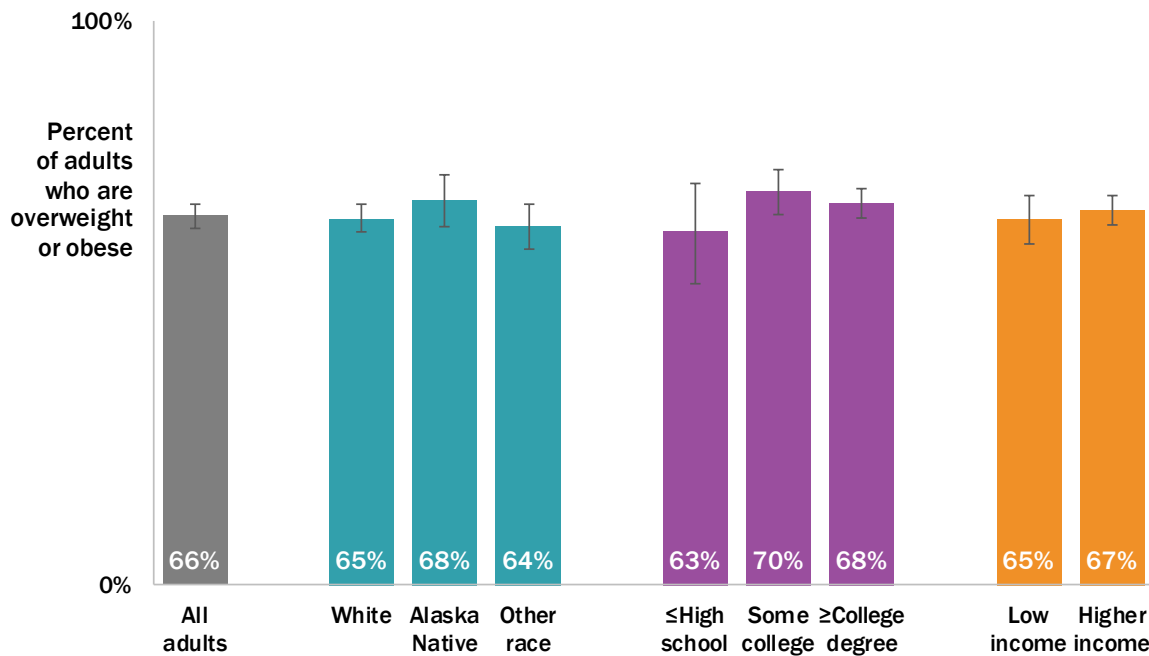
- The prevalence of overweight/obesity has increased significantly among Alaska adults in all race groups—Alaska Native adults, White adults and adults of other races combined (data not shown) since 1991, although the trend has been flat in the past 10 years. Prevalence was not significantly different for Alaska Native adults and White adults in 2018.

#### Combined years 2016-2018 for reporting other race groups (data not shown)

- Using combined year BRFSS 2016-2018 data, we can report estimates for other race/ethnicity groups.<sup>10</sup> Within the other races group, overweight/obesity prevalence was significantly higher among Hawaiian/Pacific Islander adults (86%) than all other groups, and significantly lower among Asian adults (50%) than among any other race/ethnicity groups.
- In this combined year data, overweight/obesity prevalence was not significantly different between any additional race groups, including Black adults (70%), Hispanic adults (70%), Alaska Native adults (67%), and White adults (66%, data not shown).

<sup>10</sup> Race/ethnicity categories reported in combined year data include Hispanic, Asian, African American or Black, and Hawaiian and other Pacific Islander in addition to Alaska Native and White. All races except Alaska Native are reported as non-Hispanic.

**Figure 5: Overweight/obesity among Alaska adults, by demographic groups, 2018**

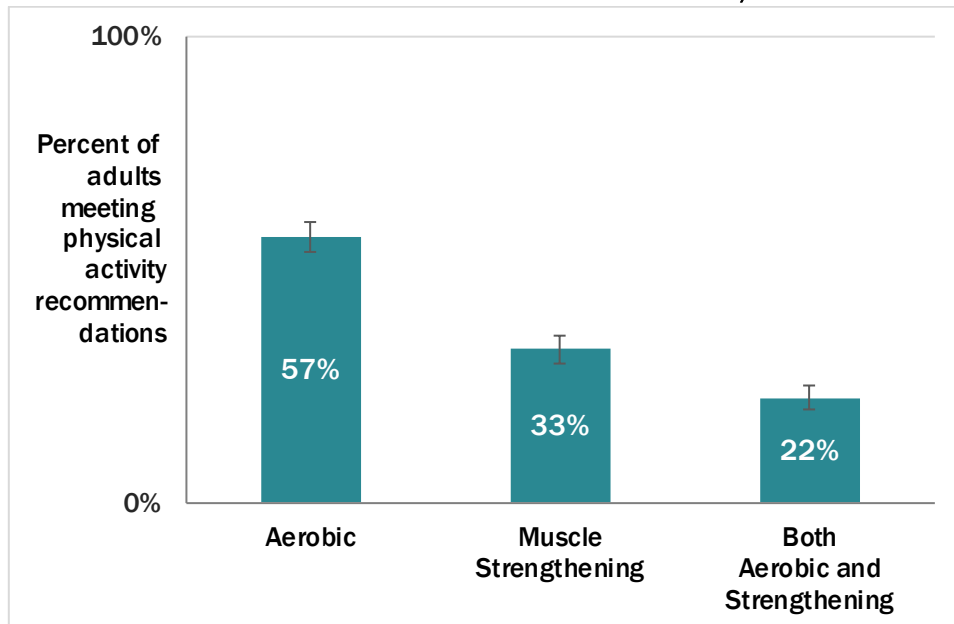


Source: AK BRFSS Combined File. Overweight/obesity is measured as  $\geq 25.0$  BMI. Education status is measured for those age 25 and older. Low income is defined as less than or equal to 185% of poverty guideline as the cut-point; see Section VII, Data Sources for more information.

- In 2018, prevalence of overweight/obesity was similar across demographic subgroups for race group (3 categories), education status, and household income status. There were no significant differences for these groups.
- However, there was a difference by sex. Men were more likely than women to be overweight/obese (70% vs. 60%, data not shown).
- There were no significant differences by demographic subgroups, including sex, in the prevalence of obesity alone ( $\text{BMI} \geq 30.0$ ). While obesity prevalence has historically been significantly higher among Alaska Native adults than White adults, in 2018 there was no difference.
- Adults in Anchorage (62%) were less likely to be overweight/obese than those in Gulf Coast (70%) or Mat-Su (70%). In other regions, the prevalence ranged from 64% to 67% (data not shown).
- While the prevalence of overweight/obesity increases with age, Alaska's younger adults are also affected. About half (56%) of adults age 18 to 29 reported overweight/obese status in 2018, compared to 68% of those age 30 to 54 and 69% of those age 55 and older (data not shown).

## B. Adult Physical Activity

Figure 6: Percentage of Alaska adults meeting physical activity recommendations, 2017



Source: AK BRFSS Standard File. See Section VII, Data Sources for more information about measuring physical activity.

For substantial health benefits, the US Department of Health and Human Services recommends that, each week, adults need at least:

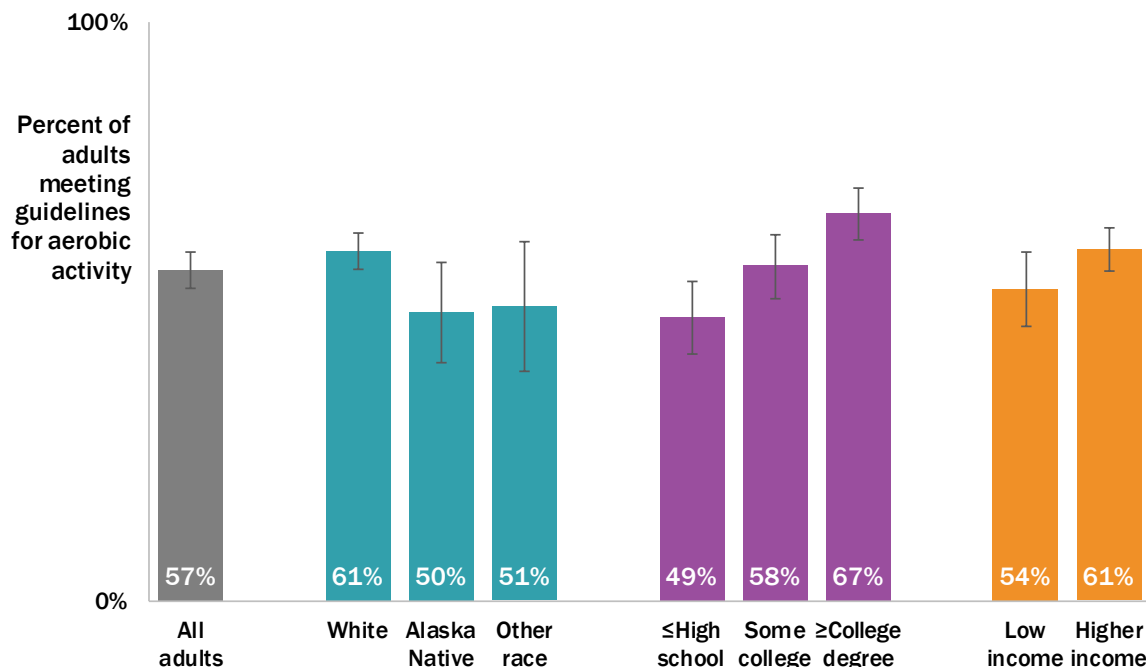
- 150 minutes of moderate-intensity aerobic activity, or 75 minutes of vigorous-intensity aerobic activity, or an equivalent combination of the two; **and**
- Muscle-strengthening activities on 2 or more days.<sup>11</sup>

- In 2017, approximately 57% Alaska adults met aerobic recommendations, 33% met the muscle strengthening recommendations, and 22% met both recommendations.
- Due to changes in questions about physical activity, analysis of the trend starts with 2011. Overall, there was no significant trend in the percentage of Alaska adults meeting physical activity recommendations since 2011. However, there was a small but significant decrease in the percentage meeting muscle strengthening recommendations among White adults (36% in 2011 to 32% in 2017), as well as a decrease in the percentage who meet both aerobic and strengthening recommendations among White adults (27% to 22%) and adults with college degree or higher education (33% to 27%).

---

<sup>11</sup> US Department of Health and Human Services, Physical Activity Guidelines for American, 2<sup>nd</sup> edition, 2018.  
<https://health.gov/our-work/physical-activity/current-guidelines>

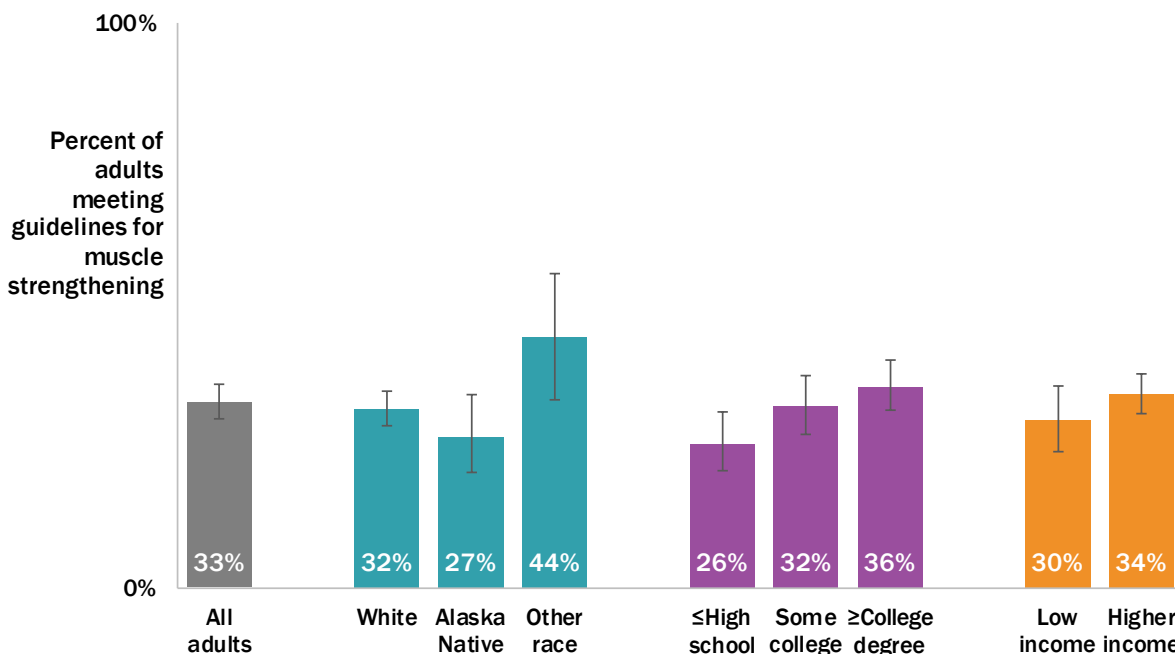
**Figure 7: Percentage of Alaska adults meeting aerobic activity recommendations, by demographic groups, 2017**



Source: AK BRFSS Standard File. See Section VII, Data Sources for more information about measuring physical activity. Education status is measured for those age 25 and older. Low income is defined as less than or equal to 185% of poverty guideline as the cut-point; see Section VII, Data Sources for more information.

- Disparities in meeting aerobic activity recommendations remained in 2017.
- Alaska Native adults (50%) and adults of other races (51%) were less likely to meet these guidelines than White adults (61%).
- The percentage of adults who met the recommendations increased by educational attainment. About half (49%) of adults with a high school degree or less education met aerobic guidelines, compared to 58% of those with some college and 67% of those with a college degree or higher educational attainment.
- The apparent difference by income status was not significant.
- There were no significant differences by sex or geographic region.

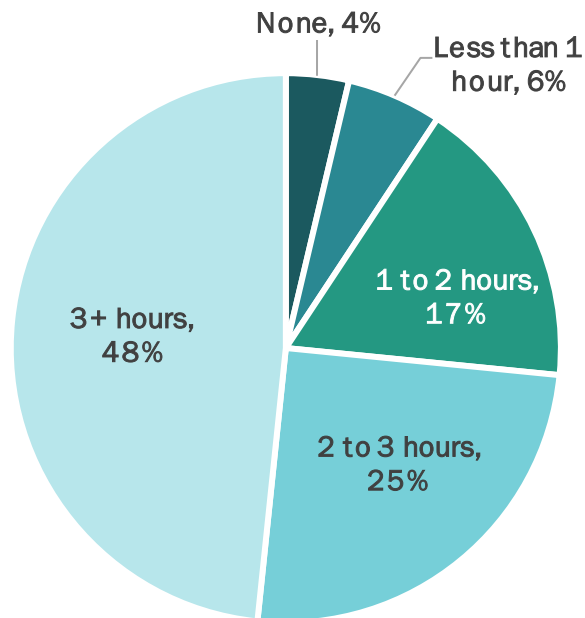
**Figure 8: Percentage of Alaska adults meeting muscle strengthening activity recommendations, by demographic groups, 2017**



Source: AK BRFSS Standard File. See Section VII, Data Sources for more information about measuring physical activity. Education status is measured for those age 25 and older. Low income is defined as less than or equal to 185% of poverty guideline as the cut-point; see Section VII, Data Sources for more information.

- Disparities in meeting muscle strengthening activity recommendations remained in 2017. Women (29%) were less likely than men (37%) to meet these recommendations (data not shown).
- Alaska Native adults (27%) and White Adults (32%) were significantly less likely to meet these guidelines than adults of other races (44%).
- Adults with a high school degree or less education (26%) were less likely to meet strength activity guidelines than those with a college degree or higher (36%).
- There was no significant difference by income status.
- There were no significant differences by geographic region (data not shown).

**Figure 9: Number of hours of recreational screen time\* per day, Alaska adults, 2017**

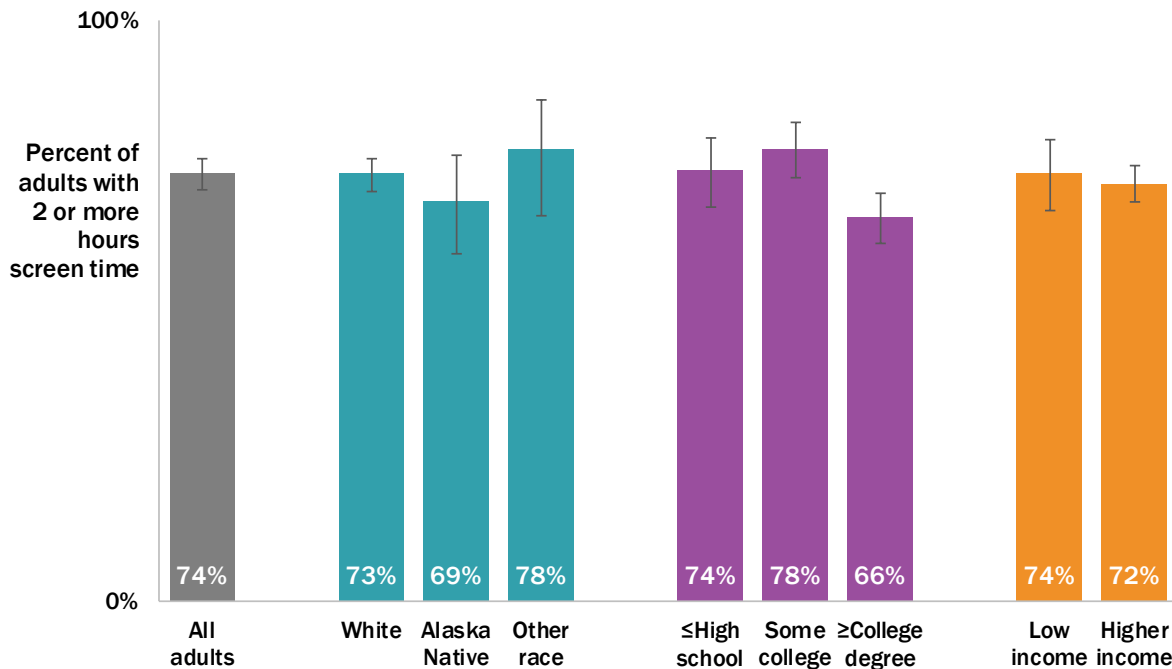


Source: AK BRFSS Standard File. Sum may not equal 100% due to rounding.

\* Screen time for adults is defined as the number of hours per day outside of work spent using a computer or watching television, videos, or DVDs.

- In 2017, nearly three-quarters (74%) of adult Alaskans spent 2 or more hours in front of a screen (not including work time) per day, a significant increase since 2005 (62%).
- Nearly half of Alaska adults (48%) reported spending 3 or more hours daily on recreational screen time.
- Alaska adults with 2 or more hours of screen time per day are:
  - significantly more likely to be obese (38%) than adults with less screen time (29%).
  - significantly less likely to meet both aerobic and muscle strengthening physical activity guidelines (20%) than adults with less screen time (28%) (data not shown).

**Figure 10: Percentage of Alaska adults who spend  $\geq 2$  hours daily on recreational screen time, by demographic groups, 2017**

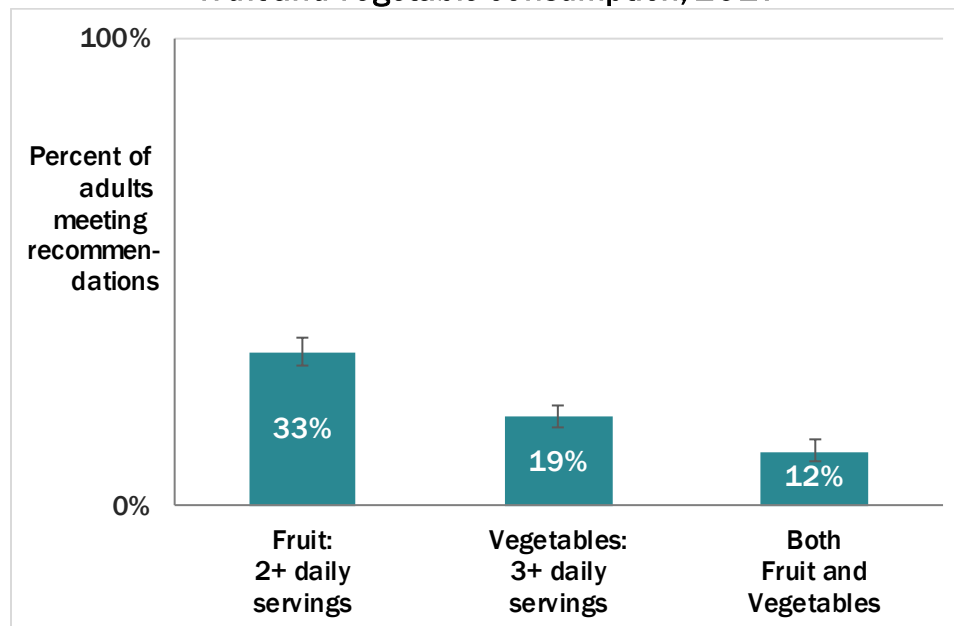


Source: AK BRFSS Standard File. Screen time for adults is defined as the number of hours per day outside of work spent using a computer or watching television, videos, or DVDs. Education status is measured for those age 25 and older. Low income is defined as less than or equal to 185% of poverty guideline as the cut-point; see Section VII, Data Sources for more information.

- Recreational screen time increased among most demographic groups between 2005 and 2017. In 2017, nearly three quarters of Alaska adults (74%) reported a daily average of 2 or more hours of screen time, compared to 62% in 2005 (data not shown).
- There were few disparities by demographic groups.
- Screen time prevalence was different by each level of education. Adults with some college (88%) were most likely to spend 2 or more hours daily on recreational screen time, followed by those with a high school degree or less education (74%), and those with a college degree or higher (66%).
- There was no significant difference in screen time prevalence by income status.
- Adults in Interior Alaska (69%) and Mat-Su (70%) were less likely to report spending 2 or more hours daily on recreational screen time than those in Northern Alaska (83%). Prevalence in other regions ranged from 73% to 76% (data not shown).

## C. Adult Nutrition

**Figure 11: Percentage of Alaska adults meeting recommendations for fruit and vegetable consumption, 2017**



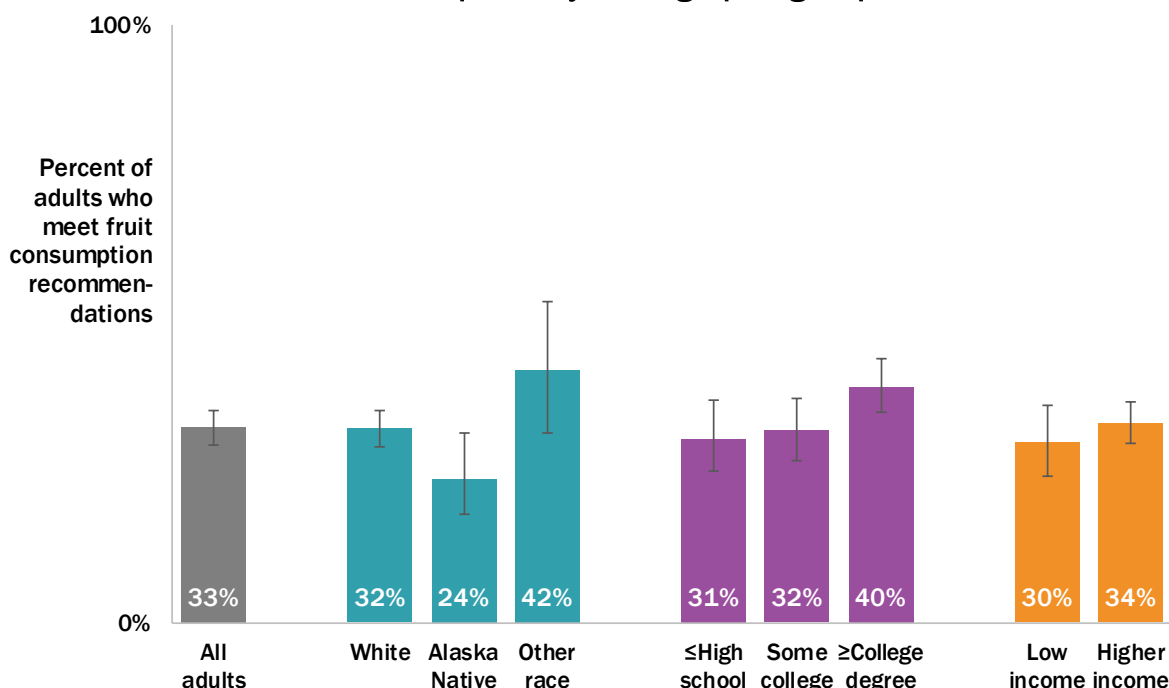
Source: AK BRFSS Standard File.

- Only 12% of Alaska adults consumed both the recommended daily servings of fruit (two or more a day) and vegetables (three or more a day) in 2017. This means that 88% of Alaska adults do not eat enough fruit and vegetables on a daily basis.
- The prevalence for meeting recommendations for both fruit and vegetable daily servings has remained near this level over the past decade. However, due to changes in questions about vegetable consumption, we cannot determine if there is any trend for vegetable consumption or the combined fruit and vegetable recommendation.
- Fruit consumption includes servings of whole fruits as well as 100% fruit juice. Although the percentage of adults who met the overall fruit servings recommendation did not change significantly between 2005 to 2017, the proportion achieved by eating whole fruits increased. The percentage of adults who had 2 or more daily whole fruit servings increased over time from 19% in 2005 to 27% in 2017 (data not shown). In the same time period, the percentage of adults drinking 2 or more servings of 100% fruit juice decreased from 13% to 3%.
- Research supports a connection between access to healthy food and increased consumption of fruits and vegetables.<sup>12</sup>

---

<sup>12</sup> Centers for Disease Control and Prevention. Strategies to Prevent Obesity and Other Chronic Diseases: The CDC Guide to Strategies to Increase the Consumption of Fruits and Vegetables. Atlanta: U.S. Department of Health and Human Services; 2011.

**Figure 12: Percentage of Alaska adults who meet recommendations for fruit consumption, by demographic groups, 2017**

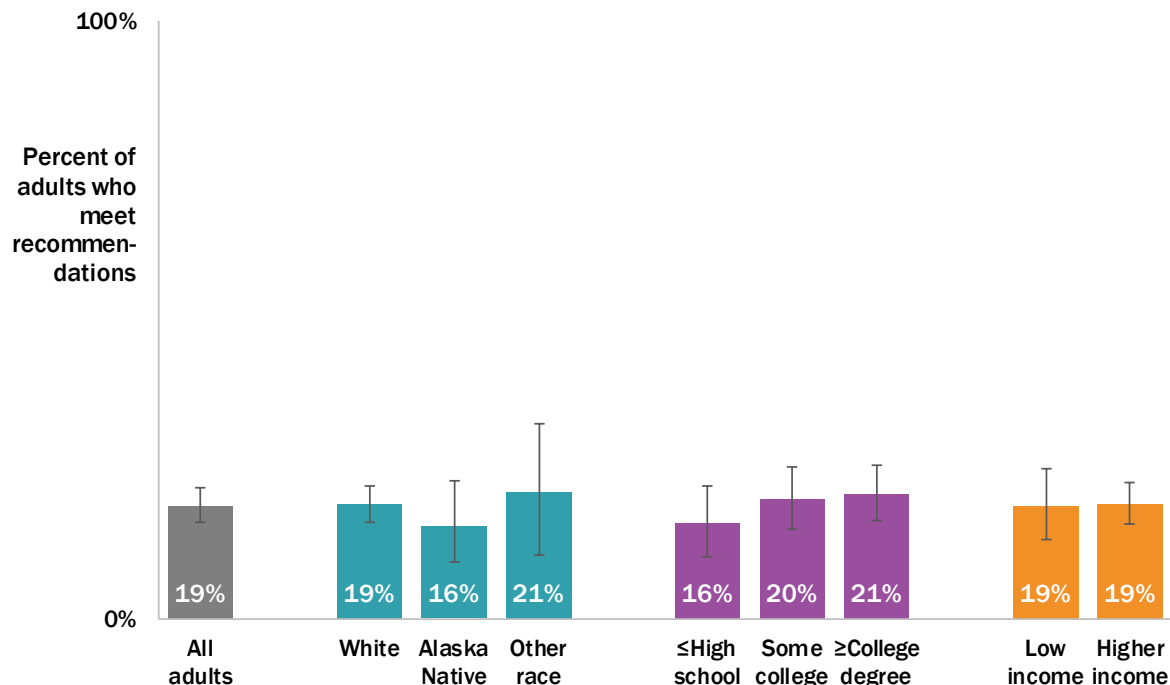


Source: AK BRFSS Standard File. Education status is measured for those age 25 and older. Low income is defined as less than or equal to 185% of poverty guideline as the cut-point; see Section VII, Data Sources for more information.

Health disparities exist in meeting recommendations for fruit consumption:

- Men (27%) were less likely than women (39%) to get the recommended average daily 2 or more servings of fruit (data not shown).
- Alaska Native adults (24%) were less likely to meet these fruit consumption guidelines than White adults (32%) and adults of other races (42%).
- Adults with a high school degree or less (31%) and those with some college (32%) were less likely to meet fruit consumption guidelines than adults with a college degree or higher (40%). There was no significant difference by income status.
- Adults in Northern Alaska (19%) were significantly less likely to consume 2 or more fruit servings daily than adults in Anchorage, Gulf Coast, Interior and Southeast Alaska (33-37%). Adults in Mat-Su were significantly less likely to meet fruit consumption guidelines than those in Interior Alaska (28% vs. 37%) (data not shown).
- The proportion of adults getting 2 or more fruit servings decreased in Northern Alaska from 27% in 1991 to 19% in 2017. Consumption also decreased among Alaska Native adults from 30% in 1991 to 24% in 2017 (data not shown).

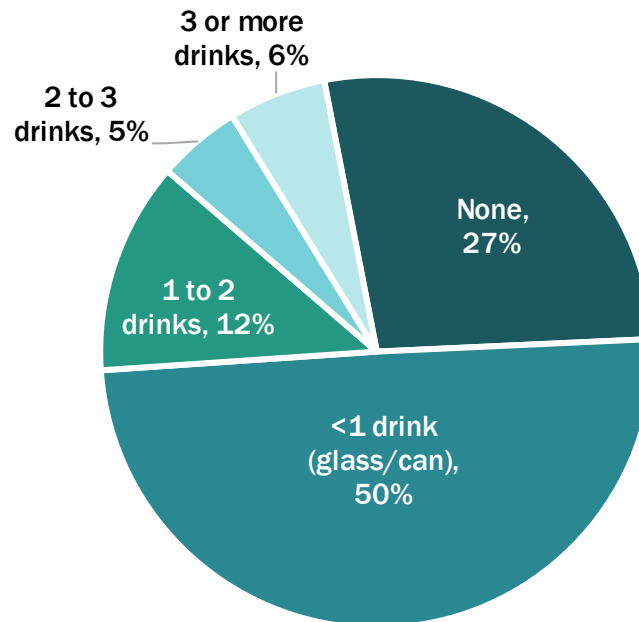
**Figure 13: Percentage of Alaska adults who meet recommendations for vegetable consumption, by demographic groups, 2017**



Source: AK BRFSS Standard File. Education status is measured for those age 25 and older. Low income is defined as less than or equal to 185% of poverty guideline as the cut-point; see Section VII, Data Sources for more information.

- There were no significant differences in meeting vegetable consumption guidelines by race group, education or income status.
- Adults in Southwest Alaska (9%) were significantly less likely to eat 3 or more vegetable servings daily than adults in any other region except Northern Alaska (18%); other regions ranged from 16-21%. Vegetable consumption decreased across all regions (data not shown).
- Men (16%) were less likely than women (22%) to eat the recommended average daily 3 or more servings of vegetables (data not shown).

**Figure 14: Average number of sugary drinks (cans/glasses) consumed per day, Alaska adults, 2017**



Source: AK BRFSS Standard File. Sum may not equal 100% due to rounding.

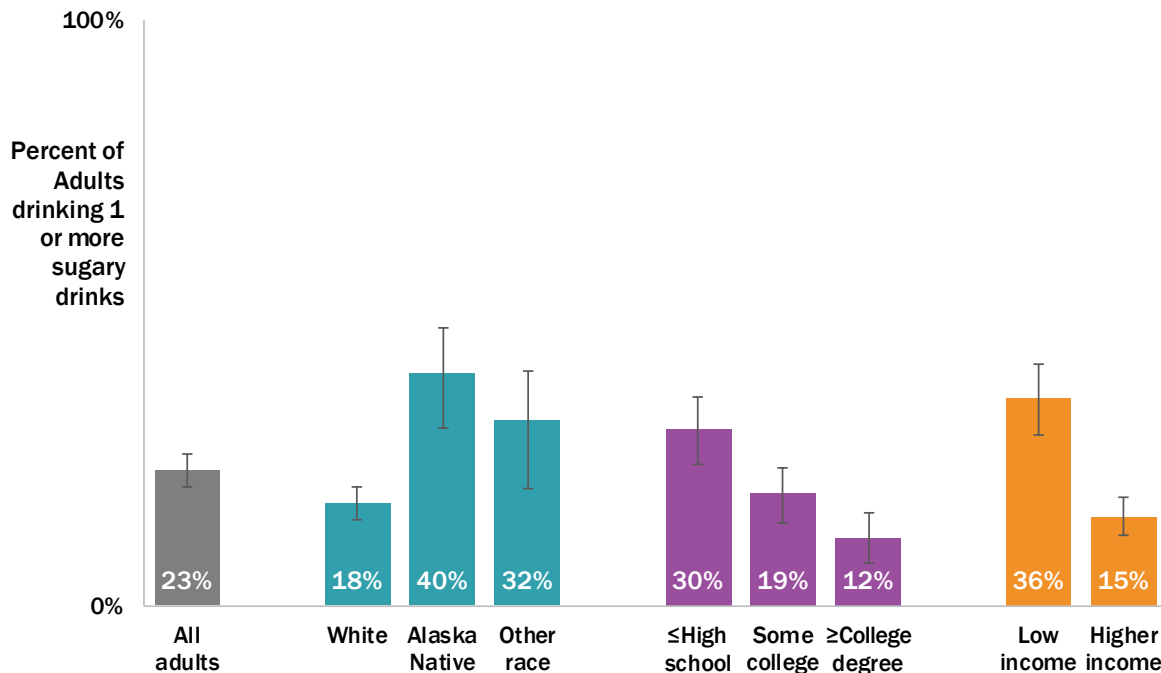
Note: the 1 to 2 drinks group includes adults who consume at least 1 to less than 2 sugary drinks daily, etc.

The 2015-2020 Dietary Guidelines for Americans recommend that less than 10% of calories come from added sugar. This means that even one sugary drink a day puts most people near their limit of added sugar for the day increasing their risk of certain diseases. These recommendations aim to promote health, prevent chronic disease, and help people reach and maintain a healthy weight.<sup>13</sup>

- Overall, 23% of Alaska adults consumed 1 or more sugary drinks daily in 2017, including sugar-sweetened sodas as well as non-carbonated beverages.
- Adults in Northern Alaska (67%) were significantly more likely than those in all other regions to drink 1 or more sugary drinks daily. Prevalence in other regions ranged from 18% to 28% (data not shown).
- Due to changes in questions about sugary drinks we can only examine the trend since 2013. There was no significant change in sugary drink consumption overall since 2013, but the percentage of Alaska adults drinking 1 or more sweetened sodas has decreased.

<sup>13</sup> 10. U.S. Department of Health and Human Services and U.S. Department of Agriculture. 2015-2020 Dietary guidelines for Americans. <https://health.gov/dietaryguidelines/2015/>. Published December 2015. Accessed May 11, 2017.

**Figure 15: Percentage of Alaska adults who drink 1 or more sugary drinks daily, by demographic groups, 2017**



Source: AK BRFSS Standard File. Education status is measured for those age 25 and older. Low income is defined as less than or equal to 185% of poverty guideline as the cut-point; see Section VII, Data Sources for more information.

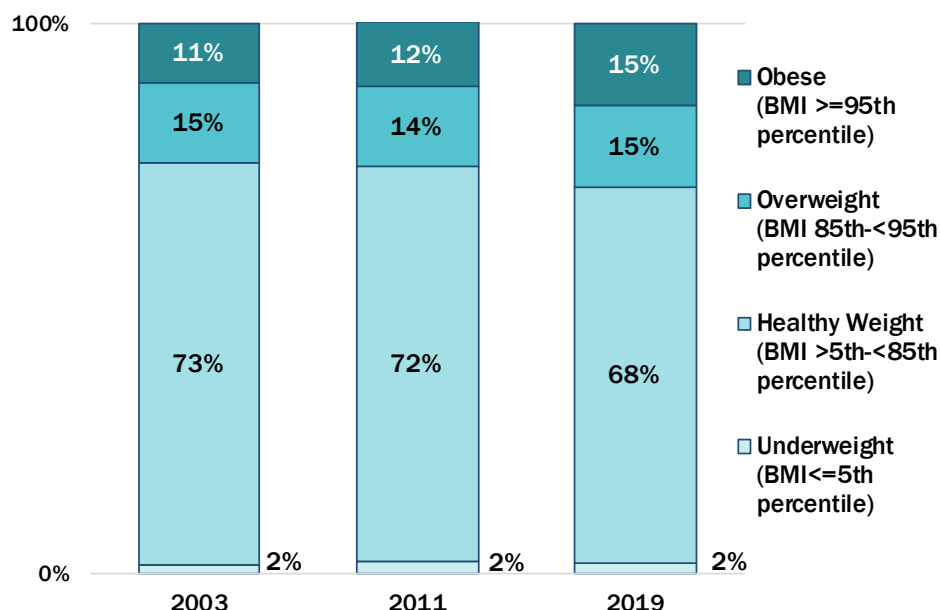
Health disparities exist in sugary drink consumption:

- Prevalence of sugary drink consumption varied by demographic groups. Men were significantly more likely than women to consume at least 1 sugary drink each day (28% versus 18%, respectively), and to consume 3 or more sugary drinks each day (7% versus 4%, respectively) (data not shown).
- Alaska Native adults (40%) and adults from other races (32%) were more likely to drink 1 or more sugary drinks daily than White adults (18%).
- Sugary drink consumption decreased by educational attainment. Adults with a high school degree or less (30%) were most likely to drink 1 or more sugary drinks daily, followed by those with some college education (19%), and those with a college degree or higher (12%).
- Adults living in low income households were more likely to drink sugary drinks than those living in higher income households (36% vs. 15%).

## IV.Children and Adolescents

### A. Weight Status of Children and Adolescents

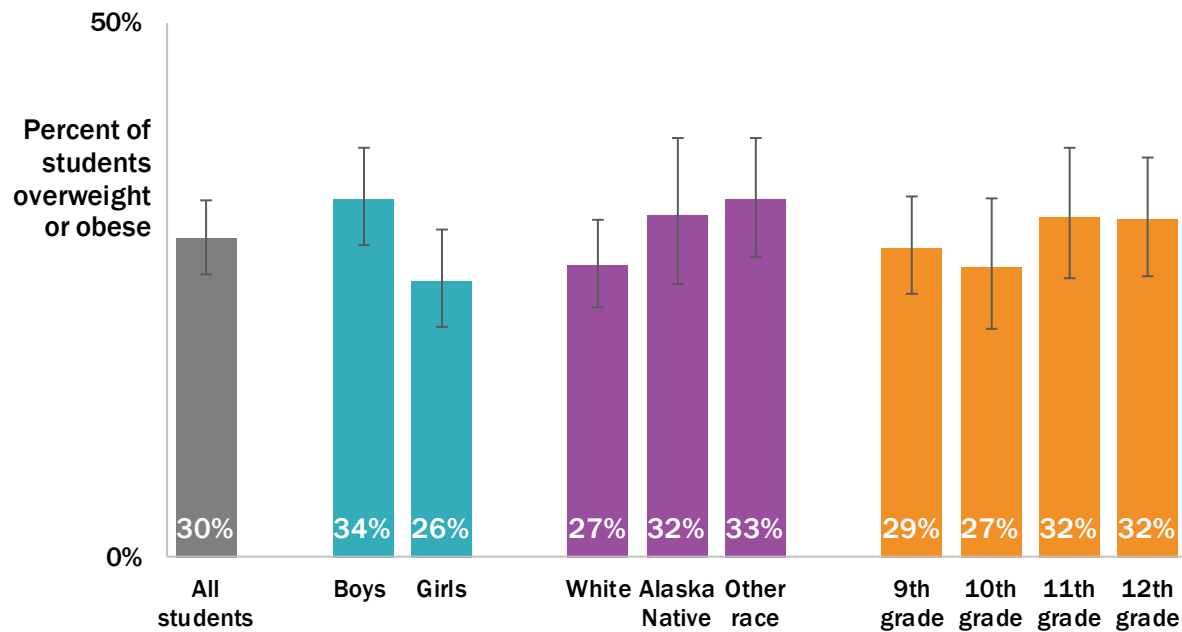
Figure 16: Overview of weight status changes among Alaska high school students, 2003, 2011 and 2019



Source: AK YRBS Statewide Traditional High School data. Sums may not equal 100% due to rounding

- In the graph above, we present information from 2003 (the first year for which we have Alaska weight status data from YRBS), 2011 and 2019, although trend reporting is from 2007 to 2019.
- In 2019, about 2% of Alaska high school students were underweight, 68% were at a healthy weight, 15% were overweight, and 15% were obese.
- 5% of Alaska high school students qualify as “severely obese,” defined for adolescents as a BMI over 120% of the 95<sup>th</sup> percentile in 2019 (data not shown).
- As with the adult trends, the decrease in healthy weight was due to an increase in obesity prevalence, while overweight prevalence remained the same.
- Among Alaska high school students, healthy weight decreased from 71% in 2007 to 68% in 2019, while obesity increased from 11% in 2007 to 15% in 2019 (2007 data not shown).

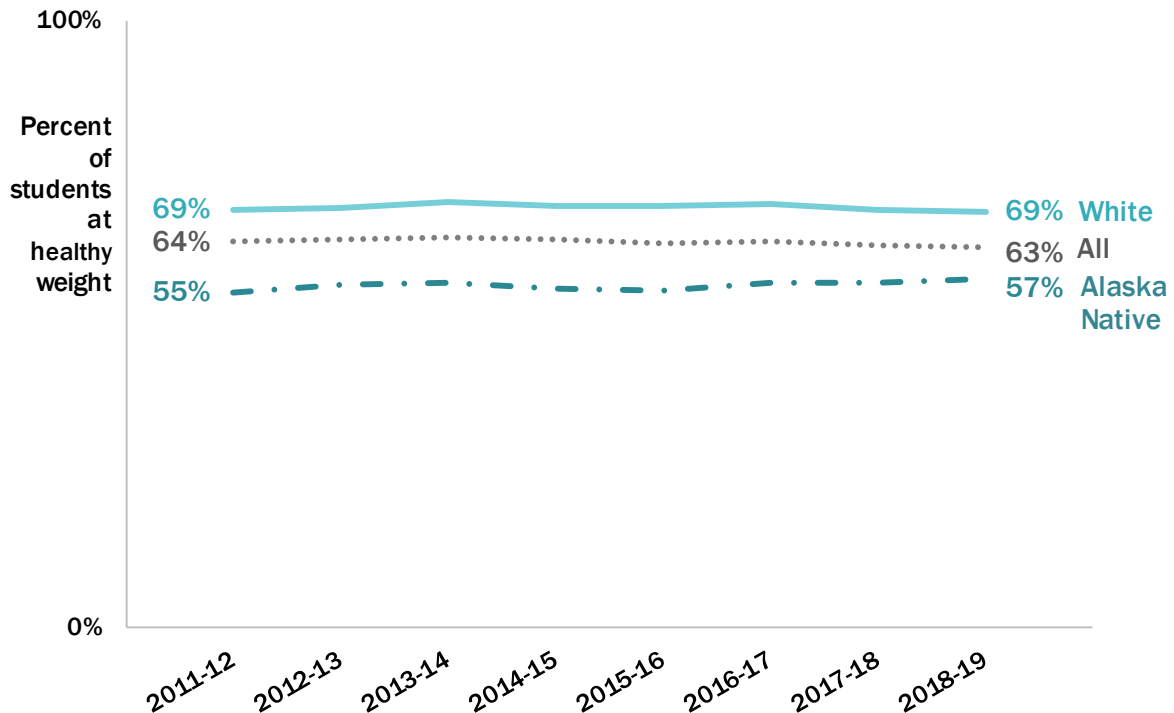
**Figure 17: Overweight/obesity prevalence among Alaska high school students, by demographic groups, 2019**



Source: AK YRBS Statewide Traditional High School data. Overweight/obesity is measured as  $\geq 85^{\text{th}}$  percentile of BMI for age group. In this report, we use Alaska Native to refer to students who reported they are Alaska Native or American Indian. See Section VII, Data Sources for more information about how race subgroups are defined.

- In 2019, prevalence of overweight/obesity among Alaska high school students was different by sex; boys were significantly more likely than girls to be overweight/obese (34% vs. 26%).
- There were no significant differences in overweight/obesity prevalence by race group or by grade level.

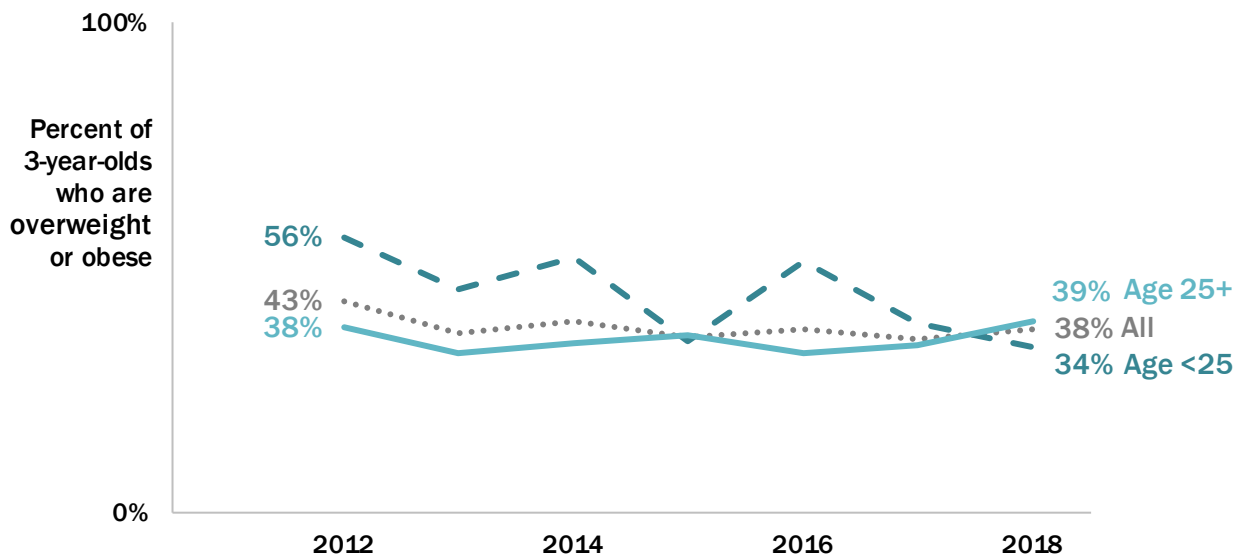
**Figure 18: Trend in percent of students in kindergarten through 8<sup>th</sup> grade who are at Healthy Weight, by school years 2011-12 through 2018-19**



Source: AK SWSSS; “K-8 combined” is K, 1, 3, 5, and 7<sup>th</sup> grade students; Anchorage, Kenai and Mat-Su school districts combined. Healthy weight is measured as 5<sup>th</sup> percentile to less than 85<sup>th</sup> percentile of BMI for age and sex.

- The Healthy Alaskans 2030 objective is to increase the proportion of children (K-8 students) who are at a healthy weight. Beginning in 2020-2021 school year, the Healthy Alaskans 2030 weight status objective has a few changes.
  - HA2030 has a single objective focusing on increasing the percent of students at a healthy weight (rather than two separate indicators on decreasing overweight and obesity).
  - The statewide childhood healthy weight objective will now include Kenai Peninsula Borough School District students in addition to those in Anchorage and the Mat-Su.
  - The measure will still be focused on Alaska K-8 students (using measurements of students in K, 1, 3, 5 and 7).
- The prevalence of healthy weight among K-8 students has not changed overall or by race group since the 2011-12 school year, the starting point for measurement in three school districts (Anchorage, Mat-Su and Kenai).
- White K-8 students are more likely than Alaska Native K-8 students to be in the healthy weight range (69% vs. 57%).

**Figure 19. Trend in overweight/obesity prevalence among Alaska 3-year-olds, by mother's age at birth of child, 2012-2018**

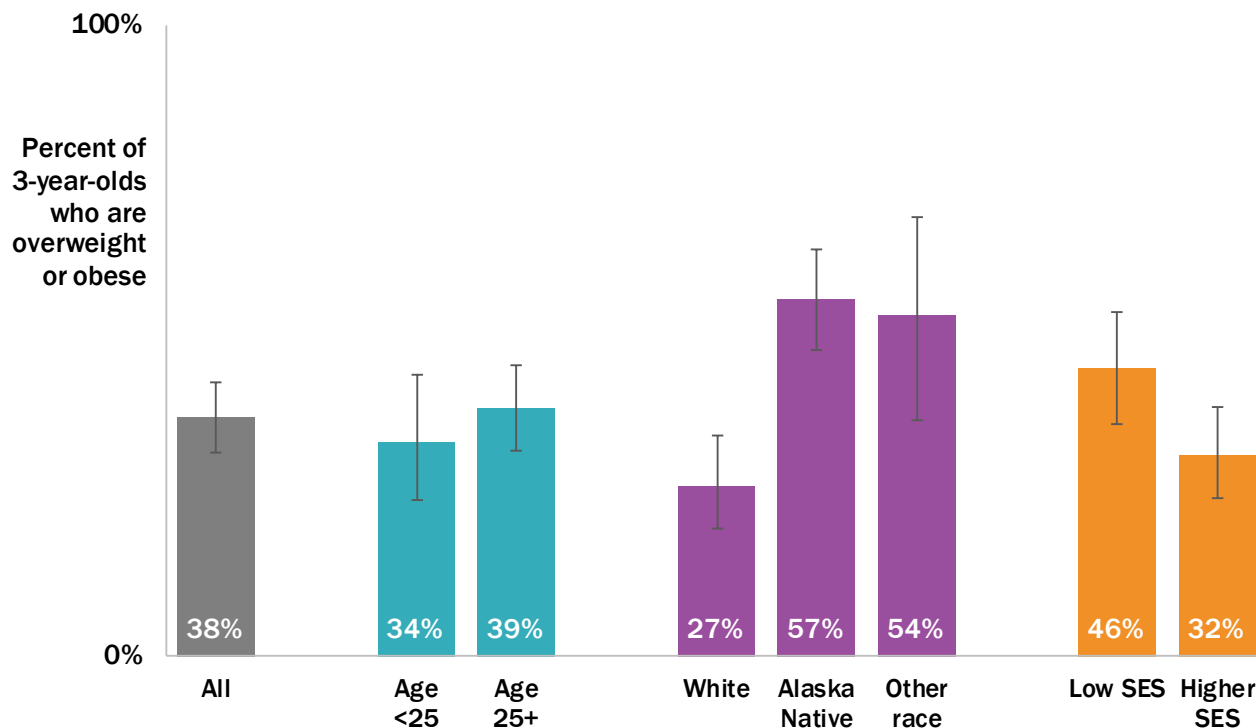


Source: Alaska Childhood Understanding Behaviors Survey (CUBS)  
Overweight/obesity: 85<sup>th</sup> percentile and higher of BMI for age and sex

- Between 2012 and 2018, the percentage of 3-year-olds who were overweight or obese remained relatively consistent overall and among children whose mothers were age 25 or older when they were born.
- However, there was a significant decrease in overweight/obesity among 3-year-olds born to mothers who were under age 25; the percentage who were overweight or obese dropped from 56% in 2012 to 34% in 2018.
- During 2010 to 2016, a study of children aged 2 to 4 years enrolled in the WIC program showed a small but significant decrease in obesity in Alaska, from 21.2% in 2010 to 19.8% in 2016 (data not shown).<sup>14</sup>
- However, Alaska stands out in the fifty states as having a higher prevalence of early childhood obesity among WIC enrollees. In 2010, only 3 states/territories were reporting early childhood obesity prevalence greater or equal to 20% (Alaska, Puerto Rico, and Virginia). In 2016, Alaska was only state with a prevalence above 18% (data not shown).<sup>13</sup>

<sup>14</sup> Pan L, Blanck H, Park S, et al. State-specific prevalence of obesity among children aged 2–4 years enrolled in the Special Supplemental Nutrition Program for Women, Infants, and Children—United States, 2000–2016. *MMWR Morb Mortal Wkly Rep* 2019;68:1057–61.

**Figure 20. Overweight/obesity prevalence among Alaska 3-year-olds, by maternal demographic groups, 2018**

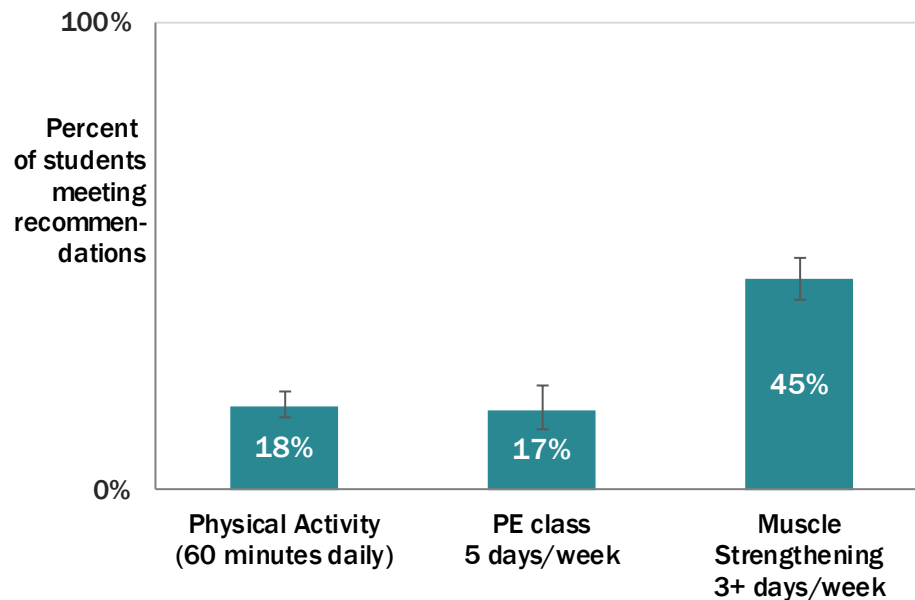


Source: Alaska Childhood Understanding Behaviors Survey (CUBS)  
 Overweight/obesity: 85th percentile and higher of BMI for age and sex  
 Current child enrollment in Medicaid was used as a proxy measure of low socioeconomic status (SES).

- Disparities exist in overweight/obesity prevalence among Alaska 3-year-olds in 2018:
  - Overweight/obesity prevalence was significantly lower among 3-year-old children of White mothers than among children of Alaska Native / American Indian mothers.
  - 3-year-old children in low-SES families had a significantly higher prevalence of overweight/obesity than children in higher-SES families.

## B. Physical Activity among Children and Adolescents

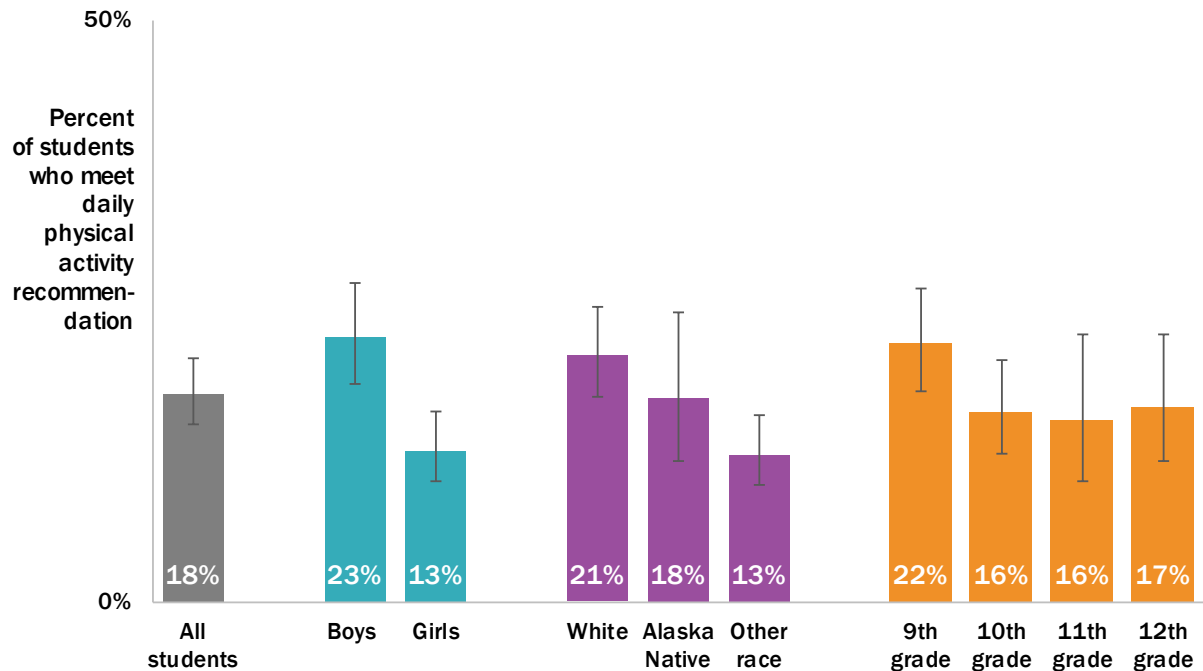
Figure 21: Percentage of Alaska high school students meeting selected physical activity recommendations, 2019



Source: AK YRBS Statewide Traditional High School data.

- Increasing the proportion of adolescents (high school students in grades 9-12) who participate in at least 60 minutes of daily physical activity (as outlined in the 2018 US DHHS updated Physical Activity Guidelines) is a Healthy Alaskans 2030 objective.
- Only 18% of Alaska high school students were getting the recommended daily 60+ minutes of physical activity, and this proportion has not changed significantly since 2007, and is not different from when the question was first asked in the 2003 AK YRBS.
- In 2019, only 17% of Alaska high school students reported having a physical education (PE) class 5 days a week when they are in school. This percentage is lower than that from 1995 (27%) but has not changed significantly between 2007 and 2019.
- The US DHHS Physical Activity Guidelines recommend that as part of their 60 minutes or more of daily physical activity, children and adolescents should include muscle-strengthening activity on at least 3 days a week. Nearly half (45%) of Alaska high school students reported doing exercises like push-ups, sit-ups, or weightlifting to strengthen or tone their muscles, on 3 or more days a week.
- Only 14.5% of Alaska high school students met both the aerobic and muscle-strengthening guidelines noted above (data not shown).

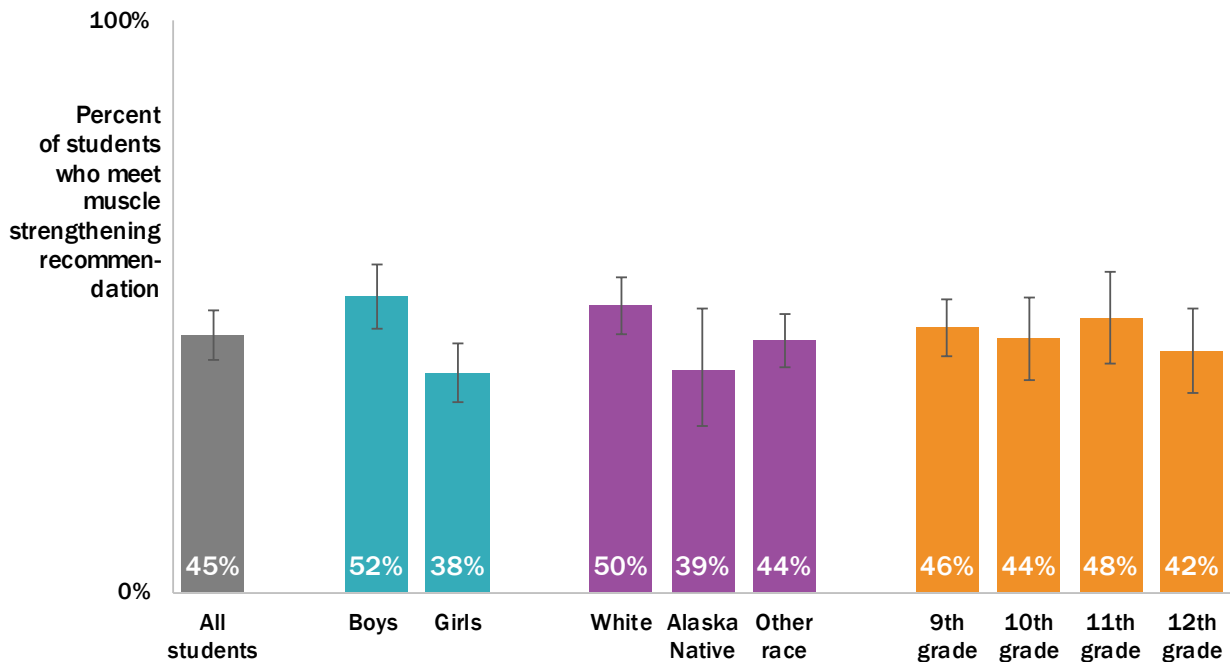
**Figure 22: Percentage of Alaska high school students participating in daily physical activity for 60 or more minutes, by demographic groups, 2019**



Source: AK YRBS Statewide Traditional High School data. See Section VII, Data Sources for more information about how race subgroups are defined.

- Alaska high school boys were more likely than high school girls to get 60 or more minutes of daily physical activity (23% versus 13%).
- White students were more likely to get the recommended amount of activity than non-Native students of other races (21% versus 13%), but there was not a significant difference between Alaska Native and White students.
- Ninth graders (22%) were more likely to meet the daily physical activity recommendation than 10<sup>th</sup> thru 12<sup>th</sup> graders combined (22% versus 16%, data not shown for combined grades).
- Although 92% of Alaska high schools require physical education for ninth graders, only 74% require physical education in the twelfth grade. (2018 AK School Health Profiles, data not shown).

**Figure 23: Percentage of Alaska high school students participating in muscle strengthening activity 3+ days per week, by demographic groups, 2019**

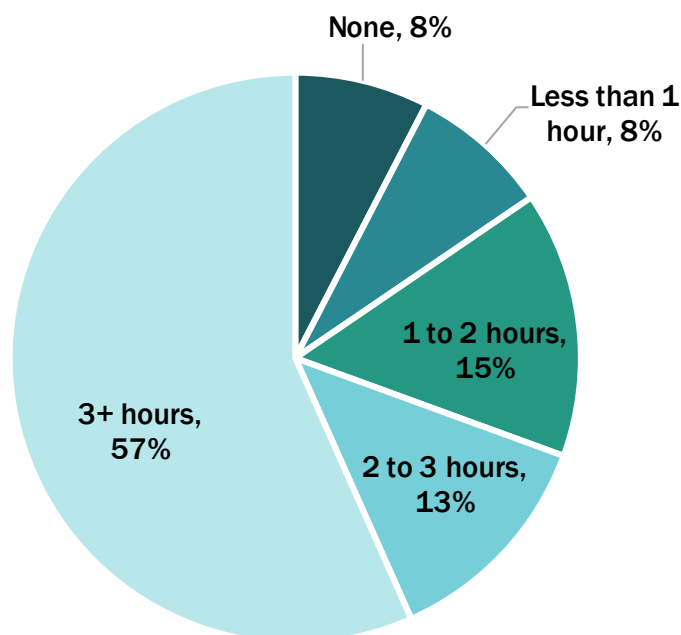


Source: AK YRBS Statewide Traditional High School data. See Section VII, Data Sources for more information about how race subgroups are defined.

The US DHHS Physical Activity Guidelines recommend that as part of their 60 minutes or more of daily physical activity, children and adolescents should include muscle-strengthening activity on at least 3 days a week.

- Nearly half (45%) of Alaska high school students reported doing exercises like push-ups, sit-ups, or weightlifting to strengthen or tone their muscles, on 3 or more days a week.
- Alaska high school boys (52%) were more likely than high school girls (38%) to participate in muscle strengthening exercise like push-ups, sit-ups or weightlifting, 3 or more times a week.
- There were no significant differences by race group or grade level.

**Figure 24: Percentage of Alaska high school students by non-academic screen time spent per day, 2019**



Source: AK YRBS Statewide Traditional High School data. Sum may not equal 100% due to rounding.

\* Non-Academic screen time for high school youth is defined as the number of hours on an average school day that are spent watching television, playing video or computer games, or using a computer for something other than school work (e.g., Xbox, PlayStation, a tablet, a smartphone, texting, YouTube, social media).

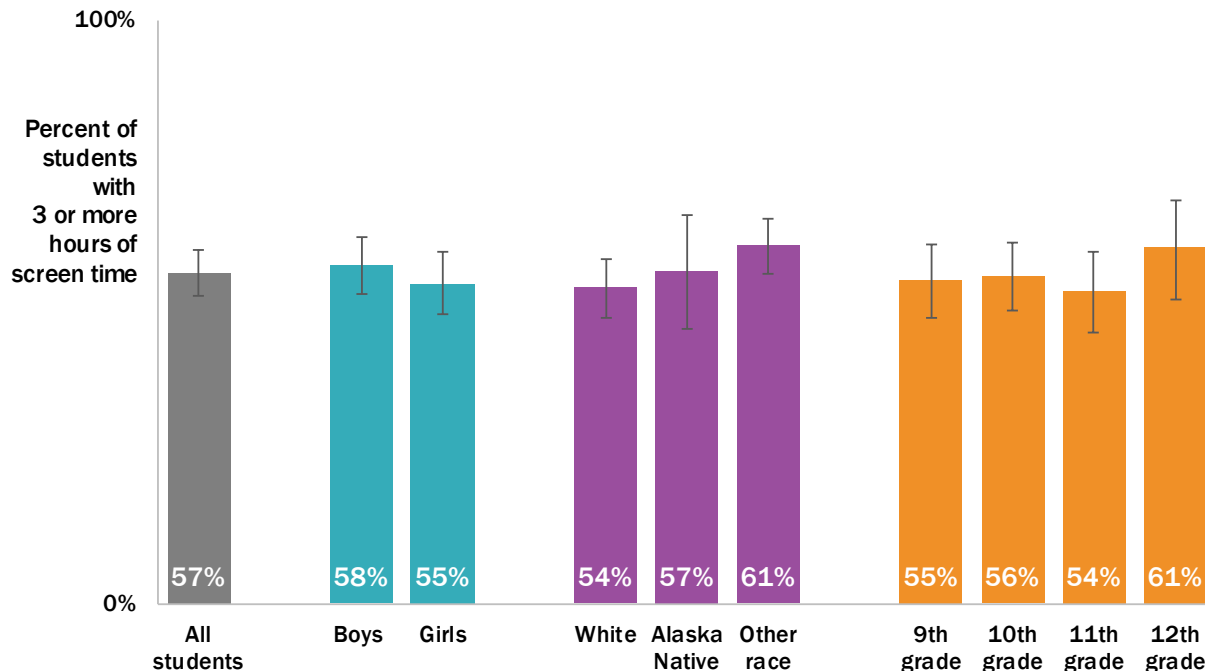
The American Academy of Pediatrics recommends that school-aged children and adolescents have 2 hours or less of sedentary screen time daily.<sup>15</sup>

- In 2019, seven out of ten Alaska high school students (70%) spent 2 or more hours in front of a screen (not including school time) per day.
- Nearly six in ten (57%) reported spending 3 or more hours daily on non-academic screen time.

---

<sup>15</sup> AAP Council on Communication and Media. Media Use in School-Aged Children and Adolescents. *Pediatrics*. 2016; 138(5):e20162592.

**Figure 25: Percentage of Alaska high school students who spend  $\geq 3$  hours daily on non-academic screen time, by demographic groups, 2019**

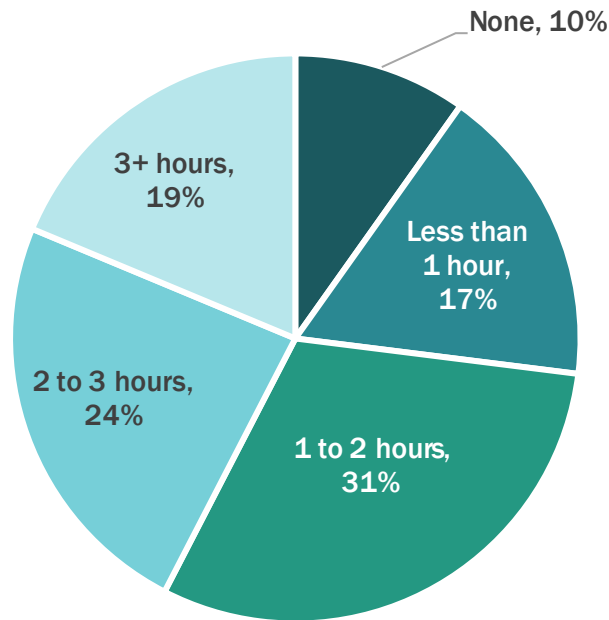


Source: AK YRBS Statewide Traditional High School data. See Section VII, Data Sources for more information about how race subgroups are defined.

Non-academic screen time for high school students is defined as the number of hours on an average school day that are spent watching television, playing video or computer games, or using a computer for something other than school work (e.g., Xbox, PlayStation, a tablet, a smartphone, texting, YouTube, social media).

- There were few significant disparities by demographic groups.
- There was no difference between boys and girls, grades in school, or between White students and Alaska Native students. White students were less likely to spend 3 or more hours in non-academic screen time than non-Native students of other races (54% versus 61%).

**Figure 26: Dailytime spent in front of a screen,  
3-year-olds, Alaska, 2016-2018**



Source: Alaska Childhood Understanding Behaviors Survey (CUBS). Sum may not equal 100% due to rounding.

The American Academy of Pediatrics recommends limiting young children's total screen time to no more than 1 hour of quality programming per day.<sup>16</sup>

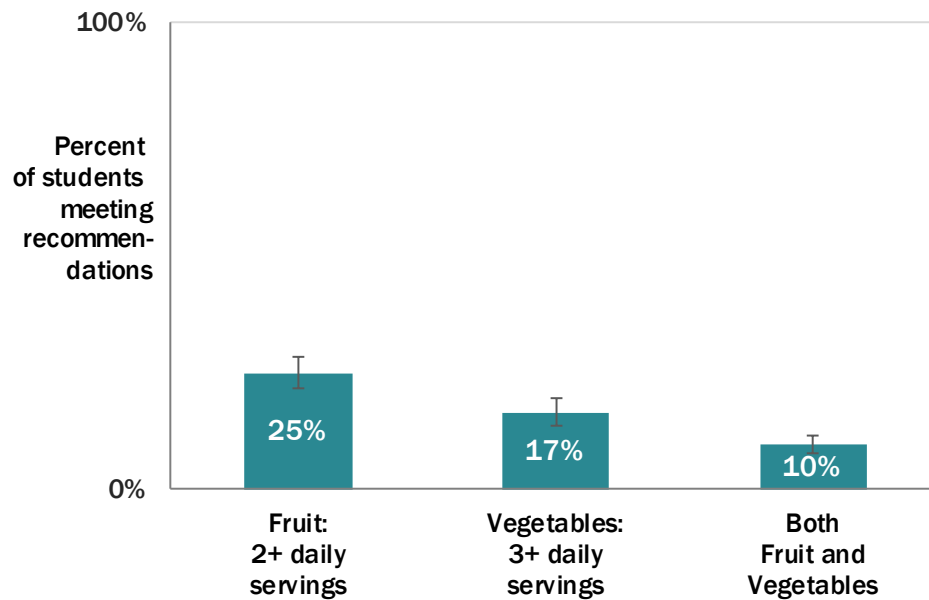
- Only 27% of Alaska 3-year-olds may be meeting this recommendation (the CUBS survey does not assess whether time in front of the screen is 'quality programming').
- 73% of Alaska 3-year-olds had an hour or more of screen time (watching television, videos, movies, or playing video games) on an average day.

---

<sup>16</sup>American Academy of Pediatrics Council on Communications and Media. Media and Young Minds. Pediatrics. 2016; 138(5):e20162591.

## C. Nutrition among Children and Adolescents

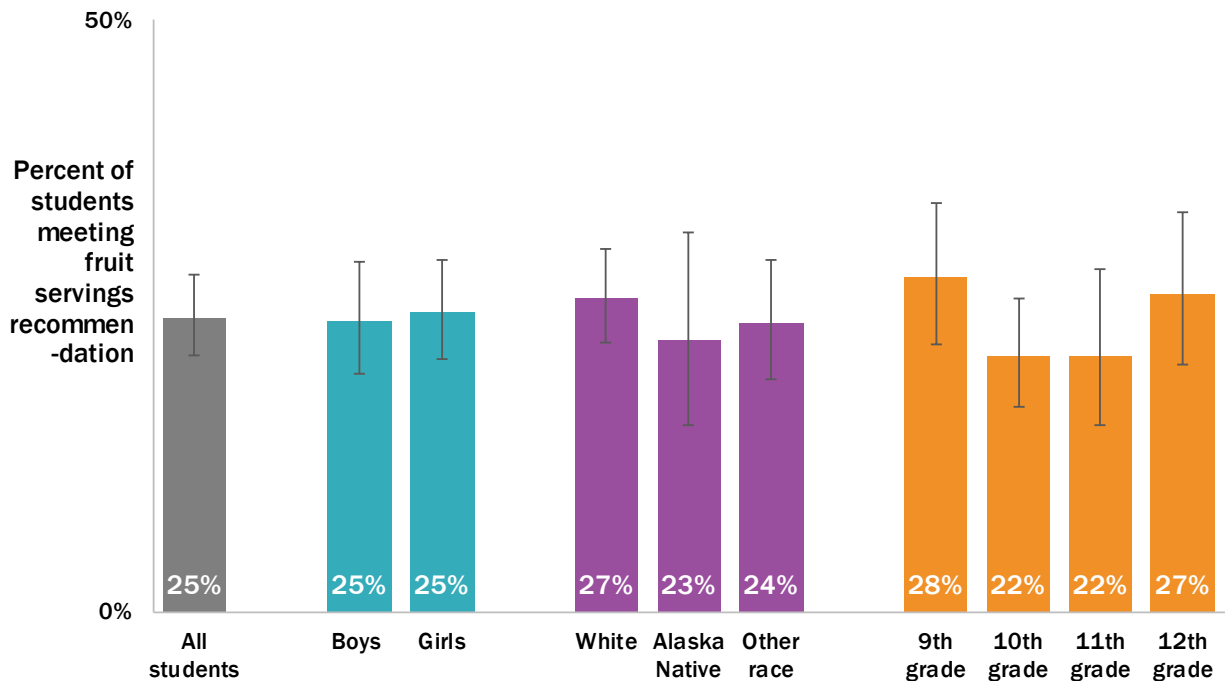
Figure 27: Percentage of Alaska high school students meeting guidelines for daily fruit and vegetable consumption, 2019



Source: AK YRBS Statewide Traditional High School data.

- Only one out of ten (10%) high school students in Alaska eat the recommended number of servings of both fruit and vegetables each day. Twenty-five percent consumed 2 or more fruit servings daily, and 17% ate 3 or more servings of vegetables.
- Fruit consumption includes servings of whole fruits as well as 100% fruit juice. Although the percentage who met the recommendation overall did not change significantly between 2007 to 2019, the proportion achieved by eating whole fruits increased. The percentage of high school students who had 2 or more daily whole fruit servings increased over time from 15% in 2007 to 20% in 2019 (data not shown).
- Vegetable consumption increased from 10% in 2007 to 17% in 2019 (data not shown).
- Some secondary schools have adopted policies designed to increase student interest and opportunity for eating fruits and vegetables (2018 Alaska School Health Profiles, data not shown). These include:
  - placing fruits and vegetables near the cafeteria cashier, where they are easy to access (48%)
  - using attractive displays of fruit and vegetables in the cafeteria (37%)
  - offering a self-serve salad bar (24%)
  - always or almost always offering fruit or non-fried vegetables when foods or beverages are offered at school celebrations (37%).

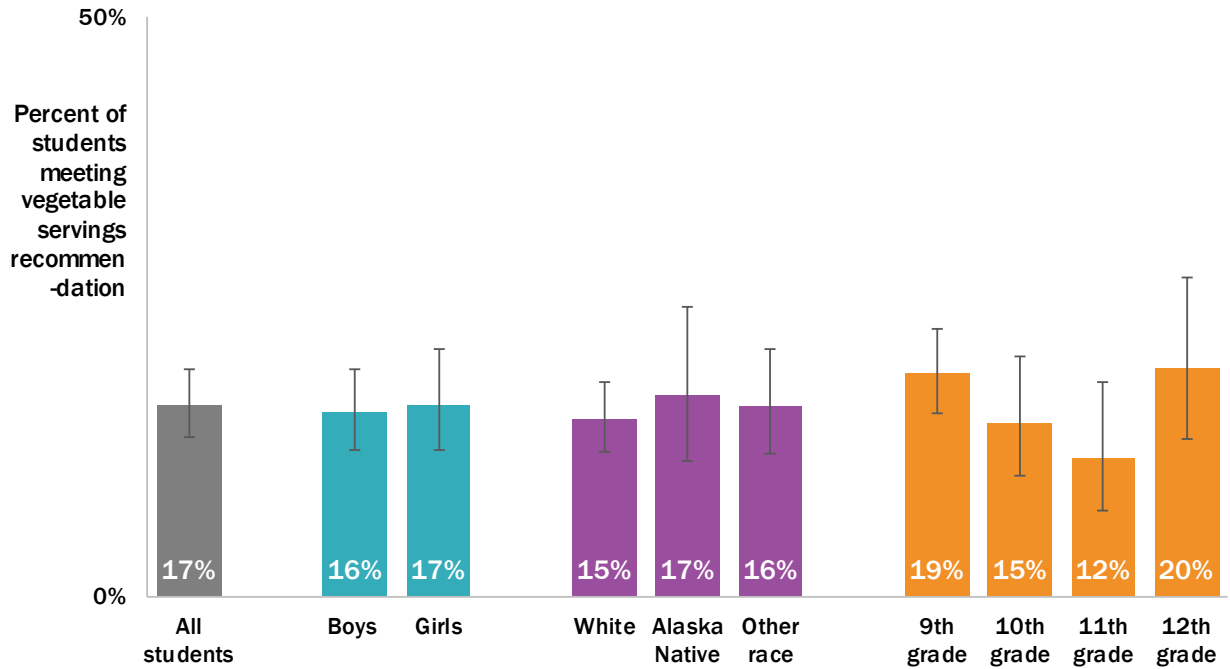
**Figure 28: Percentage of Alaska high school students who consumed 2 or more daily servings of fruit, by demographic groups, 2019**



Source: AK YRBS Statewide Traditional High School data. See Section VII, Data Sources for more information about how race subgroups are defined.

- There were no significant disparities in meeting the nutrition guideline of 2 or more daily servings of fruit (including whole fruits and 100% fruit juice).
- The questions about fruit servings include drinking 100% fruit juice, in addition to eating whole fruit.
- One in five Alaska high school students (20%) reported daily consumption of 2 or more servings of whole fruit (not from fruit juice). There were no disparities by whole fruit consumption (data not shown).
- The proportion of high school students who did not drink any 100% juice daily increased from 21% in 2007 to 38% in 2019. The increase occurred in all demographic groups shown in this report, and there were no disparities between groups in 2019 (data not shown).

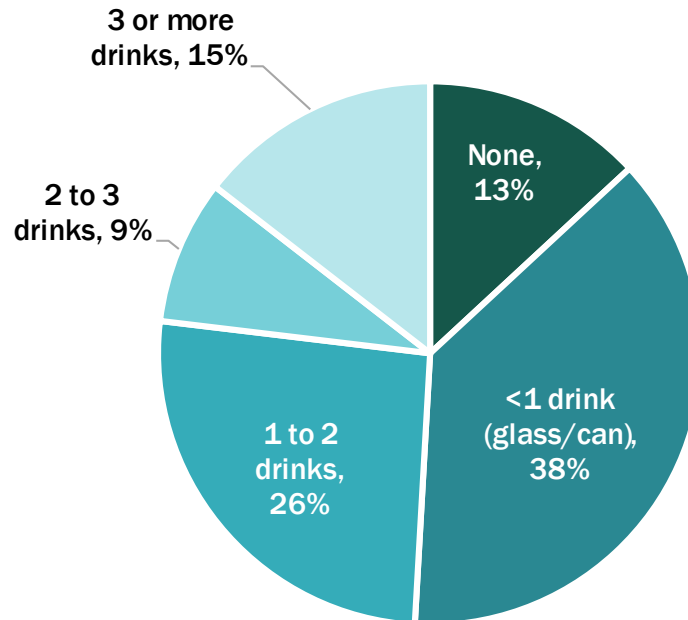
**Figure 29: Percentage of Alaska high school students who consumed 3 or more daily servings of vegetables, by demographic groups, 2019**



Source: AK YRBS Statewide Traditional High School data. See Section VII, Data Sources for more information about how race subgroups are defined.

- As noted earlier, only 17% of Alaska high school students reported eating 3 or more servings of vegetables daily. There were few significant disparities in meeting this nutrition guideline.
- Alaska ninth graders were significantly more likely than 11<sup>th</sup> graders to consume at least 3 daily servings of vegetables (19% vs. 12%).

**Figure 30: Average number of sugary drinks (cans/glasses) consumed per day, Alaska high school students, 2019**



Source: AK YRBS Statewide Traditional High School data. Sum may not equal 100% due to rounding.  
Note: the 1 to 2 drinks group includes students who consume at least 1 to less than 2 sugary drinks daily, etc.

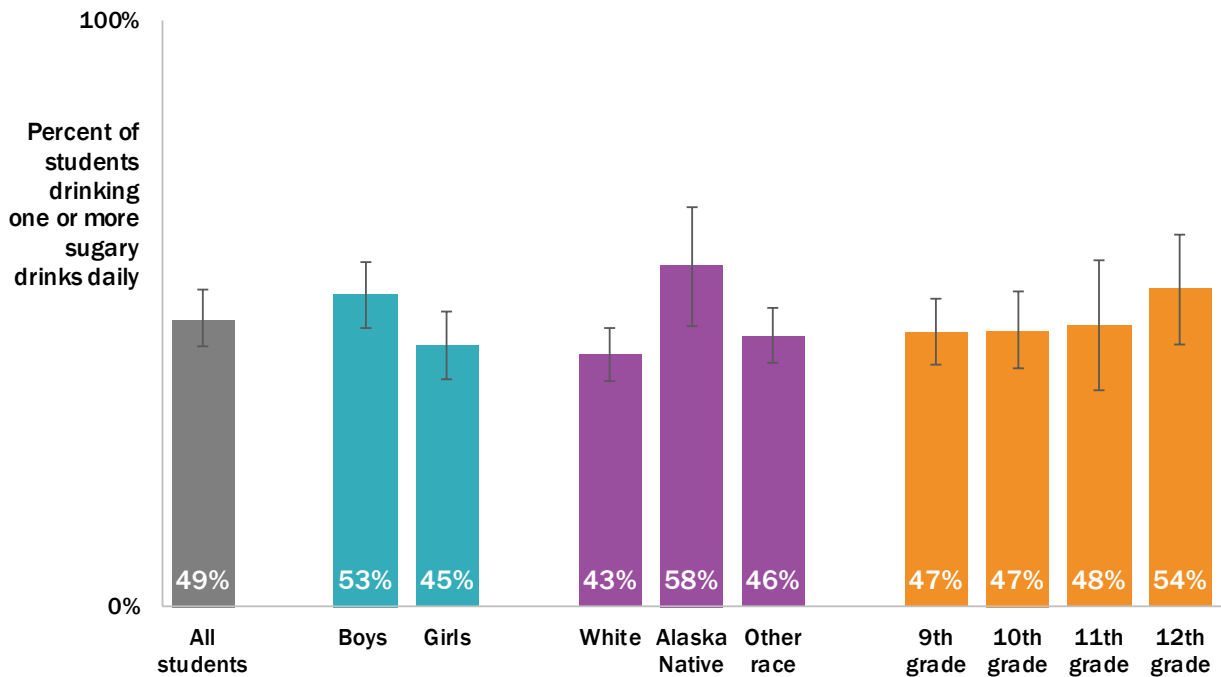
The 2015-2020 Dietary Guidelines for Americans recommend that less than 10% of calories come from added sugar. This means that even one sugary drink a day puts most people near their limit of added sugar for the day, increasing their risk of certain diseases. These recommendations aim to promote health, prevent chronic disease, and help people reach and maintain a healthy weight.<sup>17</sup>

- Overall, 49% of Alaska high school students consumed a daily average of 1 or more sugary drink servings (glass, bottle or can) in 2019. Sugary drinks include soda, sports drink (such as Gatorade or PowerAde), energy drink (such as Red Bull, Rockstar, or Monster), or another sugar-sweetened beverage (such as lemonade, sweetened tea or coffee drinks, flavored milk, Snapple, or Sunny Delight).
- In addition, 15% of Alaska high school students drink 3 or more servings of sugary drinks per day.
- Only 13% reported drinking no sugary drinks in the past seven days.

---

<sup>17</sup> U.S. Department of Health and Human Services and U.S. Department of Agriculture. 2015-2020 Dietary guidelines for Americans. <https://health.gov/dietaryguidelines/2015/>. Published December 2015. Accessed May 11, 2017.

**Figure 31: Percentage of Alaska high school students who drank 1 or more sugary drinks daily, by demographic groups, 2019**

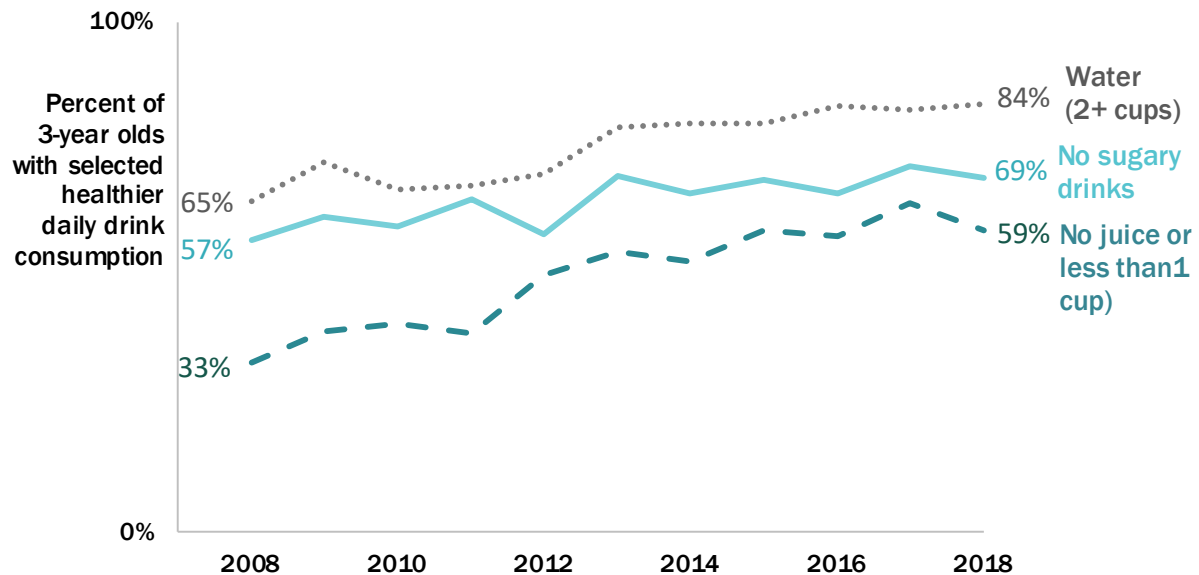


Source: AK YRBS Statewide Traditional High School data. See Section VII, Data Sources for more information about how race subgroups are defined.

The Youth Risk Behavior Survey (YRBS) collects information from high school students on their consumption of soda or pop (not including diet soda) and other sugary drinks such as sports drinks, energy drinks, lemonade, sweetened tea or coffee drinks, flavored milk, Snapple, or Sunny Delight.

- In 2019, 49% of Alaska high school students drank 1 or more sugary drinks each day.
- Health disparities exist in sugary drink consumption among Alaska high school students:
  - Boys (53%) were significantly more likely than girls (45%) to consume at least 1 sugary drink each day; and
  - Alaska Native students (58%) were significantly more likely than White students (43%) and those of other races (46%) to consume at least 1 sugary drink a day.

**Figure 32: Trend in percentage of 3-year-olds with daily healthier beverage consumption, Alaska, 2008 to 2018**



Source: Alaska Childhood Understanding Behaviors Survey (CUBS).

The Childhood Understanding Behaviors Survey (CUBS) asks mothers of 3-year-olds about how many cups of selected beverages their child consumed on a given day. Drink types include 1) soda, such as Coke or Sprite, 2) sweetened or fruit drinks, such as Kool-Aid, Tang or Capri-Sun, energy or sports drinks, and 3) 100% fruit juice.

Soda and other sugar sweetened drinks can lead to a number of serious health problems that can last throughout a child's lifetime such as unhealthy weight gain,<sup>18</sup> type 2 diabetes,<sup>19</sup> heart disease,<sup>20, 21</sup> and cavities.<sup>22</sup>

- Since 2008, the trends for daily drink consumption among 3-year-old Alaskans have improved:
  - The proportion drinking 2 or more cups of water increased from 65% in 2008 to 84% in 2018.
  - The proportion of 3-year-olds who did not drink any sugary drinks increased from 57% in 2008 to 69% in 2018
  - The proportion who drank zero to less than a cup of 100% fruit juice increased from 33% to 59%.

<sup>18</sup> Woodward-Lopez G, Kao J, Ritchie L. To what extent have sweetened beverages contributed to the obesity epidemic? *Pub Health Nutr.* 2011;14(3):499–509.

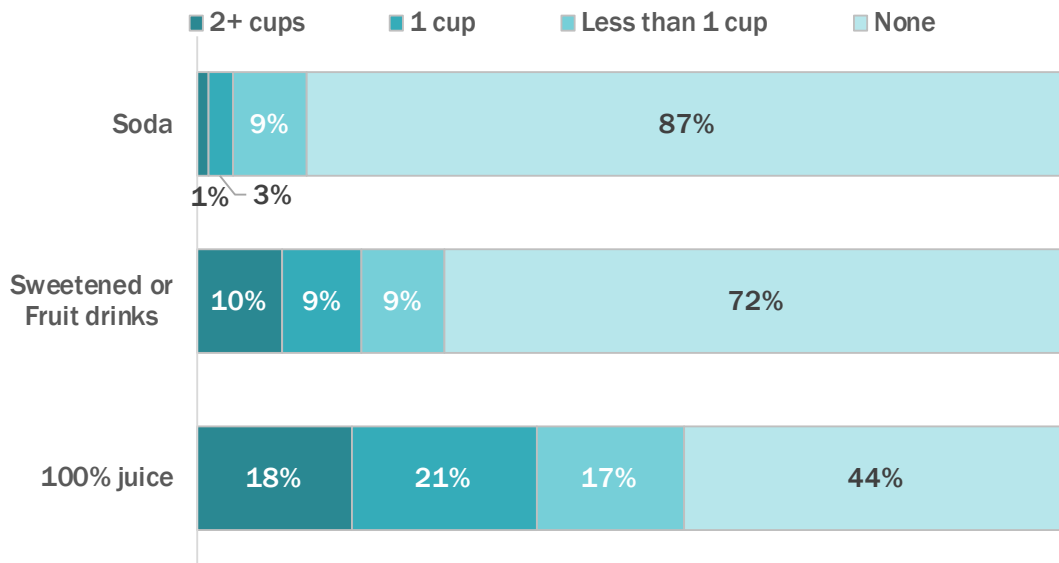
<sup>19</sup> Malik VS, Popkin BM, Bray GA, Despres JP, Willett WC, Hu FB. Sugar-sweetened beverages and risk of metabolic syndrome and type 2 diabetes: a meta-analysis. *Diabetes Care.* Nov 2010;33(11):2477-2483.

<sup>20</sup> de Koning L, Malik VS, Kellogg MD, Rimm EB, Willett WC, Hu FB. Sweetened beverage consumption, incident coronary heart disease, and biomarkers of risk in men. *Circulation.* 2012;125:1735-41, S1.

<sup>21</sup> Fung TT, Malik V, Rexrode KM, Manson JE, Willett WC, Hu FB. Sweetened beverage consumption and risk of coronary heart disease in women. *Am J Clin Nutr.* 2009;89:1037-42.

<sup>22</sup> Centers for Disease Control and Prevention Morbidity and Mortality Weekly Report. Dental Caries in Rural Alaska Native Children – Alaska, 2008 September 23, 2011 / 60(37):1275-1278 <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6037a2.htm>

**Figure 33: Average number of selected drinks servings consumed per day by Alaska 3-year-olds, 2016-2018**



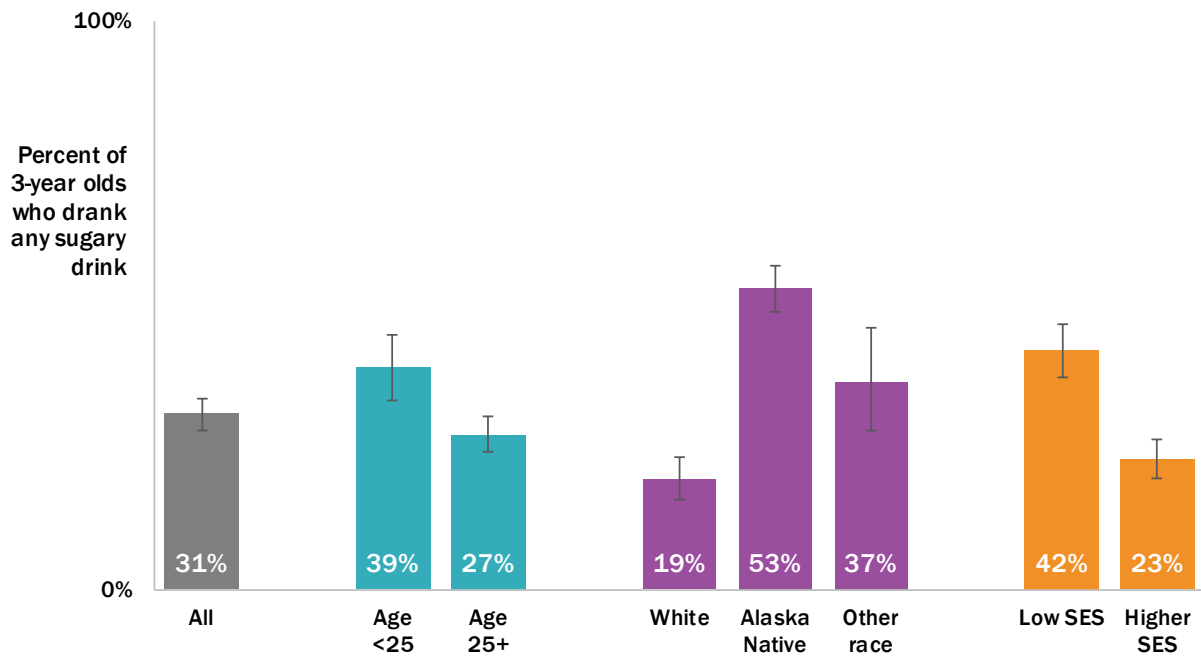
Source: Alaska Childhood Understanding Behaviors Survey (CUBS).

Key national health and nutrition organizations recommend that children 0-5 years of age do not drink sugar-sweetened beverages such as fruit flavored drinks, sports drinks or soda. They also recommend limiting juice to only  $\frac{1}{2}$  cup (4 ounces) or less of 100% fruit juice per day for 3-year-olds.<sup>23</sup>

- In 2016-2018, 13% of Alaska 3-year-olds drank soda daily, and 28% drank sweetened non-soda drinks daily. One in ten (10%) of Alaska 3-year-olds drank 2 or more cups of sweetened non-soda beverages on a given day.
- Over one third of 3-year-olds (39%) drank more than 1 cup of 100% fruit juice, and 17% drank less than 1 cup. In addition, 44% of Alaska 3-year-olds did not drink any fruit juice on a daily basis.

<sup>23</sup> Healthy Eating Research. Consensus Statement. Health Beverage Consumption in Early Childhood: Recommendations from Key National Health and Nutrition Organization. September 2019. <https://healthyeatingresearch.org/wp-content/uploads/2019/09/HER-HealthyBeverage-ConsensusStatement.pdf>

**Figure 34: Percentage of Alaska 3-year-olds who drank any sugary drinks daily, by maternal demographic groups, 2016-2018**



Source: Alaska Childhood Understanding Behaviors Survey (CUBS)  
Current child enrollment in Medicaid was used as a proxy measure of low socioeconomic status (SES).

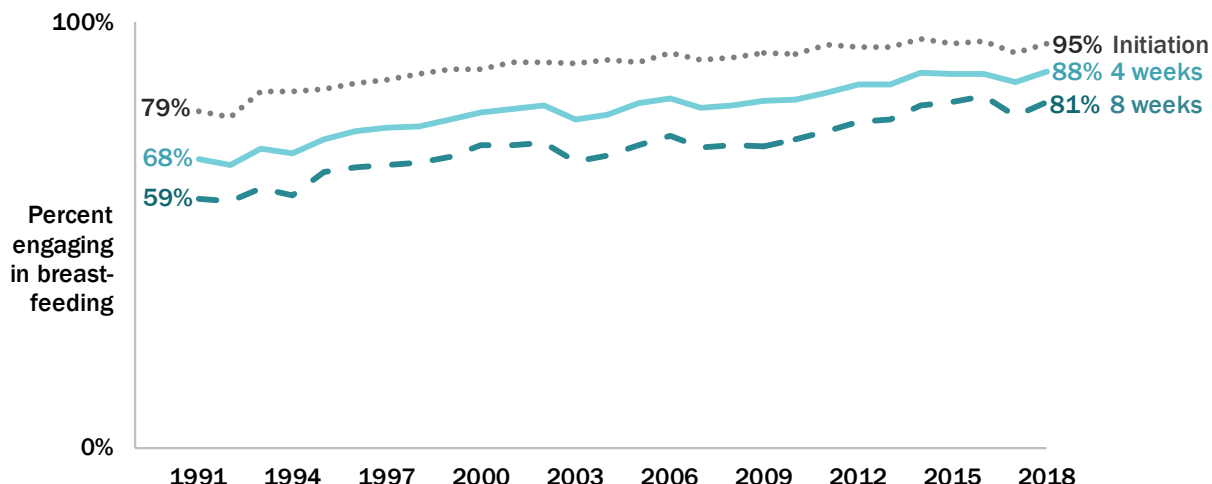
As noted on the previous page, the Childhood Understanding Behaviors Survey (CUBS) asks mothers of 3-year-olds about how many cups of selected beverages their child consumed on a given day. This graph combines answers from the question about soda and the question about sweetened or fruit drinks (such as Kool-Aid, Tang or Capri-Sun, energy or sports drinks).

- Overall, 31% of 3-year-olds drank any sugary drink daily, during 2016-2018.
- Health disparities exist in sugary drink consumption among Alaska 3-year-olds:
  - Children of younger mothers (39%) were significantly more likely than those whose mothers were 25 or older at child's birth (27%) to drink any sugary drinks daily.
  - Children of Alaska Native mothers (53%) were significantly more likely than other children to drink any sugary drinks daily, and children of other non-Native race mothers (37%) were also significantly more likely than children of White mothers (19%) to drink any sugary drinks daily.
  - Children in families with lower SES were more likely than those with higher SES families to drink any sugary drinks daily (42% vs. 23%).
  - Children in Northern (74%) and Southwest (70%) Alaska were more likely than those in other regions (range: 14% to 28%) to drink any sugary drinks daily (data not shown).

## V. Breastfeeding

### A. Initiation and Duration of Any Breastfeeding

Figure 35. Trend in breastfeeding initiation and duration, Alaska, 1991-2018



Source: Alaska Pregnancy Risk Assessment Monitoring System (PRAMS)

Breastfeeding, with its many known health benefits for infants, children, and mothers, is a key strategy to improve public health.<sup>24</sup> In the United States, the American Academy of Pediatrics (AAP) currently recommends:<sup>25</sup>

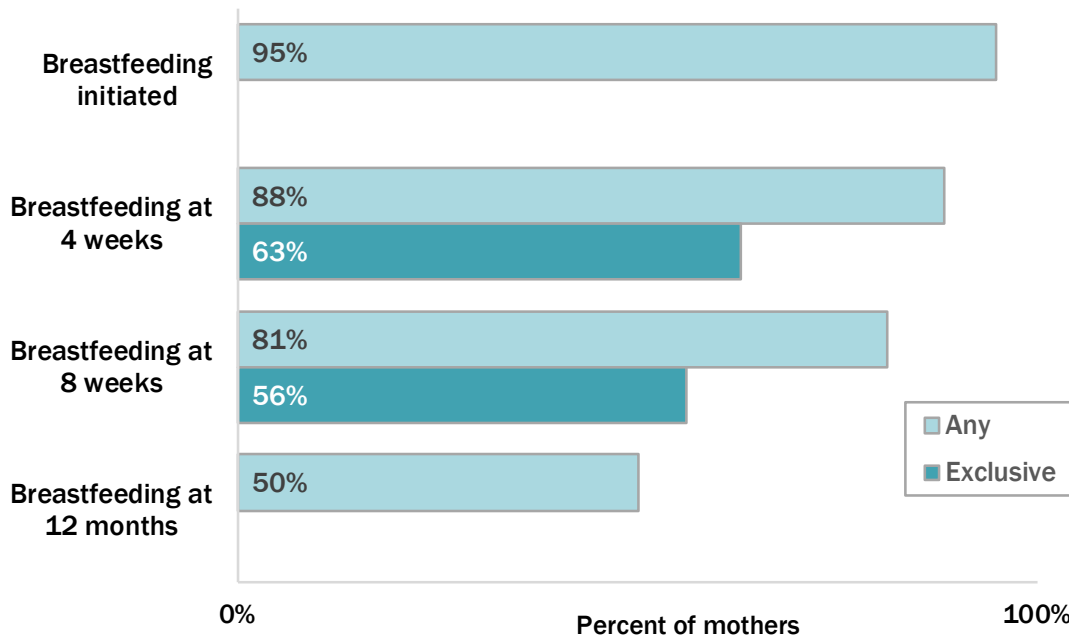
- Infants should be fed breast milk exclusively for the first 6 months after birth. Exclusive breastfeeding means that the infant does not receive any additional foods or fluids unless medically recommended.
- After the first 6 months and until the infant is 1 year old, the AAP recommends that the mother continue breastfeeding while gradually introducing solid foods into the infant's diet.
- The percentage of Alaska mothers breastfeeding their infants increased over the past few decades:
  - Initiation (ever breastfeeding – or pumping breast milk – even for a short time), from 79% in 1991 to 95% in 2018
  - Any breastfeeding at 4 weeks (infant age), from 68% in 1991 to 88% in 2018
  - Any breastfeeding at 8 weeks, from 59% in 1991 to 81% in 2018
- In 2018, 50% of Alaska mothers of 3-year-olds reported having breastfed when their child was 12 months old, an increase from 36% in 2008 (CUBS, data not shown).

<sup>24</sup> The Surgeon General's Call to Action to Support Breastfeeding. Rockville (MD): Office of the Surgeon General (US); 2011.

<sup>25</sup> American Academy of Pediatrics. (2012). Breastfeeding and the use of human milk. *Pediatrics*, 129(3), e827–e841. Retrieved April 27, 2012, from <http://pediatrics.aappublications.org/content/129/3/e827.full.pdf+html>

## B. Duration and Exclusivity

**Figure 36. Percent of mothers reporting breastfeeding duration and exclusivity, Alaska, 2018**

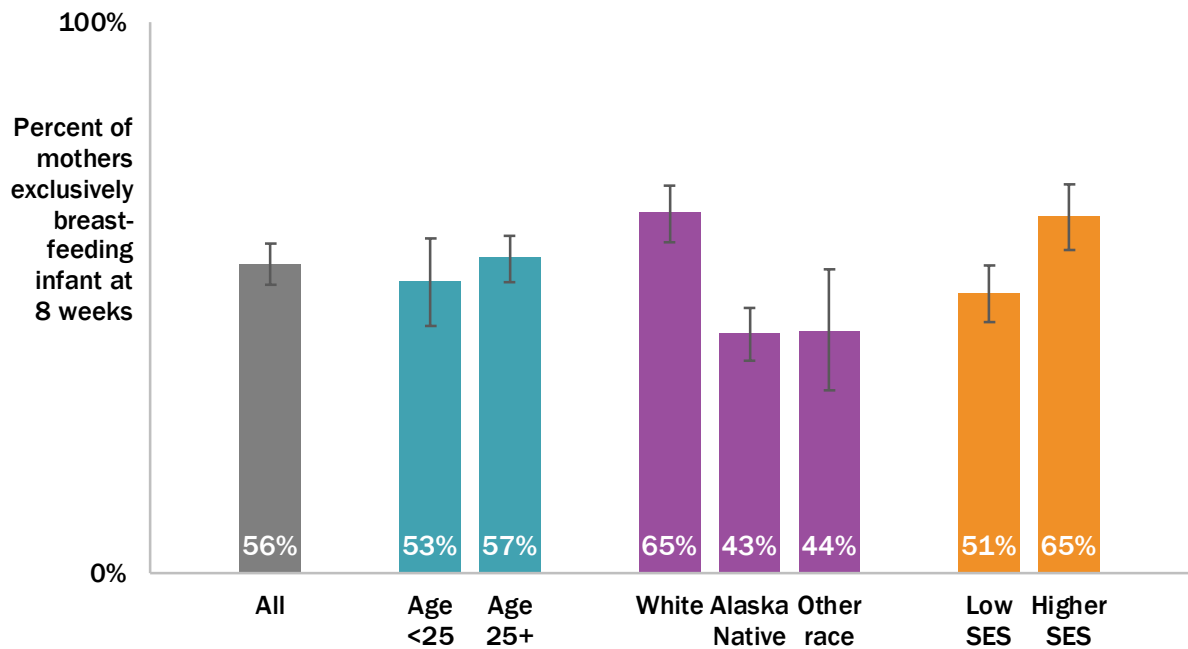


Source: Alaska Pregnancy Risk Assessment Monitoring System (PRAMS), and Alaska CUBS (breastfeeding at 12 months).

- As noted on the previous page, most Alaska mothers (95%) reported initiating breastfeeding; this is well above the Healthy People 2020 target of 82%.<sup>26</sup>
- Alaska mothers were also asked about how long they continued with breastfeeding and whether they fed their child other food or liquids in addition to breast milk. While 88% of Alaska mothers reported at least some breastfeeding when their child was 4 weeks old, 63% exclusively breastfed their babies at 4 weeks postpartum.
- At 8 weeks, 81% of Alaska mothers reported their infant received any breastfeeding, and 56% reported exclusive breastfeeding.
- Information about breastfeeding at 12 months comes from the Alaska CUBS data. In 2018, 50% of Alaska mothers of 3-year-olds reported having breastfed their child for 12 months or more.

<sup>26</sup>Healthy People 2020 [Internet]. Washington, DC: U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion. Objective MICH-21. 6/28/19 Available from: <https://www.healthypeople.gov/2020/topics-objectives/topic/maternal-infant-and-child-health/objectives>

**Figure 37. Exclusive breastfeeding at 8 weeks by maternal demographic groups, Alaska, 2018**



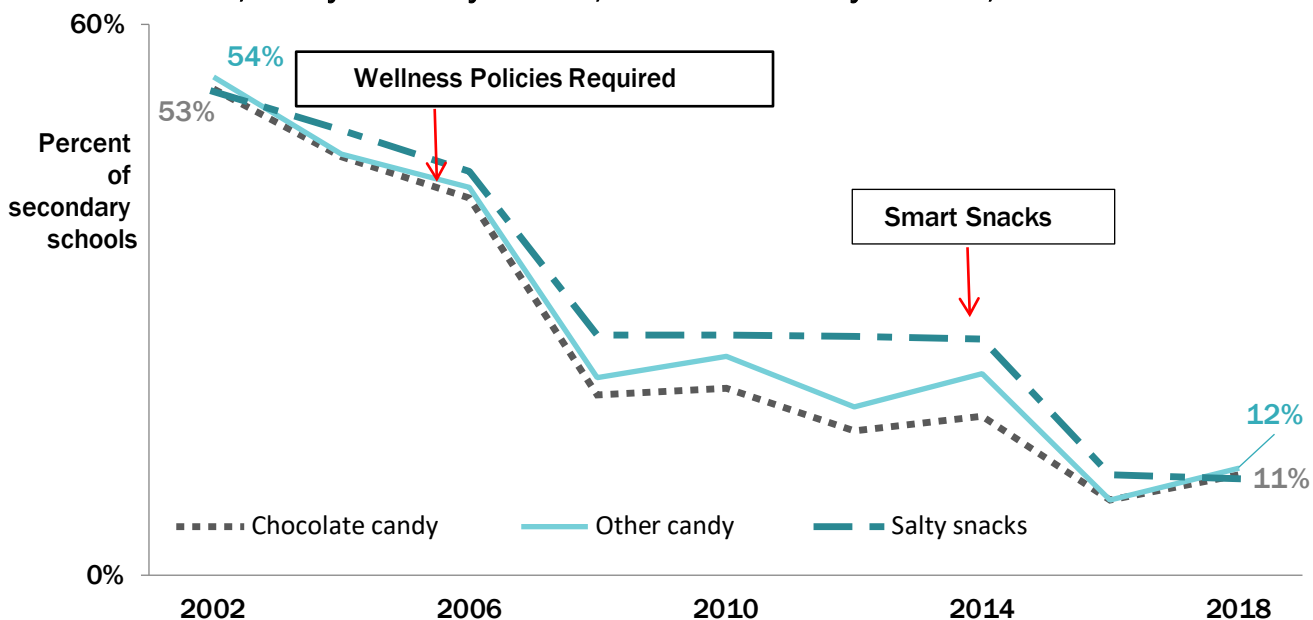
Source: Alaska Pregnancy Risk Assessment Monitoring System (PRAMS)  
Federal Poverty Level (FPL) of 200% or less, based on household size and income, was used as a proxy measure of low socioeconomic status (SES).

- The majority (56%) of Alaska women exclusively breastfed their babies at 8 weeks.
- Exclusive breastfeeding at 8 weeks was significantly higher among White mothers (65%) than among Alaska Native mothers (43%) or mothers of other races (44%).
- Mothers in higher-SES households were significantly more likely to exclusively breastfeed at 8 weeks than were mothers in lower-SES households, 65% vs. 51%, respectively.

## VI.Strategies and Interventions to Reduce Obesity

### A. School-Based Nutrition Strategies

Figure 38: Trend in percentage of schools in which students can purchase chocolate, candy and salty snacks, Alaska secondary schools, 2002-2018



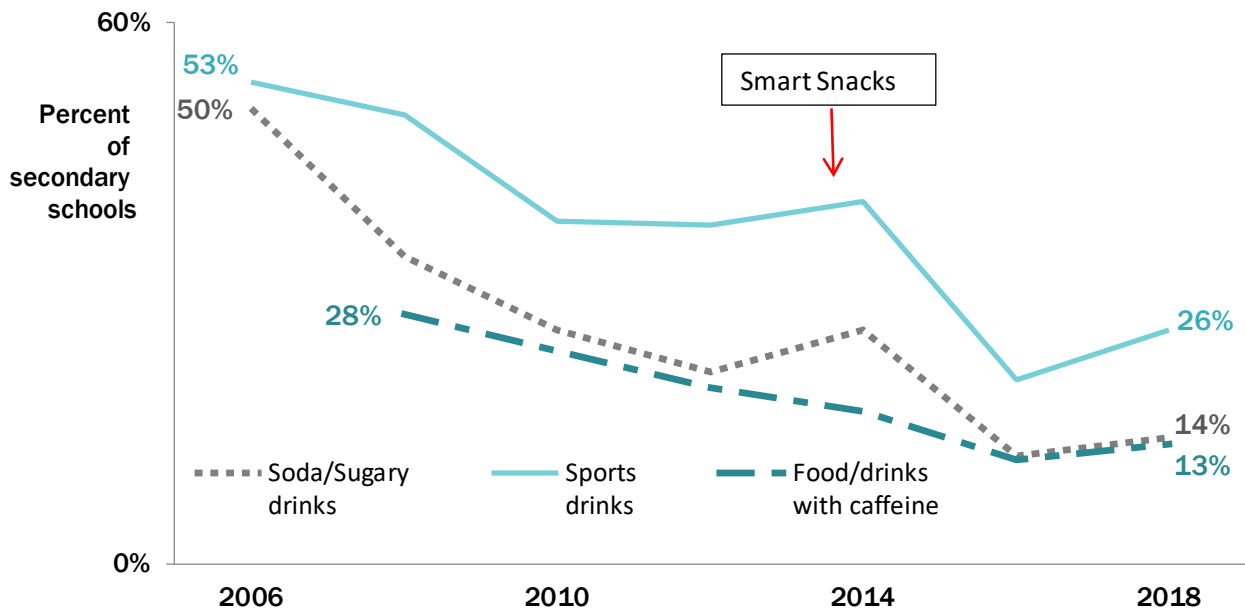
Source: AK School Health Profiles.

- Between 2002 and 2018 there were significant declines in the availability of candy, chocolate, and salty snacks within Alaska secondary schools.
  - In 2002, a little over 50% of Alaska schools provided the opportunity for students to purchase less healthy snacks at school (e.g., from vending machines in the school or at a school store, canteen, or snack bar).
  - The first significant decline occurred in 2008, directly following a federal requirement that all schools adopt a wellness policy<sup>27</sup> (also known as a physical activity and nutrition policy). In 2016, the percentages of schools selling all three types of junk foods dropped again after the USDA Smart Snacks<sup>28</sup> nutrition standards were required.
  - By 2018, chocolate, other candy and salty snacks were available in 11-12% of Alaska secondary schools. The slight increase in sales of chocolate and other candy between 2016 and 2018 (8% to 11-12%) is not significant and does not impact the declining trend. It does highlight the need for ongoing outreach to schools to support healthy nutrition policies.

<sup>27</sup> <https://www.fns.usda.gov/tn/local-school-wellness-policy>

<sup>28</sup> <https://www.fns.usda.gov/school-meals/smart-snacks-school>

**Figure 39: Trend in percentage of schools in which students can purchase selected beverages, Alaska secondary schools, 2006-2018**

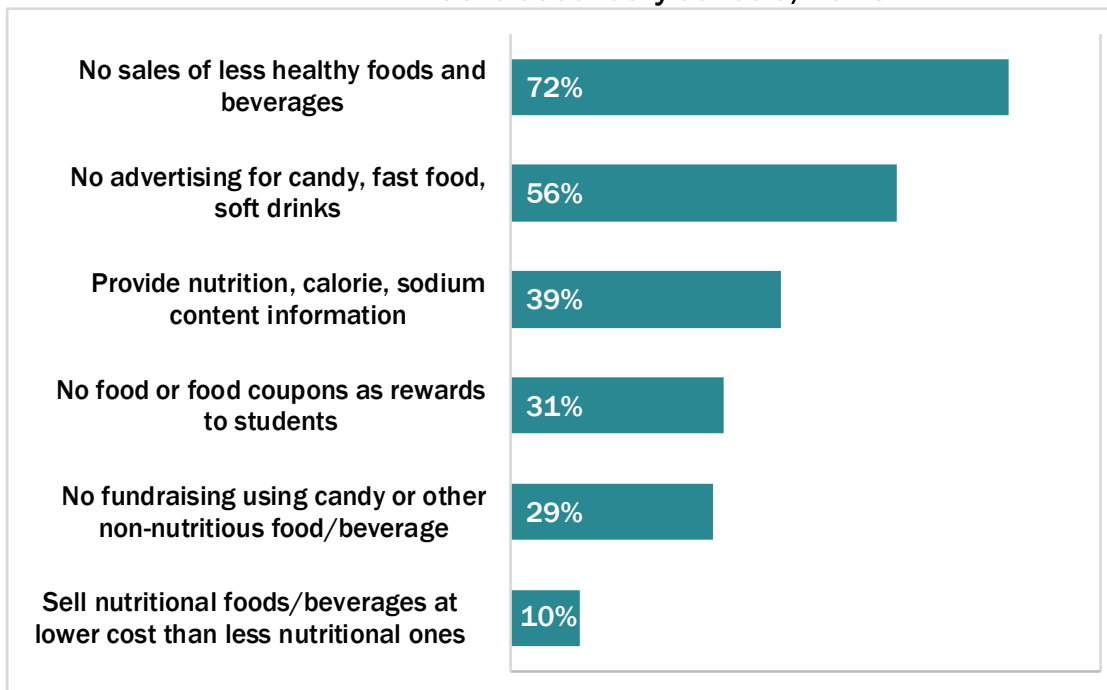


Source: AK School Health Profiles.

- Between 2006 and 2018 there were significant declines in the percentage of Alaska schools in which students could purchase less healthy beverages from one or more vending machines at the school or at a school store, canteen, or snack bar. The largest declines occurred following the release of the USDA Smart Snacks<sup>29</sup> nutrition standards.
- The proportion of Alaska secondary schools that offered these items decreased as noted below:
  - Soda and fruit drinks (excluding 100% fruit juice) declined from 50% in 2006 to 14% in 2018.
  - Sports drinks declined from 53% in 2006 to 26% in 2018.
  - Food or beverages containing caffeine declined from 28% in 2008 to 13% in 2018.
- Energy drinks were another item asked about in the 2014 through 2018 surveys, but only 2% of schools reported availability of these drinks in 2014, and they were not available for purchase in any Alaska secondary schools in 2018 (data not shown).

<sup>29</sup> <https://www.fns.usda.gov/school-meals/smart-snacks-school>

**Figure 40: Percentage of schools adopting selected nutrition policies, Alaska secondary schools, 2018**

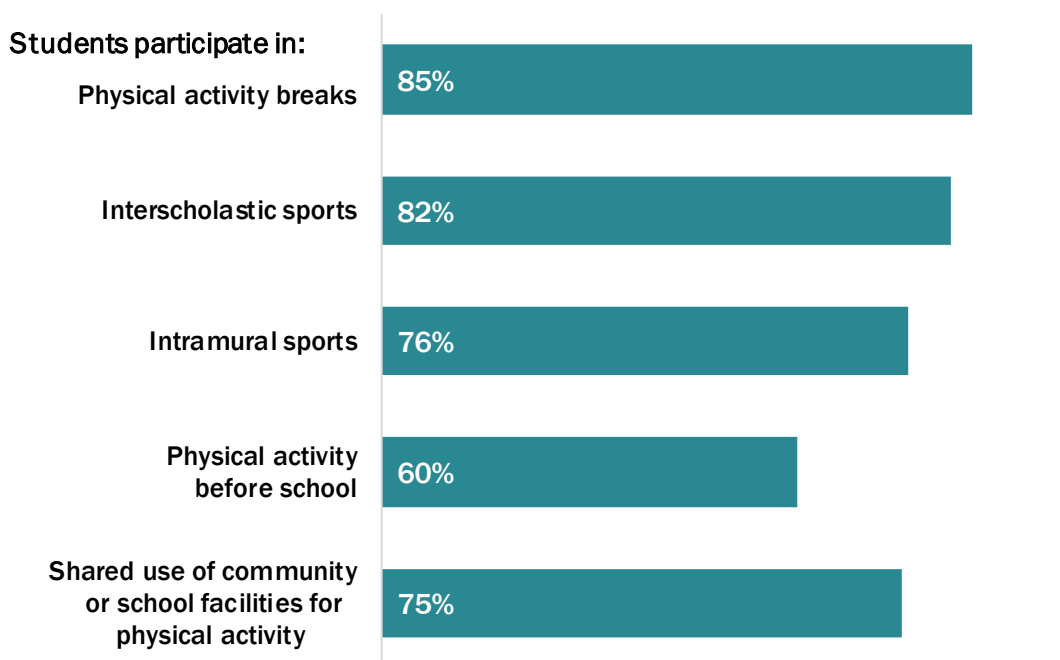


Source: AK School Health Profiles.

Alaska is seeing promising improvements in several Smart Snacks nutrition measures supported in the Alaska Gold Standard School Wellness Policy. More work can still be done, especially around reducing marketing of unhealthy foods in school.

- Most Alaska secondary schools (72%) do not sell less healthy foods such as soda pop or fruit drinks, sports drinks, baked goods, salty snacks, or candy. The proportion of schools meeting this combined measure has increased from 44% in 2008 (data not shown).
- About half of Alaska secondary schools (56%) do not allow any form of advertising for less healthy foods, as required by Smart Snacks nutrition standards since 2014. This proportion has not changed since then.
- Among schools that offer foods for purchase, 39% provide nutritional information, including calorie and sodium content, and this proportion has remained stable since 2008.
- The percentage of schools that adopted policies around use of foods in fundraising and student rewards both increased from 2014 to 2018 (2014 data not shown).
  - The proportion that do not allow food or food coupons to be used as rewards for student behavior or achievement increased from 20% to 31%
  - The percentage that prohibit less nutritious foods and beverages (e.g., candy, baked goods) from being sold for fundraising purposes increased from 15% to 29%.

**Figure 41: Percentage of schools reporting selected physical activity opportunities, Alaska secondary schools, 2018**

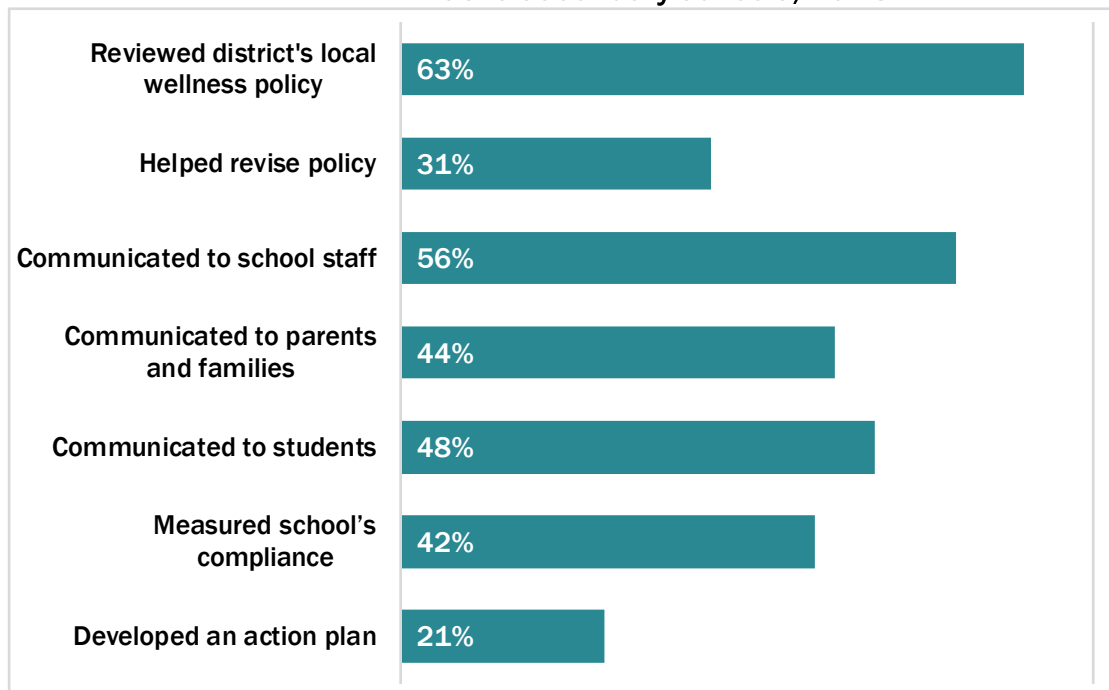


Source: AK School Health Profiles.

A Comprehensive School Physical Activity Program (CSPAP) is a multi-component approach that provides opportunities for students to be physically active before, during, and after school. Participation in the following physical activity measures in Alaskan schools has been consistently high:

- A large percentage of schools (85%) reported that students participate in physical activity breaks other than PE class.
  - This measure increased from 60% in 2012 to 85% in 2018, correlating with Alaska's Physical Activity in Schools Law which passed in 2016 and requires school districts to establish guidelines for providing opportunities for 54 minutes of physical activity each full school day for students in grades K-8 (data not shown).
- In 2018, Most Alaska secondary schools provided opportunities for the following:
  - Interscholastic sports – 82%
  - Intramural sports – 76%
  - Physical activity before school – 60%
  - Shared use of community or school facilities for physical activity – 75%
- While many schools have implemented one or more of the individual aspects of a CSPAP, only 30% of schools reported that they've developed a written plan for implementing a Comprehensive School Physical Activity Program (data not shown).

**Figure 42: Percentage of schools reporting selected school wellness policy activities, Alaska secondary schools, 2018**



Source: AK School Health Profiles.

School Wellness Policies are school-based physical activity and nutrition policies created to help children grow up at a healthy weight and are required for all districts participating in the National School Lunch or Breakfast Programs. The State of Alaska has a Gold Standard Local Wellness Policy<sup>30</sup> developed in partnership between the state Physical Activity and Nutrition unit, the Department of Education and Early Development's Child Nutrition Program, and the Association of Alaska School Boards (AASB). For the first time in 2018, the School Health Profiles Survey included a series of questions about local wellness policy implementation.

- Most Alaska secondary schools reviewed their local wellness policy (63%) in 2018.
- Districts are required to communicate about their local wellness policy on an annual basis.
  - Over half of Alaska secondary schools communicated about their local wellness policy to school staff (56%).
  - Slightly fewer communicated about it to parents (44%) and students (48%).
- Districts are required to assess their local wellness policy at least once every three years.
  - Two in five secondary schools measured their compliance with the district's local wellness policy (42%).
  - One in five secondary schools developed an action plan with steps to meet the requirements of the district's local wellness policy (21%).
  - Nearly a third of secondary schools helped to revise the district's local wellness policy (31%).

<sup>30</sup> <http://dhss.alaska.gov/dph/Chronic/Pages/SchoolHealth/aswpi.aspx>

## VII.Data Sources

### Behavioral Risk Factor Surveillance System (BRFSS)

The BRFSS is an anonymous telephone survey conducted by the Alaska Division of Public Health in cooperation with the Centers for Disease Control and Prevention (CDC). It estimates the prevalence of behavioral risk factors in the general population that are known to be associated with the leading causes of morbidity and mortality in adults. The BRFSS has operated continuously in Alaska since 1991.

Alaska presently conducts two BRFSS surveys: the standard BRFSS and a separately-funded supplemental BRFSS. Both surveys are conducted throughout the year, using separate samples drawn using the same methodology.

#### Selection of BRFSS Survey Participants

The BRFSS uses a probability (or random) sample in which all Alaska households with landline telephones have a known, nonzero chance of selection. Respondents are randomly selected from among the adult members of each household reached through a series of telephone calls. Historically, those living in institutional housing (i.e., nursing homes and barracks) are not surveyed. The sample is stratified into geographic regions, with roughly equal numbers of interviews conducted in each region. This method deliberately oversamples rural areas of the state. The sample was stratified into six geographic regions in 2011—Anchorage, Mat-Su, Gulf, Southeast, Fairbanks North Star, and Rural. Where possible, the rural region is divided into two regions: Southwest and Northern/Interior.

In addition, the sampling frame has been expanded to include cell phones as well as landline or household phones. This step was important because the proportion of households served only by cell phones has increased rapidly. By June 2010, about 20% of Alaska households were cell-only. Starting in 2011, Alaska's cell phone sample was large enough to include it in weighting and reporting of data. In 2017, approximately 586 Alaska adults were interviewed each month for the two BRFSS surveys combined. About 45% of roughly 7,000 respondents in 2017 were reached by cell phone, and 55% by residential landline phone. The overall sample size was smaller in 2018 (about 4,370 total), but proportions reached by cell and landline were similar to those in 2017.

Interviews are conducted by trained interviewers during weekdays, evenings, and weekends throughout the year. In addition to nutrition, physical activity, and weight status, the BRFSS questionnaire covers such topics as general health status, health care access, tobacco use, diabetes, alcohol use, women's health, injury prevention, and HIV/AIDS awareness. There are also questions on the demographic characteristics of respondents.

#### Data Weighting and Methods

BRFSS data are weighted to adjust the distribution of the sample data so that it reflects the total population of the sampled geographic area, and to account for the over-representation or under-representation of persons in various subgroups.

Changes in both the weighting and sampling methods are reflected in the estimates reported in this update of Alaska Physical Activity, Nutrition and Obesity Facts. These changes help ensure that the BRFSS can continue to be a valuable source of information for health planning and improvement. The first change is a new weighting method known as iterative proportional fitting, or raking. Raking allows for the inclusion of several key demographic factors in adjusting survey data to the adult population totals. To provide additional context for interpretation about changes in prevalence estimates over time, raking was applied to data from 2007 forward. More information about the changes in BRFSS methods can be found in the January 2013 issue of *Chronicles*: <http://dhss.alaska.gov/dph/Chronic/Documents/Publications/assets/ChroniclesV5-1.pdf> .

Both the standard and supplemental BRFSS are weighted (separately) for analysis of items that occur only in one version. In addition, a combined dataset (standard plus supplemental) is created and weighted for analysis of questions that occur in both versions. In recent years, the combined sample has included more respondents, between 7,000 and 9,000 each year from 2012 to 2017, although sample size was smaller in 2018 at a little less than 4,400 respondents. Prior to 2012, sample size ranged from about 1,500-2,800 from 1991 to 2003, and from 3,000-6,000 between 2004 and 2011. Larger sample sizes allow for more precision in the estimates for healthy weight, obesity and other weight status measures. Most other indicators of adult behavior related to nutrition and physical activity in this report came from questions asked only on one version of the questionnaire, for which sample sizes were about half of the combined total. Because sample size is lower for some subpopulation reporting groups, data years have occasionally been combined to report some key indicators.

In this report, we used chi-square tests in our comparisons between groups of Alaskans. Chi-square tests are tests of association between group and outcome variables (for example, meets physical activity recommendation [yes, no] and sex [male, female]). For trend analyses, we used logistic regression models that tested for a statistically significant linear change over time.

### **Physical Activity and Nutrition Questions**

Since 2011, physical activity has been measured using a set of 8 questions about exercise behavior in the past 30 days. The first 7 ask about aerobic exercise, and duration—how many times per week/month and how many minutes each time; the 8<sup>th</sup> question is about duration of muscle strengthening activities (times per week/month).

In 2017, fruit and vegetable consumption was measured using a set of 6 questions about consumption behavior in the past 30 days. The first 2 questions are combined to calculate average daily fruit servings—number of times (per day/week/month) respondent 1) has eaten fresh, frozen or canned fruit, and 2) drank 100% fruit juice. Another 3 questions are combined to calculate average daily vegetable servings and ask about how often respondent has eaten 1) leafy greens (like lettuce or spinach), 2) potatoes (not fried or in chips), and 3) other vegetables. A fourth question asks about fried potato consumption (which is not included in the calculation).

Every other year since 2013, the Alaska BRFSS has included 2 questions about sugary drinks asking about the number of times (per day/week/month) in the past 30 days that the respondent drank 1) regular soda or pop that contains sugar, and 2) sugar-sweetened fruit

drinks (such as Kool-Aid™ and lemonade), sweet tea, and sports or energy drinks (such as Gatorade™ and Red Bull™). These do not include diet or artificially sweetened drinks.

### Reporting by Poverty/Income Status

The poverty status measure is derived from the US Department of Health and Human Services (USDHHS) Federal Poverty Guidelines, which are based on household income and number of people in the household. The poverty guidelines, issued each year in the Federal Register by the Department of Health and Human Services (HHS), are a simplified version of the federal poverty thresholds and are used for administrative purposes — for instance, determining financial eligibility for certain federal programs.<sup>31</sup> The Alaska-specific guideline totals were used to create a cut-point of household incomes at or below the 185% poverty guideline<sup>32</sup> for this report, because this percent corresponds with eligibility criteria for the Supplemental Nutrition Assistance Program (SNAP), the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), and some parts of Medicaid, among other programs.

There are limitations in using income or percent of poverty guideline in the BRFSS. Respondents select a range of income categories and therefore the percent of poverty guideline is sometimes approximate. In addition, many respondents either decline to answer the question or report that they do not know their household income level. In 2018, about 18% of Alaska BRFSS respondents were missing information about income, and in 2015-2017, about 12% were missing. We were unable to calculate household percent of poverty guideline for respondents with missing information about income.

### Reporting by Race Group

For this report the term Alaska Native adult includes all survey respondents who report any mention of being Alaska Native/American Indian, alone or in combination with another race or ethnicity (Hispanic). Comparison groups are those who report their race as “White only, non-Hispanic” and “other races”, which includes those who report other races or multiple race groups, not including Alaska Native/American Indian. Those who report being Hispanic or Latino are also grouped in “other race” (unless they are already grouped in Alaska Native/American Indian). In general, reporting health indicators for specific race groups in the “Other” category is limited due to relatively small numbers of BRFSS respondents who report their race group as something other than White or Alaska Native each year.

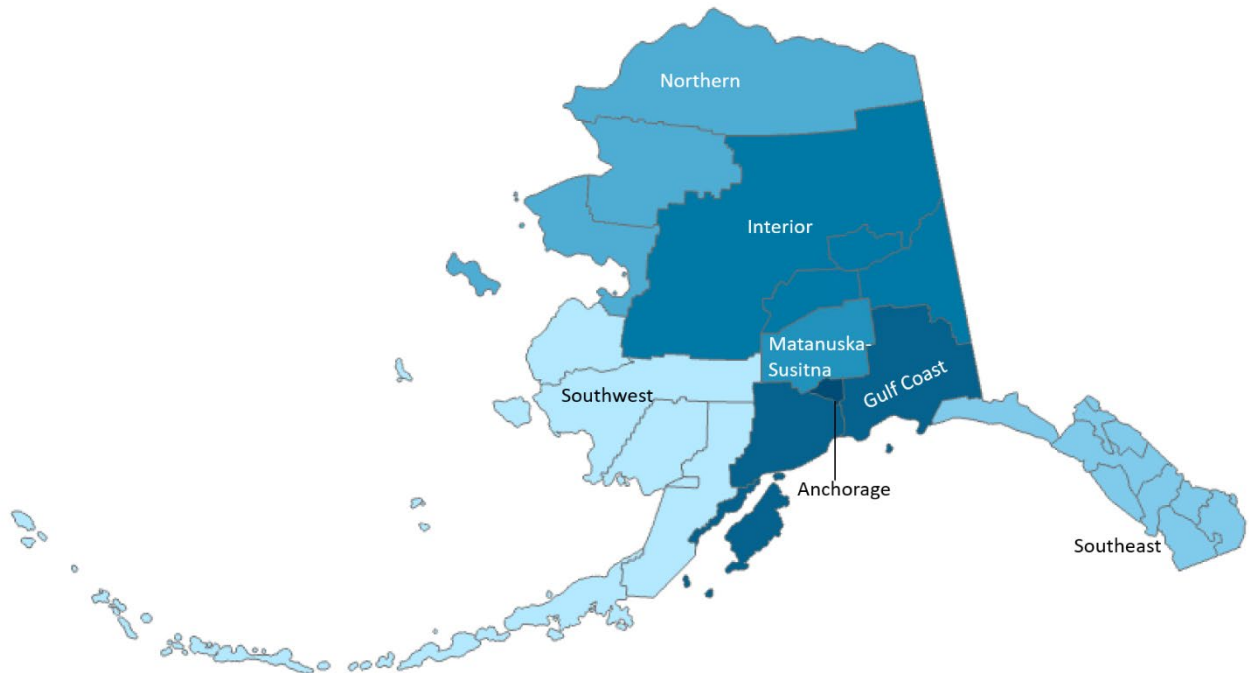
---

<sup>31</sup> More information about the poverty guideline can be found here: <https://aspe.hhs.gov/poverty-guidelines>

<sup>32</sup> In Alaska in 2017, a family of three with a household income of \$47,212 would be at 185% of the HHS poverty guideline.

## Regional Reporting

As the BRFSS survey data do not provide sufficient representation for reporting by most of the individual boroughs, we combined boroughs to create regions for analysis of patterns by the geographic areas of Alaska. Regions reported here are the Alaska Public Health Regions.



Source: State of Alaska, DHSS, DPH, Section of Chronic Disease Prevention and Health Promotion.

The Alaska Public Health Regions are defined using borough designation as follows:

- 1) Anchorage – Municipality of Anchorage
- 2) Gulf Coast – Kenai Peninsula Borough, Kodiak Island Borough, and Valdez-Cordova Census Area
- 3) Interior – Denali Borough, Fairbanks North Star Borough, Southeast Fairbanks Census Area, and Yukon-Koyukuk Census Area
- 4) Mat-Su – Matanuska-Susitna Borough
- 5) Northern – Nome Census Area, North Slope Borough, and Northwest Arctic Borough
- 6) Southeast – Haines Borough, Hoonah-Angoon Census Area, Juneau City and Borough, Ketchikan Gateway Borough, Petersburg Census Area, Prince of Wales-Hyder Census Area, Sitka City and Borough, Skagway Municipality, Wrangell City and Borough, and Yakutat City and Borough
- 7) Southwest – Aleutians East Borough, Aleutians West Census Area, Bethel Census Area, Bristol Bay Borough, Dillingham Census Area, Lake and Peninsula Borough, and Kusilvak Census Area

## Childhood Understanding Behaviors Survey (CUBS)

Alaska CUBS is a program designed to find out more about the health and early childhood experiences of young children in Alaska. CUBS collects information by conducting a follow-up survey to the Alaska Pregnancy Risk Assessment Monitoring System (PRAMS). PRAMS sends a survey to approximately one of every 6 mothers of newborns in Alaska, and CUBS sends a follow-up survey three years later to all mothers who completed PRAMS and are still living in Alaska. CUBS asks questions about both the mother and her child. About 90 Alaska mothers are sent a CUBS survey every month.

The purpose of CUBS is to provide information on health conditions, health care utilization, child development and other health related behaviors of young children and to evaluate the association between prenatal and immediate postnatal factors with early childhood health and welfare. The CUBS asks questions about both the mother and her child. Survey responses are weighted so that reported prevalence accurately describe all mothers of 3-year-old children born in Alaska in a single calendar year. Both the CUBS and PRAMS data (described below) can be presented regionally, using the same public health regions shown in the map for BRFSS (see Regional Reporting above). See

[http://dhss.alaska.gov/dph/wcfh/Pages/mchebi/cubs/CUBS\\_main.aspx](http://dhss.alaska.gov/dph/wcfh/Pages/mchebi/cubs/CUBS_main.aspx) for more information about CUBS questionnaires and methodology.

## Pregnancy Risk Assessment Monitoring System (PRAMS)

PRAMS is a population-based survey of Alaska women who have recently delivered a live-born infant. Administered since 1990 by the Alaska Division of Public Health, PRAMS is conducted in collaboration with the CDC in 47 states and several other jurisdictions to gather information on the health risk behaviors and circumstances of pregnant and postpartum women. A systematic stratified sample is drawn each month from the state's live birth records for infants between 2 and 6 months of age. Sampled mothers receive a series of mailed questionnaires, and since 1997 telephone follow-up has been initiated among those who do not respond to the third mailed request. The PRAMS questionnaire addresses such topics as access to prenatal care, obstetric history, maternal use of alcohol, maternal tobacco use, nutrition, economic status, maternal stress, and early infant development and health status. Survey responses are weighted so that reported prevalence estimates accurately describe Alaska women delivering a live-born infant during the year of the survey. See

<http://dhss.alaska.gov/dph/wcfh/Pages/mchebi/prams/default.aspx> for more information about PRAMS questionnaires and methodology.

## School Health Profiles

The School Health Profiles (Profiles) is a system of surveys assessing school health policies and practices in states, territories, and large urban school districts. Profiles surveys are conducted biennially among representative samples of middle and high school principals and lead health education teachers. Profiles Reports can be found on the School Health Program website:

<http://dhss.alaska.gov/dph/Chronic/Pages/SchoolHealth/profiles.aspx>.

## Student Weight Status Surveillance System (SWSSS)

SWSSS is comprised of Alaska student weight status data obtained voluntarily from partner school districts that have contributed their data as a means of monitoring weight status trends. Participating school districts provide the Department of Health and Social Services (DHSS) de-identified student data (i.e., measured height and weight, age and sex). DHSS conducts the analysis to generate body mass index (BMI) percentile, and the associated weight status classifications of underweight, healthy weight, overweight and obese, as described in Section I, Introduction. SWSSS data reports race using US Department of Education definitions because that is how the data is shared with the state Physical Activity and Nutrition unit. The Healthy Alaskans 2030 childhood healthy weight status objective uses data from Anchorage, Mat-Su Borough, and Kenai Peninsula Borough school districts.

School districts across the state vary in the grades for which they routinely collect height and weight data. Some districts aim to measure and weigh every student, every year, while other districts target only students in kindergarten, 1st, 3rd, 5th and 7th grades. The following school districts have participated in SWSSS in various years since its inception: Anchorage, Dillingham, Kenai Peninsula Borough, Ketchikan Gateway Borough, Kodiak Island Borough, Matanuska-Susitna Borough, Nome, North Slope Borough, Petersburg, and Sitka. Individual school district weight status reports are available at:

<http://dhss.alaska.gov/dph/Chronic/Pages/Obesity/weightstatus.aspx>

## Youth Risk Behavior Survey (YRBS)

The YRBS is a systematic survey of high school students that assesses behaviors related to the leading causes of mortality, morbidity and social issues among youth. The Centers for Disease Control and Prevention (CDC) sponsors national and state surveys every 2 years, most recently in 2019. Data are currently available through 2019.

### Selection of YRBS Survey Participants

The statewide Alaska YRBS is conducted using a two-stage sampling design. Schools are selected first with a probability of inclusion proportional to the size of their enrollment. Once a school is chosen, classes are selected, with each student having an equal opportunity for inclusion. From 2001 through 2019, active parental consent was required for each student participating in the YRBS. On the appointed survey day students completed written questionnaires without any identifying information and returned them in class in unmarked, sealed envelopes.

In addition to the statewide survey, all Alaska school districts have the opportunity to conduct a local survey, which employs the same questionnaire and data analysis methods as the statewide survey. If a district conducts a local survey and one of its classrooms was selected for the statewide survey, additional classrooms will be surveyed as part of the local survey. Districts that conduct a local survey and obtain at least 100 responses in a given school type receive a district level report based on results of all classrooms surveyed.

## Data Weighting and Methods

In a typical YRBS administration, about 1,300 to 1,400 students are surveyed from about 40 to 45 high schools that are scientifically selected to represent all public high schools (excluding boarding schools, alternative schools, correspondence and home study schools, and correctional schools) in Alaska. These results are considered to be representative of Alaska's more than 33,000 high school students in grades 9-12 in traditional public high schools. Data are weighted to reflect the true distribution of Alaska high school students by sex, grade level, and race/ethnicity, but not by region of the state, since the CDC's sampling method for YRBS does not stratify by region.

Alaska first conducted a statewide YRBS in 1995. Although Alaska participation rates met CDC standards in 1999, this sample did not include Anchorage schools and so the 1999 YRBS data are generally not included in multi-year analyses. To assure statistical validity for weighting, the CDC required a response rate of at least 60% for the statewide survey, although that was changed to >50% in 2019. In addition to the 1995 survey, Alaska achieved a representative sample on the statewide survey in 2003, and 2007 through 2019.

Analyses used for YRBS data are similar to those used for BRFSS. We used chi-square tests in our comparisons between groups of Alaskans, and for trend analyses we used logistic regression models that controlled for sex, race/ethnicity and grade, and tested for a statistically significant linear change over time. P-values less than 0.05 indicate that a difference seen between percentages or across years is statistically significant at the 95% confidence level.

School-based surveys do not estimate risk behaviors associated with youth who drop out of school or do not attend school. However, starting in 2009, students from alternative high schools in Alaska have also participated in a YRBS to evaluate and address the health risks of this unique population. High school-age youth in correctional institutions have also been surveyed since 2009. Further information about the Alaska YRBS surveys and health information from those surveys is available at

<http://dhss.alaska.gov/dph/Chronic/Pages/yrbs/results.aspx>

## Reporting by Race Group

All YRBS survey participants who report being Alaska Native or American Indian, either alone or in combination with other race groups or Hispanic ethnicity, are categorized in this report as "Alaska Native" students. Survey participants who report being White (non-Hispanic) are categorized as White, and all other race groups are combined to report as "other races". This category includes students who report being Hispanic, African American, Asian, Hawaiian or Other Pacific Islander, or who report multiple race groups (except for Alaska Native). Those who did not report a race or ethnicity are not included in the race group reporting.

## Physical Activity and Nutrition Questions

In the YRBS, aerobic physical activity has been measured using 1 question: During the past 7 days, on how many days were you physically active for a total of at least 60 minutes per day? (Add up all the time you spend in any kind of physical activity that increases your heart rate and

makes you breathe hard some of the time.) In 1995-2003 and 2015-2019, survey participants were also asked 1 question about muscle strengthening activities: During the past 7 days, on how many days did you do exercises to strengthen or tone your muscles, such as push-ups, sit-ups, or weight lifting? In addition, the YRBS has included a question about PE class attendance.

Since 1999, fruit and vegetable consumption has been measured using a set of 6 questions about consumption behavior in the past 7 days. The first 2 questions are combined to calculate average daily fruit servings—number of times (per day/week) respondent: 1) drank 100% fruit juice, and 2) has eaten fruit. The other 4 questions are combined to calculate average daily vegetable servings and ask about how often the respondent has eaten: 1) green salad, 2) potatoes (do not count french fries, fried potatoes or potato chips), 3) carrots, and 4) other vegetables.

Since 2013, the Alaska YRBS has included multiple questions about sugary drink consumption in the past 7 days, but the questions have changed over time. In 2017 and 2019, the questions included:

- 1) During the past 7 days, how many times did you drink a can, bottle, or glass of soda or pop, such as Coke, Pepsi, or Sprite? (Do not include diet soda or diet pop.)
- 2) During the past 7 days, how many times did you drink a can, bottle, or glass of a sugar-sweetened drink such as lemonade, sweetened tea or coffee drinks, flavored milk, Snapple, or Sunny Delight? (Do not count soda or pop, sports drinks, energy drinks, or 100% fruit juice.)
- 3) During the past 7 days, how many times did you drink a can, bottle or glass of a sports drink, such as Gatorade or PowerAde? (Do not count low-calorie sports drinks such as Propel or G2)
- 4) During the past 7 days, how many times did you drink a can, bottle, or glass of an energy drink, such as Red Bull, Rockstar, or Monster? (Do not count diet energy drinks such as Gatorade or PowerAde.)

## Women, Infants and Children (WIC) Nutrition Program

WIC is a supplemental food and nutrition program for pregnant and breastfeeding women and their children from birth to age 5. Alaska WIC provides nutrition information, counseling, breastfeeding support, and periodic health screening, along with supplemental food vouchers for infant formula and healthy foods. Children's height and weight are measured and recorded at clinics as part of the application and renewal process. Alaska data are available at the United States Department of Agriculture, Food and Nutrition Service website:

<https://www.fns.usda.gov/pd/wic-program>.



# **Diabetes Prevention and Control in Alaska**



Section of Chronic Disease Prevention and Health Promotion  
Alaska Department of Health and Social Services

2019

# Diabetes Prevention and Control in Alaska, 2019

A report of the Section of Chronic Disease Prevention and Health Promotion

Alaska Department of Health and Social Services

Michael J. Dunleavy, Governor

Adam Crum, MSPH, Commissioner, Department of Health and Social Services

Lily Lou, MD, FAAP, Chief Medical Officer, Department of Health and Social Services

Merry Carlson, MPP, Director, Division of Public Health

Tari O'Connor, MSW, Section Chief, Chronic Disease Prevention & Health Promotion

## Suggested Citation

Alaska Department of Health and Social Services. Diabetes Prevention and Control in Alaska – 2019. Anchorage, Alaska: Section of Chronic Disease Prevention and Health Promotion, Division of Public Health, Alaska Department of Health and Social Services; February 2019.

## Copyright Information

All material in this document is in the public domain and may be reproduced or copied without permission; citation as to source, however, is appreciated.

## Acknowledgements

This report was produced for the Diabetes Prevention and Control Program, Section of Chronic Disease Prevention and Health Promotion, Division of Public Health, Alaska Department of Health and Social Services. It was produced by Program Design and Evaluation Services, Multnomah County Health Department and Oregon Public Health Division.

Major contributors to the development of this report include:

*Alaska Department of Health and Social Services*

Chung Nim Ha, MPH, Diabetes Prevention and Control Manager

Andrea Fenaughty, PhD, Deputy Section Chief, Chronic Disease Prevention and Health Promotion

Sam Hyde-Rolland, MS, PhD, MPH, Chronic Disease Epidemiologist

Janice Gray, RN, BSN, Nurse Consultant II, Heart Disease and Stroke Prevention Program

Nancy Edtl, RN, Health System Collaboration Manager

Valerie Gosselin, RN, BSN, Nurse Consultant II, Heart Disease and Stroke Prevention

Stacie Hawkins, RN, BSN, Health System Collaboration Manager

*Program Design and Evaluation Services, Multnomah County and Oregon Public Health Division*

Julia Dilley, PhD, Senior Research Scientist/Epidemiologist

Kathryn Pickle, MPH, Senior Research Analyst

We would like to thank the following individuals for their contribution to the report:

Alaska Department of Health and Social Services, Health Analytics & Vital Records Section (HAVRS)

Rosa Avila, MSPH, PhD, Deputy Section Chief

Rebecca Topol, SM, Research Analyst IV

## Table of Contents

|                                                           |    |
|-----------------------------------------------------------|----|
| Executive Summary .....                                   | 1  |
| Introduction.....                                         | 3  |
| What is diabetes?.....                                    | 3  |
| Why is diabetes a public health priority in Alaska? ..... | 4  |
| Methods.....                                              | 5  |
| Data Sources.....                                         | 5  |
| Key Definitions .....                                     | 5  |
| Analytic Approaches .....                                 | 6  |
| Notes on Presentation of Data .....                       | 6  |
| Diabetes and Prediabetes Prevalence.....                  | 8  |
| Gestational Diabetes.....                                 | 17 |
| Burden of Diabetes .....                                  | 18 |
| Diabetes-related Deaths.....                              | 18 |
| Diabetes-related Hospitalizations.....                    | 25 |
| Economic Costs.....                                       | 28 |
| Diabetes Control .....                                    | 29 |
| Screening for Diabetes .....                              | 29 |
| Effective Healthcare .....                                | 31 |
| Risk Factors .....                                        | 38 |
| Summary of population risk factor patterns.....           | 40 |
| What can be done? .....                                   | 44 |
| Data Gaps.....                                            | 44 |
| Appendix.....                                             | 46 |
| Data Tables.....                                          | 46 |
| Data Sources.....                                         | 51 |
| Definitions.....                                          | 53 |
| Analysis and reporting approaches .....                   | 56 |

## Executive Summary

Diabetes is among Alaska's leading causes of death, and an important public health priority. This report summarizes the most recently available information about diabetes and prediabetes prevalence, screening, treatment, risk factors, illness and death in Alaska. The purpose of this report is to provide information for partners in Alaska who are working to prevent diabetes and improve care for people with diabetes.

The report includes self-reported information about behaviors related to diabetes such as drinking sugary drinks, physical inactivity or smoking; whether they have already been diagnosed with diabetes or prediabetes; and, for those who have been diagnosed with diabetes, whether they are getting appropriate medical care and self-care. Rates and numbers of diabetes-related hospitalizations, outpatient hospital visits, and death are described for different population groups and regions. Alaska's evidence-based public health activities to reduce the burden of diabetes, including economic costs, are also briefly discussed.

Key findings include:

- *Prevalence of diabetes in Alaska.* According to the most recently available data, 7.5% of adults in Alaska report being diagnosed with diabetes and another 11.1% of adults report being diagnosed with prediabetes. More than 100,000 Alaska adults have been diagnosed with diabetes or prediabetes; but an even greater number are likely at risk and do not know it. The prevalence of diabetes has significantly increased during recent years, by an average of 0.6% per year during the past 10 years. This is similar to national trends.
- *Diabetes-related death (mortality).* Diabetes is the 8<sup>th</sup> leading cause of death in Alaska, identified as a cause of death for 3,662 Alaskans between 2007-2016: 889 as the underlying cause of death (i.e., direct cause), and 2,773 as a contributing cause of death. Although diabetes prevalence increased over the past decade, diabetes-related death rates have declined significantly during the same period.
- *Diabetes-related hospitalizations and outpatient treatment.* In total, during 2016 diabetes contributed to the need for services in 70,487 hospital visits – 9,067 of these were inpatient visits, where the person was admitted to a hospital, and 7% indicated diabetes as the primary diagnosis, or reason care was needed. The remaining 61,420 cases were outpatient visits (i.e., emergency department, outpatient surgery, outpatient observation, imaging labs, or other services), and about one-third (33%) of those indicated diabetes as the primary diagnosis.
- *Comparisons by demographic group.* Diabetes prevalence increased with age: from 2.0% among people ages 18-44 to 19.3% among people ages 65 and older. Diabetes prevalence was similar for men and women, but diabetes-related hospitalizations were greater among women than men, and death rates are greater among men than women.
- *Comparisons by race.* More Alaska Native people and Black or African American people have diabetes or prediabetes than Whites in Alaska. Diabetes-related death and hospitalization rates were greater among Asian, Pacific Islander, and Black or African American people in Alaska than among Whites. Hospitalization rates – but not death rates – were greater among Alaska Native people than Whites.

- *Regional comparisons.* Relative to the state as a whole, the prevalence of diabetes was higher in the Southeast-southern region, and lower in Fairbanks. Diabetes-related death rates were lower than the state average in Fairbanks, Kenai Peninsula, and the Yukon-Kuskokwim regions, which may be related to a combination of factors.
- *Screening for diabetes.* The American Diabetes Association recommends screening and testing for type 2 diabetes or prediabetes every three years at minimum for adults ages 45 or older, and adults of any age who are overweight or obese. About half (52.0%) of Alaska adults without diabetes have been tested for diabetes within the past three years; conservatively, 76% of Alaska adults met criteria for needing screening. Screening rates were lower in the Northwest and Yukon-Kuskokwim Delta regions than in the state overall.
- *Quality healthcare for people with diabetes.* Most Alaska adults with diabetes saw a healthcare provider for diabetes care in the past year (86%), however only about one-third of people with diabetes met a “quality of care” standard for effective clinical services (annual eye and foot exams, and a glycosylated hemoglobin [A1c] test at least twice per year).
- *Effective self-care practices.* More than half of Alaska adults with diabetes (60%) said they checked their own blood glucose daily, and 60% said they had ever taken a diabetes self-management class. Prevalence of these same two self-care practices was lower among Alaska Native people with diabetes than non-Native Alaskans (48% and 50% among Alaska Native people, respectively).
- *Risk factors.* Two-thirds (67%) of Alaska adults had two or more out of six key risk factors for developing or complicating diabetes; only 10% did not have any of these risk factors. Obesity or overweight was the most common risk factor among Alaska adults, affecting nearly two-thirds of adults, followed by physical inactivity, high blood pressure, high cholesterol, drinking sugary drinks every day, and smoking cigarettes.
- *Data gaps.* Currently, there is no information about diabetes prevalence among children in Alaska. However findings from a recent assessment show that between one-third and more than one-half of Alaska children in grades K-8 are overweight or obese, placing them at-risk and indicating that continued efforts to encourage healthy eating and physical activity among youth are important for preventing onset of type 2 diabetes.

Key activities by DHSS and partners to prevent diabetes in Alaska include:

- Providing education and information to the Alaska public.
- Promoting diabetes prevention programs (DPP) and diabetes self-management education and support (DSMES) programs.
- Supporting healthcare systems to improve screening for type 2 diabetes and care for people with diabetes.
- Expanding access to diabetes self-management.

## Introduction

This report summarizes the most recently available information about diabetes prevalence, screening, risk factors, care practices, illness, and death in Alaska. The information can be used by Alaska public health partners and stakeholders – clinical and public health professionals, as well as other health advocacy partners and the public – to support continued planning and evaluation of diabetes prevention and control efforts.

### What is diabetes? <sup>1</sup>

Diabetes is a chronic (long-lasting) disease that affects how the body turns food into energy. After being eaten, food is broken down into sugar (“glucose”) and released into the bloodstream. The pancreas makes a hormone called insulin, which allows blood sugar to enter the body’s cells for energy.

When a person has diabetes his/her body cannot make insulin, does not make enough insulin, or cannot use insulin as well as it should. The result is that too much sugar stays in the bloodstream. Over time, this can cause serious health problems including heart disease, vision loss, and kidney disease. Although there is no cure, the effects of diabetes can be reduced by living a healthy lifestyle, taking medications if prescribed, learning self-management skills, and working closely with a healthcare team to manage the condition.

### *Types of diabetes*

There are three main types of diabetes.

**Type 1 diabetes** is when the body cannot make insulin. Only about 5% of people with diabetes have this type. Symptoms often develop quickly, and diagnosis is usually made among children, teens, and young adults. People with type 1 diabetes need to take insulin every day to survive. Currently, no one knows how to prevent this type of diabetes.

**Type 2 diabetes** is when the body does not make enough insulin or is unable to use insulin well and cannot keep blood sugar at normal levels. Most people with diabetes – about 9 out of 10 – have this type. It typically develops over many years and is usually diagnosed among adults, although now more young people are being diagnosed with it than in the past. There are usually no symptoms, so a blood test is needed to determine if someone has it. Type 2 diabetes can be prevented or delayed by healthy eating, regular physical activity, and losing weight if needed.

**Gestational diabetes** develops in pregnant women who have never had diabetes, and usually goes away after the baby is born. This condition creates some risks for the baby and increases risk of type 2 diabetes for the mother later in life.

---

<sup>1</sup> Content in this introductory section is adapted from the Centers for Disease Control and Prevention (CDC) publication *About Diabetes*. June 1, 2017. <https://www.cdc.gov/diabetes/basics/diabetes.html>

## Prediabetes

When a person has higher than normal blood sugar levels, but not high enough to be diagnosed as type 2 diabetes, this health condition is called “prediabetes.” This is a serious condition that puts a person at risk for developing type 2 diabetes, heart disease, and stroke.

## Why is diabetes a public health priority in Alaska?

This report provides the most current data available to describe the prevalence of diabetes and associated risk factors in Alaska. Based on this information, an estimated 41,000 adults in Alaska have been diagnosed with type 1 or type 2 diabetes, and another 62,000 have been diagnosed with prediabetes. This means that more than 100,000 Alaska adults are currently affected and at risk for a variety of serious health consequences.

The U.S. Centers for Disease Control and Prevention (CDC) reports that as many as two of every five American adults will develop type 2 diabetes in their lifetime, more people are developing diabetes during youth, and that racial and ethnic minorities continue to be affected at higher rates than other groups.<sup>2</sup>

Alaska has a unique population; one key factor is age. The state is relatively “younger” than other states: in the 2010 U. S. Census, Alaska’s median age was 33.8 years, compared to the U.S. overall median age of 37.2 years. However, during recent years, the population in Alaska has been changing: the percent of Alaska’s population over age 65 was 8% in 2010 (about 56,000 people) and 11% in 2017 (about 83,000 people).<sup>3</sup> This change means that health conditions that affect older people – such as diabetes – will become an even greater public health concern for Alaska in the future.

### Diabetes in Alaska

As of 2016:

- **7.5%** of adults have known diabetes.
- **11.1%** of adults have known prediabetes.

**More than 100,000 Alaska adults have been diagnosed with diabetes or prediabetes, but more are likely at risk and do not know it.**

<sup>2</sup> Centers for Disease Control and Prevention (CDC) *About Diabetes*. June 1, 2017.

<https://www.cdc.gov/diabetes/basics/diabetes.html>

<sup>3</sup> United States Census Bureau, 2016. Annual estimates of the resident population for selected age groups for the U.S. and Alaska.

## Methods

The following is a summary of the data sources, key definitions, analytic approaches, and notes on the presentation of data in this report. Additional detail is available in the Appendix.

### Data Sources

- *Prevalence of diabetes and prediabetes and related risk factors.* The prevalence of these factors in Alaska was obtained from the Alaska Behavioral Risk Factor Surveillance System (BRFSS). The BRFSS is an anonymous telephone survey of adults age 18 and older that is sponsored by the Centers for Disease Control and Prevention (CDC), and has been conducted in Alaska since 1991. Data from 2016 were the most recent data available for this report. It is the state's primary source of information on health risks and behaviors among the general population of adults. For the purposes of this report, "diabetes prevalence" refers to individuals' self-reported health care provider diagnosis of diabetes.
- *Hospitalizations.* Inpatient and outpatient data for people of all ages were provided by the Alaska Health Facilities Data Reporting (HFDR) program for 2016, the most recent data available. Prior years of data were not used because of concerns about completeness of data, as mandatory reporting did not begin until 2015. In addition, there was a significant change in the hospital data coding system during fall 2015 which substantially affected reporting. Only Alaska residents are included in the hospitalization data.
- *Deaths.* Information on cause of death (mortality) among adults was taken from the death certificate. Unless otherwise noted, Alaska statewide and U.S. data were obtained from the CDC WONDER Online Database, which includes data from all vital statistics programs in the U.S. Regional data included in this report, and data describing specific types of diabetes-related deaths, were obtained directly from the Alaska Health Analytics and Vital Records Section (HAVRS) within the Division of Public Health. Only Alaska residents are included in Alaska-specific rates. Data from 2016 were the most recent data available for this report.

### Key Definitions

- *Race and ethnicity:* Identification of race and ethnicity varied by data source. In BRFSS, Alaska Native people includes all individuals who reported American Indian or Alaska Native as one of their race groups, regardless of ethnicity; Hispanic includes all others who identified as Hispanic ethnicity, regardless of race; Black or African American, White and Asian includes those who identified these as their race and were non-Hispanic; and "other" race groups include those who reported Pacific Islander, other, or multiple race groups that did not include Alaska Native or Hispanic ethnicity. In the hospitalization data, race is assigned as noted in the medical record; people with Hispanic ethnicity were reported separately, and all race groups are non-Hispanic. Race and ethnicity are reported as recorded on the death certificate.
- *Alaska regions:* Data are presented geographically in this report for Behavioral Health Systems Regions (BHSR). These are 11 reporting regions in Alaska with at least 20,000 individuals, allowing sufficient population sizes for reporting data on behavioral health services in compliance with the federal Health Insurance Portability and Accountability Act (HIPAA) Privacy Rule. For BRFSS, "rural Alaska" includes those living in Northern and Southwest Alaska, as defined by the sampling regions for Alaska BRFSS. This includes Northwest, Yukon-Kuskokwim (Y-K) Delta, and Southwest regions, as well as Denali Borough, and the Census Areas Yukon-Koyukuk and Southeast Fairbanks.

- *Low SES:* For BRFSS, “low socio-economic status (SES)” includes those who live in a household that is less than 185% of the federal poverty level, or who have completed less than a high school education.
- *Cause of death:* Only underlying (proximal) cause of death from diabetes is reported for state trends, gender, and race groups. However, for regional presentations, both underlying and contributing cause of death are reported in combination, so that more regions have reportable numbers (i.e., fewer regions have data suppressed due to small numbers). For this reason, death rates shown in tables and figures with regional data will be larger than those displaying statewide data.

## Analytic Approaches

- *Confidence intervals.* Our report uses 95% confidence intervals. If there is no bias in the data collection system, there is a 95% chance (95 times out of 100 times) that the confidence interval around an estimate will include the true value. When confidence intervals for two estimates in the same data system do not overlap, those two estimates are “significantly” different from one another.
- *Age adjustment.* Age adjustment (sometimes called age standardization) is a statistical process that allows communities and states with different age structures to be compared. Age adjustment removes the influence of the differences in age distributions that occur from one population to another. Since the risk of developing chronic disease (e.g., diabetes, heart disease) is strongly associated with age, a geographic area with a high proportion of elderly residents could not be accurately compared with a younger-age populated area unless rates were adjusted to a standard reference population – the older community group would always naturally have a higher rate even if the two communities had the same risk.
- *Suppression of small numbers.* Estimates or counts based on small numbers were suppressed based on guidelines from the State of Alaska.

## Notes on Presentation of Data

Throughout this report, visual cues are used to help the reader understand what types of data are being presented:

- Data shown on a vertical axis (i.e., column charts) included both Alaska statewide and U.S. data.
- Trend line charts are also used for Alaska statewide data and include U.S. data when available.
- Data shown on a horizontal axis (i.e., bar charts) are for Alaska alone, including contrasting subgroups within the state.
- All regional data are presented both with a map to provide geospatial context and a bar chart; colors were assigned by region to provide visual cues about relative rates, but different shades should not be interpreted as statistically significant differences.
- Confidence intervals are displayed in several ways in this report: as “dumbbell” error bars, as shaded areas around a trend line, and sometimes as “+” values around a reported point estimate.
- To summarize data across groups and regions, a color block “patchwork” table is included near the end of this report. Different colors were used to provide visual cues about relative rates, and patterns of risks across groups, but should not be interpreted as statistically significant differences.
- Descriptions of “significant” differences between groups are included in text only when statistically-based approaches found that the differences measured between groups are unlikely to

be due to variability in estimates or chance. Non-significant differences are typically not described in text as being “different” (e.g., higher or lower than other groups).

## Diabetes and Prediabetes Prevalence

*Diabetes prevalence.* The prevalence of diabetes among Alaska adults in 2016 was 7.5% (95% confidence interval 6.9-7.7%). This translates to about 41,000 adults in Alaska who have been diagnosed with diabetes by a healthcare provider.

The prevalence of diabetes among Alaska adults has increased during recent years: age-adjusted rates<sup>4</sup> significantly increased over the past 20 years, at an average rate<sup>5</sup> of 0.6% per year during the past 10 years (see Figure 1). This is similar to increases that have been seen nationally. Alaska's prevalence has been similar to or slightly less than the national prevalence during the same period.

*Prediabetes prevalence.* The prevalence of prediabetes among Alaska adults in 2016 was 11.1% (95% confidence interval 9.9%-12.4%). This translates to approximately 62,000 adults who have been diagnosed with prediabetes.

The prevalence of prediabetes has significantly increased since it was first measured in Alaska: age-adjusted trends show a significant increase at the rate of approximately 4% per year since 2008 (see Figure 2). Currently, there is not a national annual source of data for diagnosed prediabetes to directly compare with Alaska's prevalence and trends of diagnosed prediabetes, but using data collected from about half of states, the CDC estimated that in 2015 the national state-level median for adults diagnosed with prediabetes was 7.0%.<sup>6</sup>

*Undiagnosed conditions.* Notably, many adults have diabetes or prediabetes and do not know it. A national study conducted in 2011-2014 used fasting blood glucose and hemoglobin A1C measurements taken from a sample of U.S. adults to determine whether individuals had diabetes or prediabetes, and also asked people whether they had been diagnosed by a health professional with either condition. They found that about 2.7% of U.S. adults had undiagnosed diabetes – about one in four of the people with physically measured diabetes.<sup>7</sup> Based on these findings, another 15,000 adults in Alaska may have diabetes and not know they have it. The same study estimated that 33.9% of U.S. adults had prediabetes, but only about one in ten of these people with prediabetes reported being told by a health professional that they had this condition. Similarly, the number of Alaskans with prediabetes is likely to be much greater than the 62,000 estimated adults with prediabetes reported here; based on national prevalence estimates, perhaps as many as 123,000 more Alaska adults may be affected.

---

<sup>4</sup> Reader note: age-adjusted prevalence estimates shown in Figure 1 are different than the most current statewide prevalence data highlighted in the first section of this report – age-adjustment is used to examine trends without the influence of changing age distributions in the state, and to compare to the U.S. without the influence of different underlying age distributions.

<sup>5</sup> This means a 0.6% increase per year relative to the prior year, not a .6 percentage point increase in prevalence.

<sup>6</sup> Centers for Disease Control and Prevention (CDC). *Diabetes Report Card 2017*. Atlanta, GA: Centers for Disease Control and Prevention, U.S. Department of Health and Human Services; 2018. Available at <https://www.cdc.gov/diabetes/pdfs/library/diabetesreportcard2017-508.pdf> (last accessed 7/27/18)

<sup>7</sup> Centers for Disease Control and Prevention (CDC). *National Diabetes Statistics Report, 2017 Estimates of Diabetes and Its Burden in the United States*. August 8, 2017. <https://www.cdc.gov/diabetes/pdfs/data/statistics/national-diabetes-statistics-report.pdf> See Table 1a. for prevalence of undiagnosed diabetes. (last accessed 7/27/18)

*Summary of people affected.* In sum, more than 100,000 Alaska adults have been diagnosed with diabetes or prediabetes, yet the actual number of people who are affected may be much greater – perhaps as many as 241,000 in total<sup>8</sup> – because of the large share of people who have not been screened and diagnosed.

*Differences by demographic groups.* We examined five years of combined data in order to compare differences in diagnosed diabetes and prediabetes prevalence among major Alaska subpopulations.<sup>9</sup> Figure 3 contrasts the prevalence of diabetes alone among subgroups, while Figure 4 shows the prevalence of both diabetes and prediabetes among subgroups. Prediabetes made up more than half of the total of combined diabetes and prediabetes among all adults (54%); it made up a relatively greater share of the total for women, Alaska Native, and younger adults (ages 18-44).

The prevalence of diabetes was similar among men and women in the state, but the prevalence of prediabetes and combined diabetes/prediabetes was greater among women than men.

Diabetes and combined diabetes/prediabetes prevalence were each higher among Black or African American adults than among other groups. Prediabetes and combined diabetes/prediabetes prevalence were higher among Alaska Native adults in comparison to Whites.

The prevalence of diabetes, prediabetes, and their combination were each higher among people with fewer economic resources (low SES) than among people with more economic resources (higher SES).

There were no significant differences in the prevalence of diabetes by urban (Anchorage, Mat-Su) and rural location overall.

The prevalence of diabetes increased significantly by age: from 2.0% among people ages 18-44 to 19.3% among adults ages 65 and older. Prediabetes and combined diabetes/prediabetes also increased significantly by age. When examining diabetes and prediabetes combined, one in four adults ages 55-64 were affected (25.0%), and nearly one in three adults ages 65 and older (32.9%) were affected.

*Differences by region.* We examined five years of combined data to describe differences in diabetes prevalence for Alaska's Behavioral Health Systems regions (see Figure 5). Relative to the state overall, the prevalence of diabetes was significantly higher in the Southeast (SE)-southern region, and significantly lower in Fairbanks. Other regions of the state were not significantly different from the state overall, although the prevalence was different among some regions from one another (e.g., prevalence is higher in the Kenai Peninsula than Fairbanks).

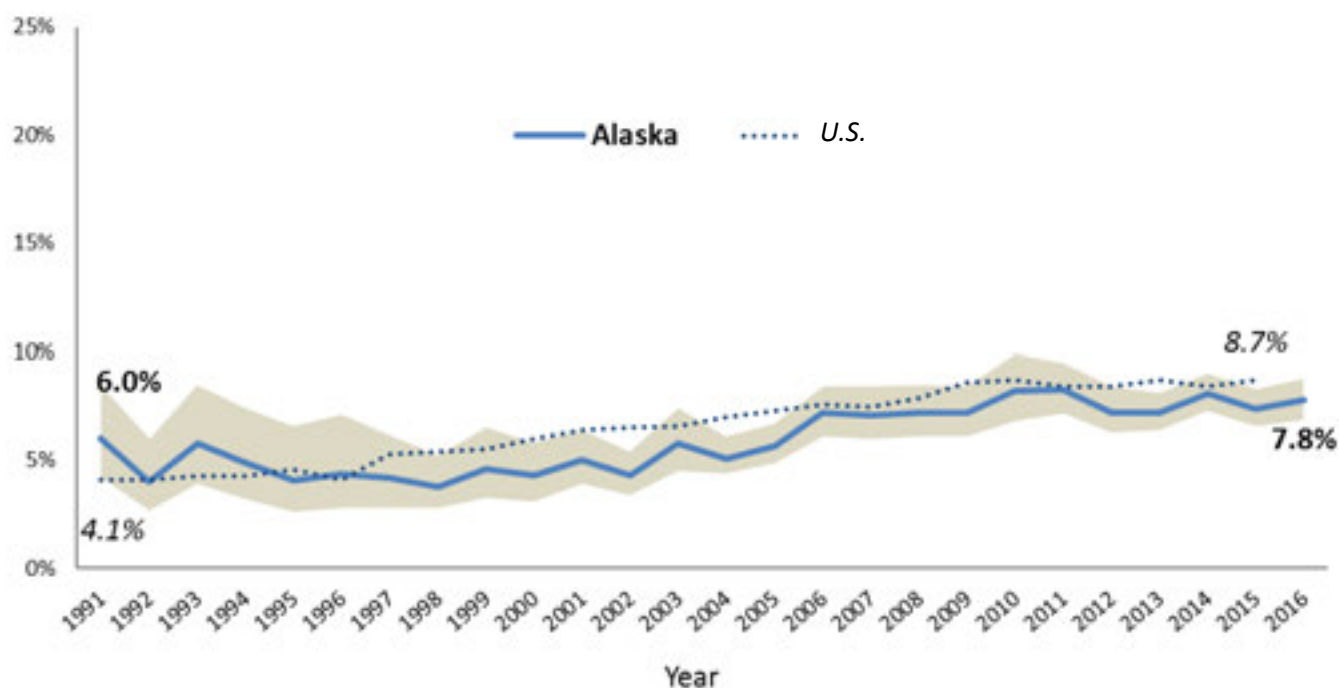
---

<sup>8</sup> This is the sum of adults with known diabetes or prediabetes and the estimated additional 22% of adults with undiagnosed diabetes or prediabetes (see table 3a in *National Diabetes Statistics Report, 2017 Estimates of Diabetes and Its Burden in the United States*. Available at <https://www.cdc.gov/diabetes/pdfs/data/statistics/national-diabetes-statistics-report.pdf>)

<sup>9</sup> Reader note: state prevalence estimates for 5 years of data combined are different than the most current statewide prevalence data highlighted in the first section of this report.

Figure 6 shows regional patterns in the prevalence of prediabetes. Relative to the state overall, prevalence was significantly lower in Fairbanks, and other regions are not significantly different. The prevalence of prediabetes was lower in Fairbanks relative to several other individual regions as well.

**Figure 1: Prevalence of ever being diagnosed with diabetes among adults**  
Alaska and U.S., 1991-2016 (U.S. through 2015), age-adjusted



Prevalence estimates are age-adjusted to the U.S. 2000 population, using 4 groups (18-34, 35-44, 45-64, 65+)

Shading shows 95% confidence interval for Alaska's annual rates. 95% confidence interval for U.S. rates averages to  $\pm 1.4\%$ .

Alaska data source: Alaska BRFSS Combined File. Question: *Has a doctor, nurse, or other health professional ever told you that you have diabetes?* (excludes female respondents who said that was only when they were pregnant)

U.S. data source: National Health Interview Survey (NHIS). Downloaded from [www.cdc.gov/diabetes/data](http://www.cdc.gov/diabetes/data); Division of Diabetes Translation - Centers for Disease Control and Prevention.

Alaska trend was tested using Joinpoint software. Linear regression test for trend between 2007-2016 showed a statistically significant increase during that period with approximately 0.6% relative increase in prevalence per year.

*Supporting table for Figure 1: Prevalence of diagnosed diabetes among adults  
Alaska and U.S., 1991-2016 (U.S. through 2015), age-adjusted*

| Year | Alaska               |             |             | U.S.                 | % Difference<br>(AK from U.S.) | + AK higher than U.S.<br>– AK lower than U.S.<br>Blank: no significant difference* |
|------|----------------------|-------------|-------------|----------------------|--------------------------------|------------------------------------------------------------------------------------|
|      | Annual<br>Prevalence | Lower<br>CI | Upper<br>CI | Annual<br>Prevalence |                                |                                                                                    |
| 1991 | 6.0%                 | 4.2%        | 8.5%        | 4.1%                 | 1.9%                           |                                                                                    |
| 1992 | 4.0%                 | 2.7%        | 6.0%        | 4.1%                 | -0.1%                          |                                                                                    |
| 1993 | 5.8%                 | 3.9%        | 8.5%        | 4.3%                 | 1.5%                           |                                                                                    |
| 1994 | 4.9%                 | 3.2%        | 7.4%        | 4.3%                 | 0.6%                           |                                                                                    |
| 1995 | 4.1%                 | 2.6%        | 6.6%        | 4.6%                 | -0.5%                          |                                                                                    |
| 1996 | 4.4%                 | 2.8%        | 7.1%        | 4.1%                 | 0.3%                           |                                                                                    |
| 1997 | 4.2%                 | 2.8%        | 6.2%        | 5.3%                 | -1.1%                          |                                                                                    |
| 1998 | 3.8%                 | 2.8%        | 5.2%        | 5.4%                 | -1.6%                          |                                                                                    |
| 1999 | 4.6%                 | 3.3%        | 6.5%        | 5.5%                 | -0.9%                          |                                                                                    |
| 2000 | 4.3%                 | 3.1%        | 5.8%        | 6.0%                 | -1.7%                          |                                                                                    |
| 2001 | 5.0%                 | 3.9%        | 6.4%        | 6.4%                 | -1.4%                          |                                                                                    |
| 2002 | 4.3%                 | 3.4%        | 5.4%        | 6.5%                 | -2.2%                          | -                                                                                  |
| 2003 | 5.8%                 | 4.5%        | 7.4%        | 6.6%                 | -0.8%                          |                                                                                    |
| 2004 | 5.1%                 | 4.4%        | 6.1%        | 7.0%                 | -1.9%                          | -                                                                                  |
| 2005 | 5.7%                 | 4.9%        | 6.7%        | 7.3%                 | -1.6%                          | -                                                                                  |
| 2006 | 7.2%                 | 6.1%        | 8.4%        | 7.6%                 | -0.4%                          |                                                                                    |
| 2007 | 7.1%                 | 6.0%        | 8.4%        | 7.5%                 | -0.4%                          |                                                                                    |
| 2008 | 7.2%                 | 6.1%        | 8.5%        | 7.9%                 | -0.7%                          |                                                                                    |
| 2009 | 7.2%                 | 6.1%        | 8.4%        | 8.6%                 | -1.4%                          |                                                                                    |
| 2010 | 8.2%                 | 6.8%        | 9.9%        | 8.7%                 | -0.5%                          |                                                                                    |
| 2011 | 8.3%                 | 7.2%        | 9.5%        | 8.4%                 | -0.1%                          |                                                                                    |
| 2012 | 7.2%                 | 6.3%        | 8.4%        | 8.4%                 | -1.2%                          |                                                                                    |
| 2013 | 7.2%                 | 6.4%        | 8.1%        | 8.7%                 | -1.5%                          | -                                                                                  |
| 2014 | 8.1%                 | 7.3%        | 9.0%        | 8.4%                 | -0.3%                          |                                                                                    |
| 2015 | 7.4%                 | 6.6%        | 8.3%        | 8.7%                 | -1.3%                          | -                                                                                  |
| 2016 | 7.8%                 | 6.9%        | 8.8%        |                      |                                |                                                                                    |

Prevalence estimates are age-adjusted to the U.S. 2000 population, using 4 groups (18-34, 35-44, 45-64, 65+)

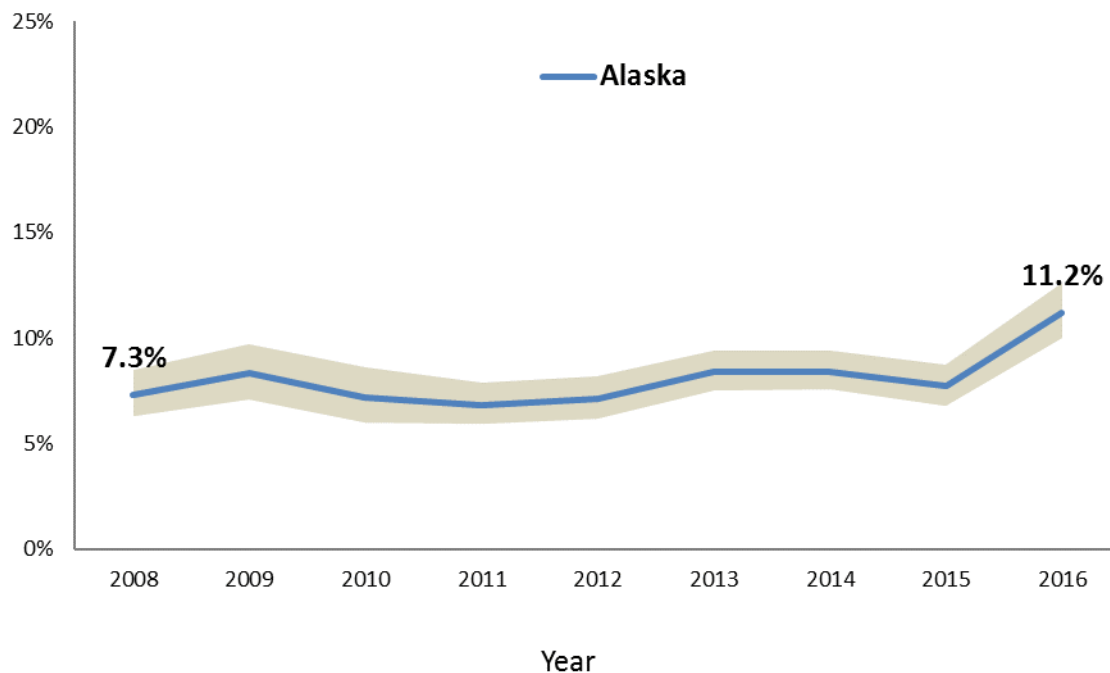
Alaska data source: Alaska BRFSS Combined File. Question: *Has a doctor, nurse, or other health professional ever told you that you have diabetes?* (excludes female respondents who said that was only when they were pregnant)

U.S. data source: National Health Interview Survey (NHIS). Downloaded from [www.cdc.gov/diabetes/data](http://www.cdc.gov/diabetes/data); Division of Diabetes Translation, Centers for Disease Control and Prevention.

\*Alaska rates are marked as higher (+) or lower (–) than the U.S. if the confidence intervals of age-adjusted estimates do not overlap. 95% confidence interval for U.S. rates averages to  $\pm 0.3\%$ .

Alaska trend was tested using Joinpoint software. Linear regression test for trend between 2007-2016 showed a statistically significant increase during that period with approximately 0.6% relative increase in prevalence per year.

**Figure 2: Prevalence of ever being diagnosed with prediabetes among adults**  
*Alaska, 2008-2016, age-adjusted*



*Supporting table for Figure 2: Prevalence of diagnosed prediabetes among adults*  
*Alaska, 2008-2016, age-adjusted*

|      | Alaska            |          |          |
|------|-------------------|----------|----------|
| Year | Annual Prevalence | Lower CI | Upper CI |
| 2008 | 7.3%              | 6.3%     | 8.5%     |
| 2009 | 8.3%              | 7.1%     | 9.7%     |
| 2010 | 7.2%              | 6.0%     | 8.6%     |
| 2011 | 6.8%              | 5.9%     | 7.9%     |
| 2012 | 7.1%              | 6.2%     | 8.2%     |
| 2013 | 8.4%              | 7.5%     | 9.4%     |
| 2014 | 8.4%              | 7.6%     | 9.4%     |
| 2015 | 7.7%              | 6.8%     | 8.7%     |
| 2016 | 11.2%             | 10.0%    | 12.6%    |

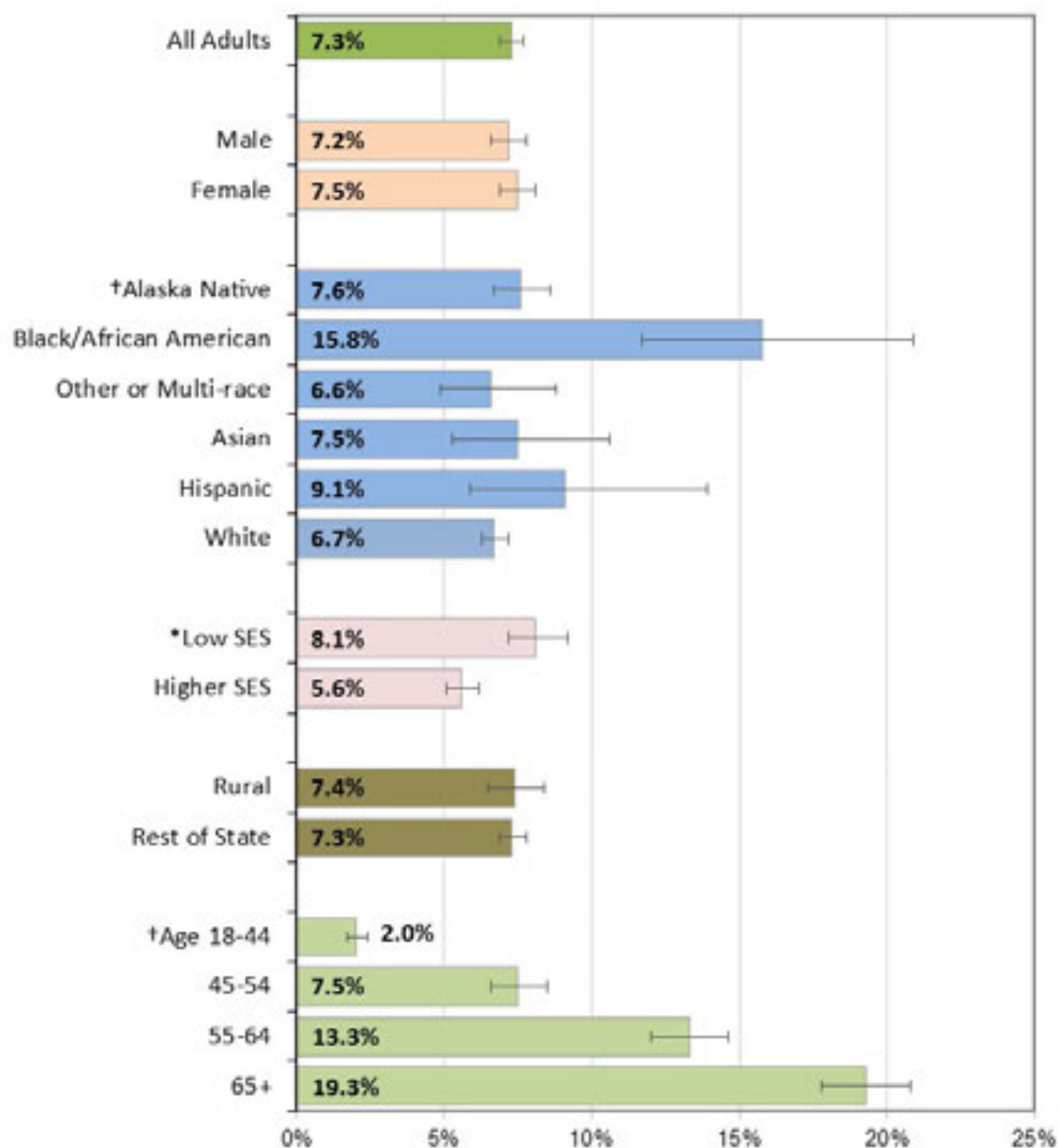
Prevalence estimates are age-adjusted to the U.S. 2000 population, using 4 groups (18-34, 35-44, 45-64, 65+)

Shading shows 95% confidence interval for Alaska's annual rates.

Data source: Alaska BRFSS Combined File. Question: *Have you ever been told by a doctor or other health professional that you have pre-diabetes or borderline diabetes?* This does include women who were told only while pregnant.

Comparable national data are not available for prediabetes.

**Figure 3: Prevalence of ever being diagnosed with diabetes among adults, by demographic group**  
Alaska, 2012-2016



Data source: Alaska BRFSS Combined File. Supporting data for this graph are included in Appendix Table 1.

\*Indicates significant difference between dichotomous groups.

†Indicates intergroup differences (chi-square test).

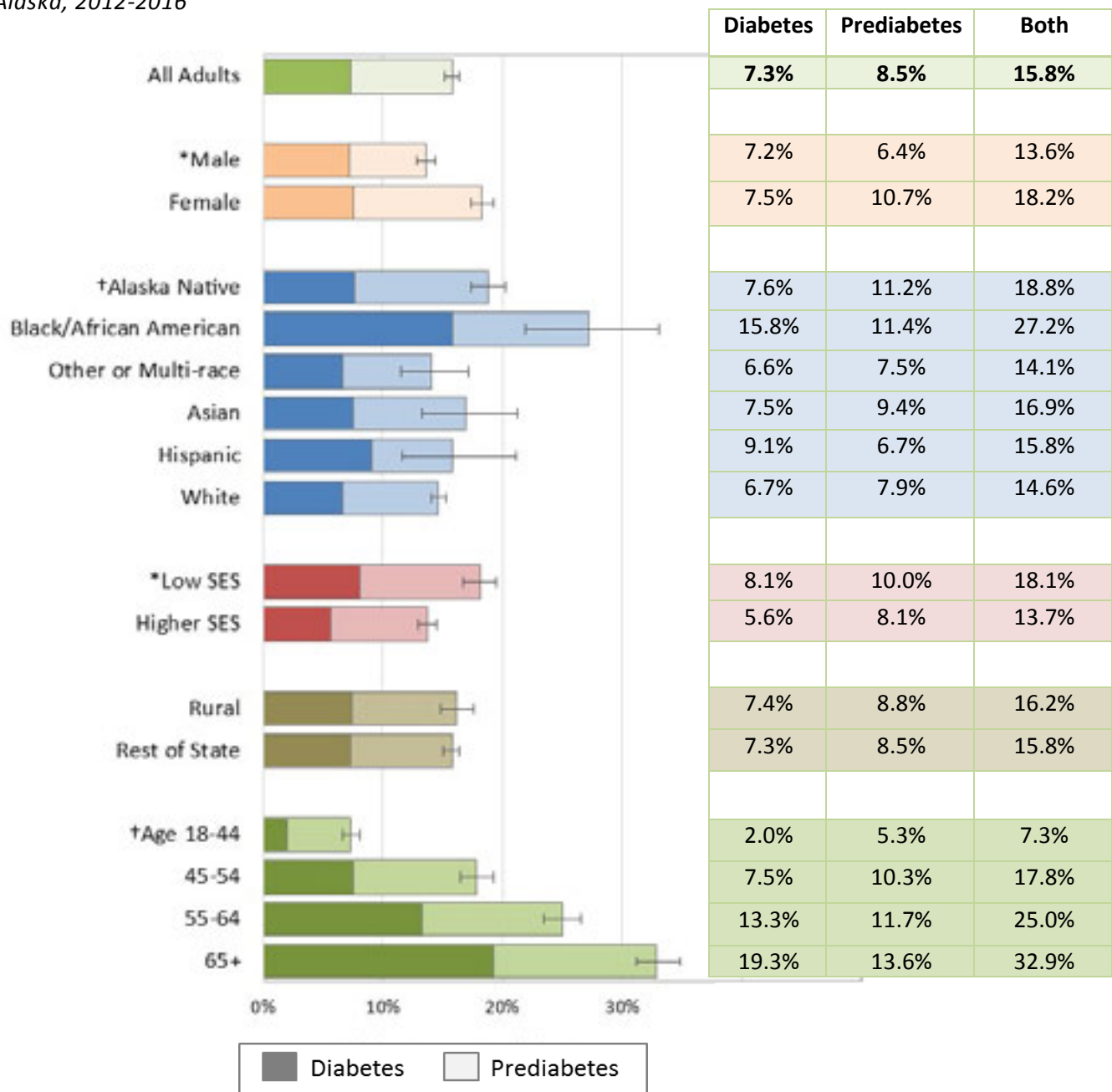
Definitions:

Low socio-economic status (SES) includes those who live in a household that is at <185% of the federal poverty level, or have completed less than a high school education.

Rural Alaska includes those living in Northern and Southwest Alaska, as defined by the sampling regions for Alaska BRFSS. This includes Northwest, Yukon-Kuskokwim (Y-K) Delta, and Southwest regions, as well as Denali Borough, and the Census Areas Yukon-Koyukuk and Southeast Fairbanks.

**Figure 4: Prevalence of ever being diagnosed with diabetes or prediabetes among adults, by demographic group**

Alaska, 2012-2016



Data source: Alaska BRFSS Combined File. Supporting data for this graph are shown in Appendix Table 1.

\*Indicates significant difference between dichotomous groups for combined diabetes and prediabetes.

†Indicates intergroup differences (chi-square test) for combined diabetes and prediabetes.

Definitions:

Low socio-economic status (SES) includes those who live in a household that is at <185% of the federal poverty level, or have completed less than a high school education.

Rural Alaska includes those living in Northern and Southwest Alaska, as defined by the sampling regions for Alaska BRFSS. This includes Northwest, Yukon-Kuskokwim (Y-K) Delta, and Southwest regions, as well as Denali Borough, and the Census Areas Yukon-Koyukuk and Southeast Fairbanks.

**Figure 5: Prevalence of ever being diagnosed with diabetes among adults, by Behavioral Health Systems Region**

Alaska, 2012-2016

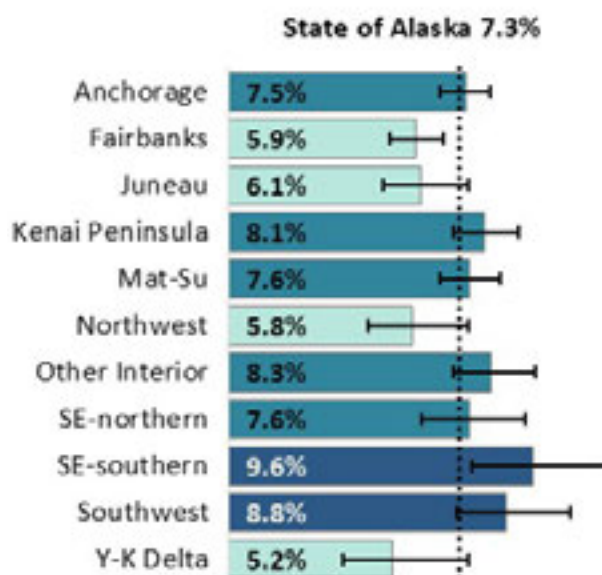


*Prevalence of ever being diagnosed with diabetes by Behavioral Health Systems Region  
Alaska adults, 2012-2016*

|                        | Prevalence  | Lower CI    | Upper CI    |
|------------------------|-------------|-------------|-------------|
| <b>State of Alaska</b> | <b>7.3%</b> | <b>6.9%</b> | <b>7.7%</b> |
| Anchorage              | 7.5%        | 6.7%        | 8.3%        |
| Fairbanks*             | 5.9%        | 5.1%        | 6.8%        |
| Juneau                 | 6.1%        | 4.9%        | 7.6%        |
| Kenai Peninsula        | 8.1%        | 7.1%        | 9.2%        |
| Mat-Su                 | 7.6%        | 6.7%        | 8.6%        |
| Northwest              | 5.8%        | 4.4%        | 7.6%        |
| Other Interior         | 8.3%        | 7.1%        | 9.7%        |
| SE-northern            | 7.6%        | 6.1%        | 9.4%        |
| SE-southern*           | 9.6%        | 7.7%        | 12.0%       |
| Southwest              | 5.2%        | 3.6%        | 7.6%        |
| Y-K Delta              | 8.8%        | 7.2%        | 10.8%       |

Data source: Alaska BRFSS Combined File.

\*Indicates significant difference between region and state overall.



**Figure 6: Prevalence of ever being diagnosed with prediabetes among adults, by Behavioral Health Systems Region**

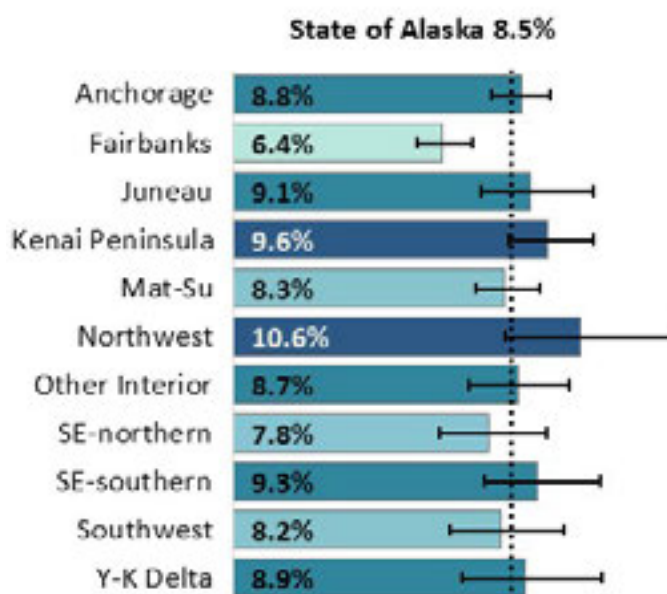
Alaska, 2012-2016



*Prevalence of ever being diagnosed with prediabetes by Behavioral Health Systems Region*

Alaska adults, 2012-2016

|                        | Prevalence  | Lower CI    | Upper CI    |
|------------------------|-------------|-------------|-------------|
| <b>State of Alaska</b> | <b>8.5%</b> | <b>8.1%</b> | <b>9.0%</b> |
| Anchorage              | 8.8%        | 7.9%        | 9.7%        |
| Fairbanks*             | 6.4%        | 5.6%        | 7.3%        |
| Juneau                 | 9.1%        | 7.6%        | 11.0%       |
| Kenai Peninsula        | 9.6%        | 8.4%        | 11.0%       |
| Mat-Su                 | 8.3%        | 7.4%        | 9.4%        |
| Northwest              | 10.6%       | 8.3%        | 13.4%       |
| Other Interior         | 8.7%        | 7.2%        | 10.3%       |
| SE-northern            | 7.8%        | 6.3%        | 9.6%        |
| SE-southern            | 9.3%        | 7.7%        | 11.2%       |
| Southwest              | 8.2%        | 6.6%        | 10.1%       |
| Y-K Delta              | 8.9%        | 7.0%        | 11.3%       |



Data source: Alaska BRFSS Combined File.

\*Indicates significant difference between region and state overall.

## Gestational Diabetes<sup>10</sup>

Gestational diabetes occurs when women who did not have diabetes develop higher than normal blood glucose levels while pregnant, raising the risk of complications for both mother and baby. It is usually diagnosed during prenatal visits, and typically goes away after delivery. Most women do not experience any symptoms. Mothers with gestational diabetes are more likely to have large babies (over 9 pounds), which can complicate delivery and increase the risk of needing a cesarean section. Infants born to women with gestational diabetes have a higher risk of developing diabetes.

Risk factors for gestational diabetes include being overweight before pregnancy and having a family history of diabetes. It is more common among American Indian/Alaska Native, Hispanic, Native Hawaiian, Pacific Islander, and African American women.

Having gestational diabetes is also associated with developing type 2 diabetes later in life. To reduce this risk, women should receive routine diabetes screenings after pregnancy, stay physically active, eat a healthy diet, and maintain a healthy weight.

The percentage of adult women in Alaska who have ever been diagnosed with gestational diabetes has been stable during recent years. The most recent prevalence estimate for gestational diabetes is 1.8% among Alaska women in 2016, as measured by the Alaska BRFSS. This is similar to the national prevalence for gestational diabetes in 2015 (the most recent year of data available), which was 1.7%.<sup>11</sup>

---

<sup>10</sup> General descriptive content in this section was adapted from the Centers for Disease Control and Prevention (CDC) *Gestational Diabetes* website, updated July 25, 2017. <https://www.cdc.gov/diabetes/basics/gestational.html> and CDC *Gestational Diabetes* publication CS248137 <https://www.cdc.gov/diabetes/pubs/pdf/gestationalDiabetes.pdf> (last accessed 7/27/18)

<sup>11</sup> Alaska Department of Health and Social Services, *Health Indicator Report of Diabetes: Gestational Diabetes*. published 9/21/17. <http://ibis.dhss.alaska.gov/indicator/view/DiabGestDiab.year.html> (last accessed 6/27/18)

## Burden of Diabetes

### Diabetes-related Deaths

Diabetes is one of the leading causes of death (mortality) among adults, both in Alaska and in the U.S. Contribution to death can be indicated on the death certificate in one of two ways:

**Underlying cause** is the proximal or direct cause of death. This is the condition or injury that initiated the chain of events that led directly and inevitably to death.

**Contributing cause** is any condition or injury that initiated the events leading to death, but which itself is not the immediate cause of death.

For the purposes of this report, “diabetes-related deaths” can refer to either deaths where diabetes is the underlying cause, or deaths where diabetes is either the underlying or a contributing cause; notes will identify which classification is used.

In 2016, there were 122 deaths directly caused by diabetes, making it the eighth leading cause of death in the state (see Table 1). The rate of diabetes death was slightly lower in Alaska than for the U.S. overall.

**Table 1: Leading causes of death in Alaska and the U.S. (2016)**

| Cause of Death by Rank in Alaska       | Alaska Deaths |           |                   | U.S. Deaths       |          |
|----------------------------------------|---------------|-----------|-------------------|-------------------|----------|
|                                        | Number        | %         | Age-adjusted Rate | Age-adjusted Rate | Rank     |
| 1. Cancer                              | 974           | 22%       | 152.5             | 155.8             | 2        |
| 2. Diseases of the Heart               | 814           | 18%       | 136.3             | 165.5             | 1        |
| 3. Unintentional Injuries              | 429           | 9%        | 61.9              | 47.4              | 3        |
| 4. Chronic Lower Respiratory Disease   | 236           | 5%        | 40.4              | 40.6              | 4        |
| 5. Stroke                              | 193           | 4%        | 38.2              | 37.3              | 5        |
| 6. Suicide                             | 186           | 4%        | 25.3              | 13.5              | 10       |
| 7. Chronic Liver Disease and Cirrhosis | 123           | 3%        | 15.9              | 10.7              | 12       |
| <b>8. Diabetes</b>                     | <b>122</b>    | <b>3%</b> | <b>18.6</b>       | <b>21.0</b>       | <b>7</b> |
| 9. Alzheimer’s Disease                 | 109           | 2%        | 25.4              | 30.3              | 6        |
| 10. Influenza and Pneumonia            | 60            | 1%        | 12.4              | 13.5              | 8        |
| Subtotal for top 10 causes             | 3,246         | 72%       |                   |                   |          |
| Total deaths                           | 4,520         | 100%      |                   |                   |          |

Alaska Data source: State of Alaska, Department of Health and Social Services. Alaska Vital Statistics 2016 Annual Report. Available at [http://dhss.alaska.gov/dph/VitalStats/Documents/PDFs/VitalStatistics\\_AnnualReport\\_2016.pdf](http://dhss.alaska.gov/dph/VitalStats/Documents/PDFs/VitalStatistics_AnnualReport_2016.pdf) (last accessed 1-18-2019)

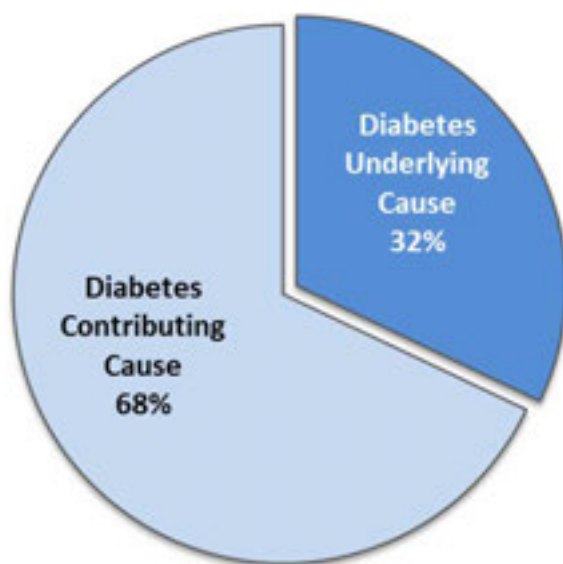
Underlying cause. Only Alaska residents are included in Alaska estimates.

U.S. data source: Xu JQ, Murphy SL, Kochanek KD, Bastian B, Arias E. Deaths: Final data for 2016. National Vital Statistics Reports; vol 67 no 5. Hyattsville, MD: National Center for Health Statistics. 2018. Available at [https://www.cdc.gov/nchs/data/nvsr/nvsr67/nvsr67\\_05.pdf](https://www.cdc.gov/nchs/data/nvsr/nvsr67/nvsr67_05.pdf) (last accessed 1-18-2019)

Between 2007 and 2016, a total of 3,662 deaths were related to diabetes in Alaska – an average of more than 360 per year. About one in three (32%) of these deaths were directly caused by diabetes, as indicated on the death certificate (i.e., the “underlying cause of death”), while the remaining two-thirds (68%) indicated that diabetes contributed to the death but was not the direct cause (i.e., “contributing cause of death”) (see Figure 7).

**Figure 7: Diabetes-related deaths**

*Alaska, 2007-2016*



Data source: Alaska Division of Public Health, Health Analytics and Vital Records Section, Mortality Data.

3,662 total deaths: 889 underlying cause; 2,773 contributing cause.

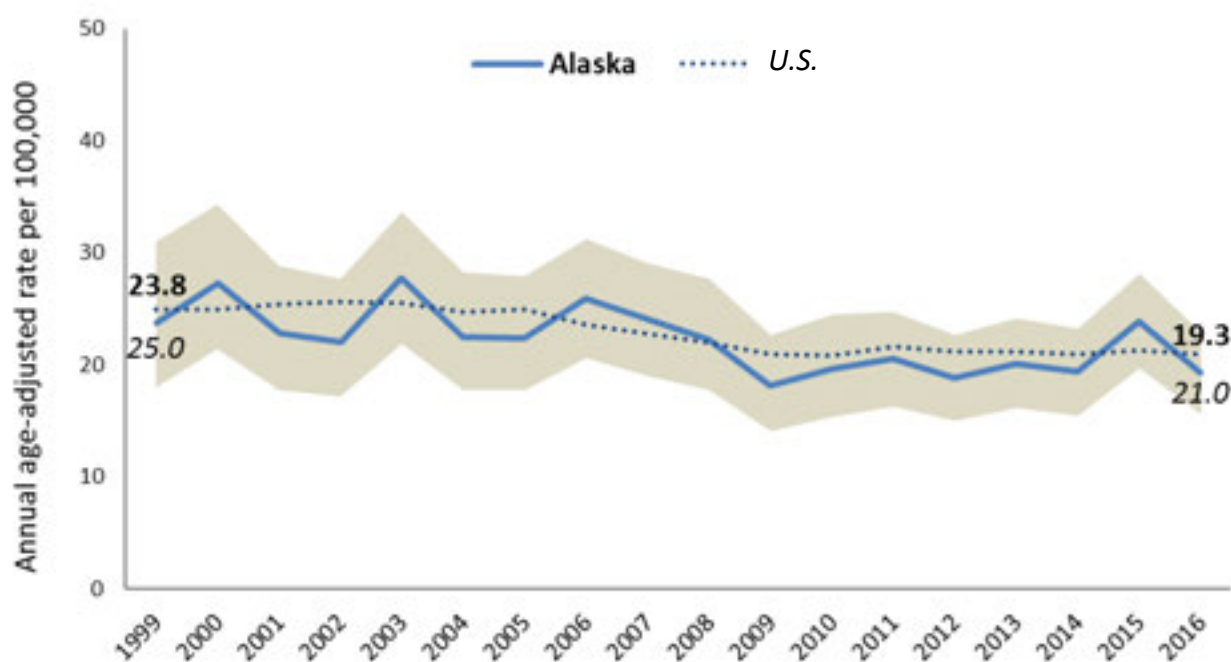
*Trends in diabetes deaths.* Despite increasing prevalence, diabetes-related deaths have declined in Alaska during recent years (see Figure 8). Between 1999 and 2016, the rate of diabetes-related deaths in Alaska declined significantly from 23.8 to 19.3 per 100,000—a relative decline of approximately 1.4% per year. Death rates have not been different in Alaska than the U.S. during any years.

*Diabetes deaths by demographic group.* We combined five years of death data to describe diabetes-related death rates among specific populations of Alaska. The rate of diabetes deaths was higher among men than women in Alaska, similar to the U.S. (see Figure 9). While the rate of diabetes deaths among men was not different than the U.S., the rate among women in Alaska was slightly lower than for the U.S.

Diabetes death rates were higher among Asian/Pacific Islanders and Black/African Americans than the state average, and also higher than for Whites (see Figure 10). While overall rates of death from diabetes were similar between Alaska and the U.S., rates were significantly higher in Alaska among Asian/Pacific Islanders, but significantly lower among American Indian/Alaska Native people.

We combined 10 years of death data, for underlying and contributing causes combined, to provide sufficient data to describe diabetes-related death rates for Alaska's regions (see Figure 11). In comparison to the state overall, diabetes-related death rates were lower in Fairbanks, Kenai and Yukon-Kuskokwim (Y-K) regions. These lower death rates could be due to diabetes-specific factors, such as lower prevalence (the prevalence in Fairbanks was significantly lower than the state average, see Figure 5), higher incidence in these regions of other competing causes of death, differences in reporting causes of death, or a combination of several factors.

**Figure 8: Diabetes-related death rates among adults**  
Alaska and U.S., 1999-2016, age-adjusted, underlying cause only



Shading shows 95% confidence interval for Alaska's annual rates. 95% confidence interval for U.S. rates averages to  $\pm 0.1$ .

Data source: Centers for Disease Control and Prevention, National Center for Health Statistics. Underlying Cause of Death 1999-2016 on CDC WONDER Online Database, released December 2017. Data are from the Multiple Cause of Death Files, 1999-2016, as compiled from data provided by the 57 vital statistics jurisdictions through the Vital Statistics Cooperative Program. Accessed at <http://wonder.cdc.gov/ucd-icd10.html> on Mar 29, 2018 5:50:58 PM.

Rates are per 100,000 and age-adjusted to the 2000 U.S. Standard Population (19 age groups - Census P25-1130). Alaska deaths are for Alaska residents only.

Alaska trend was tested using Joinpoint software. Annual Percent Change was -1.43 ( $p < .05$ ).

*Supporting table for Figure 8: Diabetes-related death rates among adults  
Alaska and U.S., 1999-2016, age-adjusted, underlying cause only*

| Year | Alaska      |          |          | Year | U.S.        |                             |                                                                                    |
|------|-------------|----------|----------|------|-------------|-----------------------------|------------------------------------------------------------------------------------|
|      | Annual Rate | Lower CI | Upper CI |      | Annual Rate | % Difference (AK from U.S.) | + AK higher than U.S.<br>– AK lower than U.S.<br>Blank: no significant difference* |
| 1999 | 23.8        | 18.0     | 31.0     | 67   | 25.0        | -5%                         |                                                                                    |
| 2000 | 27.3        | 21.4     | 34.3     | 87   | 25.0        | 9%                          |                                                                                    |
| 2001 | 22.8        | 17.7     | 28.8     | 80   | 25.4        | -10%                        |                                                                                    |
| 2002 | 22.0        | 17.2     | 27.7     | 86   | 25.6        | -14%                        |                                                                                    |
| 2003 | 27.7        | 21.9     | 33.6     | 102  | 25.5        | 9%                          |                                                                                    |
| 2004 | 22.5        | 17.8     | 28.2     | 93   | 24.7        | -9%                         |                                                                                    |
| 2005 | 22.4        | 17.7     | 27.9     | 93   | 24.9        | -10%                        |                                                                                    |
| 2006 | 25.9        | 20.6     | 31.2     | 109  | 23.6        | 10%                         |                                                                                    |
| 2007 | 24.1        | 19.0     | 29.1     | 105  | 22.8        | 6%                          |                                                                                    |
| 2008 | 22.3        | 17.7     | 27.7     | 93   | 22.0        | 1%                          |                                                                                    |
| 2009 | 18.1        | 14.1     | 22.7     | 84   | 21.0        | -14%                        |                                                                                    |
| 2010 | 19.6        | 15.4     | 24.5     | 86   | 20.8        | -6%                         |                                                                                    |
| 2011 | 20.5        | 16.3     | 24.7     | 107  | 21.6        | -5%                         |                                                                                    |
| 2012 | 18.8        | 15.0     | 22.7     | 107  | 21.2        | -11%                        |                                                                                    |
| 2013 | 20.1        | 16.1     | 24.1     | 112  | 21.2        | -5%                         |                                                                                    |
| 2014 | 19.4        | 15.5     | 23.2     | 113  | 20.9        | -7%                         |                                                                                    |
| 2015 | 23.9        | 19.7     | 28.1     | 142  | 21.3        | 12%                         |                                                                                    |
| 2016 | 19.3        | 15.6     | 22.9     | 124  | 21.0        | -8%                         |                                                                                    |

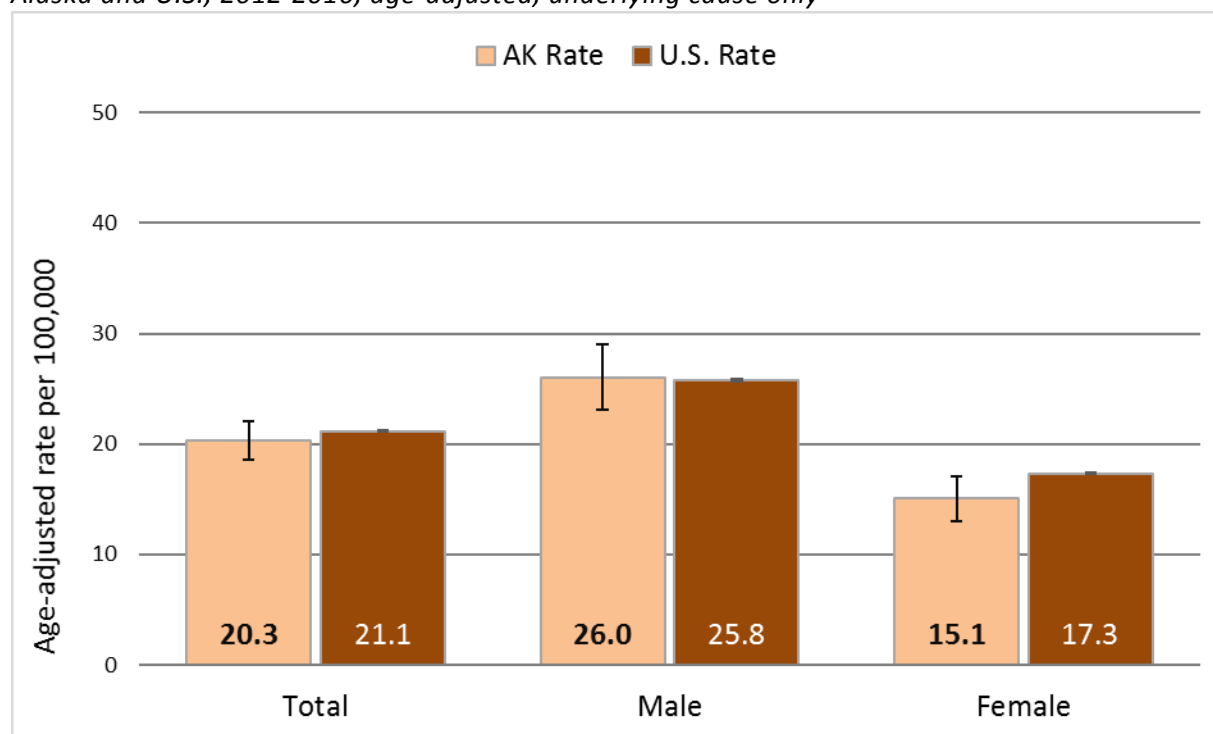
Data source: Centers for Disease Control and Prevention, National Center for Health Statistics. Underlying Cause of Death 1999-2016 on CDC WONDER Online Database, released December, 2017. Data are from the Multiple Cause of Death Files, 1999-2016, as compiled from data provided by the 57 vital statistics jurisdictions through the Vital Statistics Cooperative Program. Accessed at <http://wonder.cdc.gov/ucd-icd10.html> on Mar 29, 2018 5:50:58 PM.

Rates are per 100,000 and age-adjusted to the 2000 U.S. Standard Population (19 age groups - Census P25-1130). Only Alaska residents are included for Alaska estimates.

Alaska trend was tested using Joinpoint software. Annual Percent Change was -1.43 (p<.05).

**Figure 9: Diabetes-related death rates among adults, by gender**

Alaska and U.S., 2012-2016, age-adjusted, underlying cause only



*Supporting table for Figure 9: diabetes-related death rates among adults, by gender*

Alaska and U.S., 2012-2016, age-adjusted, underlying cause only

|              | Alaska      |             |             | Count      | U.S.        |             |             |
|--------------|-------------|-------------|-------------|------------|-------------|-------------|-------------|
|              | Rate        | Lower CI    | Upper CI    |            | Rate        | Lower CI    | Upper CI    |
| <b>Total</b> | <b>20.3</b> | <b>18.6</b> | <b>22.1</b> | <b>598</b> | <b>21.1</b> | <b>21.1</b> | <b>21.2</b> |
| Male*        | 26.0        | 23.1        | 29.0        | 376        | 25.8        | 25.7        | 25.9        |
| Female*      | 15.1        | 13.0        | 17.1        | 222        | 17.3        | 17.3        | 17.4        |

Data source: Centers for Disease Control and Prevention, National Center for Health Statistics. Underlying Cause of Death 1999-2016 on CDC WONDER Online Database, released December, 2017. Data are from the Multiple Cause of Death Files, 1999-2016, as compiled from data provided by the 57 vital statistics jurisdictions through the Vital Statistics Cooperative Program. Accessed at <http://wonder.cdc.gov/ucd-icd10.html> on Apr 3, 2018

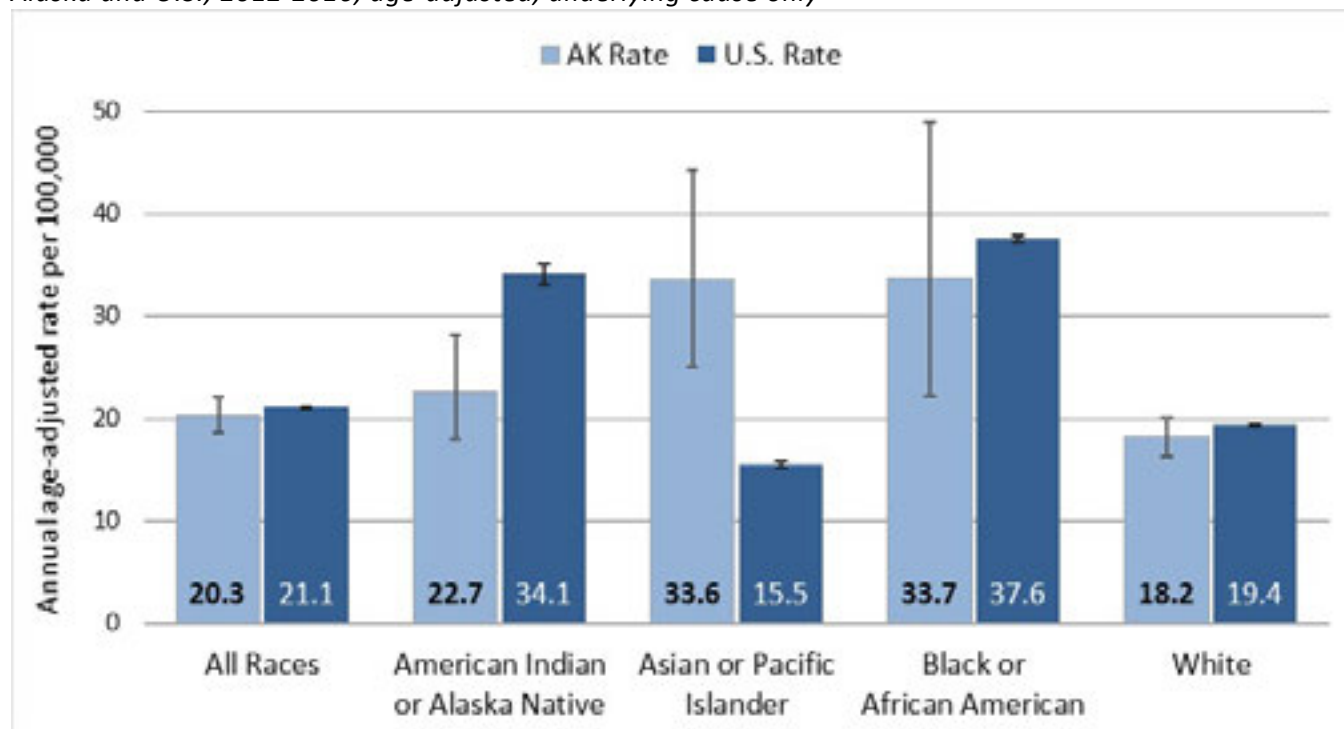
Rates are per 100,000 and age-adjusted to the 2000 U.S. Standard Population (19 age groups - Census P25-1130. Only Alaska residents are included for Alaska estimates.

\* Within Alaska, diabetes-related death rates for men are significantly higher than for women; this is also true for the U.S.

+ Diabetes-related death rates among women are lower for Alaska than for the U.S.

**Figure 10: Diabetes-related death rates among adults, by race**

Alaska and U.S., 2012-2016, age-adjusted, underlying cause only



*Supporting table for Figure 10: Diabetes-related death rates among adults, by race*

Alaska and U.S., 2012-2016, age-adjusted, underlying cause only

|                                   | Alaska      |             |             |            | U.S.        |             |             |
|-----------------------------------|-------------|-------------|-------------|------------|-------------|-------------|-------------|
|                                   | Rate        | Lower CI    | Upper CI    | Count      | Rate        | Lower CI    | Upper CI    |
| <b>All Races</b>                  | <b>20.3</b> | <b>18.6</b> | <b>22.1</b> | <b>598</b> | <b>21.1</b> | <b>21.1</b> | <b>21.2</b> |
| American Indian or Alaska Native+ | 22.7        | 18.0        | 28.2        | 90         | 34.1        | 33.1        | 35.1        |
| Asian or Pacific Islander*+       | 33.6        | 25.0        | 44.3        | 57         | 15.5        | 15.2        | 15.8        |
| Black or African American*        | 33.7        | 22.2        | 49.0        | 32         | 37.6        | 37.3        | 37.9        |
| White                             | 18.2        | 16.3        | 20.1        | 419        | 19.4        | 19.3        | 19.5        |

Data source: Centers for Disease Control and Prevention, National Center for Health Statistics. Underlying Cause of Death 1999-2016 on CDC WONDER Online Database, released December, 2017. Data are from the Multiple Cause of Death Files, 1999-2016, as compiled from data provided by the 57 vital statistics jurisdictions through the Vital Statistics Cooperative Program. Accessed at <http://wonder.cdc.gov/ucd-icd10.html> on Apr 3, 2018

Rates are per 100,000 and age-adjusted to the 2000 U.S. Standard Population (19 age groups - Census P25-1130). Only Alaska residents are included for Alaska estimates.

\* Within Alaska, death rates are higher for Asian or Pacific Islander and Black or African American in comparison to the state average and to Whites alone.

+ Death rates for American Indian or Alaska Native people in Alaska are lower than for the U.S.; rates for Asian or Pacific Islander people in Alaska are higher than for the U.S.

# Figure 11: Diabetes-related death rates among adults, by Behavioral Health Systems Region

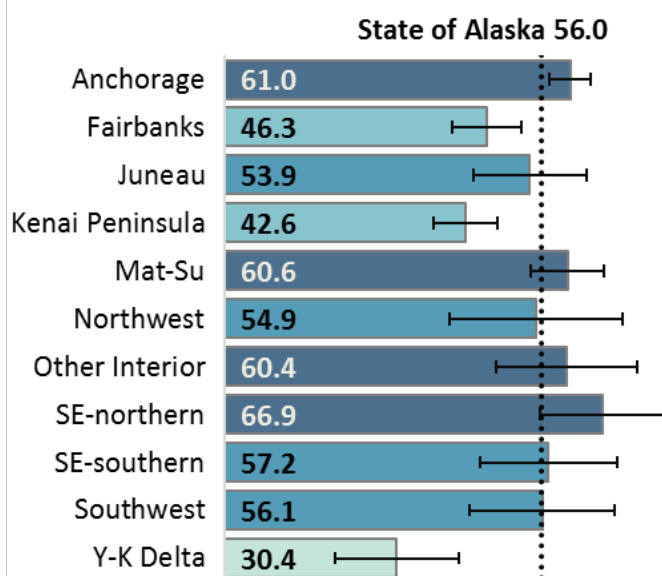
Alaska, 2007-2016, age-adjusted, underlying and contributing cause



## Supporting table for Figure 11: Diabetes-related death rates among adults, by Behavioral Health Systems Region

Alaska, 2007-2016, age-adjusted, underlying and contributing cause

|                        | Rate        | Lower CI    | Upper CI    | Count        |
|------------------------|-------------|-------------|-------------|--------------|
| <b>State of Alaska</b> | <b>56.0</b> | <b>53.8</b> | <b>58.3</b> | <b>2,781</b> |
| Anchorage              | 61.0        | 57.3        | 64.7        | 1,200        |
| Fairbanks*             | 46.3        | 40.3        | 52.4        | 264          |
| Juneau                 | 53.9        | 43.9        | 64.0        | 128          |
| Kenai Peninsula*       | 42.6        | 36.9        | 48.3        | 240          |
| Mat-Su                 | 60.6        | 54.1        | 67.0        | 396          |
| Northwest              | 54.9        | 39.6        | 70.3        | 60           |
| Other Interior         | 60.4        | 47.9        | 72.9        | 109          |
| SE-northern            | 66.9        | 55.7        | 78.0        | 148          |
| SE-southern            | 57.2        | 45.2        | 69.3        | 95           |
| Southwest              | 56.1        | 43.2        | 68.9        | 97           |
| Y-K Delta*             | 30.4        | 19.5        | 41.3        | 36           |



Data source: Alaska Division of Public Health, Health Analytics and Vital Records Section, Mortality Data. Underlying and contributing cause. Rates are per 100,000 and age-adjusted to the 2000 U.S. Standard Population (19 age groups - Census P25-1130). Only Alaska residents are included.

\*Indicates significant difference between region and state overall.

## Diabetes-related Hospitalizations

We examined diabetes-related hospitalization rates for Alaska for 2016, the most recent data available.<sup>12</sup> These datasets include both inpatient (admitted to the hospital) and outpatient (i.e., emergency department, outpatient surgery, outpatient observation, imaging labs, or other services) visits. “Diabetes-related” visits could list diabetes as the primary reason for the visit, or a contributing or complicating factor that was not the primary reason for the visit (i.e., “secondary”).

Although only about 1% of diabetes-related hospital visits were inpatient visits where diabetes was the primary cause (637 total visits), diabetes contributed to the need for hospital treatment in 70,487 total visits during 2016 (see Table 2). Of the diabetes-related inpatient visits (13% of total diabetes-related visits), only 7% indicated diabetes as the primary cause, in comparison to 33% of the outpatient visits.

Rates of diabetes-related hospitalization were similar to diabetes prevalence among subgroups: higher for females than males and increasing with age. One exception is that among children (those under age 18) for both diabetes-related inpatient and outpatient visits, diabetes was more likely to be characterized as the primary reason for the visit than for other age groups (74% and 67%, respectively).

Total diabetes-related hospitalization rates were higher among Asian, Pacific Islander, Alaska Native, and Black/African American people in comparison to White and Hispanic people (see Table 3).

---

<sup>12</sup> See description of hospitalization data in Appendix for additional detail.

**Table 2: Number and rate of inpatient and outpatient hospital discharges for diabetes, by gender and age**

Alaska, 2016

|                 | Inpatient-Diabetes |           | Outpatient-Diabetes |           | Total  |
|-----------------|--------------------|-----------|---------------------|-----------|--------|
|                 | Primary            | Secondary | Primary             | Secondary |        |
| <b>Total</b>    |                    |           |                     |           |        |
| Discharges      | 637                | 8,430     | 20,059              | 41,361    | 70,487 |
| Rate per 10,000 | 8.6                | 114.0     | 271.2               | 559.2     | 952.9  |
| <b>Male</b>     |                    |           |                     |           |        |
| Discharges      | 389                | 4,280     | 10,057              | 20,203    | 34,929 |
| Rate per 10,000 | 10.2               | 112.0     | 263.2               | 528.8     | 914.2  |
| <b>Female</b>   |                    |           |                     |           |        |
| Discharges      | 248                | 4,150     | 10,002              | 21,157    | 35,557 |
| Rate per 10,000 | 6.9                | 116.0     | 279.7               | 591.6     | 994.3  |
| <b>&lt;18</b>   |                    |           |                     |           |        |
| Discharges      | 69                 | 24        | 396                 | 194       | 683    |
| Rate per 10,000 | 3.6                | 1.3       | 20.9                | 10.2      | 36.1   |
| <b>18-44</b>    |                    |           |                     |           |        |
| Discharges      | 228                | 745       | 3,196               | 5,819     | 9,988  |
| Rate per 10,000 | 8.3                | 27.0      | 115.7               | 210.6     | 361.5  |
| <b>45-64</b>    |                    |           |                     |           |        |
| Discharges      | 205                | 3,223     | 8,706               | 17,827    | 29,961 |
| Rate per 10,000 | 10.5               | 165.2     | 446.3               | 913.8     | 1535.8 |
| <b>65+</b>      |                    |           |                     |           |        |
| Discharges      | 135                | 4,438     | 7,761               | 17,520    | 29,854 |
| Rate per 10,000 | 17.1               | 562.1     | 982.9               | 2218.9    | 3781.0 |

Data source: Alaska Division of Public Health, Health Analytics and Vital Records Section, Health Facilities Data Reporting Inpatient and Outpatient Database 2016, v5.

Excludes gestational diabetes.

Only hospitalizations for Alaska residents are shown.

Rates are per 10,000 population in the state of Alaska.

“Secondary” are contributing or complicating factors that are not the primary reason for the visit.

**Table 3: Number and rate of inpatient and outpatient hospital discharges for diabetes, by race and ethnicity**

Alaska, 2016

|                               | Inpatient-Diabetes |           | Outpatient-Diabetes |           | Total  |
|-------------------------------|--------------------|-----------|---------------------|-----------|--------|
|                               | Primary            | Secondary | Primary             | Secondary |        |
| <b>White</b>                  |                    |           |                     |           |        |
| Discharges                    | 412                | 5,362     | 9,355               | 22,600    | 37,729 |
| Rate per 10,000               | 8.4                | 109.7     | 191.4               | 462.3     | 771.9  |
| <b>Black/African American</b> |                    |           |                     |           |        |
| Discharges                    | 50                 | 401       | 684                 | 2,232     | 3,367  |
| Rate per 10,000               | 18.2               | 146.2     | 249.3               | 813.6     | 1227.4 |
| <b>Alaska Native</b>          |                    |           |                     |           |        |
| Discharges                    | 75                 | 1,225     | 6,045               | 9,480     | 16,825 |
| Rate per 10,000               | 6.6                | 108.4     | 535.1               | 839.2     | 1489.4 |
| <b>Asian</b>                  |                    |           |                     |           |        |
| Discharges                    | 16                 | 507       | 1,058               | 2,129     | 3,710  |
| Rate per 10,000               | nr                 | 515.8     | 1076.4              | 2166.0    | 3774.5 |
| <b>Pacific Islander</b>       |                    |           |                     |           |        |
| Discharges                    | 24                 | 319       | 424                 | 1,617     | 2,384  |
| Rate per 10,000               | 24.4               | 324.5     | 431.4               | 1645.1    | 2425.5 |
| <b>Hispanic</b>               |                    |           |                     |           |        |
| Discharges                    | 28                 | 250       | 586                 | 1,395     | 2,259  |
| Rate per 10,000               | 5.5                | 49.2      | 115.3               | 274.5     | 444.5  |

Data source: Alaska Division of Public Health, Health Analytics and Vital Records Section, Health Facilities Data Reporting Inpatient and Outpatient Database 2016, v5. Excludes gestational diabetes.

Only hospitalizations for Alaska residents are shown.

Categories are mutually exclusive: all race groups are non-Hispanic; Hispanic ethnicity includes people of all race groups.

Rates are per 10,000 population in the state of Alaska.

“Secondary” are contributing or complicating factors that are not the primary reason for the visit.

nr: rate not reported due to small numbers.

## Economic Costs

Diabetes-related deaths and hospitalizations – as well as other outcomes associated with chronic disease – have economic costs to the public sector, as well as placing a burden on people with diabetes and their families. The CDC reports that after adjusting for age and gender, average medical expenditures among people with diagnosed diabetes are more than double the costs for people without diabetes.<sup>13</sup> To understand costs of providing healthcare services for people with diabetes in Alaska, a comprehensive study commissioned by the State of Alaska Division of Public Health assessed the economic costs to Medicaid for treating diabetes and other chronic conditions.<sup>14</sup>

The study reported that diabetes and other chronic conditions were more common among Medicaid-eligible adults in Alaska than non-Medicaid eligible adults. The prevalence of diabetes was 7.5% among Medicaid-eligible adults and 4.7% among other Alaska adults overall; and 27.8% among Medicaid-eligible adults ages 65 and older in comparison to 20.1% among non-eligible adults of the same age. Having diabetes was associated with other chronic conditions as well, including heart disease and obesity; prevalence of co-occurring conditions was higher among the Medicaid eligible population than the non-eligible population.

The study further described costs of providing healthcare to adults with diabetes among the 102,547 Alaska Medicaid-enrolled adults in FY2016 (54% of the total persons covered were adults in that year). Medicaid-paid healthcare costs were recorded for 5,400 adults with diabetes. The average cost for healthcare in FY2016 was nearly \$36,000 per person with diabetes, in stark contrast to the average of about \$7,700 spent per person without a chronic health condition in the same year. In total, more than \$193 million in Medicaid costs were paid for people with diabetes in Alaska in that year. About \$72 million of this funding was from Alaska's state general fund (37%), and the remaining costs were covered by federal funds. Notably, these costs included only those paid by Medicaid, and do not account for medical care received from outside the system, and also do not account for other important economic costs to individuals and their families (e.g., lost work or inability to maintain employment).

---

<sup>13</sup> Centers for Disease Control and Prevention (CDC). *National Diabetes Statistics Report, 2017 Estimates of Diabetes and Its Burden in the United States*. August 8, 2017. <https://www.cdc.gov/diabetes/pdfs/data/statistics/national-diabetes-statistics-report.pdf>

<sup>14</sup> Helvoight TL, Lehdorff H, McMillan N. Evergreen Economics. *The Cost of Eight Chronic Conditions on Alaska's Medicaid Program*. October 18, 2017. [http://dhss.alaska.gov/dph/Chronic/Documents/Publications/2017\\_CostOfChronicConditions\\_EvergreenEconomics\\_web.pdf](http://dhss.alaska.gov/dph/Chronic/Documents/Publications/2017_CostOfChronicConditions_EvergreenEconomics_web.pdf)

## Diabetes Control

### Screening for Diabetes

The American Diabetes Association recommends screening and testing for type 2 diabetes or prediabetes among all adults ages 45 or older every three years at a minimum, adults of any age who are overweight or obese and have one or more additional risk factors for type 2 diabetes, and recently recommended consideration of testing for diabetes in children or adolescents who are overweight or obese.<sup>15</sup>

About half (52.0%) of Alaska adults without diabetes have been tested for diabetes within the past three years. Conservatively, at least 76% of Alaska adults who do not have diabetes met criteria for screening (i.e., people age 45 and older and people ages 18-44 who are overweight or obese) and should be screened.

Women were more likely than men to have been tested in the past three years (55.7% vs. 48.5%). Screening rates increased significantly by age: 42.3% of adults ages 18-44 had been screened in comparison to 68.3% of adults ages 65 and older. Black/African American adults and White adults were similarly likely to have been screened (57.1% and 54.9%, respectively); Alaska Native (45.4%), Hispanic (41.3%) and Asian (38.7%) adults were less likely to have been screened. People with fewer economic resources (low socioeconomic status or SES) were less likely than those of higher SES to have been screened (45.4% vs. 57.7%). (data not shown, see Appendix Table 2 for details).

Adults in Southeast (SE) Alaska – both northern and southern regions – were more likely to have been tested within the past three years than the state average (see Figure 12). Adults in the Northwest and Yukon-Kuskokwim (Y-K) regions were less likely than the state average to have been tested.

*Other screenings.* In addition to screening for diabetes, adults should receive regular screenings for high cholesterol and blood pressure; both are risk factors for developing diabetes, as well as for diabetes complications among those who already have diabetes. Appendix Table 2 provides the prevalence of current screenings for major Alaska population groups.

---

<sup>15</sup> American Diabetes Association. *Classification and Diagnosis of Diabetes: Standards of Medical Care in Diabetes – 2018*. Diabetes Care. January 2018. Vol 41, Supplement 1: S13-S27.  
[http://care.diabetesjournals.org/content/diacare/suppl/2017/12/08/41.Supplement\\_1.DC1/DC\\_41\\_S1\\_Combined.pdf](http://care.diabetesjournals.org/content/diacare/suppl/2017/12/08/41.Supplement_1.DC1/DC_41_S1_Combined.pdf)

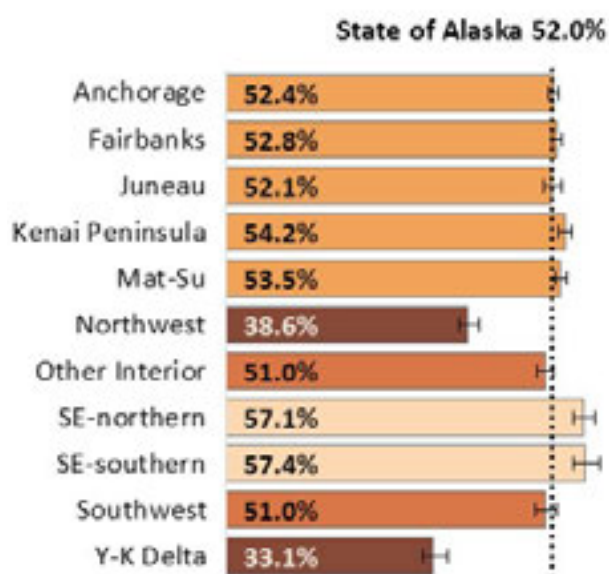
**Figure 12: Meeting diabetes screening recommendations among adults, by Behavioral Health Systems Region**

Percentage of all adults without diabetes who have been tested for diabetes in the past 3 years, Alaska, 2012-2016



Percentage of adults without diabetes who have been tested for diabetes in the past 3 years, by Behavioral Health Systems Region, Alaska, 2012-2016

|                        | Prevalence   | Lower CI     | Upper CI     |
|------------------------|--------------|--------------|--------------|
| <b>State of Alaska</b> | <b>52.0%</b> | <b>51.1%</b> | <b>52.9%</b> |
| Anchorage              | 52.4%        | 50.7%        | 54.2%        |
| Fairbanks              | 52.8%        | 50.8%        | 54.8%        |
| Juneau                 | 52.1%        | 49.0%        | 55.2%        |
| Kenai Peninsula        | 54.2%        | 51.9%        | 56.5%        |
| Mat-Su                 | 53.5%        | 51.5%        | 55.6%        |
| Northwest*             | 38.6%        | 34.8%        | 42.6%        |
| Other Interior         | 51.0%        | 48.1%        | 53.9%        |
| SE-northern*           | 57.1%        | 53.4%        | 60.7%        |
| SE-southern*           | 57.4%        | 53.4%        | 61.2%        |
| Southwest              | 51.0%        | 47.3%        | 54.7%        |
| Y-K Delta*             | 33.1%        | 29.6%        | 36.9%        |



Data source: Alaska BRFSS Combined File. Have you had a test for high blood sugar or diabetes within the past three years?

\*Indicates significant difference between region and state overall.

## Effective Healthcare

Quality care and self-management practices for people with diabetes can effectively lower the risk of health complications.

Although recommendations for care can vary based on individual characteristics, specific guidelines for diabetes care include the following information from the Alaska BRFSS:

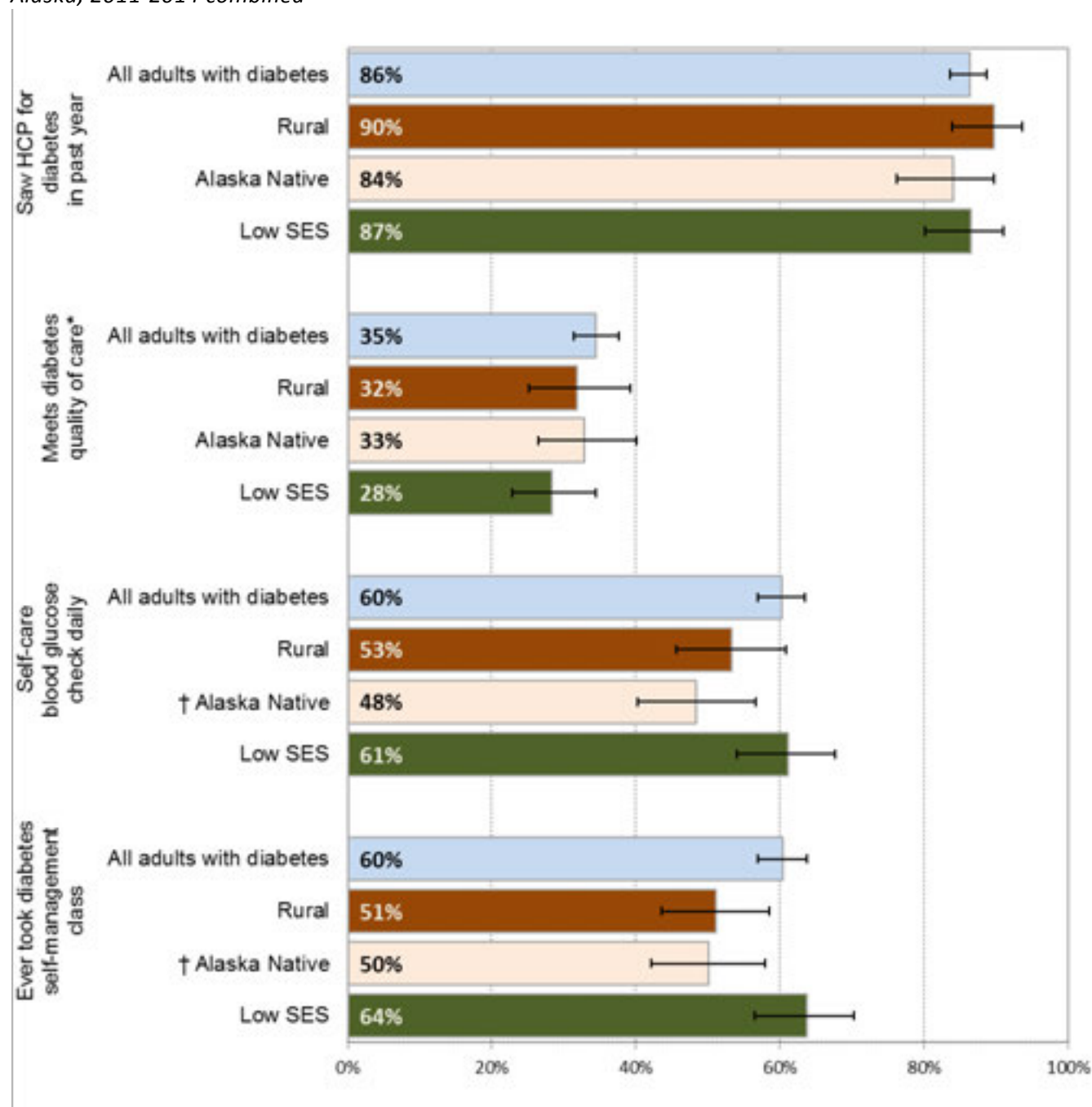
- Seeing a healthcare provider (HCP) for diabetes-related preventive care at least once per year
- Working with a healthcare team to achieve high-quality diabetes care; that means having received all three clinical services below to achieve the “quality of care” standard:
  - an annual eye exam,
  - an annual foot exam, and
  - a hemoglobin A1C test at least twice per year
- Checking blood glucose levels daily at home
- Attending evidence-based diabetes self-management classes

We combined the five most recent years of data where these measures were collected to describe quality of diabetes care among people with diabetes.

Most Alaska adults with diabetes saw a healthcare provider for diabetes care in the past year (86%), and prevalence did not vary greatly among population subgroups (see Figure 13). However, only about one-third of people with diabetes met the quality of care standard. Alaska Native adults with diabetes were less likely to report checking their blood glucose daily in comparison to Whites, and also less likely to have ever taken a diabetes self-management class. Other groups were not significantly different than the state average.

*Regional variation.* There are not significant differences by region among people with diabetes for any quality of care measures (see Figures 14-17); however, the relatively small number of people with diabetes per region included in the survey makes it difficult to detect significant differences. Although not statistically significant from the state average, the prevalence of having attended a diabetes self-management class appears relatively lower for the Northwest, Yukon-Kuskokwim (Y-K) Delta, and Other Interior regions (see Figure 17).

**Figure 13: Diabetes care indicators among adults, by priority population groups**  
 Alaska, 2011-2014 combined



Data source: Alaska BRFSS Combined File, 2011-2014. Data shown in these charts are included in Appendix Table 4a and Table 4b.

† Alaska Native adults with diabetes were less likely than Whites to do daily self-checks and to have ever taken a self-management class.

\*Meeting the Diabetes Quality of Care standard includes having had an annual eye exam and foot exam by a healthcare provider, and hemoglobin A1C tests taken at least twice in the past year.

Measures:

Seeing a healthcare provider (HCP) for diabetes: *About how many times in the past 12 months have you seen a doctor, nurse, or other health professional for your diabetes?*

[technical notes continue on the next page]

Diabetes Quality of Care standard:

- *When was the last time you had an eye exam in which the pupils were dilated? This would have made you temporarily sensitive to bright light.*
- *About how many times in the past 12 months has a health professional checked your feet for any sores or irritations.*
- *A test for "A one C" measures the average level of blood sugar over the past three months. About how many times in the past 12 months has a doctor, nurse, or other health professional checked you for "A one C"?*

*Self-care blood glucose check: About how often do you check your blood for glucose or sugar? Include times when checked by a family member or friend, but do NOT include times when checked by a health professional.*

*Diabetes self-management class: Have you ever taken a course or class in how to manage your diabetes yourself?*

Alaska Native group includes all who reported that as one of their race groups; other race groups include those who reported that race as their only race and did not report being Alaska Native or Hispanic. Pacific Islander/Other includes those who reported multiple race groups but not Alaska Native or Hispanic.

Low socio-economic status (SES) includes those who live in a household that is at <185% of the federal poverty level, or have completed less than a high school education.

Rural Alaska includes those living in Northern and Southwest Alaska, as defined by the sampling regions for Alaska BRFSS. This includes Northwest, Yukon-Kuskokwim (Y-K) Delta, and Southwest regions, as well as Denali Borough, and the Census Areas Yukon-Koyukuk and Southeast Fairbanks.

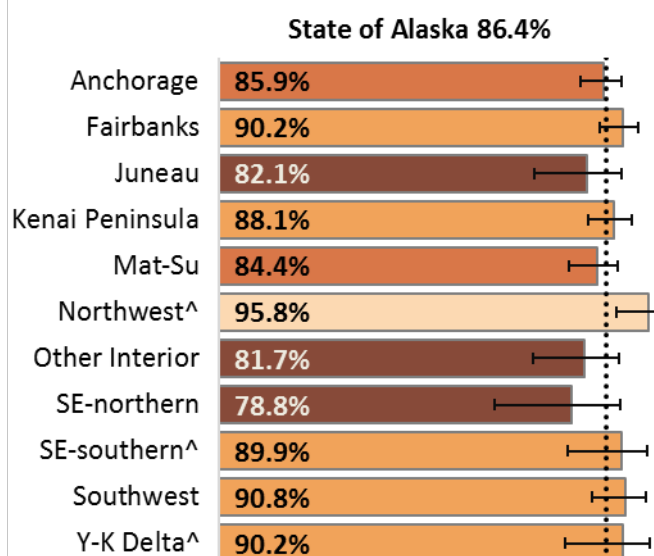
**Figure 14: Diabetes care by a provider among adults with diabetes, by Behavioral Health Systems Region**

Percentage of adults with diabetes who saw a healthcare provider for diabetes in the past year  
Alaska, 2011-2014



Percentage of Alaska adults with diabetes who saw a healthcare provider for diabetes in the past year, by Behavioral Health Systems Region, Alaska, 2011-2014

|                        | Prevalence   | Lower CI     | Upper CI     |
|------------------------|--------------|--------------|--------------|
| <b>State of Alaska</b> | <b>86.4%</b> | <b>83.7%</b> | <b>88.7%</b> |
| Anchorage              | 85.9%        | 80.6%        | 89.9%        |
| Fairbanks              | 90.2%        | 85.1%        | 93.7%        |
| Juneau                 | 82.1%        | 70.5%        | 89.8%        |
| Kenai Peninsula        | 88.1%        | 82.4%        | 92.1%        |
| Mat-Su                 | 84.4%        | 78.3%        | 89.0%        |
| Northwest              | 95.8%        | 88.6%        | 98.5%        |
| Other Interior         | 81.7%        | 70.2%        | 89.4%        |
| SE-northern            | 78.8%        | 61.5%        | 89.6%        |
| SE-southern            | 89.9%        | 78.0%        | 95.7%        |
| Southwest              | 90.8%        | 83.2%        | 95.2%        |
| Y-K Delta              | 90.2%        | 77.4%        | 96.1%        |



Data source: Alaska BRFSS Standard File.

^Estimates flagged for potential unreliability (small numbers or extremely high prevalence)

No significant difference between any region and the state overall.

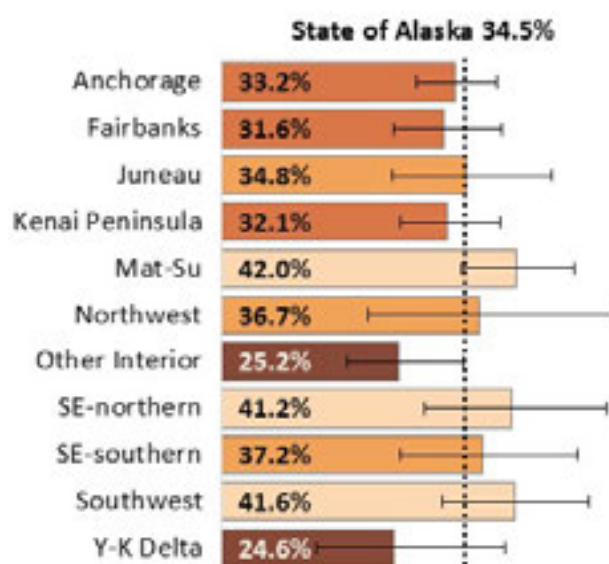
**Figure 15: Receiving quality diabetes care among adults with diabetes, by Behavioral Health Systems Region**

Percentage of adults with diabetes who receive care meeting the Diabetes Quality of Care standard\*  
Alaska, 2011-2014



Percentage of Alaska adults with diabetes who meet the Diabetes Quality of Care standard\*,  
by Behavioral Health Systems Region, Alaska, 2011-2014

|                        | Prevalence   | Lower CI     | Upper CI     |
|------------------------|--------------|--------------|--------------|
| <b>State of Alaska</b> | <b>34.5%</b> | <b>31.4%</b> | <b>37.7%</b> |
| Anchorage              | 33.2%        | 27.8%        | 39.1%        |
| Fairbanks              | 31.6%        | 24.5%        | 39.8%        |
| Juneau                 | 34.8%        | 24.3%        | 46.9%        |
| Kenai Peninsula        | 32.1%        | 25.5%        | 39.6%        |
| Mat-Su                 | 42.0%        | 34.1%        | 50.3%        |
| Northwest              | 36.7%        | 20.9%        | 56.1%        |
| Other Interior         | 25.2%        | 17.8%        | 34.3%        |
| SE-northern            | 41.2%        | 28.9%        | 54.8%        |
| SE-southern            | 37.2%        | 25.5%        | 50.7%        |
| Southwest              | 41.6%        | 31.5%        | 52.3%        |
| Y-K Delta              | 24.6%        | 13.6%        | 40.3%        |



Data source: Alaska BRFSS Standard File.

\*Meeting the Diabetes Quality of Care standard includes having had an annual foot exam and eye exam by a healthcare provider, and hemoglobin A1C tests at least twice in the past year.

No significant difference between any region and the state overall.

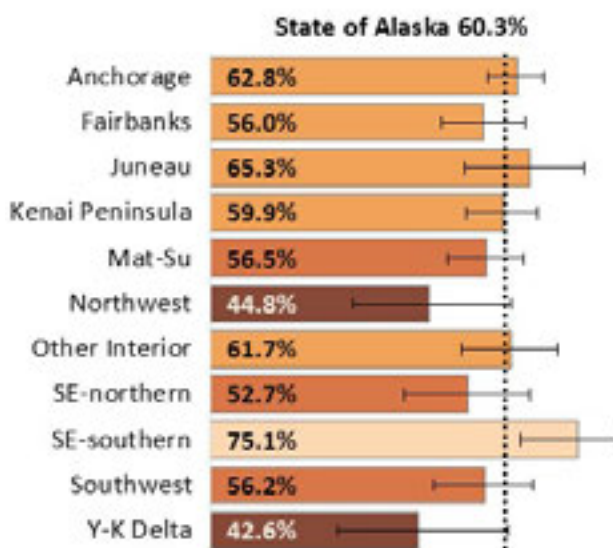
**Figure 16: Daily blood glucose checks among adults with diabetes, by Behavioral Health Systems Region**

Percentage of adults with diabetes who check their blood glucose on a daily basis, Alaska, 2011-2014



Percentage of Alaska adults with diabetes who checked their blood glucose on a daily basis, by Behavioral Health Systems Region, Alaska, 2011-2014

|                        | Prevalence   | Lower CI     | Upper CI     |
|------------------------|--------------|--------------|--------------|
| <b>State of Alaska</b> | <b>60.3%</b> | <b>57.0%</b> | <b>63.5%</b> |
| Anchorage              | 62.8%        | 56.8%        | 68.3%        |
| Fairbanks              | 56.0%        | 47.3%        | 64.4%        |
| Juneau                 | 65.3%        | 52.1%        | 76.5%        |
| Kenai Peninsula        | 59.9%        | 52.3%        | 67.1%        |
| Mat-Su                 | 56.5%        | 48.5%        | 64.2%        |
| Northwest              | 44.8%        | 29.1%        | 61.7%        |
| Other Interior         | 61.7%        | 51.5%        | 71.0%        |
| SE-northern            | 52.7%        | 39.7%        | 65.3%        |
| SE-southern            | 75.1%        | 63.4%        | 84.0%        |
| Southwest              | 56.2%        | 45.8%        | 66.1%        |
| Y-K Delta              | 42.6%        | 26.0%        | 61.0%        |



Data source: Alaska BRFSS Standard File.

No significant difference between any region and the state overall.

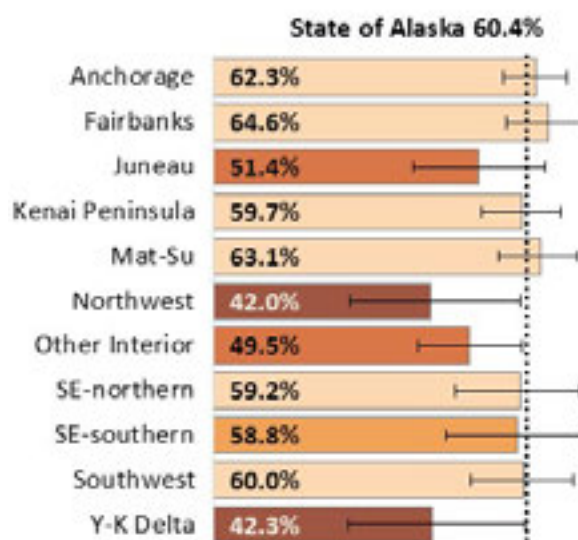
**Figure 17: Diabetes self-management class participation among adults with diabetes, by Behavioral Health Systems Region**

Percentage of adults with diabetes who have ever taken a class to manage their diabetes  
Alaska, 2011-2014



Percentage of Alaska adults with diabetes who have ever taken a class to manage their diabetes,  
by Behavioral Health Systems Region, Alaska, 2011-2014

|                        | Prevalence   | Lower CI     | Upper CI     |
|------------------------|--------------|--------------|--------------|
| <b>State of Alaska</b> | <b>60.4%</b> | <b>57.0%</b> | <b>63.7%</b> |
| Anchorage              | 62.3%        | 56.0%        | 68.2%        |
| Fairbanks              | 64.6%        | 56.7%        | 71.7%        |
| Juneau                 | 51.4%        | 38.6%        | 64.0%        |
| Kenai Peninsula        | 59.7%        | 51.8%        | 67.1%        |
| Mat-Su                 | 63.1%        | 55.0%        | 70.5%        |
| Northwest              | 42.0%        | 26.5%        | 59.2%        |
| Other Interior         | 49.5%        | 39.6%        | 59.5%        |
| SE-northern            | 59.2%        | 46.7%        | 70.7%        |
| SE-southern            | 58.8%        | 44.9%        | 71.4%        |
| Southwest              | 60.0%        | 49.7%        | 69.5%        |
| Y-K Delta              | 42.3%        | 26.2%        | 60.3%        |



Data source: Alaska BRFSS Standard File.

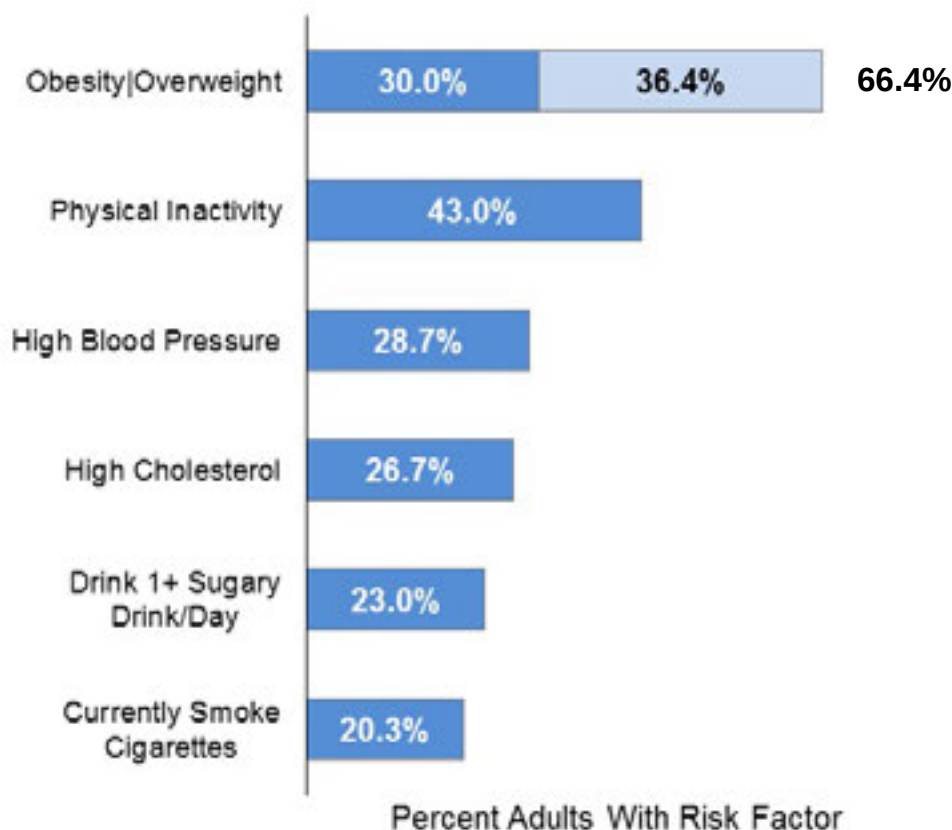
No significant difference between any region and the state overall.

## Risk Factors

Key risk factors for developing diabetes or its complications include being overweight or obese, drinking sugary drinks, not getting enough exercise, high blood pressure or cholesterol, and smoking cigarettes. Many adults in Alaska had one of these risk factors (see Figure 18), and more than half of adults in any of the major demographic groups examined for this report had two or more risk factors (see Figure 19).

**Figure 18: Prevalence of selected risk factors for diabetes among adults**

Alaska, 2011-2016



Data source: Alaska BRFSS Combined File, 2013-2016 for obesity, overweight and smoking; Alaska BRFSS Standard File, 2011, 2013, 2015 for physical inactivity, high cholesterol, and drinking one or more sugary drinks per day; Alaska BRFSS Standard File, 2011-2015 for high blood pressure.

### Measure Definitions:

Obesity/Overweight: self-reported height and weight are used to calculate body mass index (BMI); BMI  $\geq 30$  is obese, and BMI between 25.0-29.9 is overweight.

Physical inactivity: percent of adults not getting the equivalent of moderate-intensity physical activity for  $\geq 150$  minutes per week.

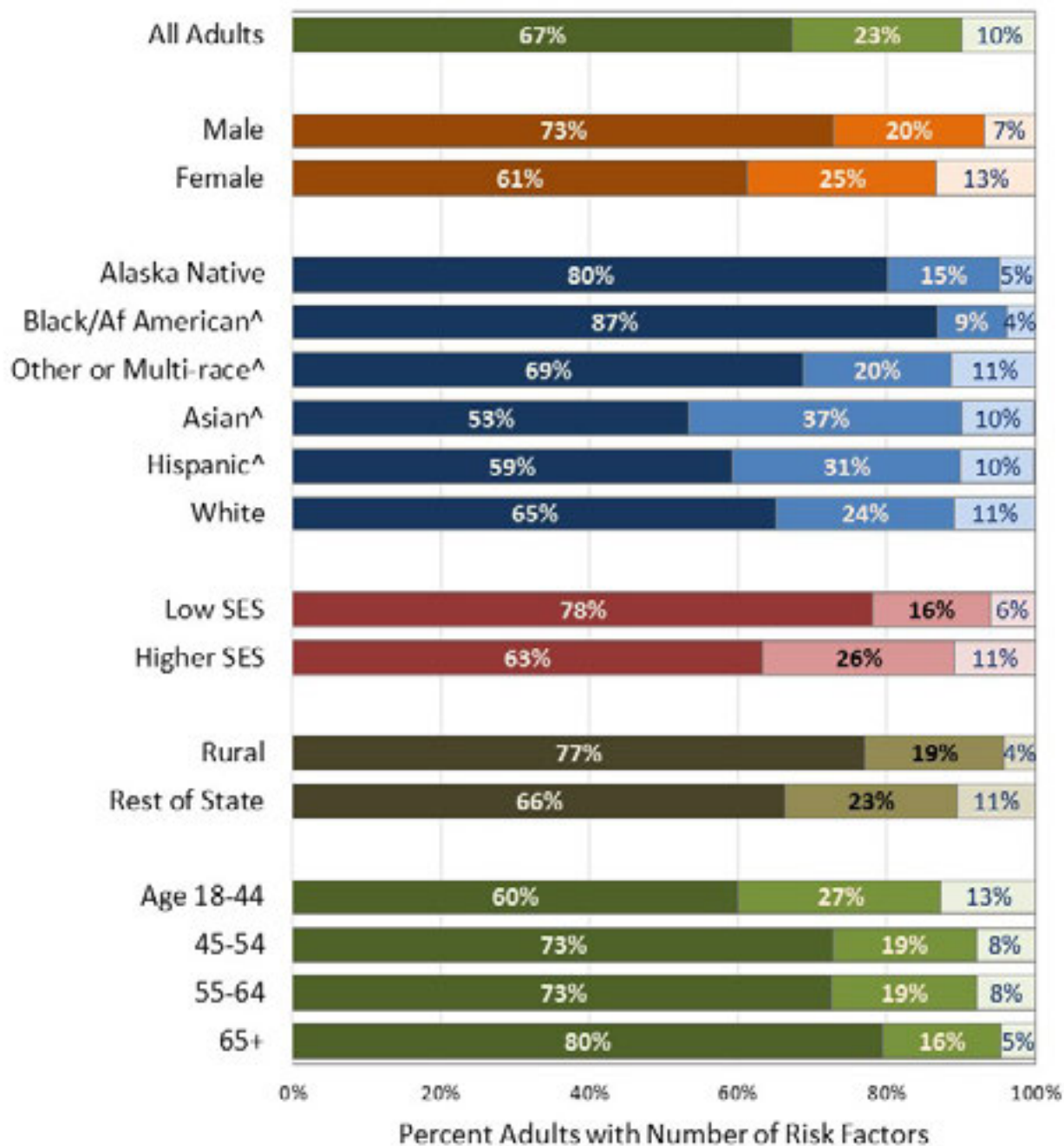
High blood pressure, High cholesterol: percent of adults who were ever told by a healthcare professional that they have this condition (high blood pressure or high cholesterol)

Drink 1+ sugary drink/day: percent of adults who report drinking an average of one or more non-diet sodas or other sugary drinks per day in the past seven days.

Currently smoke cigarettes: percent of adults who have ever smoked 100 or more cigarettes and who report that they smoke every day or some days.

**Figure 19: Prevalence of multiple risk factors for diabetes among adults, by demographic group**

Alaska, 2011-2015



Key for number of risk factors (RFs)

2 or more RFs    1 RF    None of 6 RFs

Data source: Alaska BRFSS Standard Data file, 2011, 2013, 2015. Supporting data for this figure are shown in Appendix Table 3.

Risk factors included in the count: Obesity or overweight, physical inactivity, ever told have high blood pressure, ever told have high cholesterol, drank one or more sugary drinks per day, and/or currently a smoker. [technical notes continue on next page]

Note: data may not add up to 100% due to rounding.

^ Indicates that the estimate is flagged for reliability.

Alaska Native group includes all who reported American Indian or Alaska Native as one of their race groups; other race groups include those who reported that race as their only race and did not report being Alaska Native or Hispanic.

Other/multi-race includes those who reported multiple race groups but not Alaska Native or Hispanic.

Low socio-economic status (SES) includes those who live in a household that is at <185% of the federal poverty level, or have completed less than a high school education.

Rural Alaska includes those living in Northern and Southwest Alaska, as defined by the sampling regions for Alaska BRFSS. This includes Northwest, Yukon-Kuskokwim (Y-K) Delta, and Southwest regions, as well as Denali Borough, and the Census Areas Yukon-Koyukuk and Southeast Fairbanks.

## Summary of population risk factor patterns

In summary, we provide a visual display of higher and lower risk factor prevalence by different population groups in Alaska: increasing intensity of red indicates relatively greater prevalence of risk factors, lighter shades indicate closer to “average” prevalence of risk, and increasing intensity of blue spotted patterns indicates relatively lower prevalence of risk factors. These can help to reveal patterns of risk across different population groups.

Figure 20 shows greater risk across multiple risk factors among men, older adults, and low SES populations. Figure 21 shows elevated risk for some factors among Alaska Native and Black/African American adults, and relatively lower risk among Asian, Hispanic and White adults. Finally, Figure 22 shows multiple increased risk factors by Behavioral Health Systems region, although patterns are generally mixed by region.

**Figure 20: Summary of diabetes risk and risk factor status among adults, by gender, age, and socioeconomic status (SES)**  
Alaska, 2011-2015

| Patterns for<br>Individual Risk Factors | Gender |        | Age   |       |       |     | SES     |        |
|-----------------------------------------|--------|--------|-------|-------|-------|-----|---------|--------|
|                                         | Male   | Female | 18-44 | 45-54 | 55-64 | 65+ | Low SES | Higher |
| Obese (BMI 30.0 or higher)              |        |        |       |       |       |     |         |        |
| Overweight (BMI 25.0-29.9)              |        |        |       |       |       |     |         |        |
| Physical Activity <150 Min/Week         |        |        |       |       |       |     |         |        |
| 1+ Sugary Beverage/Day                  |        |        |       |       |       |     |         |        |
| Current Cigarette Smoker                |        |        |       |       |       |     |         |        |
| Hypertension (Lifetime)                 |        |        |       |       |       |     |         |        |
| High Cholesterol (Lifetime)             |        |        |       |       |       |     |         |        |
| Diagnosed with Diabetes                 |        |        |       |       |       |     |         |        |

Key for patterns of risk summary above

| Key for Patterns                | Higher Risk |           |           |           | Lower Risk |       |
|---------------------------------|-------------|-----------|-----------|-----------|------------|-------|
| Individual Risk Factors         |             |           |           |           |            |       |
| Obese (BMI 30.0 or higher)      | >=40%       | 35.0-39.9 | 30.7-34.9 | 28.5-30.6 | 18.0-28.4  | <18.0 |
| Overweight (BMI 25.0-29.9)      | >=43.0      | 40.0-42.9 | 37.9-39.9 | 34.0-37.9 | 20.0-33.9  | <20.0 |
| Physical Activity <150 Min/Week | >=53.0      | 48.0-52.9 | 45.1-47.9 | 40.0-45.0 | 25.0-39.9  | <25.0 |
| 1+ Sugary Beverage/Day          | >=40.0      | 35.0-39.9 | 32.1-34.9 | 27.0-32.0 | 20.0-26.9  | <20.0 |
| Current Cigarette Smoker        | >=30.0      | 25.0-29.9 | 21.6-24.9 | 19.0-21.5 | 12.0-19.0  | <12.0 |
| Hypertension (Lifetime)         | >=47.0      | 36.0-46.9 | 30.1-35.9 | 27.0-30.0 | 18.0-26.9  | <18.0 |
| High Cholesterol (Lifetime)     | >=45.0      | 34.0-44.9 | 28.1-33.9 | 25.0-28.0 | 18.0-24.9  | <18.0 |
| Diagnosed with Diabetes         | >=15%       | 10.0-14.9 | 7.9-9.9   | 6.7-7.9   | 4.0-6.6    | <4.0  |

Data source: 2011-2015 Alaska BRFSS Standard File for physical activity, sugary drinks, hypertension, high cholesterol; 2012-2016 Alaska BRFSS Combined File for obesity, overweight, smoking, and diabetes.

**Figure 21: Summary of diabetes risk and risk factor status among adults, by race and ethnicity**

Alaska, 2011-2015

| Patterns for Individual Risk Factors | Race and Ethnicity |                           |       |                     |          |       |
|--------------------------------------|--------------------|---------------------------|-------|---------------------|----------|-------|
|                                      | Alaska Native      | Black or African American | Asian | Other or Multi-race | Hispanic | White |
| Obese (BMI 30.0 or higher)           |                    |                           |       |                     |          |       |
| Overweight (BMI 25.0-29.9)           |                    |                           |       |                     |          |       |
| Physical Activity <150 Min/Week      |                    |                           |       |                     |          |       |
| 1+ Sugary Beverage/Day               |                    |                           |       |                     |          |       |
| Current Cigarette Smoker             |                    |                           |       |                     |          |       |
| Hypertension (Lifetime)              |                    |                           |       |                     |          |       |
| High Cholesterol (Lifetime)          |                    |                           |       |                     |          |       |
| Diagnosed with Diabetes              |                    |                           |       |                     |          |       |

Key for patterns of risk summary above

| Key for Patterns                | Higher Risk |           |           |           | Lower Risk |       |
|---------------------------------|-------------|-----------|-----------|-----------|------------|-------|
| Individual Risk Factors         |             |           |           |           |            |       |
| Obese (BMI 30.0 or higher)      | >=40%       | 35.0-39.9 | 30.7-34.9 | 28.5-30.6 | 18.0-28.4  | <18.0 |
| Overweight (BMI 25.0-29.9)      | >=43.0      | 40.0-42.9 | 37.9-39.9 | 34.0-37.9 | 20.0-33.9  | <20.0 |
| Physical Activity <150 Min/Week | >=53.0      | 48.0-52.9 | 45.1-47.9 | 40.0-45.0 | 25.0-39.9  | <25.0 |
| 1+ Sugary Beverage/Day          | >=40.0      | 35.0-39.9 | 32.1-34.9 | 27.0-32.0 | 20.0-26.9  | <20.0 |
| Current Cigarette Smoker        | >=30.0      | 25.0-29.9 | 21.6-24.9 | 19.0-21.5 | 12.0-19.0  | <12.0 |
| Hypertension (Lifetime)         | >=47.0      | 36.0-46.9 | 30.1-35.9 | 27.0-30.0 | 18.0-26.9  | <18.0 |
| High Cholesterol (Lifetime)     | >=45.0      | 34.0-44.9 | 28.1-33.9 | 25.0-28.0 | 18.0-24.9  | <18.0 |
| Diagnosed with Diabetes         | >=15%       | 10.0-14.9 | 7.9-9.9   | 6.7-7.9   | 4.0-6.6    | <4.0  |

Data source: 2011-2015 Alaska BRFSS Standard File for physical activity, sugary drinks, hypertension, high cholesterol; 2012-2016 Alaska BRFSS Combined File for obesity, overweight, smoking, and diabetes.

**Figure 22: Summary of diabetes risk and risk factor status among adults by Behavioral Health Systems region**

Alaska, 2011-2015

| Patterns for Individual Risk Factors | Behavioral Health Systems Region |           |        |                 |        |           |                |             |             |           |           |
|--------------------------------------|----------------------------------|-----------|--------|-----------------|--------|-----------|----------------|-------------|-------------|-----------|-----------|
|                                      | Anchorage                        | Fairbanks | Juneau | Kenai Peninsula | Mat-Su | Northwest | Other Interior | SE-northern | SE-southern | Southwest | Y-K Delta |
| Obese (BMI 30.0 or higher)           |                                  |           |        |                 |        |           |                |             |             |           |           |
| Overweight (BMI 25.0-29.9)           |                                  |           |        |                 |        |           |                |             |             |           |           |
| Physical Activity <150 Min/Week      |                                  |           |        |                 |        |           |                |             |             |           |           |
| 1+ Sugary Beverage/Day               |                                  |           |        |                 |        |           |                |             |             |           |           |
| Current Cigarette Smoker             |                                  |           |        |                 |        |           |                |             |             |           |           |
| Hypertension (Lifetime)              |                                  |           |        |                 |        |           |                |             |             |           |           |
| High Cholesterol (Lifetime)          |                                  |           |        |                 |        |           |                |             |             |           |           |
| Diagnosed with Diabetes              |                                  |           |        |                 |        |           |                |             |             |           |           |

Key for patterns of risk summary above

| Key for Patterns                | Higher Risk |           |           |           | Lower Risk |       |
|---------------------------------|-------------|-----------|-----------|-----------|------------|-------|
| Individual Risk Factors         |             |           |           |           |            |       |
| Obese (BMI 30.0 or higher)      | >=40%       | 35.0-39.9 | 30.7-34.9 | 28.5-30.6 | 18.0-28.4  | <18.0 |
| Overweight (BMI 25.0-29.9)      | >=43.0      | 40.0-42.9 | 37.9-39.9 | 34.0-37.9 | 20.0-33.9  | <20.0 |
| Physical Activity <150 Min/Week | >=53.0      | 48.0-52.9 | 45.1-47.9 | 40.0-45.0 | 25.0-39.9  | <25.0 |
| 1+ Sugary Beverage/Day          | >=40.0      | 35.0-39.9 | 32.1-34.9 | 27.0-32.0 | 20.0-26.9  | <20.0 |
| Current Cigarette Smoker        | >=30.0      | 25.0-29.9 | 21.6-24.9 | 19.0-21.5 | 12.0-19.0  | <12.0 |
| Hypertension (Lifetime)         | >=47.0      | 36.0-46.9 | 30.1-35.9 | 27.0-30.0 | 18.0-26.9  | <18.0 |
| High Cholesterol (Lifetime)     | >=45.0      | 34.0-44.9 | 28.1-33.9 | 25.0-28.0 | 18.0-24.9  | <18.0 |
| Diagnosed with Diabetes         | >=15%       | 10.0-14.9 | 7.9-9.9   | 6.7-7.9   | 4.0-6.6    | <4.0  |

Data source: 2011-2015 Alaska BRFSS Standard File for physical activity, sugary drinks, hypertension, high cholesterol; 2012-2016 Alaska BRFSS Combined File for obesity, overweight, smoking, and diabetes.

## What can be done?

The State of Alaska and its partners are working to prevent and control diabetes in multiple ways.<sup>16</sup> Examples include:

- **Providing education and information to the Alaska public.** This includes campaigns to educate about risk factors and prevention of diabetes.
- **Promoting diabetes prevention programs (DPP) and diabetes self-management education and support (DSMES) programs.** The state of Alaska is working to increase access to and participation in DPPs, as evidence shows that DPPs can cut the risk of developing type 2 diabetes in people with prediabetes by over half.<sup>17</sup> The state supports training of facilitators and delivery of evidence-based self-management training for people with diabetes. These trainings build skills for people to practice self-care and improve the effectiveness of their clinical care. An economic evaluation of this program commissioned by the State of Alaska in 2014 found that attending diabetes self-management classes was associated with a more than 20% reduction in annual Medicaid spending relative to people who did not attend classes.<sup>18</sup>
- **Supporting healthcare systems to improve screening for type 2 diabetes and care for people with diabetes.** This includes collecting and disseminating clinical guidelines for care and sharing information about resources that providers can use with their patients.
- **Expanding access to resources.** Partners in Alaska have been working to expand insurance coverage for DPP, DSMES and other diabetes self-management programs.

## Data Gaps

This report summarizes key data that are available to describe the burden of diabetes in Alaska, including among specific populations and communities. One important data gap is the prevalence of diabetes among children; currently, there is no information available about the percentage of Alaska's children who have prediabetes or diabetes, but development of type 2 diabetes in youth has been an issue of increasing national concern.<sup>19</sup> One critical risk factor for youth is obesity.

Although we lack prevalence information about diabetes in youth, Alaska's Student Weight Status Surveillance System (SWSSS) collects information about youth obesity from partner school districts that have contributed their data to help monitor obesity trends. Participating school districts provide the Department of Health and Social Services (DHSS) with de-identified student data (i.e., measured height and weight, age, and sex). DHSS conducts the analysis to generate body mass index (BMI), BMI percentile, and the associated weight status classifications of underweight, healthy weight, overweight

---

<sup>16</sup> See Alaska Department of Health and Social Services, Division of Public Health, Diabetes Prevention and Control Program <http://dhss.alaska.gov/dph/Chronic/Pages/Diabetes/default.aspx>

<sup>17</sup> National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases, *Diabetes Prevention Program (DPP)* – website summarizing results from research. <https://www.niddk.nih.gov/about-niddk/research-areas/diabetes/diabetes-prevention-program-dpp> (last accessed 7/28/18)

<sup>18</sup> Helvoight TL, Lehndorff H, McMillan N. Evergreen Economics. *The Cost of Eight Chronic Conditions on Alaska's Medicaid Program*. October 18, 2017.

<sup>19</sup> Centers for Disease Control and Prevention (CDC). *Prevent Type 2 Diabetes in Kids*. <https://www.cdc.gov/features/prevent-diabetes-kids/index.html>

and obese. The percentage of K-8 students who are overweight and obese in participating districts ranged from 30.5 (Matanuska-Susitna) to 61.8 (Dillingham) in the 2016-17 school year.<sup>20</sup> Programs working to encourage healthy eating and physical activity among youth will also result in preventing type 2 diabetes.

---

<sup>20</sup> Alaska Department of Health and Social Services, Division of Public Health, Obesity Prevention. [http://dhss.alaska.gov/dph/InfoCenter/Pages/ia/swsss/swsss\\_health\\_profiles.aspx](http://dhss.alaska.gov/dph/InfoCenter/Pages/ia/swsss/swsss_health_profiles.aspx) and <http://dhss.alaska.gov/dph/Chronic/Pages/Obesity/weightstatus.aspx>

Appendix  
Data Tables

**Appendix Table 1: Prevalence of diagnosed diabetes and prediabetes among adults**

*Alaska, 2012-2016*

|                         | Diabetes |             |             | Prediabetes |             |             | Combined <sup>+</sup><br>Diabetes/Prediabetes |             |             |
|-------------------------|----------|-------------|-------------|-------------|-------------|-------------|-----------------------------------------------|-------------|-------------|
|                         | %        | Lower<br>CI | Upper<br>CI | %           | Lower<br>CI | Upper<br>CI | %                                             | Lower<br>CI | Upper<br>CI |
| <b>All Adults</b>       | 7.3%     | 6.9%        | 7.7%        | 8.5%        | 8.1%        | 9.0%        | 15.8%                                         | 15.4%       | 16.6%       |
|                         |          |             |             |             |             |             |                                               |             |             |
| <b>Male</b>             | 7.2%     | 6.6%        | 7.8%        | 6.4%        | 5.9%        | 7.0%        | 13.6%                                         | 13.0%       | 14.6%       |
| <b>Female</b>           | 7.5%     | 6.9%        | 8.1%        | 10.7%       | 10.0%       | 11.4%       | 18.2%                                         | 17.5%       | 19.3%       |
|                         |          |             |             |             |             |             |                                               |             |             |
| <b>Alaska Native</b>    | 7.6%     | 6.7%        | 8.6%        | 11.2%       | 10.1%       | 12.4%       | 18.8%                                         | 17.5%       | 20.3%       |
| <b>Black/African</b>    | 15.8%    | 11.7%       | 20.9%       | 11.4%       | 8.1%        | 15.7%       | 27.2%                                         | 22.5%       | 33.7%       |
| <b>American</b>         |          |             |             |             |             |             |                                               |             |             |
| <b>Other/Multi-race</b> | 6.6%     | 4.9%        | 8.8%        | 7.1%        | 5.2%        | 9.7%        | 13.7%                                         | 11.6%       | 17.8%       |
| <b>Asian</b>            | 7.5%     | 5.3%        | 10.6%       | 9.4%        | 6.7%        | 13.0%       | 16.9%                                         | 13.5%       | 21.4%       |
| <b>Hispanic</b>         | 9.1%     | 5.9%        | 13.9%       | 6.7%        | 4.4%        | 10.2%       | 15.8%                                         | 12.0%       | 21.5%       |
| <b>White</b>            | 6.7%     | 6.3%        | 7.2%        | 7.9%        | 7.4%        | 8.4%        | 14.6%                                         | 14.2%       | 15.5%       |
|                         |          |             |             |             |             |             |                                               |             |             |
| <b>Low SES</b>          | 8.1%     | 7.2%        | 9.2%        | 10.0%       | 8.9%        | 11.1%       | 18.1%                                         | 16.9%       | 19.7%       |
| <b>Higher SES</b>       | 5.6%     | 5.1%        | 6.2%        | 8.1%        | 7.5%        | 8.7%        | 13.7%                                         | 13.1%       | 14.7%       |
|                         |          |             |             |             |             |             |                                               |             |             |
| <b>Rural</b>            | 7.4%     | 6.5%        | 8.4%        | 8.8%        | 7.8%        | 10.0%       | 16.2%                                         | 15.0%       | 17.8%       |
| <b>Rest of State</b>    | 7.3%     | 6.9%        | 7.8%        | 8.5%        | 8.0%        | 9.0%        | 15.8%                                         | 15.3%       | 16.6%       |
|                         |          |             |             |             |             |             |                                               |             |             |
| <b>Age 18-44</b>        | 2.0%     | 1.7%        | 2.4%        | 5.3%        | 4.8%        | 6.0%        | 7.3%                                          | 6.8%        | 8.2%        |
| <b>45-54</b>            | 7.5%     | 6.6%        | 8.5%        | 10.3%       | 9.3%        | 11.4%       | 17.8%                                         | 16.6%       | 19.3%       |
| <b>55-64</b>            | 13.3%    | 12.0%       | 14.6%       | 11.7%       | 10.6%       | 12.8%       | 25.0%                                         | 23.7%       | 26.7%       |
| <b>65+</b>              | 19.3%    | 17.8%       | 20.8%       | 13.6%       | 12.3%       | 15.0%       | 32.9%                                         | 31.4%       | 35.0%       |

Data source: Alaska BRFSS Combined File, 2012-2016

<sup>+</sup> Combined diabetes/prediabetes prevalence is by direct addition of diabetes and prediabetes, to avoid inconsistency from missing data.

Definitions:

Alaska Native group includes all who reported American Indian or Alaska Native as one of their race groups; other race groups include those who reported that race as their only race and did not report being Alaska Native or Hispanic. Pacific Islander/Other includes those who reported multiple race groups but not Alaska Native or Hispanic.

Low socio-economic status (SES) includes those who live in a household that is at <185% of the federal poverty level, or have completed less than a high school education.

Rural Alaska includes those living in Northern and Southwest Alaska, as defined by the sampling regions for Alaska BRFSS. This includes Northwest, Yukon-Kuskokwim Delta, and Southwest regions, as well as Denali Borough, and the Census Areas Yukon-Koyukuk and Southeast Fairbanks.

**Appendix Table 2: Prevalence of health screenings for chronic diseases among adults**  
*Alaska, 2011-2016*

|                               | Hypertension Screening    |          |          | Cholesterol Screening     |              |              | Diabetes Screening        |          |          |
|-------------------------------|---------------------------|----------|----------|---------------------------|--------------|--------------|---------------------------|----------|----------|
|                               | %                         | Lower CI | Upper CI | %                         | Lower CI     | Upper CI     | %                         | Lower CI | Upper CI |
| <b>All Adults</b>             | <b>92.1%</b>              | 91.1%    | 93.0%    | <b>83.6%</b>              | 82.3%        | 84.8%        | <b>52.0%</b>              | 51.1%    | 52.9%    |
| <b>Male</b>                   | <b>89.6%</b>              | 88.0%    | 91.1%    | <b>79.3%</b>              | 77.4%        | 81.1%        | <b>48.5%</b>              | 47.3%    | 49.7%    |
| <b>Female</b>                 | <b>94.7%</b>              | 93.5%    | 95.7%    | <b>89.8%</b>              | 88.2%        | 91.1%        | <b>55.7%</b>              | 54.4%    | 56.9%    |
| <b>Alaska Native</b>          | <b>90.3%</b>              | 87.9%    | 92.3%    | <b>80.0%</b>              | 77.1%        | 82.7%        | <b>45.4%</b>              | 43.4%    | 47.3%    |
| <b>Black/African American</b> | <sup>^</sup> <b>95.0%</b> | 89.1%    | 97.8%    | <sup>^</sup> <b>79.3%</b> | 68.3%        | 87.2%        | <sup>^</sup> <b>57.1%</b> | 50.1%    | 63.9%    |
| <b>Other/Multi-race</b>       | <sup>^</sup> <b>88.0%</b> | 80.2%    | 92.9%    | <sup>^</sup> <b>84.2%</b> | 73.7%        | 91.0%        | <sup>^</sup> <b>47.4%</b> | 42.9%    | 51.9%    |
| <b>Asian</b>                  | <sup>^</sup> <b>84.6%</b> | 74.3%    | 91.2%    | <sup>^</sup> <b>88.5%</b> | 80.1%        | 93.7%        | <sup>^</sup> <b>38.7%</b> | 33.2%    | 44.4%    |
| <b>Hispanic</b>               | <sup>^</sup> <b>95.3%</b> | 80.0%    | 99.0%    | <sup>†</sup>              | <sup>†</sup> | <sup>†</sup> | <sup>^</sup> <b>41.3%</b> | 34.9%    | 47.9%    |
| <b>White</b>                  | <b>93.3%</b>              | 92.3%    | 94.2%    | <b>84.1%</b>              | 82.7%        | 85.5%        | <b>54.9%</b>              | 53.9%    | 55.9%    |
| <b>Low SES</b>                | <b>86.0%</b>              | 83.1%    | 88.5%    | <b>70.3%</b>              | 66.5%        | 73.9%        | <b>45.4%</b>              | 43.4%    | 47.4%    |
| <b>Higher SES</b>             | <b>94.6%</b>              | 93.4%    | 95.5%    | <b>85.5%</b>              | 83.8%        | 87.0%        | <b>57.7%</b>              | 56.5%    | 58.9%    |
| <b>Rural Alaska</b>           | <b>89.0%</b>              | 86.0%    | 91.4%    | <b>72.4%</b>              | 68.8%        | 75.7%        | <b>43.0%</b>              | 40.9%    | 45.1%    |
| <b>Rest of State</b>          | <b>92.5%</b>              | 91.4%    | 93.4%    | <b>84.9%</b>              | 83.5%        | 86.2%        | <b>53.1%</b>              | 52.1%    | 54.0%    |
| <b>Age 18-44</b>              | <b>89.8%</b>              | 88.0%    | 91.3%    | <b>67.5%</b>              | 62.5%        | 72.2%        | <b>42.3%</b>              | 40.9%    | 43.6%    |
| <b>45-54</b>                  | <b>92.3%</b>              | 89.8%    | 94.2%    | <b>81.0%</b>              | 78.6%        | 83.3%        | <b>57.2%</b>              | 55.4%    | 59.1%    |
| <b>55-64</b>                  | <b>94.3%</b>              | 92.6%    | 95.6%    | <b>87.1%</b>              | 85.2%        | 88.7%        | <b>65.6%</b>              | 63.8%    | 67.3%    |
| <b>65+</b>                    | <b>97.0%</b>              | 96.0%    | 97.7%    | <b>93.8%</b>              | 92.5%        | 94.9%        | <b>68.3%</b>              | 66.4%    | 70.1%    |

Data sources:

Hypertension screening within the past 2 years, Alaska BRFSS Standard File, 2014-2016

Cholesterol screening within the past 5 years, among men age 35+ and women age 45+, Alaska BRFSS Standard File, 2011, 2013, 2015

Diabetes screening within the past 3 years among adults without diabetes, Alaska BRFSS Combined File, 2012-2016

<sup>^</sup> Indicates that the estimate is flagged for reliability.

<sup>†</sup> Estimate suppressed because number of respondents <50.

Definitions:

Alaska Native group includes all who reported American Indian or Alaska Native as one of their race groups; other race groups include those who reported that race as their only race and did not report being Alaska Native or Hispanic. Pacific Islander/Other includes those who reported multiple race groups but not Alaska Native or Hispanic.

Low socio-economic status (SES) includes those who live in a household that is at <185% of the federal poverty level, or have completed less than a high school education.

Rural Alaska includes those living in Northern and Southwest Alaska, as defined by the sampling regions for Alaska BRFSS. This includes Northwest, Yukon-Kuskokwim Delta, and Southwest regions, as well as Denali Borough, and the Census Areas Yukon-Koyukuk and Southeast Fairbanks.

**Appendix Table 3: Prevalence of diabetes-related risk factors among adults**  
*Alaska, 2011-2015*

|                                               | <b>None of 6<br/>RFs</b> | <b>1 RF</b> | <b>2+ RFs</b> |
|-----------------------------------------------|--------------------------|-------------|---------------|
| <b>All Adults</b>                             | 9.9%                     | 22.7%       | 67.4%         |
| <b>Male</b>                                   | 6.9%                     | 20.3%       | 72.8%         |
| <b>Female</b>                                 | 13.3%                    | 25.4%       | 61.3%         |
| <b>Alaska Native</b>                          | 4.8%                     | 15.1%       | 80.1%         |
| <b>Black/African<br/>American<sup>^</sup></b> | 3.9%                     | 9.2%        | 86.9%         |
| <b>Other/Multi-race<sup>^</sup></b>           | 11.4%                    | 20.0%       | 68.7%         |
| <b>Asian<sup>^</sup></b>                      | 9.8%                     | 36.8%       | 53.3%         |
| <b>Hispanic<sup>^</sup></b>                   | 10.0%                    | 30.7%       | 59.2%         |
| <b>White</b>                                  | 10.9%                    | 24.0%       | 65.1%         |
| <b>Low SES</b>                                | 6.2%                     | 15.9%       | 78.0%         |
| <b>Higher SES</b>                             | 10.9%                    | 25.9%       | 63.2%         |
| <b>Rural</b>                                  | 4.3%                     | 18.7%       | 77.0%         |
| <b>Rest of State</b>                          | 10.5%                    | 23.1%       | 66.4%         |
| <b>Age 18-44</b>                              | 12.7%                    | 27.2%       | 60.1%         |
| <b>45-54</b>                                  | 8.0%                     | 19.2%       | 72.8%         |
| <b>55-64</b>                                  | 8.1%                     | 19.3%       | 72.7%         |
| <b>65+</b>                                    | 4.6%                     | 15.9%       | 79.5%         |

Data source: Alaska BRFSS Standard File, 2011, 2013, 2015.

<sup>^</sup> Indicates that the estimate is flagged for reliability.

**Definitions:**

Risk factors included in the count: Obesity or overweight, physical inactivity, ever told have high blood pressure, ever told have high cholesterol, drank 1 or more sugary drinks per day, and/or currently a smoker.

Alaska Native group includes all who reported American Indian or Alaska Native as one of their race groups; other race groups include those who reported that race as their only race and did not report being Alaska Native or Hispanic. Pacific Islander/Other includes those who reported multiple race groups but not Alaska Native or Hispanic.

Low socio-economic status (SES) includes those who live in a household that is at <185% of the federal poverty level, or have completed less than a high school education.

Rural Alaska includes those living in Northern and Southwest Alaska, as defined by the sampling regions for Alaska BRFSS. This includes Northwest, Yukon-Kuskokwim Delta, and Southwest regions, as well as Denali Borough, and the Census Areas Yukon-Koyukuk and Southeast Fairbanks.

**Appendix Table 4a: Prevalence of diabetes care measures among adults with diabetes**  
*Alaska, 2011-2014*

|                                   | Diabetes<br>HCP visit | Lower<br>CI | Upper<br>CI | Diabetes<br>QOC | Lower<br>CI | Upper<br>CI |
|-----------------------------------|-----------------------|-------------|-------------|-----------------|-------------|-------------|
| <b>All Adults</b>                 | 86.4%                 | 83.7%       | 88.7%       | 34.5%           | 31.4%       | 37.7%       |
|                                   |                       |             |             |                 |             |             |
| <b>Male</b>                       | 86.8%                 | 83.2%       | 89.7%       | 32.7%           | 28.4%       | 37.2%       |
| <b>Female</b>                     | 86.0%                 | 81.7%       | 89.4%       | 36.3%           | 31.9%       | 41.0%       |
|                                   |                       |             |             |                 |             |             |
| <b>Alaska Native</b>              | 84.1%                 | 76.2%       | 89.8%       | 32.9%           | 26.5%       | 40.1%       |
| <b>White Non-Hispanic</b>         | 85.1%                 | 81.7%       | 88.0%       | 36.5%           | 33.0%       | 40.1%       |
| <b>All Other</b>                  |                       |             |             |                 |             |             |
| <b>Race/Ethnicity<sup>^</sup></b> | 92.5%                 | 84.3%       | 96.6%       | 28.4%           | 19.3%       | 39.6%       |
|                                   |                       |             |             |                 |             |             |
| <b>Low SES</b>                    | 86.5%                 | 80.1%       | 91.1%       | 28.3%           | 22.8%       | 34.5%       |
| <b>Higher SES</b>                 | 89.6%                 | 85.8%       | 92.5%       | 36.8%           | 31.6%       | 42.4%       |
|                                   |                       |             |             |                 |             |             |
| <b>Rural</b>                      | 89.8%                 | 84.0%       | 93.7%       | 31.8%           | 25.1%       | 39.2%       |
| <b>Rest of State</b>              | 86.0%                 | 83.1%       | 88.5%       | 34.7%           | 31.4%       | 38.2%       |
|                                   |                       |             |             |                 |             |             |
| <b>Age 18-44</b>                  | 80.1%                 | 69.1%       | 87.9%       | 25.3%           | 17.9%       | 34.3%       |
| <b>45-54</b>                      | 87.0%                 | 80.5%       | 91.6%       | 32.4%           | 25.9%       | 39.5%       |
| <b>55-64</b>                      | 89.7%                 | 86.3%       | 92.4%       | 35.9%           | 30.4%       | 41.9%       |
| <b>65+</b>                        | 86.2%                 | 82.6%       | 89.1%       | 39.8%           | 34.7%       | 45.2%       |

Data source: Alaska BRFSS Combined file, 2011-2014

<sup>^</sup> Indicates that the estimate is flagged for reliability. Race/ethnicity groups had to be combined due to small numbers.

Definitions:

Diabetes HCP Visit: had a health care provider visit for their diabetes care in the past 12 months

Diabetes QOC: meets the quality of care measure for diabetes, which includes having an annual foot exam and eye exam by a healthcare provider, and hemoglobin A1C tests at least twice a year.

Alaska Native group includes all who reported American Indian or Alaska Native as one of their race groups; White Non-Hispanic group includes those who reported that race as their only race and did not report being Alaska Native or Hispanic; all other race groups include single race, multiple race reported if not Alaska Native, and Hispanic.

Low socio-economic status (SES) includes those who live in a household that is at <185% of the federal poverty level, or have completed less than a high school education.

Rural Alaska includes those living in Northern and Southwest Alaska, as defined by the sampling regions for Alaska BRFSS. This includes Northwest, Yukon-Kuskokwim Delta, and Southwest regions, as well as Denali Borough, and the Census Areas Yukon-Koyukuk and Southeast Fairbanks.

**Appendix Table 4b: Prevalence of diabetes care measures among adults with diabetes**  
*Alaska, 2011-2014*

|                                   | Daily<br>Self-care | Lower<br>CI | Upper<br>CI | Diabetes<br>Education | Lower<br>CI | Upper<br>CI |
|-----------------------------------|--------------------|-------------|-------------|-----------------------|-------------|-------------|
| <b>All Adults</b>                 | 60.3%              | 57.0%       | 63.5%       | 60.4%                 | 57.0%       | 63.7%       |
|                                   |                    |             |             |                       |             |             |
| <b>Male</b>                       | 60.5%              | 55.9%       | 65.0%       | 60.5%                 | 55.7%       | 65.1%       |
| <b>Female</b>                     | 60.0%              | 55.3%       | 64.5%       | 60.4%                 | 55.6%       | 64.9%       |
|                                   |                    |             |             |                       |             |             |
| <b>Alaska Native</b>              | 48.4%              | 40.3%       | 56.6%       | 50.1%                 | 42.1%       | 58.0%       |
| <b>White Non-Hispanic</b>         | 62.1%              | 58.5%       | 65.6%       | 63.7%                 | 60.1%       | 67.2%       |
| <b>All Other</b>                  |                    |             |             |                       |             |             |
| <b>Race/Ethnicity<sup>^</sup></b> | 62.2%              | 51.5%       | 71.8%       | 55.7%                 | 44.6%       | 66.2%       |
|                                   |                    |             |             |                       |             |             |
| <b>Low SES</b>                    | 61.1%              | 54.1%       | 67.7%       | 63.7%                 | 56.5%       | 70.3%       |
| <b>Higher SES</b>                 | 59.4%              | 53.9%       | 64.6%       | 64.0%                 | 58.4%       | 69.2%       |
|                                   |                    |             |             |                       |             |             |
| <b>Rural</b>                      | 53.3%              | 45.6%       | 60.8%       | 51.1%                 | 43.6%       | 58.5%       |
| <b>Rest of State</b>              | 60.9%              | 57.4%       | 64.4%       | 61.3%                 | 57.7%       | 64.9%       |
|                                   |                    |             |             |                       |             |             |
| <b>Age 18-44</b>                  | 63.7%              | 53.8%       | 72.6%       | 66.3%                 | 56.8%       | 74.6%       |
| <b>45-54</b>                      | 56.9%              | 49.1%       | 64.3%       | 60.2%                 | 52.2%       | 67.6%       |
| <b>55-64</b>                      | 61.0%              | 55.3%       | 66.4%       | 60.9%                 | 54.8%       | 66.7%       |
| <b>65+</b>                        | 59.8%              | 54.8%       | 64.7%       | 56.8%                 | 51.6%       | 61.9%       |

Data source: Alaska BRFSS Combined file, 2011-2014

<sup>^</sup> Indicates that the estimate is flagged for reliability. Race/ethnicity groups had to be combined due to small numbers.

Definitions:

Daily self-care: people with diabetes who monitor their blood glucose levels on a daily basis.

Diabetes education: have ever taken a class or course about how to manage their diabetes.

Alaska Native group includes all who reported American Indian or Alaska Native as one of their race groups; White Non-Hispanic group includes those who reported that race as their only race and did not report being Alaska Native or Hispanic; all other race groups include single race, multiple race reported if not Alaska Native, and Hispanic.

Low socio-economic status (SES) includes those who live in a household that is at <185% of the federal poverty level, or have completed less than a high school education.

Rural Alaska includes those living in Northern and Southwest Alaska, as defined by the sampling regions for Alaska BRFSS. This includes Northwest, Yukon-Kuskokwim Delta, and Southwest regions, as well as Denali Borough, and the Census Areas Yukon-Koyukuk and Southeast Fairbanks.

## Data Sources

### **Death Data**

Information on cause of death is taken from the death certificate. “Cause of death” is reported in two ways:

- Underlying (proximal) cause of death: The disease or injury that initiated the chain of events that led directly and inevitably to death.
- Contributing cause(s) of death: any conditions or injuries that initiated the events leading to death, but which are not themselves the immediate cause of death.

This report primarily uses underlying cause of death alone to describe statewide estimates, but underlying and contributing causes of death were combined and used for reporting regional estimates. This approach was used to provide the most results by region; using underlying cause of death only would have required suppression of many estimates due to small numbers. Including the contributing causes of death also highlights that disease burdens are worsened by additional factors.

Alaska statewide data (e.g., state rates, and rates by gender, age and race/ethnicity) and U.S. data were obtained from the Centers for Disease Control and Prevention (CDC), National Center for Health Statistics, Underlying Cause of Death 1999-2016 on CDC WONDER Online Database, released December, 2017. Data are from the Multiple Cause of Death Files, 1999-2016, as compiled from data provided by the 57 vital statistics jurisdictions through the Vital Statistics Cooperative Program. Data were accessed at <http://wonder.cdc.gov/ucd-icd10.html>.

For regional estimates, information on numbers and causes of death for Alaska residents was obtained directly from the Alaska Health Analytics and Vital Records Section, Division of Public Health. Only Alaska residents are included in the death data reports of Alaska-specific rates.

In some cases, there are minor discrepancies between annual statewide rates reported between the two systems; however, these are not meaningful differences in terms of understanding public health burden.

For more information on Alaska’s death data, visit: <http://dhss.alaska.gov/dph/VitalStats/Pages/data/Deaths.aspx>

### **Behavioral Risk Factor Surveillance System (BRFSS)**

The BRFSS is an anonymous telephone survey conducted by the Alaska Division of Public Health in cooperation with the Centers for Disease Control and Prevention (CDC). It aims to estimate the prevalence of behavioral risk factors in the general adult population that are known to be associated with the leading causes of morbidity and death. The BRFSS has operated continuously in Alaska since 1991.

BRFSS data are weighted to adjust the distribution of the sample data so that it reflects the total population of the sampled area, and to compensate for the over-representation or under-representation of persons in various subgroups. Changes in both the weighting and sampling methods occurred between 2007 and 2011, including the expansion of the sampling frame to include cell phones in addition to landline phones. More information about the changes in BRFSS methods can be found in the January 2013 issue of

Chronicles: <http://dhss.alaska.gov/dph/Chronic/Documents/Publications/assets/ChroniclesV5-1.pdf>.

Alaska presently conducts two BRFSS surveys: the standard BRFSS and a separately funded supplemental BRFSS. Data can be reported based on different survey dataset combinations:

- Standard BRFSS
- Supplemental BRFSS
- Combined (standard + supplemental) BRFSS

Datasets are weighted (separately) for analysis of items based on whether they occur only in one or both survey versions. Whenever possible, the combined dataset was used to provide the estimates contained in this report. In cases where questions appeared on only one or another of the BRFSS surveys, that particular dataset was used.

For more information on the Alaska BRFSS, visit <http://dhss.alaska.gov/dph/Chronic/Pages/brfss/default.aspx>

### ***National Health Interview Survey (NHIS)***

The National Health Interview Survey (NHIS) has been given in the U.S. since 1957 and is currently administered by the U.S. Census Bureau. NHIS uses household-based interviews to collect data on a variety of health topics, including healthcare access, health conditions and behaviors, and provides results used for tracking U.S. national health objectives.

For this report, NHIS data were downloaded from the Centers for Disease Control and Prevention (CDC) CDC Division of Diabetes Translation at [www.cdc.gov/diabetes/data](http://www.cdc.gov/diabetes/data)

Similar data are available through the Division for Heart Disease and Stroke Prevention at <https://www.cdc.gov/dhdsp/maps/dtm/index.html>

NHIS data are age-adjusted. Results are directly standardized to the age distribution of the 2000 U.S. Standard Population using the following age groups: 18-39, 40-59, 60+.

For more information on the NHIS, visit <https://www.cdc.gov/nchs/nhis/index.htm>

### ***Hospitalization data***

Inpatient and outpatient discharge data were obtained from the Alaska Health Facilities Data Reporting (HFDR) program. These facilities include private, municipal, state and some federal hospitals, including hospitals operated by Alaska Native organizations; military hospitals are not included.

Reporting of data by Alaska health facilities was mandated effective in December 2014 with reporting beginning in 2015; prior to that year this reporting was voluntary. Only data for 2016 were included in this report due to concerns about the impact of the transition from using International Classification of Diseases, 9<sup>th</sup> Revision, Clinical Modification (ICD-9-CM) for discharge coding to the 10<sup>th</sup> revision (ICD-10) between quarter 3 and quarter 4 of 2015. Such changes in coding systems could create increases or decreases in estimates that are not related to actual changes in patient presentation or treatment.

Rates are reported per 10,000 population, which is the reporting standard suggested by the HFDR program. These rates were presented without adjustment for factors such as age or gender. Population estimates for 2016 were used as denominators. Population estimates were obtained from the Alaska

Department of Labor and Workforce Development, Research and Data Analysis Section  
(see <http://live.laborstats.alaska.gov/pop/index.cfm> accessed June 20, 2018).

Data are reported separately by type of encounter, based on the facility where treatment was given:

- Inpatient: acute medical/surgical unit, psychiatric unit, medical rehabilitation, alternate level of care (e.g., long-term care, hospice), alcohol or drug rehabilitation.
- Outpatient: emergency room, outpatient surgery, observation only.

Cases were identified using discharge diagnosis codes, and also reported separately by the position of the disease of interest within the discharge codes – as primary alone, secondary or both primary and secondary combined:

- Primary diagnosis: the specific condition is the first listed discharge code. This is usually the most serious and/or resource-intensive during the hospitalization or patient encounter.
- Secondary diagnoses: the discharge code for a specific condition is identified in any position from up to 19 diagnosis codes (except the first position code). There are up to 29 total discharge codes available, however we limited to 19 so that only conditions most relevant to the visit would be included.

Specific ICD-10 discharge codes used to identify cases for this report were:

- Diabetes cases were identified based on ICD-10 codes E10, E11.
- Gestational diabetes (O24) was not included in hospitalization rates.

For more information about the Alaska Health Facilities Data Reporting Program, visit <http://dhss.alaska.gov/dph/VitalStats/Pages/HFDR/default.aspx>

National hospitalization data were not included in this report.

## Definitions

### ***Alaska Regions***

Data are presented geographically in this report for Behavioral Health Systems Regions (BHSRs). Rates and counts are not shown for specific areas when there were fewer than 6 cases within the combined years. The following table includes a list of Borough/Census Areas included in each of Alaska's Behavioral Health Systems Regions, as well as their total population.

For some BRFSS indicators, results are presented for “rural residents” of Alaska. Rural Alaska includes Northern and Southwest Alaska, as defined by the sampling regions for the Alaska BRFSS. This includes Northwest, Yukon-Kuskokwim (Y-K) Delta, and Southwest regions, as well as Denali Borough, and the Census Areas of Yukon-Koyukuk and Southeast Fairbanks.

The following table provides an example of populations included in each BHSR for one year included in this report. Prior to 2010, the Southeast region was organized as one region; however, our analyses uses the current definitions.

## Alaska Behavioral Health Systems Regions with 2014 Alaska Resident Population

| Behavioral Health Systems Region   | Included Boroughs/Census Areas    | Population     |
|------------------------------------|-----------------------------------|----------------|
| <b>State of Alaska</b>             |                                   | <b>737,046</b> |
| <b>Anchorage</b>                   | Anchorage Municipality            | <b>300,357</b> |
| <b>Fairbanks</b>                   | Fairbanks North Star Borough      | <b>99,371</b>  |
| <b>Interior</b>                    | Denali Borough                    | 1,903          |
|                                    | Southeast Fairbanks Census Area   | 6,978          |
|                                    | Valdez-Cordova Census Area        | 9,493          |
|                                    | Yukon-Koyukuk Census Area         | 5,563          |
|                                    | <b>Interior Total</b>             | <b>23,937</b>  |
| <b>Juneau</b>                      | Juneau City and Borough           | <b>32,625</b>  |
| <b>Kenai Peninsula</b>             | Kenai Peninsula Borough           | <b>57,638</b>  |
| <b>Mat-Su</b>                      | Matanuska-Susitna Borough         | <b>98,285</b>  |
| <b>Northwest</b>                   | Nome Census Area                  | 9,833          |
|                                    | North Slope Borough               | 9,713          |
|                                    | Northwest Arctic Borough          | 7,748          |
|                                    | <b>Northwest Total</b>            | <b>27,294</b>  |
| <b>Southeast (SE)-northern</b>     | Haines Borough                    | 2,566          |
|                                    | Hoonah-Angoon Census Area         | 2,091          |
|                                    | Petersburg Borough                | 3,184          |
|                                    | Sitka City and Borough            | 8,881          |
|                                    | Skagway Municipality              | 1,038          |
|                                    | Wrangell City and Borough         | 2,360          |
|                                    | Yakutat City and Borough          | 634            |
|                                    | <b>SE-northern Total</b>          | <b>20,754</b>  |
| <b>Southeast (SE)-southern</b>     | Ketchikan Gateway Borough         | 13,781         |
|                                    | Prince of Wales-Hyder Census Area | 6,384          |
|                                    | <b>SE-southern Total</b>          | <b>20,165</b>  |
| <b>Southwest</b>                   | Aleutians East Borough            | 3,317          |
|                                    | Aleutians West Census Area        | 5,751          |
|                                    | Bristol Bay Borough               | 946            |
|                                    | Dillingham Census Area            | 4,994          |
|                                    | Kodiak Island Borough             | 14,007         |
|                                    | Lake and Peninsula Borough        | 1,629          |
|                                    | <b>Southwest Total</b>            | <b>30,644</b>  |
| <b>Yukon-Kuskokwim (Y-K) Delta</b> | Bethel Census Area                | 17,923         |
|                                    | Kusilvak Census Area              | 8,053          |
|                                    | <b>Y-K Delta Total</b>            | <b>25,976</b>  |

Sources: Alaska Department of Labor and Workforce Development, Research and Analysis Section; U.S. Census Bureau; and National Center for Health Statistics.

## ***Race***

Throughout this report the term “Alaska Native” is used for hospital and BRFSS data to represent people who reported being or were identified as “Alaska Native/American Indian” (AIAN). We used the term AIAN for death data because this is a national standard dataset and comparisons were made to national AIAN groups.

For this report, Asian and Native Hawaiian/Other Pacific Islander groups were combined for the death data because this is how race is reported in this data system. We urge caution in interpreting findings, because Asian and Native Hawaiian/Pacific Islander groups are quite distinct from one another and often show very different risk factors and prevalence of health indicators. Until recent years, they have often been combined in population and other datasets, and some data systems continue to use these prior groupings. For BRFSS data, Native Hawaiian/Other Pacific Islander group are combined with “other” due to small numbers of participants; there were sufficient number of participants for most measures so that results for Asian people were reported alone.

For death data, information included on the death certificate about the race and Hispanic ethnicity of the decedent is reported on the death certificate as provided by an informant, often the surviving next of kin, or, in the absence of an informant, on the basis of observation. Race and ethnicity information from the census (e.g., counts of people in different groups) is by self-report. To the extent that race and Hispanic origin are inconsistent between these two data sources, death rates by race will be biased. Studies have shown that persons self-reported as American Indian, Asian, or Hispanic on census and survey records may sometimes be reported as white or non-Hispanic on the death certificate, resulting in an underestimation of deaths and death rates for the American Indian, Asian, and Hispanic groups. Bias also results from undercounts of some population groups in the census, particularly young black males, young white males, and elderly persons, resulting in an overestimation of death rates.<sup>21</sup> In this report, death data are presented only for race, and not for Hispanic ethnicity.

For hospitalization data, a single race and separate Hispanic ethnicity are included in the record. It is not clear how these are assigned by hospitals. An “other” category may be used to describe people who identify as more than one race, or individuals may select the race with which they most strongly identify. We did not report data for the “other” group, because it was unclear who was included.

For BRFSS, survey participants self-report their race and Hispanic ethnicity in two separate questions, and they can indicate that they identify with multiple race groups. BRFSS respondents were identified as Alaska Native people if they reported this as one of their race groups, regardless of whether they reported being Hispanic. People who said they were Hispanic ethnicity, but not Alaska Native, were classified as Hispanic regardless of their race. Other race groups (Asian, Black, White) include survey respondents who reported that race as their only race group and also said that they were not Hispanic. The “other” group includes people who reported being Pacific Islander/Native Hawaiian, or multiple race groups but not Alaska Native or Hispanic. Numbers of respondents were too small to report Pacific Islander/Native Hawaiian alone.

## ***“Low SES” Alaskans***

Having fewer financial resources, including lower household income and less formal education, is associated with poorer health outcomes. This is sometimes called low socio-economic status (SES). In this report, some BRFSS indicators are shown for “Low SES” populations. This means people who live

---

<sup>21</sup> Centers for Disease Control and Prevention (CDC), Underlying cause of death 1999-2016, dataset documentation. <https://wonder.cdc.gov/wonder/help/ucd.html#>

in a household that is at less than 185% (< 185%) of the federally-determined poverty level (annual thresholds are based on combined household income and number of people living in the household) or who have completed less than a high school education.

## Analysis and reporting approaches

### ***Notes on data display***

Throughout this report, visual cues are used to help the reader understand what types of data are being presented:

- Data shown on a vertical axis (i.e., column charts) included both Alaska statewide and U.S. data.
- Trend line charts are also used for Alaska statewide data, and include U.S. data when available.
- Data shown on a horizontal axis (i.e., bar charts) are for Alaska alone, including contrasting sub-groups within the state.
- All regional data are presented both with a map to provide geospatial context and a bar chart; colors were assigned by region to provide visual cues about relative rates, but different shades should not be interpreted as statistically significant differences.
- To summarize data across groups and regions, a color block “patchwork” table is included near the end of this report. Different colors were used to provide visual cues about relative rates, and patterns of risks across groups, but should not be interpreted as statistically significant differences.

### ***Small numbers and other limitations***

The following are systematic limitations of our datasets, analysis and reporting.

#### Small numbers and data suppression

The State of Alaska has guidelines for suppressing data based on small numbers, both because rates based on these numbers can be unreliable, and also to prevent the identification of individuals within the data.

In this report, death and hospitalization counts based on fewer than 6 occurrences are not reported. For both of these data sources, rates based on fewer than 20 occurrences are not reported, although the counts ( $n > 5$ ) are reported.

To maximize reportable data for regional comparisons, the rate for both underlying and contributing cause of death are combined, to generate larger and more reportable numbers.

BRFSS information is suppressed or flagged based on statistical guidelines developed by Alaska’s Division of Public Health in the Department of Health and Social Services, which are based upon the national Joint Policy of Variance Estimation and Statistical Reporting Standards for the National Health and Nutrition Examination Survey (NHANES-III) and the Continuing Survey of Food Intake by Individuals (CSFII) Reports. An asterisk is used to indicate that the estimate may lack statistical precision. Estimates are suppressed if the unweighted sample size for the denominator (N) is less than 50, or if the numerator (n) is less than 5. In addition, estimates may be reported but flagged with an asterisk if there is inadequate sample size for normal approximation, or for uncommon or very common event. Finally, if the coefficient of variation is greater than 30%, the estimate is also considered imprecise and is flagged.

### Population estimates and effect on rates

Death and hospitalization data are shown as rates, i.e., in terms of cases per population totals. For years when the U.S. census is taken (e.g., 2000, 2010) total population counts are based on what was actually measured during that year. For non-census years (i.e., years other than 2010 and 2000), state and borough/census area population figures are estimates. Because rates are calculated using the population data as a denominator, any errors in the population estimates will impact the rates.

### ***Age-adjusted Rates***

A “crude” rate is calculated by taking the number of cases for a given population and dividing it by the total number of people in that population per a specific time period. Since this number would be a very small decimal, it is multiplied by 100,000 and is thus expressed as “per 100,000 persons”. However, death rates in this report are calculated using the direct method and age-adjusted to the standard 2000 U.S. population; they are expressed as an annual number of cases per 100,000 persons, using the 19-age group Census P25-1130 data file. National prevalence rates from the NHIS, and Alaska prevalence rates used for comparing trends to the U.S., are directly standardized to the age distribution of the 2000 U.S. Standard Population (except where stratified by age) using the following age groups: 18-39, 40-59, 60+.

Age adjustment (sometimes called age standardization) is a statistical process that allows communities and states with different age structures to be compared. Age adjustment removes the influence of the differences in age distributions that occur from one population to another. Since the risk of developing chronic disease (e.g., diabetes, heart disease) is strongly associated with age, a geographic area with a high proportion of elderly residents could not be accurately compared with a younger-age populated area unless rates were adjusted to a standard reference population – the older community group would always naturally have a higher rate even if the two communities had the same risk.

Age adjustment is an internationally approved statistical method to remove this effect – sometimes called “confounding” – caused by different age distributions. Effectively, rates for a specific age group in the population of interest are multiplied by the number of people in the same age group in a standard population (in this case, the U.S. 2000 population).

Rates shown for combined years of data are average annual age-adjusted rates for the years of data indicated.

### ***Confidence Intervals***

The “margin of error” is a common term for the “plus or minus” value around a point estimate, which in total represents the confidence interval. The confidence interval helps to understand the size of uncertainty of the “true value” in a population. Readers are advised to consider the precision of point estimates.

Our report uses 95% confidence intervals. If there is no bias in the data collection system, there is a 95% chance (95 times out of 100 times) that the confidence interval around an estimate will include the true value.

In many of the tables, we report the 95% confidence intervals as well as the estimates and denominators. In the bar graphs, the error bars (lines with a “T” at either end) reflect the confidence intervals and show the range of where the true population estimate is expected to be, at the 95% confidence level.

Narrower confidence intervals indicate more precision in the presented estimates. The width of the confidence interval is dependent upon the size of the population at risk and the number of reported cases (presence of chronic disease or a risk factor, counts of deaths or hospitalizations). Generally, large populations with large number of cases will result in rates with narrower confidence intervals. Because U.S. rates are based on very large populations and number of cases, their confidence intervals are not stated in this report and are usually about  $\pm 0.1$  of the rate. Rural areas with sparse populations tend to have large confidence intervals.

### ***Statistically Significant Differences***

In this report, we indicate “significant” differences between groups when we have used statistically-based approaches and found that the differences measured between groups are unlikely to be due to variability in estimates or chance. Non-significant differences are typically not described in text as being “different” (e.g., higher or lower than other groups).

We used chi-square tests in our comparisons between groups of Alaskans. Chi-square tests are tests of association between group and outcome variables (for example, smoking [yes, no] and gender [male, female]). For trend analyses, we used logistic regression models that tested for a statistically significant linear change over time. P-values less than 0.05 indicate that a difference seen between percentages or across years is statistically significant at the 95% confidence level.

Confidence intervals are also used as another way to test statistical significance. Generally, if the confidence intervals of two different rates overlap, we cannot be certain that there is a true difference between them. However, if the confidence intervals do not overlap, then we believe the true values of results for the two groups are different.

### ***Trend Analysis***

Trends for Alaska’s age-adjusted death and prevalence rates were assessed using the National Cancer Institute’s (NCI) Joinpoint Regression Program, Version 4.3.1.0 (April 2016, NCI Statistical Research and Applications Branch; software available at <https://surveillance.cancer.gov/joinpoint/> ). Joinpoint is a national standard for analysis of population-based cancer statistical trends in cancer surveillance, and can also be applied to other health outcomes.

Based on annual prevalence and standard errors, the software identifies “joinpoints” (points of inflection where trends have significantly changed). The program starts with the minimum number of joinpoints (e.g., 0 joinpoints, or a straight line), and tests whether more joinpoints are statistically significant and improve the fit of data (up to the maximum allowed number; 3 for this report).

For each joinpoint time segment, the estimated annual percentage change (APC) was calculated by fitting a least squares regression line to the natural logarithm of the rates. When the APC is statistically significant as different from zero (i.e., significantly different from a flat line), it is listed together with the p-value for that trend. This APC can be interpreted as the average percent increase or decrease in incidence during that period.

# ALASKA DIABETES COALITION STRATEGIC PLAN 2020-2025



This page intentionally left blank.

# Table of Contents

|                                                            |           |
|------------------------------------------------------------|-----------|
| <b>Introduction + Background .....</b>                     | <b>4</b>  |
| Developing Our Strategic Plan .....                        | 4         |
| Acknowledgements .....                                     | 5         |
| Coalition Members (2019) .....                             | 5         |
| Strategic Plan Framework + Coalition Structure .....       | 7         |
| Vision and Coalition Organizational Chart .....            | 7         |
| Mission .....                                              | 7         |
| Guiding Principles .....                                   | 7         |
| Goals .....                                                | 7         |
| <b>Burden of Diabetes in Alaska .....</b>                  | <b>8</b>  |
| What Is Diabetes? .....                                    | 8         |
| Prevalence, Mortality, Hospitalizations + Healthcare ..... | 10        |
| Diabetes Disparities in Alaska .....                       | 11        |
| Economic Costs of Diabetes .....                           | 14        |
| <b>Preventing and Managing Diabetes .....</b>              | <b>15</b> |
| <b>Goals + Strategies .....</b>                            | <b>19</b> |
| <b>Evaluating Our Impact: Performance Indicators .....</b> | <b>21</b> |
| List of Acronyms/ Glossary .....                           | 23        |

# Introduction + Background

## Developing Our Strategic Plan

This plan was developed by members of the Alaska Diabetes Coalition, with leadership from the Steering Committee and assistance from local contractor, Agnew::Beck Consulting. The Alaska Division of Public Health's Section of Chronic Disease Prevention and Health Promotion received cooperative agreement funding from the Centers for Disease Control and Prevention (CDC) in 2018 to improve the health of Alaskans through prevention and management of diabetes.

Through this funding, the State of Alaska's Diabetes Prevention and Control Program has convened stakeholders from around the state to develop a statewide strategic plan to address diabetes in Alaska. The plan's vision, mission, guiding principles, goals, objectives and strategies were identified--drawing from existing data, evidence-based practices, and coalition members' expertise--during multiple coalition working sessions, teleconferences, and online surveys. The final plan was approved by the coalition in April 2020.

This plan is a living document comprised of four broad goal areas aimed at reducing the burden of diabetes in Alaska. To meet these goals, it includes specific strategies and objectives to focus on for the next five years. Guided by these goals, strategies, and objectives; specific activities—in the form of annual work plans—have been developed by the three Alaska Diabetes Coalition Work Groups:

- Access to Evidence-Based Programs,
- Education and Outreach,
- Effective Self-Management.

The Alaska Diabetes Coalition works together to achieve a healthier Alaska through diabetes education, prevention and management. To join the coalition's efforts or for more details about Work Groups and annual work plans, please reach out to the State of Alaska's Diabetes Prevention and Control Program at [diabetes@alaska.gov](mailto:diabetes@alaska.gov).

## Acknowledgements

We wish to acknowledge and thank those who helped create the Alaska Diabetes Coalition 2020-2025 Strategic Plan and who continue to work towards a diabetes-free Alaska. Members with an asterisk next to their name are Steering Committee members.

### Coalition Members (2019)

| Name                       | Organization                                            |
|----------------------------|---------------------------------------------------------|
| Samuel Abbate              | Adonai Diabetes & Endocrinology Center                  |
| Erin Aklestad              | Mountain-Pacific Quality Health - Alaska                |
| Deseree Baker              | Fairbanks Memorial Hospital                             |
| Claire Banks               | Tanana Chiefs Conference                                |
| Jessica Beam               | Southeast Alaska Regional Health Consortium             |
| *Kimberly Blood            | Tanana Chiefs Conference                                |
| DeeDee Brandeberry         | Veterans Administration                                 |
| Jess Brown                 | City and Borough of Juneau                              |
| *Elizabeth Buckingham      | Diabetes Advocate                                       |
| Alida Bus                  | Alaska Division of Insurance                            |
| Julie Cascio               | UAF Cooperative Extension Service                       |
| Cathy Colwell              | American Association of Retired Persons (AARP – Alaska) |
| Tamara Deschaine           | Anchorage Neighborhood Health Center                    |
| Carlin Evanoff             | healtheConnect Alaska                                   |
| Kate Fossman               | Southeast Alaska Regional Health Consortium             |
| Heather Gallahorn          | Maniilaq Health Center                                  |
| May Gonzalez               | Maniilaq Health Center                                  |
| Preston Groogan            | Mountain-Pacific Quality Health - Alaska                |
| Ken Helander               | American Association of Retired Persons (AARP – Alaska) |
| Jennifer Henderson         | Veterans Administration                                 |
| Pamela Horan               | Providence Pediatric Subspecialty Clinic                |
| Jeannette Jueneman         | Alaska Regional Hospital                                |
| *Olivia Kennedy            | Arctic Slope Native Association                         |
| PeggyEllen Kleinleder      | South Peninsula Hospital (Homer)                        |
| *Jessica Leystra           | Alaska Diabetes Association                             |
| Nicole Licht               | healtheConnect Alaska                                   |
| Patty Linduska             | Alaska Primary Care Association                         |
| Melanie Lynch              | YMCA of Alaska                                          |
| Jodie Mallette             | Arctic Slope Native Association                         |
| Jessica Mata-Rukovishnakof | Aleutian Pribilof Islands Association                   |
| *Ashley Minaei             | DHSS, Chronic Disease Prevention & Health Promotion     |
| Cynthia Nickerson          | Bartlett Regional Hospital (Juneau)                     |

| Name               | Organization                                                 |
|--------------------|--------------------------------------------------------------|
| Georgiana Page     | healtheConnect Alaska                                        |
| Dana Paperman      | Seward Senior Center                                         |
| Amy Paul           | Providence Alaska Medical Center                             |
| Bill Pearch        | healtheConnect Alaska                                        |
| Erin Peterson      | Alaska Native Tribal Health Consortium                       |
| *Lori Price        | DHSS, Chronic Disease Prevention & Health Promotion          |
| Christy Revet      | Southcentral Foundation                                      |
| *Renee Robinson    | University of Alaska Anchorage                               |
| Kathy Romain       | Kenai Senior Center                                          |
| Elize Rumley       | Southcentral Foundation                                      |
| *Mary Schneider    | DHSS, Chronic Disease Prevention & Health Promotion          |
| Sandra Scrase      | Fairbanks Memorial Hospital                                  |
| Leslie Shallcross  | University of Alaska Fairbanks Cooperative Extension Service |
| Erika Shedlarski   | Southcentral Foundation                                      |
| Sylvia Sheldon     | Maniilaq Health Center                                       |
| Claire Siekaniec   | Alaska Native Tribal Health Consortium                       |
| Luz Smeenk         | Alaska Native Tribal Health Consortium                       |
| Liah Taylor        | Southcentral Foundation                                      |
| Melinda Tomazevic  | Providence Outpatient Diabetes and Nutrition Center          |
| Caraline Tompkins  | Kenaitze Indian Tribe                                        |
| Ruth Townsend      | HCA Healthcare (Alaska Regional)                             |
| Elizabeth Tressler | Yukon Kuskokwim Health Corporation                           |
| Sue Unger          | Aleutian Pribilof Islands Association                        |
| Jamie Westenskow   | Alaska Regional Hospital                                     |
| Erin Widener       | YMCA of Alaska                                               |
| Katie Yabut        | Southcentral Foundation                                      |
| Laura Young        | healtheConnect Alaska                                        |
| Joyce Yuratic      | Maniilaq Health Center                                       |
| JoAnne Zito-Brause | DHSS, Chronic Disease Prevention & Health Promotion          |

# Strategic Plan Framework + Coalition Structure

## Vision

An Alaska that promotes healthy lifestyles statewide to prevent diabetes, reduce complications, reduce health care costs, and support Alaskans living with diabetes.

## Mission

The Alaska Diabetes Coalition works together to achieve a healthier Alaska through diabetes education, prevention and management.

## Guiding Principles

- Promote optimum health for Alaskans
- Strengthen individuals' knowledge and empowerment through health literacy and education
- Encourage prevention efforts throughout the lifespan
- Focus on early intervention
- Promote wellness and healthy lifestyles
- Build systems of holistic, patient-centered care
- Partner with existing organizations and coalitions with similar goals and priorities
- Use data and evidence-based practices to guide our work

## Goals

- **Goal 1.** Increase access to and utilization of evidence-based interventions for Alaskans at risk of diabetes or living with diabetes, to maintain health and prevent complications.
- **Goal 2.** Reduce risk factors for diabetes among Alaska youth and adults through education, outreach, and collaboration with existing efforts to promote healthy lifestyles.
- **Goal 3.** Increase capacity of the health system to offer medications and evidence-based services to increase self-management and prevention efforts by those living with or at risk of developing diabetes.
- **Goal 4.** Maintain an active, committed coalition of partners working together to efficiently and effectively achieve our shared vision.

## Coalition Organizational Chart



# Burden of Diabetes in Alaska, 2012-2016<sup>1</sup>

## What Is Diabetes?

**Diabetes impacts the body's ability to process food.** Our bodies use insulin, a hormone produced by the pancreas, to transform the foods we eat into glucose, a type of sugar that living cells use for energy. A person with diabetes has difficulty making or using insulin, and the food they eat remains in their bloodstream as undigested sugars. If a person has persistently high levels of sugar in the blood, he or she may be diagnosed with prediabetes or diabetes. There are multiple types of diabetes, defined in the sidebar at the right.

**Diabetes is a chronic disease, and a risk factor for other health conditions.** Diabetes is a chronic condition that affects a person's daily life and can lead to other serious health issues, especially if the condition persists undiagnosed or unmanaged over a long period. Diabetes is a risk factor for:

- heart disease, including heart attacks and stroke;
- vision loss;
- loss of feeling or functioning in hands, feet, and limbs; and
- kidney disease, including kidney failure.

Diabetes is a leading cause of preventable deaths and hospitalizations.

**Diabetes cannot be cured, but it can be prevented or managed.** As with other chronic diseases, making healthy choices can reduce or prevent risk of developing diabetes, as well as reduce the risk of developing other chronic diseases. This includes

- maintaining a healthy weight;
- eating a nutrient-rich diet with healthy fruits, vegetables, grains and fats;
- participating in regular physical activity; and
- avoiding or moderating unhealthy products such as tobacco and alcohol.

## Types of Diabetes

- **Type 1:** The body is unable to make insulin naturally. Usually diagnosed early in life. Requires taking insulin daily. Rarer than Type 2 diabetes. No known prevention or cure.
- **Type 2:** The body cannot produce enough insulin, or utilize insulin efficiently, so blood sugar is not regulated at normal level. Most common form of diabetes today. Usually develops during adulthood. Preventable or manageable with healthy lifestyle choices.
- **Gestational:** A woman develops diabetes during pregnancy, with no prior diagnosis. Usually temporary, but increases the mother's risk of developing Type 2 diabetes in the future.
- **Prediabetes:** The body has elevated blood sugar, but not high enough to be diagnosed as Type 2 diabetes. Associated with greater risk for diabetes, heart disease and stroke. Prediabetes is preventable with healthy lifestyle choices.

<sup>1</sup> Alaska DHSS Section of Chronic Disease Prevention and Health Promotion, Division of Public Health. *Diabetes Prevention and Control in Alaska – 2019*. Accessed February 18, 2020: [http://dhss.alaska.gov/dph/Chronic/Documents/Diabetes/burden/2019\\_AlaskaDiabetesBurdenReport.pdf](http://dhss.alaska.gov/dph/Chronic/Documents/Diabetes/burden/2019_AlaskaDiabetesBurdenReport.pdf)

For those living with diabetes, including Type 1, maintaining a healthy lifestyle is important. Many people successfully manage their condition through maintaining healthy habits, medications to regulate insulin levels, and careful monitoring of their blood glucose level. Helping people stay healthy while living with diabetes is an essential part of reducing the burden of diabetes.

## Prevalence, Mortality, Hospitalizations + Healthcare

Diabetes is among Alaska’s leading causes of death and is a critical public health priority. In 2016, it was the eighth most common cause of death in Alaska (see Table 1). As of 2016, 7.5% of adults in Alaska have known diabetes and 11.1% of adults have known prediabetes. More than 100,000 Alaska adults have been diagnosed with diabetes or prediabetes, but more—**over 80%**—are likely at risk and do not know it.

**Table 1: Cause of Death by Rank in Alaska + the U.S. (2016)**

| Cause of Death by Rank in Alaska       | Alaska Deaths |     |                   | US Deaths         |      |
|----------------------------------------|---------------|-----|-------------------|-------------------|------|
|                                        | Number        | %   | Age-Adjusted Rate | Age Adjusted Rate | Rank |
| 1. Cancer                              | 974           | 22% | 152.5             | 155.8             | 2    |
| 2. Diseases of the Heart               | 814           | 18% | 136.3             | 165.5             | 1    |
| 3. Unintentional Injuries              | 429           | 9%  | 61.9              | 47.4              | 3    |
| 4. Chronic Lower Respiratory Disease   | 236           | 5%  | 40.4              | 40.6              | 4    |
| 5. Stroke                              | 193           | 4%  | 38.2              | 37.3              | 5    |
| 6. Suicide                             | 186           | 4%  | 25.3              | 13.5              | 10   |
| 7. Chronic Liver Disease and Cirrhosis | 123           | 3%  | 15.9              | 10.7              | 12   |
| 8. Diabetes                            | 122           | 3%  | 18.6              | 21.0              | 7    |
| 9. Alzheimer’s Disease                 | 109           | 2%  | 25.4              | 30.3              | 6    |
| 10. Influenza and Pneumonia            | 60            | 1%  | 12.4              | 13.5              | 8    |

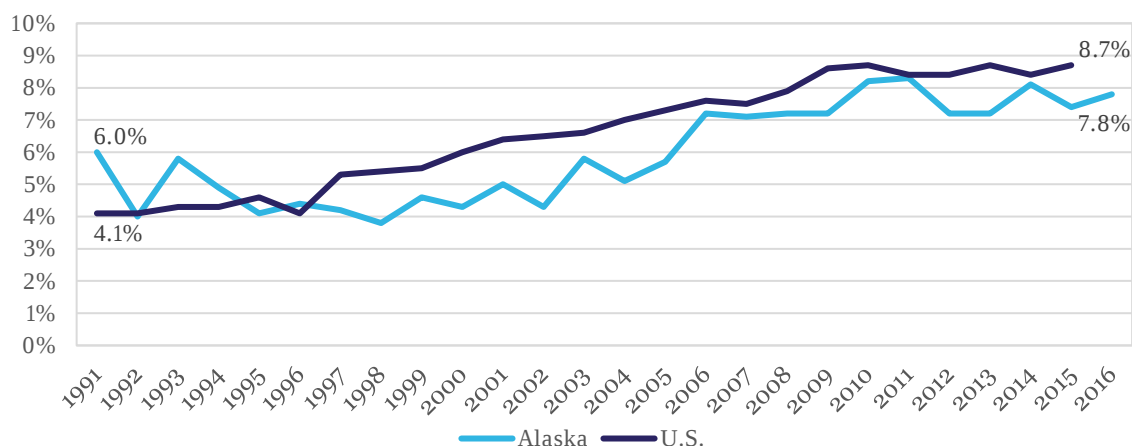
Source: Reproduced from State of Alaska, DHSS. Alaska Vital Statistics 2016 Annual Report. Available at [http://dhss.alaska.gov/dph/VitalStats/Documents/PDFs/VitalStatistics\\_AnnualReport\\_2016.pdf](http://dhss.alaska.gov/dph/VitalStats/Documents/PDFs/VitalStatistics_AnnualReport_2016.pdf). Accessed 2-17-2020.

More than ever, Alaskans and people across the U.S. are impacted by diabetes:

- Nationally, the Centers for Disease Control and Prevention (CDC) report that 40% (2 in 5) of U.S. adults will develop Type 2 diabetes in their lifetime. Younger adults are increasingly diagnosed with diabetes.
- In Alaska, approximately 41,000 adults (1 in 13) have been diagnosed with Type 1 or Type 2 diabetes. Another 62,000 adults (1 in 9) are diagnosed with prediabetes.
- Many other people may be living with diabetes or prediabetes but have not been screened or diagnosed. A national study estimates that up to 33% of adults (1 in 3) may have prediabetes, but of those, only 10% have been diagnosed by a health care provider. Applying these figures to Alaska, **there may be over 120,000 additional cases of diabetes or prediabetes among Alaska adults**—more than the number of diagnosed cases to date.
- The prevalence of diagnosed diabetes continues to increase in Alaska and nationally.

Figure 1 illustrates the trend in prevalence over time for Alaska and the U.S. While Alaska has maintained a slightly lower rate of diabetes diagnoses over the last 20 years compared to the national average, both populations' prevalence continues to increase.

Figure 1: Prevalence of Diagnosed Diabetes, Alaska and U.S., age-adjusted 1991 - 2016



Source: Reproduced from *Diabetes Prevention and Control in Alaska* (2019).

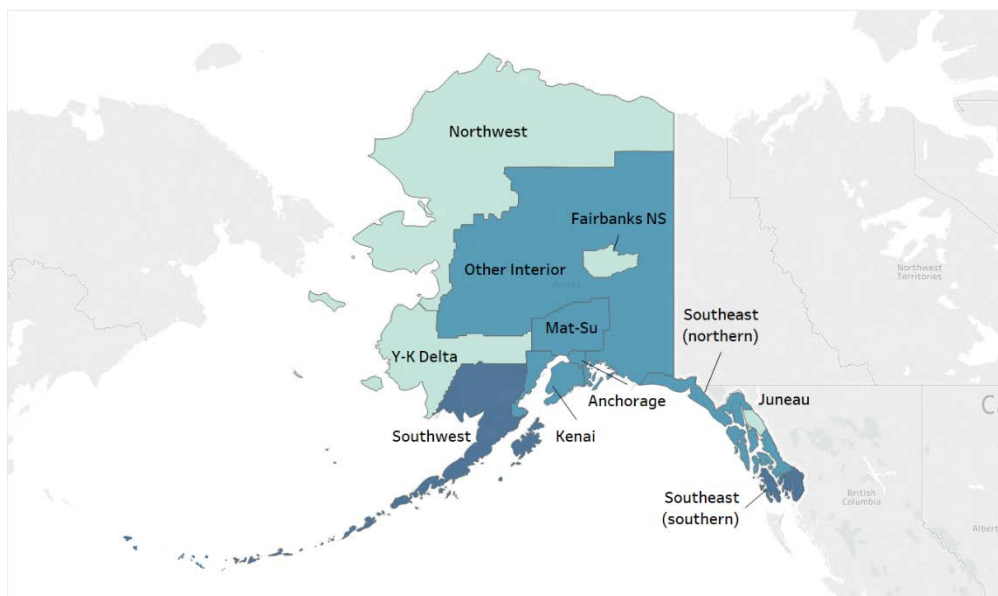
- **Diabetes-related death (mortality).** Diabetes is the 8<sup>th</sup> leading cause of death in Alaska, identified as a cause of death for 3,662 Alaskans between 2007 and 2016 – 889 as the underlying cause of death (i.e., direct cause), and 2,773 as a contributing cause of death. Although diabetes prevalence increased over the past decade, diabetes-related death rates have declined significantly during the same period.
- **Diabetes-related hospitalizations and outpatient treatment.** In total during 2016, diabetes contributed to the need for services in 70,487 hospital visits – 9,067 of these were inpatient visits, where the person was admitted to a hospital, and 7% indicated diabetes as the primary diagnosis, or reason care was needed. The remaining 61,420 cases were outpatient visits (i.e., emergency department, outpatient surgery, outpatient observation, imaging labs, or other services), and about one-third (33%) of those indicated diabetes as the primary diagnosis.
- **Quality healthcare for people with diabetes.** Most Alaska adults with diabetes saw a healthcare provider for diabetes care in the past year (86%), however only about one-third of people with diabetes met a “quality of care” standard for effective clinical services (obtaining annual eye and foot exams, and a glycosylated hemoglobin [A1c] test at least twice per year).

## Diabetes Disparities in Alaska

- **Comparisons by demographic group.** Diabetes prevalence increased with age: from 2.0% among people ages 18-44 to 19.3% among people ages 65 and older. Diabetes prevalence was similar for men and women, but diabetes-related hospitalizations were greater among women than men, and death rates are greater among men than women.

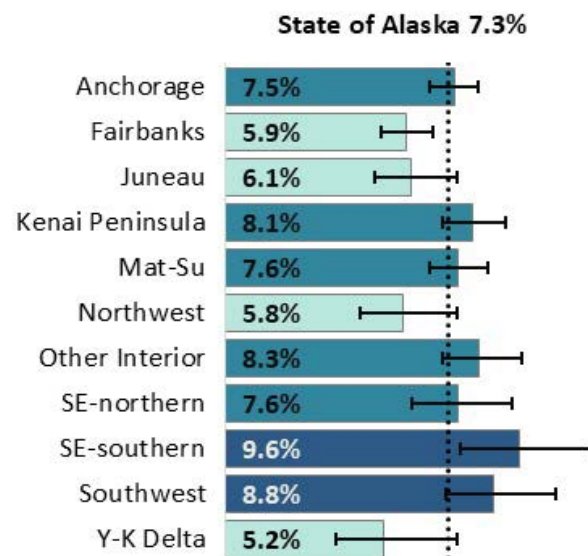
- ***Comparisons by race.*** More Alaska Native people and Black or African American people have diabetes or prediabetes than Whites in Alaska. Diabetes-related death and hospitalization rates were greater among Asian, Pacific Islander, and Black or African American people in Alaska than among Whites. Hospitalization rates – but not death rates – were greater among Alaska Native people than Whites.
- ***Regional comparisons.*** Relative to the state as a whole, the prevalence of diabetes was higher in the Southeast-southern region, and lower in Fairbanks. See Figure 2. Diabetes-related death rates were lower than the state average in Fairbanks, Kenai Peninsula, and the Yukon-Kuskokwim regions, which may be related to a combination of factors. These lower death rates could be due to diabetes-specific factors, such as lower prevalence, higher incidence in these regions of other competing causes of death, differences in reporting causes of death, or a combination of several factors.

Figure 2: Prevalence of Ever Being Diagnosed with Diabetes Among Adults,  
By Behavioral Health Systems Region  
Alaska, 2012-2016



Prevalence of Ever Being Diagnosed with Diabetes by Behavioral Health  
Systems Region  
Alaska adults, 2012-2016

|                        | Prevalence  | Lower CI    | Upper CI    |
|------------------------|-------------|-------------|-------------|
| <b>State of Alaska</b> | <b>7.3%</b> | <b>6.9%</b> | <b>7.7%</b> |
| Anchorage              | 7.5%        | 6.7%        | 8.3%        |
| Fairbanks*             | 5.9%        | 5.1%        | 6.8%        |
| Juneau                 | 6.1%        | 4.9%        | 7.6%        |
| Kenai Peninsula        | 8.1%        | 7.1%        | 9.2%        |
| Mat-Su                 | 7.6%        | 6.7%        | 8.6%        |
| Northwest              | 5.8%        | 4.4%        | 7.6%        |
| Other Interior         | 8.3%        | 7.1%        | 9.7%        |
| SE-northern            | 7.6%        | 6.1%        | 9.4%        |
| SE-southern*           | 9.6%        | 7.7%        | 12.0%       |
| Southwest              | 8.8%        | 7.2%        | 10.8%       |
| Y-K Delta              | 5.2%        | 3.6%        | 7.6%        |



Data source: Alaska BRFSS  
Combined File.

\*Indicates significant difference between region and state overall.

- **Screening for diabetes.** The American Diabetes Association (ADA) recommends screening and testing for type 2 diabetes or prediabetes every three years at minimum for adults ages 45 or older, and adults of any age who are overweight or obese. About half (52.0%) of Alaska adults without diabetes have been tested for diabetes within the past three years; conservatively, 76% of Alaska adults met criteria for needing screening. Screening rates were lower in the Northwest and Yukon-Kuskokwim Delta regions than in the state overall.
- **Effective self-care practices.** More than half of Alaska adults with diabetes (60%) said they checked their own blood glucose daily, and 60% said they had ever taken a diabetes self-management class. Prevalence of these same two self-care practices was lower among Alaska Native people with diabetes than non-Native Alaskans (48% and 50% among Alaska Native people, respectively).

## Economic Costs of Diabetes

Diabetes-related deaths and hospitalizations have significant economic costs to the public sector, and places a burden on people with diabetes and their families. The CDC reports that after adjusting for age and gender, average medical expenditures in the U.S. among people with diagnosed diabetes are more than double the costs for people without diabetes.<sup>2</sup>

- Approximately **\$1 in \$7 health care dollars** is spent treating diabetes and its complications.<sup>3</sup>
- Diagnosed diabetes costs America **\$327 billion** each year.<sup>3</sup>

Diabetes has significant economic costs in Alaska, too.

- In Alaska, the average cost for healthcare in fiscal year 2016 was nearly **\$36,000 per person** with diabetes in contrast to the average of about **\$7,700 spent per person** without a chronic health condition in the same year.
- In total, more than **\$193 million in Medicaid costs** were paid for people with diabetes in Alaska in that year. About **\$72 million** of this funding was from Alaska's state general fund (37%), and the remaining costs were covered by federal funds.

Notably, these costs do not account for medical care received from outside the Medicaid system, and do not account for other important economic costs to individuals and their families (e.g., lost work or inability to maintain employment), and are thus underestimates of the true economic costs of diabetes. In 2014, diabetes and prediabetes cost an estimated \$668 million in Alaska each year.<sup>4</sup>

<sup>2</sup> Centers for Disease Control and Prevention (CDC). National Diabetes Statistics Report, 2017 Estimates of Diabetes and Its Burden in the United States. August 8, 2017.

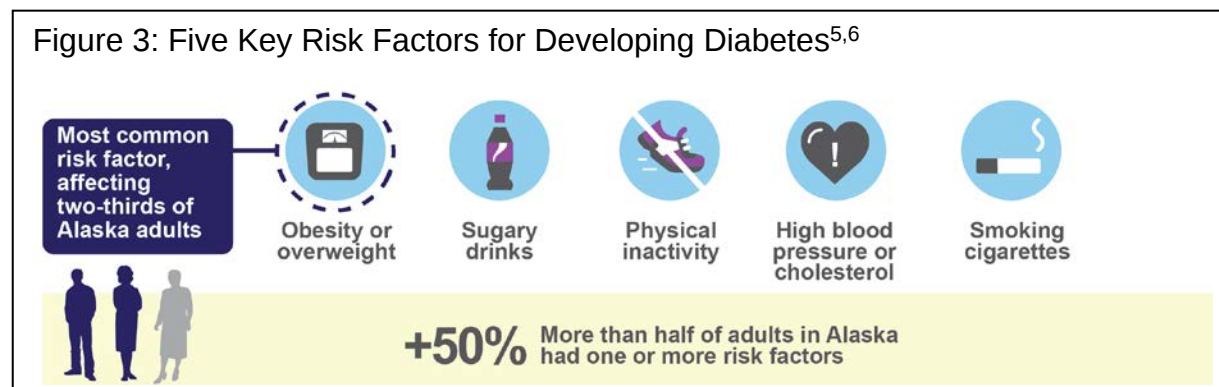
<sup>3</sup> American Diabetes Association. Accessed February 19, 2020: <https://www.diabetes.org/resources/statistics/cost-diabetes>.

<sup>4</sup> American Diabetes Association. Accessed February 19, 2020: <http://main.diabetes.org/dorg/PDFs/Advocacy/burden-of-diabetes/alaska.pdf>.

# Preventing and Managing Diabetes

## Risk + Protective Factors

Key risk factors for developing diabetes or its complications include being overweight or obese, drinking sugary drinks, not getting enough exercise, high blood pressure or cholesterol, and smoking cigarettes.<sup>5</sup> Many adults in Alaska had one of these risk factors and more than half of adults in any of the major demographic groups examined for this report (White, Hispanic, Asian, Black/African American, Alaska Native, and other or Multi-race) had one or more risk factors (see Figure 3).<sup>6</sup>



Protective factors, which reduce the risk of diabetes and related complications, include: maintain a healthy weight; eat healthy foods; drink water instead of sugary beverages<sup>7</sup>; stay physically active; get blood sugar, blood pressure and cholesterol screenings<sup>8</sup>; don't use tobacco; and prevent and/or manage diabetes.<sup>9</sup> See Figure 4.



<sup>5</sup> Alaska DHSS Section of Chronic Disease Prevention and Health Promotion, Division of Public Health. *Diabetes Prevention and Control in Alaska – 2019*. Accessed February 18, 2020:

[http://dhss.alaska.gov/dph/Chronic/Documents/Diabetes/burden/2019\\_AlaskaDiabetesBurdenReport.pdf](http://dhss.alaska.gov/dph/Chronic/Documents/Diabetes/burden/2019_AlaskaDiabetesBurdenReport.pdf)

<sup>6</sup> Alaska BRFSS Combined File, 2013-2016 for obesity, overweight and smoking; Alaska BRFSS Standard File, 2011, 2013, 2015 for physical inactivity, high cholesterol, and drinking one or more sugary drinks per day; Alaska BRFSS Standard File, 2011-2015 for high blood pressure.

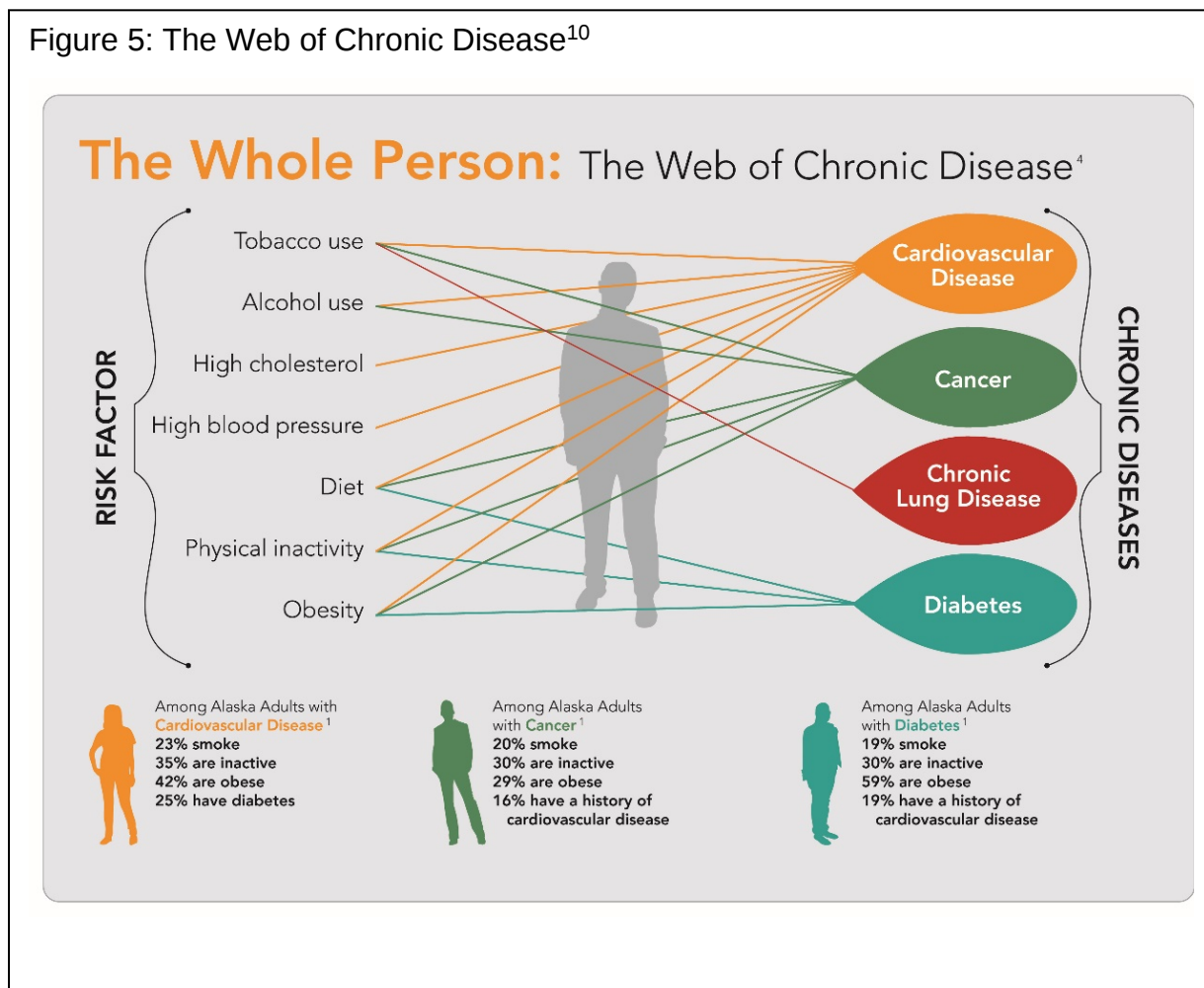
<sup>7</sup> Harvard T.H. Chan School of Public Health website. Sugary Drinks. Accessed February 28, 2020:

<https://www.hsph.harvard.edu/nutritionsource/healthy-drinks/sugary-drinks/>.

<sup>8</sup> American Heart Disease website. Understand Your Risk for Diabetes. Accessed February 28,

2020 <https://www.heart.org/en/health-topics/diabetes/understand-your-risk-for-diabetes>.

Figure 5: The Web of Chronic Disease<sup>10</sup>



Source: Image produced by Agnew::Beck Consulting for the Section of Chronic Disease Prevention and Health Promotion, Division of Public Health, Alaska Department of Health and Social Services.

### Diabetes + Mental Health<sup>11</sup>

Mental health affects many parts of daily life, such as how people think and feel, handle stress, relate to others, and make choices. Having a mental health problem could make it harder for people to stick to their diabetes care plans. Thoughts, feelings, beliefs, and attitudes can affect how healthy a person's body is. Untreated mental health issues can make diabetes worse, and problems with diabetes can make mental health issues worse. However, as one improves, the other tends to improve, too.

<sup>10</sup> Remington PL, Brownson RC, Wegner MV, eds. Chronic Disease Epidemiology and Control, 3<sup>rd</sup> Ed. Washington DC: American Public Health Association, 2010. AK BRFSS (2009-2011). Accessed May 12, 2020: [http://dhss.alaska.gov/dph/Chronic/PublishingImages/assets/CDPHP\\_thewholeperson.gif](http://dhss.alaska.gov/dph/Chronic/PublishingImages/assets/CDPHP_thewholeperson.gif).

<sup>11</sup> Center for Disease Control and Prevention (CDC). Diabetes and Mental Health webpage. Accessed February 20, 2020: <https://www.cdc.gov/diabetes/managing/mental-health.html>.

People may sometimes feel discouraged, worried, frustrated, or tired of dealing with daily diabetes care. Those feelings, known as diabetes distress, may cause people to slip into unhealthy habits, stop checking their blood sugar, and skip doctor's appointments. In any 18-month period, 33% to 50% of people with diabetes have diabetes distress.

Diabetes distress can look like depression or anxiety, but it can't be treated effectively with medicine. Instead, the following approaches have been shown to help:

- See an endocrinologist for diabetes care. He or she is likely to have a deeper understanding of diabetes challenges than regular doctors.
- Ask a doctor for a referral to a mental health counselor who specializes in chronic health conditions.
- Get some one-on-one time with a diabetes educator to problem-solve together.
- Focus on one or two small diabetes management goals instead of working on everything at once.
- Join a diabetes support group to share and exchange thoughts, feelings and lessons learned.

## Screening<sup>12</sup>

Diagnosing diabetes or prediabetes early can avoid complications. The American Diabetes Association (ADA) recommends regular screenings to test for diabetes:

- *Adults age 45 and older:* every 3 years
- *People with prediabetes:* every year
- *Women who were diagnosed with gestational diabetes:* every 3 years
- *Adults who are overweight or obese and have one or more risk factors:* every year

Additionally, the ADA recently recommended testing children and adolescents who are overweight or obese and have at least one other risk factor for diabetes.

In addition to screening for diabetes, adults should receive regular screenings for high cholesterol and blood pressure; both are risk factors for developing diabetes, as well as for diabetes complications among those who already have diabetes.

## Healthcare + Self-Management<sup>13</sup>

Quality healthcare and self-management practices for people with diabetes can effectively lower the risk of health complications. Although recommendations for care can vary based on individual characteristics, specific guidelines for diabetes care include the following four actions:

- See a healthcare provider for diabetes-related preventive care at least once per year.

---

<sup>12</sup> American Diabetes Association. Classification and Diagnosis of Diabetes: Standards of Medical Care in Diabetes – 2020. Diabetes Care. January 2020. Vol 41, Supplement 1: S13-S27. Accessed February 27, 2020: [https://care.diabetesjournals.org/content/diacare/suppl/2019/12/20/43.Supplement\\_1.DC1/DC\\_43\\_S1\\_2020.pdf](https://care.diabetesjournals.org/content/diacare/suppl/2019/12/20/43.Supplement_1.DC1/DC_43_S1_2020.pdf)

<sup>13</sup> Alaska DHSS Section of Chronic Disease Prevention and Health Promotion, Division of Public Health. *Diabetes Prevention and Control in Alaska – 2019*. Accessed February 18, 2020: [http://dhss.alaska.gov/dph/Chronic/Documents/Diabetes/burden/2019\\_AlaskaDiabetesBurdenReport.pdf](http://dhss.alaska.gov/dph/Chronic/Documents/Diabetes/burden/2019_AlaskaDiabetesBurdenReport.pdf)

- Work with a healthcare team to achieve high-quality diabetes care; that means having received all three clinical services below to achieve the “quality of care” standard:
  - an annual eye exam,
  - an annual foot exam, and
  - a hemoglobin A1C test at least twice per year.
- Check blood glucose levels daily at home.
- Attend evidence-based diabetes self-management classes.

# Goals + Strategies

## **Goal 1. Increase access to and utilization of evidence-based interventions for Alaskans at risk of diabetes or living with diabetes, to maintain health and prevent complications.**

- **Strategy A.** Promote consistent screening of and follow-up with patients who have risk factors for prediabetes and diabetes.
- **Strategy B.** Increase health care providers' knowledge of and referrals to evidence-based diabetes prevention and self-management programs.
- **Strategy C.** Increase participation in CDC-recognized Diabetes Prevention Programs (DPP) statewide.
- **Strategy D.** Increase participation in ADCES-accredited or ADA-recognized Diabetes Self-Management Education and Support (DSMES) services.
- **Strategy E.** Increase access to DPP and DSMES programs through telehealth and other delivery methods.
- **Strategy F.** Promote best practices for pharmacists to use medication therapy management (MTM) to support self-management for people living with diabetes.

These goals and strategies were identified—drawing from existing data, evidence-based practices, and coalition members' expertise—during multiple coalition working sessions, teleconferences, and online surveys.

This is a summary of the goals and strategies that will guide the coalition's activities over the next five years.

## **Goal 2. Reduce risk factors for diabetes among Alaska youth and adults through education, outreach, and collaboration with existing efforts to promote healthy lifestyles.**

- **Strategy A.** Collaborate with and expand the reach of partners who work on primary prevention, i.e., promote healthy lifestyle choices for all Alaskans, to support health throughout the lifespan and reduce risk factors for diabetes.
- **Strategy B.** Increase public awareness of key symptoms and risk factors for diabetes.

## **Goal 3. Increase capacity of the health system to offer medications and evidence-based services to increase self-management and prevention efforts of those living with or at risk of developing diabetes.**

- **Strategy A.** Increase the number of health plans that provide comprehensive coverage of diabetes prevention and self-management services, medications and devices.
- **Strategy B.** Increase number of recognized providers who can bill for diabetes self-management services.
- **Strategy C.** Improve the availability of medications and devices for diabetes management.

**Goal 4. Maintain an active, committed coalition of partners working together to efficiently and effectively achieve our shared vision.**

- **Strategy A.** Build a diverse statewide membership of subject matter experts, health care professionals and individuals who are passionate about our mission.
- **Strategy B.** Maintain a focused, strategic annual action plan for the coalition to focus its implementation work.

# Evaluating Our Impact: Performance Indicators

The purpose of performance indicators is to measure and monitor the coalition's progress toward achieving our goals. The coalition has identified high-level measures to track overall outcomes (see below), as well as one or more measures for each priority strategy that the group is currently focused on. Please reach out to the State of Alaska's Diabetes Prevention and Control Program at [diabetes@alaska.gov](mailto:diabetes@alaska.gov) for more information on priority strategy level indicators.

| Overall Diabetes Indicators                                                                                 | Baseline (date)     | Target (2025) | Data Source           |
|-------------------------------------------------------------------------------------------------------------|---------------------|---------------|-----------------------|
| <b>Prevalence:</b> Reduce the percentage of adults living with diabetes.                                    | 8.4% (2018)         | 8.0%          | <a href="#">BRFSS</a> |
| <b>Mortality:</b> Reduce diabetes mortality rates in AK (deaths directly caused by diabetes). Age-adjusted. | 17.8/100,000 (2018) | 16.9/100,000  | <a href="#">HAVRS</a> |

Sources: Alaska Behavioral Risk Factor Surveillance Survey; Alaska Division of Public Health, Vital Statistics, Mortality.

## Reference: Relevant Healthy Alaskans 2030 Health Objectives

In addition to the performance measures that the coalition will use to measure progress toward our vision and goals, we intend to monitor the Healthy Alaskans indicators related to prevention and management of diabetes. None of the 30 health objectives for Healthy Alaskans 2030 specifically address diabetes prevention and control directly. However, three indicators address risk factors (weight status, sugary drink intake, and physical activity) and three address access to healthcare, which may indirectly impact diabetes rates and related risk and protective factors.

- **Objective 5:** Reduce the percentage of adults (aged 18 years and older) reporting that they could not afford to see a doctor in the last 12 months.
- **Objective 6:** Reduce the rate of preventable hospitalizations per 1,000 adults (hospitalizations that could have been prevented with high quality primary and preventive care) based on the Agency for Healthcare Research and Quality (AHRQ) definition.<sup>14</sup>
- **Objective 8:** Reduce the percentage of the population without health insurance.
- **Objective 9:** Increase the percentage of children (students in grades K-8) who meet criteria for healthy weight.
- **Objective 15:** Reduce the percentage of 3-year-olds who drink any sugary drinks on a given day.

---

<sup>14</sup> AHRQ Quality Indicators—Guide to Prevention Quality Indicators: Hospital Admission for Ambulatory Care Sensitive Conditions. Rockville, MD: Agency for Healthcare Research and Quality, 2001. AHRQ Pub. No. 02-R0203. <https://www.ahrq.gov/downloads/pub/ahrqqi/pqiguide.pdf>

- **Objective 16:** Increase the percentage of adolescents who meet the Physical Activity Guidelines for Americans (2008 US DHHS Physical Activity Guidelines: adolescents who do at least 60 minutes of physical activity a day, every day of the week).

## List of Acronyms/ Glossary

- ADCES (Association of Diabetes Care & Education Specialists)
- ADA (American Diabetes Association)
- AHRQ (Agency for Healthcare Research and Quality)
- BRFSS (Behavioral Risk Factor Surveillance Survey)
- CDC (U.S. Centers for Disease Control and Prevention)
- DHSS (Department of Health and Social Services)
- DPP (Diabetes Prevention Program)
- DSME / DSMES (Diabetes Self-Management Education and Support)
- US DHHS (United States Department of Health and Human Services)



## Alaska Diabetes Coalition Strategic Plan (2020-2025)

### **Michael Dunleavy, Governor**

State of Alaska

### **Adam Crum, Commissioner**

Department of Health and Social Services

### **Dr. Anne Zink, Chief Medical Officer**

Department of Health and Social Services

### **Heidi Hedberg, Director**

Division of Public Health

### **Tari O'Connor, Section Chief**

Chronic Disease Prevention and Health Promotion



Funding for this publication was provided by the Center for Disease Control and Prevention (CDC), Cooperative Agreement # 6NU58DP006534. This publication was produced by the Alaska Department of Health and Social Services and Agnew::Beck Consulting.



Introduced by: City Manager, Peter Williams  
Date: April 13, 2021  
Public Hearing: April 27, 2021  
Action:  
Vote:

## *CITY OF BETHEL, ALASKA*

### **Ordinance #21-13**

#### **AN ORDINANCE AUTHORIZING THE ACQUISITION OF INTEREST IN LAND FOR A UTILITY EASEMENT FROM IRVIN L. KREIDER AND DIANA S. KREIDER, CO-TRUSTEES OF KREIDER REVOCABLE TRUST INVOLVING THE BETHEL AVENUES PIPED WATER AND SEWER PROJECT - PHASE I**

- Whereas,** the City of Bethel "City" has a grant from the U.S. Department of Agriculture (USDA). To provide for water and sewer improvements known as the Bethel Avenues Piped water and Sewer Project – Phase I;
- Whereas,** the City has arranged for a multi-phase project to supply water and collect sewer through the following described real property, including alignment of mains and service lines and other utilities through the easements and right-of-ways in perpetuity;
- Whereas,** the City needs to acquire various easements across the properties involved in the Bethel Avenues Piped Water and Sewer Project – Phase I;
- Whereas,** the proposed various easements are in the public interest because the easements allow the City the land necessary for placement of different utility lines for its Projects;
- Whereas,** in accordance with Section 4.08.02 of Bethel Municipal Code, the City Council hereby authorizes the acquisition of this easement, in the form as set forth in this ordinance;
- Whereas,** Lot Parcel E of Supplemental Plat of Lot 10, Block 2, U.S. SURVEY NO. 3770 NORTHWEST ADDITION TO THE TOWNSITE OF BETHEL, ALASKA, according to the official plat thereof, filed under Plat Number 78-5, Records of the Bethel Recording District, Fourth Judicial District, State of Alaska, more particularly described as:

The Basis of Bearing for this description is a local plane bearing based on NAD83(2011) Geodetic Bearings. Distances shown are horizontal ground distances in U.S. Survey Feet.

Introduced by: City Manager, Peter Williams  
Date: April 13, 2021  
Public Hearing: April 27, 2021  
Action:  
Vote:

A portion of Lot E, according to the Supplemental Plat of Lot 10, Block 2, U.S. Survey 3770, filed as Plat No. 78-5, Bethel Recording District, Fourth Judicial District, Alaska, being more particularly described by metes and bounds as follows:

Beginning at the northwest corner of said Lot E, being common with the southwest corner of Lot B according to the Supplemental Plat of Lot 10, Block 2, U.S. Survey 3770, filed as Plat No. 78-5, Bethel Recording District, Fourth Judicial District, Alaska, being the True Point of Beginning for this description; thence along the northern line of said Lot E N89°44'07"E 8.00 feet; thence departing said northern line S00°15'52"E 43.41 feet; thence S55°28'39"E 20.42 feet to a point on the southern line of said Lot E; thence along said southern line S89°44'07"W 14.02 feet to a point on the southern line of said Lot E; thence N55°28'39"W 13.09 feet to a point on the western line of said Lot E; thence N00°15'52"E 47.59 feet along said line to the True Point of Beginning. Said easement embraces an area of 498 square feet, more or less as calculated from said courses and distances.



**NOW, THEREFORE BE IT ORDAINED**, the City, in consideration of the agreement between IRVIN L. KREIDER and DIANA S. KREIDER, Co-trustees of KREIDER REVOCABLE TRUST, the Grantor, and the City of Bethel "CITY" the Grantee, mentioned herein,

Introduced by: City Manager, Peter Williams  
Date: April 13, 2021  
Public Hearing: April 27, 2021  
Action:  
Vote:

acquires this easement and this ordinance shall be recorded with each detailed "PUBLIC UTILITY EASEMENT" document.

**SECTION 1. Classification.** This ordinance is of a general nature and shall not become a part of the Bethel Municipal Code.

**SECTION 2. Authorization.** Pursuant to Bethel Municipal Code 04.08.020 Acquisition of Real Property.

**SECTION 3. Effective Date.** This Ordinance shall become effective upon the passage by the Bethel City Council.

---

Michelle DeWitt, Mayor

ATTEST:

---

Lori Strickler, City Clerk

# CITY OF BETHEL, ALASKA

## Ordinance #21-14

### **AN ORDINANCE BY THE BETHEL CITY COUNCIL AMENDING BETHEL MUNICIPAL CODE 4.16.160 SALES TAX EXEMPTIONS AND LIMITATIONS**

**WHEREAS,** in 2017, the City of Bethel repealed and readopted the City's Municipal Code 4.16, Sales Tax Exemptions;

**WHEREAS,** in 2020, the City began collecting remote sales tax through the Alaska Remote Seller Sales Tax Commission (ARSSTC);

**WHEREAS,** in establishing the City's participation in ARSSTC, it became clear that some of the City's sales tax exemptions and limitations were confusing or inconsistent;

**WHEREAS,** addressing these inconsistencies and clarifying the sales tax exemptions and limitations will improve accurate and timely collection of City sales tax and make the City's sales tax regulations more user-friendly for the City administration and the public.

### **NOW THEREFORE BE IT ENACTED BY THE CITY COUNCIL OF THE CITY OF BETHEL, ALASKA:**

**SECTION 1. Classification.** This is a codified Ordinance is of general and permanent nature and shall become part of the Bethel Municipal Code.

**SECTION 2. Amendment.** Bethel Municipal Code Chapter 4.16.160 Tax Exemptions, is amended as follows, new language is underlined old language is stricken.

#### 4.16.160 Exemptions and Limitations on Exemptions

The following sales and services are exempt from the tax levied under this chapter only in accordance with the exemptions and limitations thereon, as provided for in this section:

- A. *Admissions.* Sales of admission to school entertainments, school athletic events, and events conducted for the benefit of charitable or community organizations are exempt. ~~This exemption does not apply to sales of gaming property.~~
- B. *ATVs/Boats.* That portion of the selling price of an all-terrain vehicle (ATV), snow machine, boat, or boat motor in excess of three thousand five hundred dollars (\$3,500) is exempt, regardless of whether or not such items are purchased simultaneously, or are invoiced or otherwise billed on the same billing document.
- C. *Banking* The following fees, sales and services charged by banks, savings and loan associations, credit unions and investment banks are exempt:
- a. Fees for the sale, exchange or transfer of currency, stocks, bonds and other securities;
  - b. *Loans.* The principal amount of the loan, the interest charged for loaning of money, escrow collection services, and any fees associated with the loaning of money ~~are exempt~~;
  - c. Services associated with the sale, exchange or transfer of currency, stocks, bonds and other securities;
  - d. Pass-through charges on loan transactions which include sales tax;
  - e. Sale of insurance policies, bonds of guaranty and fidelity (AS [21.09.210](#)).
- D. *Casual and Isolated Sales, Services or Rentals.* Proceeds from casual, occasional or isolated sales which are easily identified as the sale of ~~personal goods or property~~ tangible personal property or goods at such functions as moving, garage, yard, food and bake sales, markets or fairs (such as flea markets and craft fairs), the sale of private vehicles when the seller is not a dealer in used vehicles, or services such as babysitting or house-sitting provided the seller does not regularly engage in the business of selling such goods or services or rentals ~~but are exempt, but~~ only if:
1. The sales of goods and services do not occur for more than ten (10) days in a calendar year, and are not made through a dealer, broker, agent or consignee; or

2. The rental of personal tangible property does not exceed sixty (60) days in a calendar year, whether or not consecutive. ~~The rental of real estate is not exempt.~~
3. Sales or rentals made pursuant to a business license or by sellers representing themselves to be in the business of making sure sales, rentals or services are not exempt.
4. The rental of real estate is not exempt.
- E. *Cemetery Plots.* The sale of cemetery/burial plots is exempt.
- F. ~~*Commerce.* Freight and wharfage charges, whether arising out of foreign, interstate or intrastate commerce, are exempt.~~  
~~Warehouse and storage services transportation of goods, equipment, or other property from one point to another within the city limits by commercial movers is are not exempt.~~
- G. *Compliance with State and Federal Laws.* Gross receipts or proceeds derived from sales or services which the city is prohibited from taxing under the laws of the state or under the laws and the Constitution of the United States, including, but not limited to the following:
  1. Sales by the U.S. Postal Service are exempt;
  2. Purchases made under the authority of or made with any type of certificate issued pursuant to [42](#) USC Sections [1771](#) through [1789](#) (Child Nutrition Act of 1966) are exempt;
  3. *Repealed by Ord. 20-06.*
  4. ~~Air transportation including that portion of any chartered fishing or hunting expedition which covers the cost of air transportation;~~ Air transportation precluded from taxation under AS 29.45.820 is exempt.
  5. Gross receipts or proceeds derived from sales to the United States Government, the state, a city or any political department thereof are exempt. However, the exemption shall not apply to the sale of materials and supplies to contractors for the manufacture or production of property or rendering services for sale to such government units or agencies on a contract bid

- award, in which event the contractor shall be deemed the buyer, subject to the payment of the tax.
6. A sale or rental to an employee of the state, its political subdivisions, or the federal government is ~~only~~ exempt, but only when the government employee provides proof that the sale is for government business by paying for the sale with a government voucher, purchase order, check, credit card, or warrant, or providing other verifiable documentation to the seller to allow the seller to readily determine that the sale is for government business.
7. A sale or rental to a federally recognized tribe is exempt, but only when the tribal employee provides proof that the sale is for tribal government business by paying for the sale with a tribal voucher, purchase order, check, credit card, or warrant, or providing other verifiable documentation to the seller to allow the seller to readily determine that the sale is for tribal government business.
- H. *Credit Unions.* Sales to or by federally chartered credit unions or credit unions organized under AS 06.45 are exempt.
- I. *Dues.* Dues or fees paid to clubs, labor unions and other organizations solely for the privilege of membership are exempt.
- J. *Freight and Wharfage.* Freight and wharfage charges, whether arising out of foreign, interstate or intrastate commerce, are exempt unless such delivery services are included in a through bill of lading in conjunction with interstate commerce. ~~Warehouse, storage services, and delivery services that begin and end within the city of Bethel are taxable, unless such delivery services are included in a through bill of lading in conjunction with interstate commerce.~~ 1. Warehouse and storage services are not exempt. 2. Transportation of goods, equipment, or other property from one point to another within the city limits by commercial movers is not exempt.
- K. *Maximum Tax.* That portion of the selling price for a single piece of equipment or tangible personal property ~~by an individual unit price in excess of ten thousand dollars (\$10,000) is exempt. A single sales unit is any retail merchandise sale in~~ excess of ten thousand dollars (\$10,000) is exempt, where the selling price is

totalled on one (1) invoice or on any sales slip, ~~although this exemption does not apply if any portion of the invoice or sales slip refers to more than~~ under one (1) calendar day.

L. *Medical Services.*

1. Services of a person licensed or certified by the state of Alaska as a doctor of medicine and surgery, a doctor of osteopath and surgery, a chiropractor, a dentist, an optometrist, an audiologist, a hospital, an occupational therapist, a physical therapist or a licensed or practical nurse; provided, that the service is within the scope of the state license or certificate are exempt;
2. Services of a person licensed or certified by the state of Alaska as a psychologist or psychological associate, a clinical social worker, an alcohol or drug counselor, a marital and family therapist or a licensed professional counselor; provided, that the service is within the scope of the state license or certificate are exempt;
3. Fees for supplies, equipment and services provided by a hospital, medical clinic or dental clinic for patient treatment, including laboratory and x-ray services are exempt;
4. Assisted living services provided in accordance with an assisted living plan and in an assisted living home licensed as such by the state are exempt;
5. Gross receipts or proceeds of the retail sale of prescription drugs are exempt;
6. ~~Services rendered by masseurs, even those working for a hospital, chiropractor or other medical provider, are not exempt.~~  
Services rendered by massage therapists, including those working for a chiropractor or other medical provider, are not exempt.

M. *Newspapers.* Sales of newspapers are exempt.

N. *Nonprofits.* A sale of goods or services to any entity that, ~~at the time of the sale, is nonprofit able to produce~~ entity that, at the time of sale, can produce a sales tax exemption card and that has:

1. ~~legally constituted and legitimately acting in accordance with a duly~~  
authorized federal tax-exempt status pursuant to IRS Regulations, Section

501(c)(3), (4) or (19) is exempt, provided that any income from the exempt sale is also exempt from federal taxation;

- ~~2. provided any income from the exempt sale is exempt from federal taxation;~~  
and  
~~3. provided the nonprofit produces a sales tax exemption card.~~

~~Exceptions: Activities provided by the entity where such organization is engaged in business for profit or is competing with other persons engaged in the same manner or in a similar business are not exempt.~~

- O. *Public Assistance.* Purchases made with food coupons, food stamps, or other type of certificate issued under [7](#) USC Sections [2011](#) through [2025](#) (Food Stamp Act) or other certificates issued under [42](#) USC [1786](#) (Special Supplemental Food Program for Women, Infants and Children) are exempt.
- P. *Real estate sales.* Sale of property consisting of land and/or buildings are exempt.
- Q. *Recreational Vehicles.* That portion of the selling price of an all-terrain vehicle (ATV), snow machine, boat, or boat motor in excess of three thousand five hundred dollars (\$3,500) is exempt, ~~is exempt~~ regardless of whether or not such items are purchased simultaneously, or are invoiced or otherwise billed on the same billing document.
- R. ~~*Rental Units.* Costs incurred by owners/landlords for rental units, such as included utilities, fuel, or any other expenses, are not exempt.~~
- S. *Retail Sales of Foods.* ~~Are exempt in~~ Prepared food sold under the following circumstances are exempt as follows:
1. When served in cafeterias or lunchrooms of elementary, secondary, post-secondary schools, colleges or universities which are operated primarily for students and staff, and are not operated for the public or for profit;
  2. When served to clients and staff, and not to the public or for profit, as part of services provided by a nonprofit hospital or other nonprofit government organization licensed by the state of Alaska for the care of humans;

3. Meals delivered by a nonprofit organization to handicapped or senior citizens at their place of residence or meals served on the premises of a nonprofit to senior citizens or the homeless or disadvantaged; provided, that the sale price of such meals does not exceed the cost of delivery or service of such meals.
- T. *Sales to Retailers.* Are exempt only if the buyer presents to the seller a valid exemption card, issued by the city pursuant to this section, and for the class of activity involved for which the exemption is sought and:
1. The sale of goods, wares or merchandise to a retail dealer, manufacturer or contractor is for resale within the city as is or incorporated into a product or commodity to be sold by the dealer, manufacturer or contractor within the city, if the subsequent sale is subject to the city sales tax;
  2. and the ~~The~~ product is an item sold as part of the reseller's primary business and ~~must be~~ is of such nature that it can be purchased by the general public in a transaction that is not dependent upon the purchase of another product or service.
  3. ~~The exemption card must be for the class of activities involving the resale of the type of goods for which the exemption is sought.~~
  4. Food products that are purchased for resale must be purchased and sold as is or prepared in a commercial kitchen. ~~If a purchaser buys goods for resale in accordance with this subsection and for personal or other use at the same time, only the goods that are to be sold for resale in accordance with this subsection shall be exempt.~~
  5. ~~Supplies, services, tools, repair services, equipment or any other goods or services purchased to support a business but not for resale in accordance with this subsection are not exempt.~~
- U. *School.*
1. Fees and charges for extracurricular activities or events promoted or undertaken by educational or student organizations are exempt;
  2. Sales by any student organization, parent/teacher organization or booster club recognized by the school or educational organization in which it

operates, which proceeds are utilized to further the purposes for which the organization was formed are exempt;

3. Sales and services by schools or other educational organizations made in the course of their regular functions and activities, which proceeds are utilized to further the purposes for which such organization was formed are exempt;
  4. Sales of food and beverages at educational lunchrooms which are operated primarily for staff and/or students, and which are not operated for the purpose of sale to the general public for profit are exempt;
  5. The service of transporting students to and from a school in vehicles when in the regular course of that business is exempt.
- V. *Securities*. The sale of insurance and bonds of guaranty and fidelity, and the commission thereon (AS [21.09.210\(f\)](#), [21.79.130](#), [21.80.130](#)) is exempt.
- W. *Senior Citizen Exemptions*. The following are exempt only if the buyer, or their designee, presents a valid senior citizen exemption certificate and the product or service is intended primarily for the senior citizen holding the exemption card:
1. ~~The sale to a senior citizen of f-Food~~ intended for consumption by the senior citizen, their spouse, or same sex partner living in the same household, or the unemancipated minor children of either the senior citizen or their spouse or same sex partner, who live in the same household. For purposes of this subsection, "food" is defined in accordance with [7](#) USC Section [2012\(g\)](#) (definition of "food" for purposes of the Food Stamp Act).
  2. The payment of rent by a senior citizen on a single dwelling occupied as the senior citizen's primary residence and permanent place of abode.
  3. Payment for telephone, electric, ~~water and sewer utility services, and heating~~ fuel by a senior citizen on a single dwelling occupied as the senior citizen's primary residence and permanent place of abode.
  4. ~~The payment for heating fuel used by a senior citizen for a single dwelling occupied as the senior citizen's primary residence and permanent place of abode.~~
  5. ~~The sale of alcohol, tobacco, bingo cards, raffle tickets, pull tabs, other games of chance and/or marijuana to a senior citizen is not exempt.~~

X. *Services.* That portion of the selling price of a single service that exceeds twelve thousand dollars ~~(\$12,000)~~ 2,400.00 is exempt. This amount will be adjusted in ~~2019~~ 2022 and every two (2) calendar years thereafter consistent with the Consumer Price Index for all urban consumers for Anchorage metropolitan area compiled by the United States Department of Labor, Bureau of Labor Statistics. Adjustments to the amount listed will be rounded to the nearest one hundred dollars (\$100). For the purposes of this subsection, a single service is an interrelated and interdependent function necessary to perform a specified action. If a single service is performed over a period exceeding one (1) month, the selling price must be apportioned to a monthly or invoice basis, whichever is more frequent, proportionate to the service performed, except for:

1. A commission paid to an agent for negotiating the sale of real property ~~(the commission is taxed at the first twelve thousand dollars (\$12,000) of the sale, regardless of the length of time the agent has taken in selling the property); or~~
2. A written contingency fee agreement award or settlement ~~(to be collected on the first twelve thousand dollars (\$12,000) of the fee award regardless of the length of time taken to resolve the case).~~

Y. *Transportation.*

~~1. The following types of transportation services are exempt:~~

- ~~a. 1. The sale of services for transporting passengers by river taxi, taxicab, bus, commercial airline, air charter, air taxi, hover craft; or~~  
are exempt.
- ~~b. 2. The sale of passenger seat tickets by a commercial airline is~~  
exempt;
- ~~c. 3. The service of transporting disabled or handicapped individuals when in the regular course of that business is exempt.~~

~~2. The following are not exempt:~~

- ~~a. 4. The lease of vehicle for hire permits are not exempt.~~

Introduced by: City Manager, Pete Williams  
Introduction Date April 13, 2021  
Public Hearing Date: April 27, 2021  
Action:  
Vote:

- ~~b.~~ 5. The portions of a sale of flight seeing or air/water/shore excursion travel or adventure services which are not charges for transportation of persons on a federal airway are exempt;
- ~~c.~~ 6. The lease or rental of vehicles is not exempt.
- Z. *Utilities.* Payment for city water, sewer and refuse utility services by any and all persons or entities are exempt.
- AA. *Wholesale.* Proceeds from products sold as wholesale sales to businesses designated by the state of Alaska as wholesalers are exempt. These include sales of goods, wares or merchandise to a retail dealer, manufacturer or contractor for resale within the city as is or incorporated into a product or commodity to be sold by the dealer, manufacturer or contractor within the city, if the subsequent sale is subject to the city sales tax. In this connection a retailer must stock that merchandise for resale, display the same to the public and hold themselves out as regularly engaged in the business of selling such products.

**SECTION 4.** This Ordinance shall become effective immediately following adoption by the Bethel City Council.

**BE IT ENACTED BY THE CITY COUNCIL OF THE CITY OF BETHEL, ALASKA THIS 27<sup>th</sup> DAY OF APRIL 2021 BY A VOTE OF \_ IN FAVOR AND \_ OPPOSED.**

---

Michelle DeWitt, Mayor

ATTEST:

---

Lori Strickler, City Clerk

# SUGGESTED AMENDMENT TO ORDINANCE 21-14

## From Administration

---

### Suggested Amendment

Motion to amend to:

1. Strike new language “provided that any income from the exempt sale is also exempt from federal taxation”
  2. Insert new language “Exceptions: A sale of goods or services to any nonprofit when the sale of the goods or services is used to support for-profit business operations or operations that compete with persons engaged in similar business operations, are not exempt from taxation.”
- A. *Nonprofits.* A sale of goods or services to any ~~entity that, at the time of the sale, is nonprofit able to produce~~ entity that, at the time of sale, can produce a sales tax exemption card ~~and that has:~~
- ~~1. legally constituted and legitimately acting in accordance with a duly authorized federal tax-exempt status pursuant to IRS Regulations, Section 501(c)(3), (4) or (19)~~  
is exempt, provided that any income from the exempt sale is also exempt from federal taxation;
  - ~~2. provided any income from the exempt sale is exempt from federal taxation; and~~
  - ~~3. provided the nonprofit produces a sales tax exemption card.~~

~~Exceptions: Activities provided by the entity where such organization is engaged in business for profit or is competing with other persons engaged in the same manner or in a similar business are not exempt.~~

Exceptions: A sale of goods or services to any nonprofit when the sale of the goods or services is used to support for-profit business operations or operations that compete with persons engaged in similar business operations, are not exempt from taxation.

---

Bethel Municipal Code 4.16.040 Presumption of taxability, provides: it is presumed that all sales by a person engaging in business are subject to the sales tax. This assumption applies to sales made by nonprofits, even if those sales are to support the mission of the nonprofit. Although that can be assumed through a review and interpretation of the code, a clearer exception to this exemption may help facilitate clearer expectation from the public on collections.

Introduced by: Peter A. Williams, Interim City Manager  
Introduction Date: April 13, 2021  
Public Hearing Date: April 27, 2021  
Action:  
Vote:

# CITY OF BETHEL, ALASKA

## Ordinance 20-12 (I)

### AN ORDINANCE AMENDING THE CITY OF BETHEL FISCAL YEAR 2021 BUDGET

**THEREFORE BE IT ORDAINED** by the City Council of Bethel, Alaska, as follows:

**SECTION 1. Classification.** This is a non-codified Ordinance and shall not become part of the Bethel Municipal Code.

**SECTION 2. Fiscal Year Budget Amendments.** The following estimated revenues and expenditures are hereby appropriated for the corporate purposes and objects of the City of Bethel for Fiscal Year 2021.

**WHEREAS,** engineer firm CH2MHill completed the City of Bethel Water and Sewer Cost Allocation and Rate Study update in April 2013;

**WHEREAS,** the purpose of the study was to project the cost of operating the water system and sewer system for ten years ending June 30, 2023, establish rates to make the utility financially self-sufficient, and to estimate annual depreciation costs;

**WHEREAS,** seeing the need for a new study update, City Administration requested DOWL, LLC to prepare a rate study task order (proposal) for Bethel City Council's consideration;

**WHEREAS,** DOWL prepared Task Order #39 Utility Rate Study that describes the scope of work to be completed with subcontractor FCS Group at a cost of \$66,429;

**WHEREAS,** City Administration feels that a study update is warranted for the following reasons: (1) assumptions on which the study was based have changed, (2) in the last 8 years, there have been an increase in the number of new buildings in Bethel receiving water and sewer services, (3) implementation of the institutional corridor, (4) opening and use of the Yukon Kuskokwim Health Corporation's primary care center, (5) and the use of the City's new water and sewer trucks purchased within the last three years that require less maintenance.

Introduced by: Peter A. Williams, Interim City Manager  
 Introduction Date: April 13, 2021  
 Public Hearing Date: April 27, 2021  
 Action:  
 Vote:

| <b>I-1 Water Sewer Study</b> |                       |                         |                    |                               |
|------------------------------|-----------------------|-------------------------|--------------------|-------------------------------|
| Line Item                    | Description           | Approved Appropriations | Proposed Amendment | Proposed Total Appropriations |
| 10-51-644                    | Consulting Fees       | 0                       | <u>\$60,000</u>    | \$60,000                      |
| 10-10100                     | Cash in Combined Fund | \$13,599,307            | (\$60,000)         | (\$60,000)                    |

**WHEREAS,** the City has one Accounting Specialist I performing overtime duties associated as food distribution coordinator for those in quarantine due to COVID-19 at local hotels and YKHC facilities;

**WHEREAS,** the City pays local non-profit organizations and groups on contract to deliver meals three times a day to all those in quarantine at a cost of \$2,520 per week;

**WHEREAS,** the City approved a budget modification in the amount of \$37,365 on January 12, 2021 to fund the cost of the food distribution coordinator and food distribution contracts until March 31, 2021;

**WHEREAS,** the cost of food distribution for five weeks from April 4, 2021 to May 8, 2021 is \$15,569.25, which includes a part-time coordinator working 15 hours per week for 5 weeks at \$39.59/hr. overtime and the cost of non-profit groups distributing food for 5 weeks at \$2,520/wk.

| <b>I-2 COVID FOOD DISTRIBUTION</b> |                                   |                         |                    |                               |
|------------------------------------|-----------------------------------|-------------------------|--------------------|-------------------------------|
| Line Item                          | Description                       | Approved Appropriations | Proposed Amendment | Proposed Total Appropriations |
| 10-51-669                          | Increase Other Purchased Services | 0                       | \$15,570           | \$15,570                      |
| 10-10100                           | Cash in Combined Fund             | \$13,539,307            | (\$15,570)         | \$13,523,737                  |

**WHEREAS,** the City of Bethel established the Community Action Grant Program (CAG) to provide funding to applicant projects that contribute to the health, welfare, and overall quality of life for residents of Bethel, especially its most vulnerable populations;

**WHEREAS,** funding for the program comes from 20% of the Alcohol Use Tax collected by the City;

**WHEREAS,** City Administration directed Carmen Jackson, CPA, LLC to determine the balance of funds available for CAG distribution and establish an interest-bearing account in which to deposit CAG funds at least quarterly, so that the actual amount available for distribution and future budget modifications may be easily obtained;

Introduced by: Peter A. Williams, Interim City Manager  
 Introduction Date: April 13, 2021  
 Public Hearing Date: April 27, 2021  
 Action:  
 Vote:

**WHEREAS**, the amount of \$84,000 in the FY 2021 Budget for Community Action Grants is insufficient to cover \$35,237.47 in awards distributed through AM #20-56 on December 8, 2020, plus Action Memorandum 21-07 that approves CAG awards totaling \$101,474.93;

**WHEREAS**, the Community Action Grant Technical Review Board will not recommend that City Council distribute CAG awards totaling more than the total amount available from 20% of the alcohol use tax revenues collected since program inception less awards already distributed or approved for distribution;

| <b>I-3 Community Action Grant</b> |                                 |                               |                    |                               |
|-----------------------------------|---------------------------------|-------------------------------|--------------------|-------------------------------|
| Line Item                         | Description                     | Approved Appropriations       | Proposed Amendment | Proposed Total Appropriations |
| 10-72-760                         | Community Action Grant          | \$84,000                      | \$57,000           | \$141,000                     |
| 10-40-408                         | Alcohol Use Tax/<br>Alcohol Tax | 20% of \$302,165/<br>\$60,433 | (\$57,000)         | \$3,433                       |

**WHEREAS**, Public Works Department, Bethel Heights Water Treatment Plant budget line item 51-83-508 Leave Cash-out is over expended by \$377.48;

**WHEREAS**, employees are requesting leave cash-out for fiscal year 2021;

**WHEREAS**, it is requested that \$6,000 be allocated from the Water and Sewer Enterprise Fund Balance to Leave Cash-out for the Bethel Heights Water Treatment Plant;

| <b>I-5 Bethel Heights Water Treatment Facility</b> |                                                                             |                         |                    |                               |
|----------------------------------------------------|-----------------------------------------------------------------------------|-------------------------|--------------------|-------------------------------|
| Line Item                                          | Description                                                                 | Approved Appropriations | Proposed Amendment | Proposed Total Appropriations |
| 51-83-508                                          | Bethel Heights Water Treatment Facility<br>Personnel Budget – Leave Cashout | 6,068                   | <u>6,000</u>       | 12,068                        |
| 51-10100                                           | Water and Sewer Enterprise Fund Balance                                     | 2,224,296.48            | <u>(6,000)</u>     | 2,218,296.48                  |
|                                                    |                                                                             |                         |                    |                               |

**WHEREAS**, Public Works Department, Hauled Refuse budget line item 50-70-508 Leave Cash-out is over expended by \$2,607.69;

**WHEREAS**, employees are requesting leave cash-out for fiscal year 2021;

**WHEREAS**, it is requested that \$7,000 be allocated from the Solid Waste Enterprise Fund Balance to Leave Cash-out for the Bethel Heights Water Treatment Plant;

City of Bethel, Alaska

Ordinance 20-12(I)  
3 of 4

Introduced by: Peter A. Williams, Interim City Manager  
Introduction Date: April 13, 2021  
Public Hearing Date: April 27, 2021  
Action:  
Vote:

| <b>I-4 Hauled Refuse</b> |                                                 |                         |                    |                               |
|--------------------------|-------------------------------------------------|-------------------------|--------------------|-------------------------------|
| Line Item                | Description                                     | Approved Appropriations | Proposed Amendment | Proposed Total Appropriations |
| 50-70-508                | Hauled Refuse Personnel Budget – Leave Cash-out | 1,507                   | <u>7,000</u>       | 8,507                         |
| 50-93300                 | Solid Waste Enterprise Fund Balance             | 2,253,555.34            | <u>(7,000)</u>     | 2,246,555.34                  |
|                          |                                                 |                         |                    |                               |

**SECTION 3. Effective Date.** This Ordinance shall become effective upon the passage by the Bethel City Council.

**ENACTED THIS 27TH DAY OF APRIL 2021 BY A VOTE OF \_\_\_\_ IN FAVOR AND \_\_\_\_ OPPOSED.**

\_\_\_\_\_  
Michelle DeWitt, Mayor

ATTEST:

\_\_\_\_\_  
Lori Strickler, City Clerk

Introduced by: Public Safety and  
Transportation Commission  
Introduction Date: April 27, 2021  
Public Hearing Date: May 11, 2021  
Vote:

## CITY OF BETHEL, ALASKA

### ORDINANCE #21-15

**AN ORDINANCE BY THE BETHEL CITY COUNCIL TEMPORARILY REDUCING  
PAYMENTS LISTED UNDER 5.20.160 A. OF THE BETHEL MUNICIPAL CODE  
FOR TAXICAB, RIVER TAXI, LIMOUSINE OR BUS PERMIT NOT IN  
OPERATIONAL STATUES AS A RESULT OF COVID-19**

**WHEREAS**, the United States Centers for Disease Control and Prevention (CDC) has identified COVID-19 as a significant public risk;

**WHEREAS**, on March 11, 2020, Governor Dunleavy issued a declaration of public health disaster emergency in response to the anticipated outbreak of COVID-19 within Alaska's communities;

**WHEREAS**, on March 11, 2020, the World Health Organization designated the COVID-19 outbreak a pandemic;

**WHEREAS**, various organizations, agencies, and local governments throughout the State of Alaska continue to restrict public gatherings, school sessions and programs, and other activities as well as non-essential travel in efforts to contain the virus these actions and the effects of these action have impacted the operation of our taxicab industry;

**WHEREAS**, on March 25, 2020, Bethel City Council adopted Ordinance 20-09, finding the existence of a public health emergency related to the COVID-19 outbreak, incorporating by reference the declaration of local disaster emergency issued by the Acting City Manager and Mayor on March 24, 2020; seeking state and federal funding assistance; and issuing certain health advisories and requests consistent with state and federal law;

**WHEREAS**, on May 26, 2020, Bethel City Council adopted Ordinance 20-11 extending the declaration of emergency it previously issued, requiring explicit approval of Council before the adoption of any mandates or guidelines beyond the scope of the State of Alaska health mandates; and repealing Section 4 of Ordinance 20-09, which adopted travel and social distancing guidance within the City;

Introduced by: Public Safety and  
Transportation Commission  
Introduction Date: April 27, 2021  
Public Hearing Date: May 11, 2021  
Vote:

**WHEREAS**, since June 2020, there has been a rapid increase in COVID-19 cases throughout Alaska and within Bethel and surrounding communities in the Yukon-Kuskokwim Delta region;

**WHEREAS**, the communities regulated vehicle industry has faced significant loss due to the COVID-19 pandemic requiring many City issued vehicle permits to not be in operational status;

**WHEREAS**, Bethel Municipal Code Section 5.20.160 A states:

A. Two hundred dollars (\$200) monthly shall be paid to the transportation inspector for the issuance or renewal of a bus, limousine, river taxi, dispatch service, or taxicab permit no later than the tenth (10th) of each month.

**WHEREAS**, the Commission finds it necessary to, because of the public health emergency provide a reduction of monthly fees for unoccupied permits to \$100 to the consideration of regular monthly fee of permits as provided in the above-mentioned subsection a. of 5.20.160

**NOW, THEREFORE BE IT RESOLVED** by the City of Bethel city council, as follows:

The City Council finds, the public health emergency has significantly impacted the operations of the transportation industry and wishes to provide a reduction of the monthly fee for permits as they related to BMC 5.20.160 A. for permits that are in an unoccupied status for the entire month, to pay a monthly fee of \$100 while occupied permits pay the regular \$200 between the period of March 25, 2020 until December 30, 2021 unless otherwise amended. Any over payment made by permit holder on an unoccupied permit between the period of this reduction, shall have a credit on their account.

**ENACTED THIS 11 DAY OF MAY 2021 BY A VOTE OF \_ IN FAVOR AND \_ OPPOSED.**

\_\_\_\_\_  
Michelle DeWitt, Mayor

**ATTEST:**

\_\_\_\_\_  
Lori Strickler, City Clerk CMC

Introduced by: City Manager Peter A. Williams  
Introduction Date: April 27, 2021  
Public Hearing Date: May 11, 2021  
Action:  
Vote:

# CITY OF BETHEL, ALASKA

## Ordinance 20-12 (m)

### AN ORDINANCE AMENDING THE CITY OF BETHEL FISCAL YEAR 2021 BUDGET

**THEREFORE BE IT ORDAINED** by the City Council of Bethel, Alaska, as follows:

**SECTION 1. Classification.** This is a non-codified Ordinance and shall not become part of the Bethel Municipal Code.

**SECTION 2. Fiscal Year Budget Amendments.** The following estimated revenues and expenditures are hereby appropriated for the corporate purposes and objects of the City of Bethel for Fiscal Year 2021.

**WHEREAS,** Public Works Department, Property Maintenance Division budget line item 10-70-502, Overtime was approved for \$35,000.

**WHEREAS,** Property Maintenance overtime is currently overextend by \$20,431.56;

**WHEREAS, IT** is estimated that this department (five positions) utilizes an estimated average of \$6,000 per month for overtime;

**WHEREAS, THIS** department will foreseeably be using overtime for the three remaining months of fiscal year 2021, it is requested that \$40,431.56 be re-allocated from the General Fund Balance to pay for the deficit and designate \$20,000 for the rest of the fiscal year FY-21;

| <b>M-1 Property Maintenance</b> |                                                  |                         |                                           |                               |
|---------------------------------|--------------------------------------------------|-------------------------|-------------------------------------------|-------------------------------|
| Line Item                       | Description                                      | Approved Appropriations | Proposed Amendment                        | Proposed Total Appropriations |
| 10-70-502                       | Property Maintenance Personnel Budget - Overtime | 35,000                  | <u>40,431.56</u><br><i>Total Increase</i> | 75,431.56                     |
| 10-10100                        | Cash In Combined Fund                            | 12,681,652.72           | (40,431.56)<br><i>Total Decrease</i>      | 12,641,221.16                 |
|                                 |                                                  |                         |                                           |                               |

**WHEREAS,** Public Works Department, Piped Water Division budget line item 51-82-502, Overtime was approved for \$34,375;

**WHEREAS,** Piped Water 51-82-502 has a deficit of \$5,148 for overtime;

Introduced by: City Manager Peter A. Williams  
 Introduction Date: April 27, 2021  
 Public Hearing Date: May 11, 2021  
 Action:  
 Vote:

**WHEREAS**, it is estimated that this department utilizes an estimated average of \$4,391 per month for overtime;

**WHEREAS**, this department will foreseeably be using overtime for the three remaining months of fiscal year 2021, it is requested that \$20,000 be re-allocated from the Water and Sewer Enterprise Fund Balance to stabilize the over expenditure and designate the remaining additional overtime expenses in FY-21 ;

| <b>M-2 Piped Water</b> |                                          |                         |                                        |                               |
|------------------------|------------------------------------------|-------------------------|----------------------------------------|-------------------------------|
| Line Item              | Description                              | Approved Appropriations | Proposed Amendment                     | Proposed Total Appropriations |
| 51-82-502              | Hauled Sewer Personnel Budget - Overtime | 34,375                  | <u>20,000</u><br><i>Total Increase</i> | 54,375                        |
| 51-10100               | Water/Sewer Enterprise Fund Balance      | 2,718,298.16            | (15,000)<br><i>Total Decrease</i>      | 2,703,298.16                  |
|                        |                                          |                         |                                        |                               |

**WHEREAS, PUBLIC** Works Department, Hauled Sewer Division budget line item 51-85-502, Overtime was approved for \$125,000;

**WHEREAS**, Hauled Sewer currently has \$2,600 for overtime expenses.

**WHEREAS, IT** is estimated that this department (eleven positions) utilizes an estimated average of a est. \$13,166 per month for overtime;

**WHEREAS, THIS** department will foreseeably be using overtime for the three remaining months of fiscal year 2021, it is requested that \$40,000 be re-allocated from the Water and Sewer Enterprise Fund Balance to pay for anticipated overtime expenditures for the rest of FY-21;

| <b>M-3 Hauled Sewer</b> |                                          |                         |                                        |                               |
|-------------------------|------------------------------------------|-------------------------|----------------------------------------|-------------------------------|
| Line Item               | Description                              | Approved Appropriations | Proposed Amendment                     | Proposed Total Appropriations |
| 51-85-502               | Hauled Sewer Personnel Budget - Overtime | 125,000                 | <u>40,000</u><br><i>Total Increase</i> | 165,000                       |
| 51-10100                | Water/Sewer Enterprise Fund Balance      | 2,703,298.16            | (40,000)<br><i>Total Decrease</i>      | 2,663,298.16                  |
|                         |                                          |                         |                                        |                               |

**SECTION 3. Effective Date.** This Ordinance shall become effective upon the passage by the Bethel City Council.

**ENACTED THIS \_\_TH DAY OF 2021 BY A VOTE OF \_ IN FAVOR AND \_ OPPOSED.**

City of Bethel, Alaska

Ordinance 20-12 (m)  
2 of 3

Introduced by: City Manager Peter A. Williams  
Introduction Date: April 27, 2021  
Public Hearing Date: May 11, 2021  
Action:  
Vote:

---

Michelle DeWitt, Mayor

ATTEST:

---

Lori Strickler, City Clerk

# CITY OF BETHEL, ALASKA

## Resolution #21-08

### **A RESOLUTION BY THE BETHEL CITY COUNCIL PROVIDING SUPPORT OF THE KUSKOKWIM 300 RACE COMMITTEE'S APPLICATION FOR A GRANT FOR THE DEVELOPMENT AND REPAIR OF TRAILS AND TRAIL MARKING IN THE REGION**

- WHEREAS,** the Kuskokwim 300 (K300) Race Committee is applying for grant funding through the Recreational Trail Program, a federally assisted program that provides funding to develop and maintain recreational trails and trail-related facilities for both nonmotorized and motorized recreational trail uses;
- WHEREAS,** the Yukon Kuskokwim Delta is a network of communities in the western portion of Alaska; these communities, do not have road connectivity due to the challenging nature of the terrain being primarily tundra and wetlands;
- WHEREAS,** in the absence of road access between these communities, in the winter months, residents rely on developed and safe trail systems to provide safe travel to neighboring communities;
- WHEREAS,** one of the K300 Race Committee's missions is to preserve traditional trails in the Region;
- WHEREAS,** to support that mission, the K300 trail marking crew breaks and marks trails each winter; these trails span approximately 150 miles in the Kuskokwim drainage between Bethel, and Aniak for the K300 Sled Dog Race;
- WHEREAS,** approximately 100 to 150 miles of additional trails are marked by the Kuskokwim 300 Race Committee for other sled dog races;
- WHEREAS,** the annual breaking and marking of these established trails create the winter routes used by thousands of people to travel safely through the frozen sloughs, rivers, lakes, and tundra;
- WHEREAS,** these trails are used in the winter as the primary routes for ATV and snow machine travel between communities, which provide access to health care services, employment, family and friends, and retail establishments;

?

**NOW THEREFORE BE IT RESOLVED,** The Bethel City Council supports the Kuskokwim 300 Race Committee in their application of the Recreational Trail Program grant and recognizes the

City of Bethel, Alaska

Resolution #21-08

1 of 2

Introduced by: Vice-Mayor Hanson  
Date: April 27, 2021  
Action:  
Vote:

importance of an integrated trails system for the Yukon Kuskokwim Delta. Additionally, the Bethel City Council thanks the Kuskokwim 300 Race Committee for their commitment to preserve and support a safe trail system for our Region's growing population.

**ENACTED THIS 27<sup>th</sup> DAY OF APRIL 2021 BY A VOTE OF \_ IN FAVOR AND \_ OPPOSED.**

---

Michelle DeWitt, Mayor

ATTEST:

---

Lori Strickler, City Clerk

## City of Bethel Action Memorandum

|                         |                |                |                              |
|-------------------------|----------------|----------------|------------------------------|
| Action memorandum No.   | 21-08          |                |                              |
| Date action introduced: | April 27, 2021 | Introduced by: | Peter Williams, City Manager |
| Date action taken:      |                | Approved       | Denied                       |
| Confirmed by:           |                |                |                              |

**Action Title:** Purchase of Axon TASER conducted energy weapons

**Attachment(s):** Sole-source Procurement ltr; Axon Enterprises Inc price quote; (3) line-item transfer requests

| Department/Individual: | Initials: | Remarks:                     |
|------------------------|-----------|------------------------------|
| City Attorney          | EMB       | Reviewed for sole source OK. |
| City Clerk             |           |                              |
| Finance Director       | <i>XM</i> |                              |
| City Manager           | <i>BW</i> |                              |

| Amount of fiscal impact:       | Account information: |
|--------------------------------|----------------------|
| No fiscal impact at this time. |                      |
| Funds in City Budget.          |                      |
| Funds not in City Budget.      |                      |

**Summary Statement:** This is a request to transfer funds available from three accounts into a fourth for the single purchase of twenty-five (25) Axon TASER Conducted Energy Weapons (model X7) and supporting equipment by the Bethel Police Department. Total cost is \$58,112.

1. Transfer \$12,500 from 10-61-669 (other purchased services) to 10-61-561 (supplies)
2. Transfer \$12,500 from 10-61-661 (maintenance) to 10-61-561 (supplies)
3. Transfer \$12,500 from 10-61-563 (wearing apparel) to 10-61-561 (supplies)
4. After all transfers 10-61-561 will have \$61,465 to cover the purchase

BPD is a current user of the Axon TASER weapons (older models X26, X26-P, and X2) and camera systems (Body-2). Our software, instructor certification, individual training, and years of combined organizational experience is based in Axon TASER systems. The transfer and consolidation of funds would enable the department to update to the most current model X7 (which is better able to work through winter clothing, among other benefits) and allows us to standardize on just one model and training across all sworn users. Purchase will equip the department for several years with replacements for damaged units or staffing growth. It allows us to use the current supporting hardware, software, and certifications already in place.

# CITY OF BETHEL POLICE DEPARTMENT



April 7, 2021

Mr. Peter Williams, City Manager  
Mr. Xavier Mason, Assistant Finance Director

Ref: **TASER CONDUCTED ENERGY WEAPON SOLE-SOURCE**  
Bethel City Code 4.20.250 Sole-source Procurements

Dear Mr. Williams and Mr. Mason,

Please accept this letter as a request for sole-source procurement for the purchase of twenty-five (25) Axon TASER Conducted Energy Weapons and supporting equipment by the Bethel Police Department for \$58,112 (encl). **Axon TASER weapon systems are only manufactured, sold, and serviced by Axon Enterprises, Inc.**

BPD is a current user of the Axon TASER weapons (P-26 and X2) and camera systems (Body-2). Our software, instructor certification, and individual training is based in the Axon TASER systems. This purchase would enable the entire department to upgrade to the most current model (X7) and allow us to standardize one system and training across all users in the department. This purchase also equips the department for several years to come with replacements for damaged units or staffing growth. It allows us to use the current support processes already in place.

BPD has negotiated with Axon TASER as a single supplier to obtain the most advantageous contract to the city. No other reasonable alternative exists to make a purchase for these conducted energy weapons. Cost pricing data is attached.

Respectfully,

Richard Simmons  
chief

- Encl: (1) COB/TASER Purchase Agreement  
(2) TASER International Sole-source Letter  
(3) City of Unalaska, AK/TASER sole-source letter  
(4) City of Homer, AK/TASER sole-source email

Bethel Police Department | P.O. Box 809 | 157 Salmonberry Rd. | Bethel, Alaska 99559  
Telephone 907-543-3781 | Fax 907-543-5086 | [www.cityofbethel.org/Police](http://www.cityofbethel.org/Police)



**Axon Enterprise, Inc.**  
17800 N 85th St.  
Scottsdale, Arizona 85255  
United States  
Phone: (800) 978-2737

**Q-291999-44292.002KU**

Issued: 04/05/2021

Quote Expiration: 05/15/2021

Account Number: 107863

Payment Terms: Net 30  
Delivery Method: Fedex - Ground

**SHIP TO**

Christopher Wigner  
Bethel Police Dept. - AK  
157 Salmonberry Road  
Bethel, AK 99559  
US

**BILL TO**

Bethel Police Dept. - AK  
P. O. Box 809  
Bethel, AK 99559  
US

**SALES REPRESENTATIVE**

Kara Uzelac  
Phone:  
Email: kuzelac@axon.com  
Fax:

**PRIMARY CONTACT**

Christopher Wigner  
Phone: 907-545-1084  
Email: cwigner@cityofbethel.net

**Year 1**

| Item                             | Description                                                  | Term (Months) | Quantity | List Unit Price | Net Unit Price | Total (USD) |
|----------------------------------|--------------------------------------------------------------|---------------|----------|-----------------|----------------|-------------|
| <b>Axon Plans &amp; Packages</b> |                                                              |               |          |                 |                |             |
| 20248                            | TASER 7 EVIDENCE.COM ACCESS LICENSE                          | 60            | 1        | 0.00            | 0.00           | 0.00        |
| 20248                            | TASER 7 EVIDENCE.COM ACCESS LICENSE                          | 60            | 25       | 0.00            | 0.00           | 0.00        |
| <b>Hardware</b>                  |                                                              |               |          |                 |                |             |
| 22175                            | TASER 7 LIVE CARTRIDGE, STANDOFF (3.5-DEGREE) NS             |               | 80       | 38.00           | 38.00          | 3,040.00    |
| 22176                            | TASER 7 LIVE CARTRIDGE, CLOSE QUARTERS (12-DEGREE) NS        |               | 80       | 38.00           | 38.00          | 3,040.00    |
| 20160                            | TASER 7 HOLSTER - SAFARILAND, RH+CART CARRIER                |               | 6        | 0.00            | 0.00           | 0.00        |
| 80090                            | TARGET FRAME, PROFESSIONAL, 27.5 IN. X 75 IN., TASER 7       |               | 1        | 0.00            | 0.00           | 0.00        |
| 20008                            | TASER 7 HANDLE, YLW, HIGH VISIBILITY (GREEN LASER), CLASS 3R |               | 25       | 0.00            | 0.00           | 0.00        |
| 20040                            | TASER 7 HANDLE WARRANTY, 4-YEAR                              |               | 25       | 0.00            | 0.00           | 0.00        |
| 20018                            | TASER 7 BATTERY PACK, TACTICAL                               |               | 28       | 0.00            | 0.00           | 0.00        |
| 20041                            | TASER 7 BATTERY PACK WARRANTY, 4-YEAR                        |               | 28       | 0.00            | 0.00           | 0.00        |
| 20042                            | TASER 7 DOCK & CORE WARRANTY, 4-YEAR                         |               | 1        | 0.00            | 0.00           | 0.00        |
| 70033                            | WALL MOUNT BRACKET, ASSY, EVIDENCE.COM DOCK                  |               | 1        | 0.00            | 0.00           | 0.00        |

## Year 1 (Continued)

| Item                        | Description                                              | Term<br>(Months) | Quantity | List Unit<br>Price | Net Unit Price | Total (USD)      |
|-----------------------------|----------------------------------------------------------|------------------|----------|--------------------|----------------|------------------|
| <b>Hardware (Continued)</b> |                                                          |                  |          |                    |                |                  |
| 74200                       | TASER 7 6-BAY DOCK AND CORE                              |                  | 1        | 0.00               | 0.00           | 0.00             |
| 20062                       | TASER 7 HOLSTER - BLACKHAWK, RIGHT<br>HAND               |                  | 7        | 69.00              | 0.00           | 0.00             |
| 20067                       | TASER 7 HOLSTER - BLACKHAWK, LEFT<br>HAND                |                  | 6        | 69.00              | 0.00           | 0.00             |
| 20161                       | TASER 7 HOLSTER - SAFARILAND,<br>LH+CART CARRIER         |                  | 6        | 0.00               | 0.00           | 0.00             |
| <b>Other</b>                |                                                          |                  |          |                    |                |                  |
| 20240                       | TASER 7 BASIC BUNDLE PAYMENT                             | 60               | 25       | 2,400.00           | 2,081.28       | 52,032.00        |
| 20247                       | TASER 7 ONLINE TRAINING CONTENT<br>ACCESS LICENSE        | 60               | 25       | 0.00               | 0.00           | 0.00             |
| 80087                       | TASER 7 TARGET, CONDUCTIVE,<br>PROFESSIONAL (RUGGEDIZED) |                  | 1        | 0.00               | 0.00           | 0.00             |
| Subtotal                    |                                                          |                  |          |                    |                | 58,112.00        |
| Estimated<br>Shipping       |                                                          |                  |          |                    |                | 0.00             |
| Estimated Tax               |                                                          |                  |          |                    |                | 0.00             |
| Total                       |                                                          |                  |          |                    |                | 58,112.00        |
| <b>Grand Total</b>          |                                                          |                  |          |                    |                | <b>58,112.00</b> |



## Discounts (USD)

Quote Expiration: 05/15/2021

|             |           |
|-------------|-----------|
| List Amount | 66,977.00 |
| Discounts   | 8,865.00  |
| Total       | 58,112.00 |

*\*Total excludes applicable taxes*

## Notes

Execution of this quote will terminate contracts associated with Q-72210(executed contract #00007858) and Q-184057( executed contract #18824) with Axon and will start a new 60 month contract.

Purchase of TASER 7 are governed by the TASER 7 Agreement located at <https://www.axon.com/legal/sales-terms-and-conditions> and not the Master Services and Purchasing Agreement referenced below.

Tax is subject to change at order processing with valid exemption.

## Axon's Sales Terms and Conditions

This Quote is limited to and conditional upon your acceptance of the provisions set forth herein and Axon's Master Services and Purchasing Agreement (posted at [www.axon.com/legal/sales-terms-and-conditions](http://www.axon.com/legal/sales-terms-and-conditions)) and the Axon Customer Experience Improvement Program Appendix, which includes the sharing of de-identified segments of Agency Content with Axon to develop new products and improve your product experience (posted at [www.axon.com/legal/sales-terms-and-conditions](http://www.axon.com/legal/sales-terms-and-conditions)), as well as the attached Statement of Work (SOW) for Axon Fleet and/or Axon Interview Room purchase, if applicable. **The Axon Customer Experience Improvement Program Appendix ONLY applies to Customers in the USA.** In the event you and Axon have entered into a prior agreement to govern all future purchases, that agreement shall govern to the extent it contemplates the products and services being purchased and does not conflict with the Axon Customer Experience Improvement Program Appendix. Any purchase order issued in response to this Quote is subject solely to the above referenced terms and conditions. By signing below, you represent that you are lawfully able to enter into contracts. If you are signing on behalf of an entity (including but not limited to the company, municipality, or government agency for whom you work), you represent to Axon that you have legal authority to bind that entity. If you do not have this authority, please do not sign this Quote.

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Name (Print): \_\_\_\_\_

Title: \_\_\_\_\_

PO# (Or write  
N/A): \_\_\_\_\_

Please sign and email to Kara Uzelac at [kuzelac@axon.com](mailto:kuzelac@axon.com) or fax to

Thank you for being a valued Axon customer. For your convenience on your next order, please check out our online store [buy.axon.com](http://buy.axon.com)

The trademarks referenced above are the property of their respective owners.

### \*\*\*Axon Internal Use Only\*\*\*

SFDC Contract#:

Order Type:

RMA#:

Address Used:

SO#:

Review 1

Review 2

Comments:

Q-291999-44292.002KU

4

Protect Life.



17800 N 25TH STREET  
SCOTTSDALE, ARIZONA 85255

AXON.COM

4/5/2021

**To:** *Bethel Police Department - Alaska*

**Re:** **Sole Source Letter for Axon Enterprise, Inc.'s TASER Conducted Energy Weapons, Axon brand products, and Axon Evidence (Evidence.com) Data Management Solutions**

A sole source justification exists because the following goods and services required to satisfy the agency's needs are only manufactured and available for purchase from Axon Enterprise. Axon is also the sole distributor and retailer of all TASER brand products for the agency identified in this letter.

### TASER CEW Descriptions



#### TASER 7 CEW

- Multiple-shot CEW
- High-efficiency flashlight
- Close Quarter and Standoff cartridges
- Green LASER and dual red LASERs that adjust for cartridge angle
- Arc switch enables drive-stun with or without a Smart Cartridge installed
- Central Information Display (CID): Displays mission critical data such as remaining battery energy, burst time, and cartridge status.
- Weapon logs
- TASER 7 Dock connected to Axon Evidence (Evidence.com) services
- Onboard self-diagnostic and system status monitoring and reporting
- Real-time clock updated when the battery pack is plugged into the TASER 7 Dock
- Ambidextrous safety switch
- Can be configured by the agency to alert Axon camera systems
- The trigger activates a single cycle (approximately five seconds). Holding the trigger down will continue the discharge beyond the standard cycle (unless configured by the agency to stop at five seconds). The CEW cycle can be stopped by placing the safety switch in the down (SAFE) position.
- Compatible with TASER 7 Cartridges only

#### TASER 7 CQ CEW

- Multiple-shot CEW for agencies that deploy CEWs mostly at close quarters (CQ)
- High-efficiency flashlight
- Close Quarter cartridges
- Arc switch enables drive-stun with or without a Smart Cartridge installed
- Central Information Display (CID): Displays mission critical data such as remaining battery energy, burst time, and cartridge status.
- Weapon logs
- TASER 7 Dock connected to Axon Evidence (Evidence.com) services



17800 N 85TH STREET  
SCOTTSDALE, ARIZONA 85255

AXON.COM

- Onboard self-diagnostic and system status monitoring and reporting
- Real-time clock updated when the battery pack is plugged into the TASER 7 Dock
- Ambidextrous safety switch
- Can be configured by the agency to alert Axon camera systems
- The trigger activates a single cycle (approximately five seconds). Holding the trigger down will continue the discharge beyond the standard cycle (unless configured by the agency to stop at five seconds). The CEW cycle can be stopped by placing the safety switch in the down (SAFE) position.
- Compatible with 12-degree TASER 7 Cartridges only

#### **X2 CEW**

- Multiple-shot CEW
- High efficiency flashlight
- Static dual LASERs (used for target acquisition)
- ARC switch enables drive-stun with or without a Smart Cartridge installed
- Central Information Display (CID): Displays mission-critical data such as remaining battery energy, burst time, operating mode, and user menu to change settings and view data on a yellow-on-black display
- The Trilogy log system records information from a variety of sensors into three data logs: Event log, Pulse log, and Engineering log. Data can be downloaded using a universal serial bus (USB) data interface module connected to a personal computer (PC). Data may be transferred to Evidence.com services.
- Real-time clock with back-up battery
- Onboard self-diagnostic and system status monitoring and reporting
- Ambidextrous safety switch
- Capable of audio/video recording with optional TASER CAM HD recorder
- The trigger activates a single cycle (approximately five seconds). Holding the trigger down will continue the discharge beyond the standard cycle (except when used with an APPM or TASER CAM HD AS). The CEW cycle can be stopped by placing the safety switch in the down (SAFE) position
- Compatible with TASER Smart Cartridges only

#### **X26P CEW**

- High efficiency flashlight
- Red LASER (used for target acquisition)
- Central Information Display (CID): Displays data such as calculated remaining energy, burst time, and notifications
- The Trilogy log system records information from a variety of sensors into three data logs: Event log, Pulse log, and Engineering log. Data can be downloaded using a universal serial bus (USB) data interface module connected to a personal computer (PC). Data may be transferred to Evidence.com services.
- Real-time clock with back-up battery
- Onboard self-diagnostic and system status monitoring and reporting
- Ambidextrous safety switch
- Capable of audio/video recording with optional TASER CAM HD recorder
- The trigger activates a single cycle (approximately five seconds). Holding the trigger down will continue the discharge beyond the standard cycle (except when used with



17800 N 85TH STREET  
SCOTTSDALE, ARIZONA 85255

AXON.COM

an APPM or TASER CAM HD AS). The CEW cycle can be stopped by placing the safety switch in the down (SAFE) position.

- Compatible with TASER standard series cartridges

#### **Axon Signal Performance Power Magazine (SPPM)**

- Battery pack for the X2 and X26P conducted energy weapons
- Shifting the safety switch from the down (SAFE) to the up (ARMED) positions sends a signal from the SPPM. Upon processing the signal, an Axon system equipped with Axon Signal technology transitions from the BUFFERING to EVENT mode. Axon Signal technology only works with Axon cameras.

#### **TASER Brand CEW Model Numbers**

1. Conducted Energy Weapons (CEWs):
  - TASER 7 Models: 20008, 20009, 20010, and 20011
  - TASER 7 CQ Models 20213, 20214
  - 
  - TASER X2 Models: 22002 and 22003
  - TASER X26P Models: 11002 and 11003
2. Optional Extended Warranties for CEWs:
  - TASER 7 – 4-year extended warranty, item number 20040
  - X2 – 4-year extended warranty, item number 22014
  - X26P – 2-year extended warranty, item number 11008
  - X26P – 4-year extended warranty, item number 11004
3. TASER 7 Cartridges (compatible with the TASER 7; required for this CEW to function in the probe deployment mode)
  - Standoff cartridge, 3.5 degrees, Model 20012
  - Close Quarter cartridge, 12 degrees, Model 20013
4. TASER standard cartridges (compatible with the X26P; required for this CEW to function in the probe deployment mode):
  - 15-foot Model: 34200
  - 21-foot Model: 44200
  - 21-foot non-conductive Model: 44205
  - 25-foot Model: 44203
  - 35-foot Model: 44206
5. TASER Smart cartridges (compatible with the X2; required for this CEW to function in the probe deployment mode):
  - 15-foot Model: 22150
  - 25-foot Model: 22151
  - 25-foot inert simulation Model: 22155
  - 25-foot non-conductive Model: 22157
  - 35-foot Model: 22152
6. TASER CAM HD recorder Model: 26810 (full HD video and audio) and TASER CAM HD with AS (automatic shut-down feature) Model: 26820. The TASER CAM HD is compatible



17800 N 25TH STREET  
SCOTTSDALE, ARIZONA 85255

AXON.COM

- with both the X26P and X2 CEWs.
  - TASER CAM HD replacement battery Model: 26764
  - TASER CAM HD Download Kit Model: 26762
  - TASER CAM HD optional 4-year extended warranty, item number 26763
- 7. Power Modules (Battery Packs) for TASER 7 CEWs:
  - Tactical battery pack Model 22018
  - Compact battery pack Model 22019
- 8. Battery Packs for X26P and X2 CEWs:
  - Performance Power Magazine (PPM) Model: 22010
  - Tactical Performance Power Magazine (TPPM) Model: 22012
  - Automatic Shut-Down Performance Power Magazine (APPM) Model: 22011
  - eXtended Performance Power Magazine (XPPM) Model: 11010
  - eXtended Automatic Shut-Down Performance Power Magazine (XAPPM) Model: 11015
  - Axon Signal Performance Power Magazine (SPPM) Model: 70116
- 9. TASER 7 Dock:
  - TASER 7 Dock Core and Multi-bay Module: 74200
- 10. TASER Dataport Download Kits:
  - Dataport Download Kit for the X2 and X26P Model: 22013
- 11. TASER Blast Door Repair Kit Model 44019 and TASER Blast Door Replenishment Kit Model 44023
- 12. CEW Holsters:
  - Right-hand TASER 7 holster by Safariland Model: 20063
  - Left-hand TASER 7 holster by Safariland Model: 20068
  - Right-hand X2 holster by BLACKHAWK Model: 22501
  - Left-hand X2 holster by BLACKHAWK Model: 22504
  - Right-hand X26P holster by BLACKHAWK Model: 11501
  - Left-hand X26P holster by BLACKHAWK Model: 11504
- 13. TASER Simulation Suit II Model 44550
- 14. TASER 7 conductive target Model: 80087
- 15. Blue X26P Demonstrator/LASER Pointer Model: 11023

### **Axon Digital Evidence Solution Description**

#### **Axon Body 3 Video Camera (DVR)**

- Improved video quality with reduced motion blur and better low-light performance
- Multi-mic audio—four built-in microphones
- Wireless upload option
- Gunshot detection and alerts
- Streaming audio and video capability



17800 N 85TH STREET  
SCOTTSDALE, ARIZONA 85255

AXON.COM

- "Find my camera" feature
- Verbal transcription with Axon Records (coming soon)
- End-to-end encryption
- Twelve-hour battery
- Up to 120-second buffering period to record footage before pressing record button

#### **Axon Flex 2 Video Camera**

- Video playback on mobile devices in the field via Bluetooth pairing
- Retina Low Light capability sensitive to less than 0.1 lux
- Audio tones to alert user of usage
- Low SD, high SD, low HD, and high HD resolution (customizable by the agency)
- Up to 120-second buffering period to record footage before pressing record button
- Multiple mounting options using magnetic attachment: head, collar, shoulder, helmet, ball cap, car dash, and Oakley sunglass mounts available
- 120-degree diagonal field of view camera lens, 102-degree horizontal field of view, and 55-degree vertical field of view

#### **Axon Flex 2 Controller**

- 12+ hours of battery operation per shift (even in recording mode)
- LED lights to show current battery level and operating mode
- Haptic notification available
- Tactical beveled button design for use in pocket
- Compatible with Axon Signal technology

#### **Axon Air System**

- Purpose-built solution for law enforcement UAV programs
- Supported applications on iOS and Android
- Automated tracking of pilot, aircraft, and flight logs
- Unlimited Storage of UAV data in Axon Evidence (Evidence.com)
- In application ingestion of data in Axon Evidence (Evidence.com)
- Axon Aware integration for live streaming and situational awareness

#### **Axon Body 2 Video Camera**

- Video playback on mobile devices in the field via Bluetooth pairing
- Retina Low Light capability sensitive to less than 1 lux
- Audio tones and haptic (vibration) notification to alert user of usage
- Audio mute during event option
- Wi-Fi capability
- High, medium, and low quality recording available (customizable by the agency)
- Up to 2-minute buffering period to record footage before pressing record button
- Multiple mounting options using holster attachment: shirt, vest, belt, and dash mounts available
- 12+ hours of battery operation per shift (even in recording mode)
- LED lights to show current battery level and operating mode
- 143-degree lens
- Includes Axon Signal technology

#### **Axon Fleet 2 Camera**



1800 N 85TH STREET  
SCOTTSDALE, ARIZONA 85255

AXON.COM

- Fully integrated with Axon Evidence services and Axon devices
- Automatic time synchronization with other Axon Fleet and Axon on-officer cameras allows for multi-camera playback on Axon Evidence.
- Immediate upload to Axon Evidence of critical event videos via 4G/LTE
- Wireless alerts from the TASER CEW Signal Performance Power Magazine (SPPM).
- Automatic transition from BUFFERING to EVENT mode in an emergency vehicle equipped with the Axon Signal Unit
- Decentralized system architecture without a central digital video recorder (DVR).
- Cameras that function independently and communicate wirelessly with the computer in the vehicle (MDT, MDC, MDU) for reviewing, tagging and uploading video.
- Wireless record alert based on Bluetooth communication from Axon Signal Vehicle when a configured input is enabled (e.g. emergency light, siren, weapon rack, etc.).
- Receives alerts from Axon Signal Sidearm.
- Plug-And-Play design allowing for cameras to be easily replaced and upgraded.
- Ability for an unlimited number of agency vehicles recording in the same vicinity with an Axon Fleet system to be automatically associated with one another when reviewing video in the video management platform. This feature is also supported across body cameras.

#### **Axon Signal Unit (ASU)**

- Communications device that can be installed in emergency vehicles.
- With emergency vehicle light bar activation, or other activation triggers, the Axon Signal Unit sends a signal. Upon processing the signal, an Axon system equipped with Axon Signal technology transitions from the BUFFERING to EVENT mode.

#### **Axon Signal Performance Power Magazine (SPPM)**

- Battery pack for the TASER X2 and X26P conducted electrical weapons
- Shifting the safety switch from the down (SAFE) to the up (ARMED) positions sends a signal from the SPPM. Upon processing the signal, an Axon system equipped with Axon Signal technology transitions from the BUFFERING to EVENT mode. Axon Signal technology only works with Axon cameras.

#### **Axon Signal Sidearm Sensor**

- Can be installed on common duty holsters
- Drawing a service handgun from the holster sends a signal from the Axon Signal Sidearm sensor. Upon processing the signal, an Axon system equipped with Axon Signal technology transitions from the BUFFERING to EVENT mode.

#### **Axon Interview Solution**

- High-definition cameras and microphones for interview rooms
- Covert or overt camera installations
- Touch-screen user interface
- Motion-based activation
- Up to 7-minute pre- and post-event buffering period
- Full hardware and software integration
- Upload to Axon Evidence services
- Interview room files can be managed under the same case umbrella as files from Axon on-officer cameras and Axon Fleet cameras; i.e., Axon video of an arrest and interview room video are managed as part of the same case in Axon Evidence



17800 N 85TH STREET  
SCOTTSDALE, ARIZONA 85255

AXON.COM

- Dual integration of on-officer camera and interview room camera with Axon Evidence digital evidence solution

#### **Axon Signal Technology**

- Sends a broadcast of status that compatible devices recognize when certain status changes are detected
- Only compatible with TASER and Axon products

#### **Axon Dock**

- Automated docking station uploads to Axon Evidence services through Internet connection
- No computer necessary for secure upload to Axon Evidence
- Charges and uploads simultaneously
- The Axon Dock is tested and certified by TUV Rheinland to be in compliance with UL 60950-1: 2007 R10.14 and CAN/ CSA-C22.2 NO.60950-I-07+A1:2011+A2:2014 Information Technology Equipment safety standards.

#### **Axon Evidence Data Management System**

- Software as a Service (SaaS) delivery model that allows agencies to manage and share digital evidence without local storage infrastructure or software needed
- SaaS model reduces security and administration by local IT staff: no local installation required
- Automatic, timely security upgrades and enhancements deployed to application without the need for any local IT staff involvement
- Securely share digital evidence with other agencies or prosecutors without creating copies or requiring the data to leave your agency's domain of control
- Controlled access to evidence based on pre-defined roles and permissions and pre-defined individuals
- Password authentication includes customizable security parameters: customizable password complexity, IP-based access restrictions, and multi-factor authentication support
- Automated category-based evidence retention policies assists with efficient database management
- Ability to recover deleted evidence within seven days of deletion
- Stores and supports all major digital file types: .mpeg, .doc, .pdf, .jpeg, etc.
- Requires NO proprietary file formats
- Ability to upload files directly from the computer to Axon Evidence via an Internet browser
- Data Security: Robust Transport Layer Security (TLS) implementation for data in transit and 256-bit AES encryption for data in storage
- Security Testing: Independent security firms perform in-depth security and penetration testing
- Reliability: Fault- and disaster-tolerant infrastructure in at least 4 redundant data centers in both the East and West regions of the United States
- Chain-of-Custody: Audit logs automatically track all system and user activity. These logs cannot be edited or deleted, even by account administrators and IT staff
- Protection: With no on-site application, critical evidence stored in Axon Evidence is protected from local malware that may penetrate agency infrastructure
- Stability: Axon Enterprise is a publicly traded company with stable finances and



17800 N 85TH STREET  
SCOTTSDALE, ARIZONA 85255

AXON.COM

- funding, reducing concerns of loss of application support or commercial viability
- Application and data protected by a CJIS and ISO 27001 compliant information security program
- Dedicated information security department that protects Axon Evidence and data with security monitoring, centralized event log analysis and correlation, advanced threat and intrusion protection, and incident response capabilities
- Redact videos easily within the system, create tags, markers and clips, search 7 fields in addition to 5 category-based fields, create cases for multiple evidence files

#### **Axon Evidence for Prosecutors**

- All the benefits of the standard Axon Evidence services
- Ability to share information during the discovery process
- Standard licenses available for free to prosecutors working with agencies already using Axon Evidence services
- Unlimited storage for data collected by Axon cameras and Axon Capture

#### **Axon Capture Application**

- Free app for iOS and Android mobile devices
- Allows users to capture videos, audio recordings, and photos and upload these files to their Axon Evidence account from the field
- Allows adding metadata to these files, such as: Category, Title, Case ID, and GPS data

#### **Axon Commander Services**

- On-premises data management platform
- Chain of custody reports with extensive audit trail
- Automated workflows, access control, storage, and retention
- Compatible with multiple file formats

#### **Axon View Application**

- Free app for iOS and Android mobile devices
- Allows user to view the camera feed from a paired Axon Body, Axon Body 2, Axon Flex, or Axon Flex 2 camera in real-time
- Allows for playback of videos stored on a paired Axon Body, Axon Body 2, Axon Flex, or Axon Flex 2 system
- Allows adding meta-data to videos, such as: Category, Title, Case ID, and GPS data

#### **Axon Records**

- Continuously improving automated report writing by leveraging AI and ML on officer recorded video, photo, and audio from BWC, In-Car, Mobile App (Axon Capture), or other digital media
- Collaborative report writing through instantly synced workspaces allowing officers to delegate information gathering on scene
- Instant access to records allowing detectives to begin their investigation and records clerks to update information exchanges on things like missing people or stolen property as soon as possible
- Complete leveraging of Axon Evidence sharing to allow fast, efficient, digital, and secure sharing of records and cases to DAs and Prosecutors
- Robust API and SDK allows data to be easily ingested and pushed out to other



12800 N 85TH STREET  
SCOTTSDALE, ARIZONA 85255

AXON.COM

- Integration with the TASER 7 CEW for automatically pulling firing logs (alpha)
- Available as an option for Axon Records
- Automatically bundled with Officer Safety Plan 7+

#### **Axon Professional Services**

- Dedicated implementation team
- Project management and deployment best practices aid
- Training and train-the-trainer sessions
- Integration services with other systems

#### **Axon Support Engineer:**

- Dedicated Axon Regional/Resident Support Engineer Services
- Quarterly onsite visits
- Solution and Process Guidance custom to your agency
- White-Glove RMA and TAP (if applicable) Service for devices
- Monthly Product Usage Analysis
- Resident Support Engineer also includes onsite product maintenance, troubleshooting, and beta testing assistance

#### **Axon Customer Support**

- Online and email-based support available 24/7
- Human phone-based support available Monday–Friday 7:00 AM–5:00 PM MST; support is located in Scottsdale, AZ, USA
- Library of webinars available 24/7
- Remote-location troubleshooting



#### **Axon Brand Model Numbers**

1. Axon Body 3 Camera Model: 73202
2. Axon Flex 2 Cameras:
  - Axon Flex 2 Camera (online) Model: 11528
  - Axon Flex 2 Camera (offline) Model: 11529
3. Axon Flex 2 Controller Model: 11532
4. Axon Flex 2 USB Sync Cable Model: 11534
5. Axon Flex 2 Coiled Cable, Straight to Right Angle, 48" (1.2 m)
6. Axon Flex 2 Camera Mounts:
  - Oakley Flak Jacket Kit Model: 11544
  - Collar Mount Model: 11545
  - Oakley Clip Model: 11554



17800 N 85TH STREET  
SCOTTSDALE, ARIZONA 85255

AXON.COM

- Epaulette Mount Model: 11546
  - Ballcap Mount Model: 11547
  - Ballistic Vest Mount Model: 11555
7. Universal Helmet Mount Model: 11548
  8. Axon Air System with Axon Evidence (Evidence.com) 5-Year License Model: 12332
  9. Axon Body 2 Camera Model: 74001
  10. Axon Flex 2 Controller and Axon Body 2 Camera Mounts:
    - Z-Bracket, Men's, Axon RapidLock Model: 74018
    - Z-Bracket, Women's Axon RapidLock Model: 74019
    - Magnet, Flexible, Axon RapidLock Model: 74020
    - Magnet, Outerwear, Axon RapidLock Model: 74021
    - Small Pocket, 4" (10.1 cm), Axon RapidLock Model: 74022
    - Large Pocket, 6" (15.2 cm), Axon RapidLock Model: 74023
    - MOLLE Mount, Single, Axon RapidLock Model: 11507
    - MOLLE Mount, Double, Axon RapidLock Model: 11508
    - Belt Clip Mount, Axon RapidLock Model: 11509
  11. Axon Fleet Camera
    - Axon Fleet 2 Front Camera: 71079
    - Axon Fleet 2 Front Camera Mount: 71080
    - Axon Fleet 2 Rear Camera: 71081
    - Axon Fleet 2 Rear Camera Controller: 71082
    - Axon Fleet 2 Rear Camera Controller Mount: 71083
    - Axon Fleet Battery System: 74024
    - Axon Fleet Bluetooth Dongle: 74027
  12. Axon Signal Unit Model: 70112
  13. Axon Dock Models:
    - Axon Dock – Individual Bay and Core for Axon Flex 2
    - Axon Dock – 6-Bay and Core for Axon Flex 2
    - Individual Bay for Axon Flex 2 Model: 11538
    - Core (compatible with all Individual Bays and 6-Bays) Model: 70027
    - Wall Mount Bracket Assembly for Axon Dock: 70033
    - Axon Dock – Individual Bay and Core for Axon Body 2 and Axon Fleet Model 74009
    - Axon Dock – 6-Bay and Core for Axon Body 2 and Axon Fleet Model 74008
    - Individual Bay for Axon Body 2 and Axon Fleet Model: 74011
    - Axon Signal Performance Power Magazine (SPPM) Model: 70116



1400 N 55TH STREET  
SCOTTSDALE, ARIZONA 85253

AXON.COM



### Axon Brand Model Numbers

1. Axon Body 3 Camera Model: 73202
2. Axon Flex 2 Cameras:
  - Axon Flex 2 Camera (online) Model: 11528
  - Axon Flex 2 Camera (offline) Model: 11529
3. Axon Flex 2 Controller Model: 11532
4. Axon Flex 2 USB Sync Cable Model: 11534
5. Axon Flex 2 Coiled Cable, Straight to Right Angle, 48" (1.2 m)
6. Axon Flex 2 Camera Mounts:
  - Oakley Flak Jacket Kit Model: 11544
  - Collar Mount Model: 11545
  - Oakley Clip Model: 11554
  - Epaulette Mount Model: 11546
  - Ballcap Mount Model: 11547
  - Ballistic Vest Mount Model: 11555
  - Universal Helmet Mount Model: 11548
7. Axon Body 2 Camera Model: 74001
8. Axon Flex 2 Controller and Axon Body 2 Camera Mounts:
  - Z-Bracket, Men's, Axon RapidLock Model: 74018
  - Z-Bracket, Women's Axon RapidLock Model: 74019
  - Magnet, Flexible, Axon RapidLock Model: 74020
  - Magnet, Outerwear, Axon RapidLock Model: 74021
  - Small Pocket, 4" (10.1 cm), Axon RapidLock Model: 74022
  - Large Pocket, 6" (15.2 cm), Axon RapidLock Model: 74023
  - MOLLE Mount, Single, Axon RapidLock Model: 11507
  - MOLLE Mount, Double, Axon RapidLock Model: 11508
  - Belt Clip Mount, Axon RapidLock Model: 11509
9. Axon Air System with Axon Evidence (Evidence.com) 5-Year License Model: 12332
10. Axon Fleet 2 Camera
  - Axon Fleet 2 Front Camera: 71079
  - Axon Fleet 2 Front Camera Mount: 71080
  - Axon Fleet 2 Rear Camera: 71081
  - Axon Fleet 2 Rear Camera Controller: 71082
  - Axon Fleet 2 Rear Camera Controller Mount: 71083
  - Axon Fleet Battery System: 74024



17800 N 25TH STREET  
SCOTTSDALE, ARIZONA 85255

AXON.COM

- Axon Fleet Bluetooth Dongle: 74027
11. Axon Signal Unit Model: 70112
  12. Axon Dock Models:
    - Axon Dock – Individual Bay and Core for Axon Flex 2
    - Axon Dock – 6-Bay and Core for Axon Flex 2
    - Individual Bay for Axon Flex 2 Model: 11538
    - Core (compatible with all Individual Bays and 6-Bays) Model: 70027
    - Wall Mount Bracket Assembly for Axon Dock: 70033
    - Axon Dock – Individual Bay and Core for Axon Body 2 and Axon Fleet Model 74009
    - Axon Dock – 6-Bay and Core for Axon Body 2 and Axon Fleet Model 74008
    - Individual Bay for Axon Body 2 and Axon Fleet Model: 74011

### Axon Product Packages

1. **Officer Safety Plan:** includes an X2 or X26P CEW, Axon camera and Dock upgrade, and Axon Evidence (Evidence.com) license and storage. See your Sales Representative for further details and Model numbers.
2. **Officer Safety Plan 7** Includes a TASER 7 conducted electrical weapon (CEW), Axon Body 3 camera, Axon Dock, Axon Camera and Dock upgrade, Axon Evidence (Evidence.com) licenses and storage, and Axon Aware, and Axon Records Core.
3. **Officer Safety Plan 7 Plus:** Includes a TASER 7 conducted energy weapon (CEW), Axon Body 3 camera, Axon Evidence (Evidence.com) licenses and storage, Axon Records Core, Axon Aware +, Axon Auto-Tagging Services, Axon Performance, Axon Citizen for Communities, Axon Redaction Assistant, and Axon Signal Sidearm.
4. **TASER 7 Certification:** Pays for TASER 7 program in installments over 5 years including access to Evidence.com for CEW program management, annual training cartridges, unlimited duty cartridges and online training content.
5. **TASER Certification Add-On:** Allows the agency to pay an annual fee to receive an annual allotment of training cartridges, unlimited duty cartridges and online training content.
6. **TASER Assurance Plan (TAP):** Hardware extended warranty coverage, Spare Products, and Upgrade Models available for the X2 and X26P CEWs, and the TASER CAM HD recorder. (The TAP is available only through Axon Enterprise, Inc.)
7. **TASER 60:** Pay for X2 and X26P CEWs and Spare Products in installments over 5 years.
8. **Unlimited Cartridge Plan:** Allows agency to pay an annual fee to receive annual training cartridges, unlimited duty cartridges and unlimited batteries for the X2 and X26P.
9. **TASER 60 Unlimited:** Pay for X2 and X26P CEWs and Spare Products in installments over 5 years and receive unlimited cartridges and batteries.



17800 N 85TH STREET  
SCOTTSDALE, ARIZONA 85255

AXON.COM

| SOLE AUTHORIZED DISTRIBUTOR FOR<br>AXON BRAND CAMERAS AND TASER<br>BRAND CEW PRODUCTS                                       | SOLE AUTHORIZED REPAIR FACILITY<br>FOR AXON BRAND CAMERAS AND<br>TASER BRAND CEW PRODUCTS                                   |
|-----------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| Axon Enterprise, Inc.<br>17800 N. 85 <sup>th</sup> Street, Scottsdale, AZ 85255<br>Phone: 800-978-2737<br>Fax: 480-991-0791 | Axon Enterprise, Inc.<br>17800 N. 85 <sup>th</sup> Street, Scottsdale, AZ 85255<br>Phone: 800-978-2737<br>Fax: 480-991-0791 |

Please contact your local Axon sales representative or call us at 1-800-978-2737 with any questions.

Sincerely,

Josh Isner  
Chief Revenue Officer  
Axon Enterprise, Inc.

Android is a trademark of Google, Inc. BLACKHAWK! is a trademark of the Blackhawk Products Group, Bluetooth is a trademark of the Bluetooth SIG, Flak Jacket is a trademark of Oakley, Inc. iPod touch is a trademark of Apple Inc., IOS is a trademark of Cisco, LTE is a trademark of the European Telecommunications Standards Institute, Safariland is a trademark of Safariland, LLC, Shoen is a trademark of Shoen Co., Ltd., VELCRO is a trademark of Velcro Industries, B.V., and Wi-Fi is a trademark of the Wi-Fi Alliance.

The Delta Logo, the Axon + Delta Logo, Axon, Axon Aware, Axon Citizen, Axon Evidence, Axon Flex, Axon Interview, Axon Records, Fleet, TASER CAM, X2, X26, TASER 7, TASER, and the Lightning Bolt in Circle Logo are trademarks of Axon Enterprise, Inc., some of which are registered in the US and other countries. For more information, visit [www.axon.com/legal](http://www.axon.com/legal). All rights reserved. © 2020 Axon Enterprise, Inc.

CITY OF UNALASKA  
Division of Police Services  
29 Safety Way POB 370  
Unalaska, Alaska 99685  
TEL (907) 581-1233 FAX (907) 581-5024  
Jay King, Police Chief



To: Erin Reinders, City Manager  
CC: Ed Keough, Director, Finance Department  
From: Chief J.E. King #2235  
Director, Department of Public Safety  
Date: 30 March 2021  
Subject: Sole Source for Equipment Purchase – Axon

The vendor Axon Enterprises is the sole vendor authorized to distribute Taser brand products in the State of Alaska. Axon has been the vendor used by the City of Unalaska for the past few years, and have been providing other municipalities and the State of Alaska with Taser brand products and services during that same time period.

The Purchasing Policy on sole source procurement (8.3(5)(A)(6)) allows for a contract and purchases of equipment to be awarded without competition when the provider of supplies or services is providing other municipalities or the State of Alaska with the supplies or services following a competitive bid process. Axon is the only authorized Taser Dealer in this region.

I believe that Axon meets this criterion of the sole source procurement policy as well.

The \$39,040.00 quote is for 15 Taser 7 CEW's and necessary accessories.

☐ Approved

City Manager's Signature: \_\_\_\_\_

☐ Denied

Account Code: \_\_\_\_\_

**From:** [Ryan Browning](#)  
**To:** [Richard Simmons](#)  
**Subject:** RE: TASER sole-source letters  
**Date:** Wednesday, April 7, 2021 11:28:46 AM

---

Hi Richard,

We didn't do anything with council – there's really no other distributor for Taser so for us that's a non-issue.

Ryan

**From:** Richard Simmons <rsimmons@cityofbethel.net>  
**Sent:** Wednesday, April 07, 2021 11:12 AM  
**To:** Putney, Tim <tputney@city.kodiak.ak.us>; tstonecipher@cityofklawock.com; Mark Robl <mrobl@ci.homer.ak.us>; Ryan Browning <rbrowning@ci.homer.ak.us>  
**Cc:** Jesse Poole <jpoole@cityofbethel.net>  
**Subject:** TASER sole-source letters

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or clicking links, especially from unknown senders.

Good morning,

Ms. Kara Uzelac with TASER said your respective departments have recently used sole-source procurement to make a purchase of TASERs. If so, can I get a copy of y'all's sole-source letters to council (or similar documentation) as a reference, please?

r/s,  
Richard

--

R. H. Simmons

Chief, Bethel Police Department  
157 Salmonberry  
PO Box 809  
Bethel, Alaska 99559  
907-543-3781

**CITY OF BETHEL**  
**Budget Line Item Transfer Request**

Department: Bethel Police DeptBudget Year FY-21Submitted By: R. H. Simmons, Chief  
(Department Head)Date: 4/5/2021Reason for transfer:  
\_\_\_\_\_  
\_\_\_\_\_Move budget FROM: 10-61-669  
G/L NumberAMOUNT: \$12,500 Budget Available After Transfer \$16,626Name of G/L account PD Other Purchased ServicesMove budget TO: 10-61-561  
G/L NumberAMOUNT: \$12,500 Budget Available After Transfer \$36,465Name of G/L account PD Supplies*Transfers to and from must be in equal amounts.*

*Approvals*

City Manager \_\_\_\_\_

Date \_\_\_\_\_

Finance Director \_\_\_\_\_

Date \_\_\_\_\_

Entered by \_\_\_\_\_ Date \_\_\_\_\_

**Bethel Municipal Code****4.04.080 Budget – Control.**

Budgetary control is exercised at the departmental level. The city manager may approve intra-departmental transfers of appropriated funds not directed to personnel services and only to the extent such transfers do not exceed five thousand dollars (\$5,000). Any supplemental appropriations that amend the total budgeted expenditures of any department and all inter-departmental transfers of appropriated funds shall be by ordinance. The request for any supplemental appropriation shall be submitted to the council as soon as the city manager becomes aware that the total expenditure for any line item has exceeded the budgeted expenditure for that line item by five thousand dollars (\$5,000). [Ord. 17-43 § 2; Ord. 04-05 § 2; Ord. 161 § 2, 1985.]

**CITY OF BETHEL**  
**Budget Line Item Transfer Request**

Department: Bethel Police DeptBudget Year FY-21Submitted By: R. H. Simmons, Chief  
(Department Head)Date: 4/5/2021Reason for transfer:  
\_\_\_\_\_  
\_\_\_\_\_Move budget FROM: 10-61-661  
G/L NumberAMOUNT: \$12,500 Budget Available After Transfer \$4,015Name of G/L account PD Veh Maint RepairMove budget TO: 10-61-561  
G/L NumberAMOUNT: \$12,500 Budget Available After Transfer \$48,965Name of G/L account PD Supplies*Transfers to and from must be in equal amounts.*

*Approvals*

City Manager \_\_\_\_\_

Date \_\_\_\_\_

Finance Director \_\_\_\_\_

Date \_\_\_\_\_

Entered by \_\_\_\_\_ Date \_\_\_\_\_

**Bethel Municipal Code****4.04.080 Budget – Control.**

Budgetary control is exercised at the departmental level. The city manager may approve intra-departmental transfers of appropriated funds not directed to personnel services and only to the extent such transfers do not exceed five thousand dollars (\$5,000). Any supplemental appropriations that amend the total budgeted expenditures of any department and all inter-departmental transfers of appropriated funds shall be by ordinance. The request for any supplemental appropriation shall be submitted to the council as soon as the city manager becomes aware that the total expenditure for any line item has exceeded the budgeted expenditure for that line item by five thousand dollars (\$5,000). [Ord. 17-43 § 2; Ord. 04-05 § 2; Ord. 161 § 2, 1985.]

**CITY OF BETHEL**  
**Budget Line Item Transfer Request**

Department: Bethel Police DeptBudget Year FY-21Submitted By: R. H. Simmons, Chief  
(Department Head)Date: 4/5/2021Reason for transfer:  
\_\_\_\_\_  
\_\_\_\_\_Move budget FROM: 10-61-563  
G/L NumberAMOUNT: \$12,500 Budget Available After Transfer \$8,750Name of G/L account PD Employee Wearing ApparelMove budget TO: 10-61-561  
G/L NumberAMOUNT: \$12,500 Budget Available After Transfer \$61,465Name of G/L account PD Supplies*Transfers to and from must be in equal amounts.*

**Approvals**

City Manager \_\_\_\_\_

Date \_\_\_\_\_

Finance Director \_\_\_\_\_

Date \_\_\_\_\_

Entered by \_\_\_\_\_ Date \_\_\_\_\_

**Bethel Municipal Code****4.04.080 Budget – Control.**

Budgetary control is exercised at the departmental level. The city manager may approve intra-departmental transfers of appropriated funds not directed to personnel services and only to the extent such transfers do not exceed five thousand dollars (\$5,000). Any supplemental appropriations that amend the total budgeted expenditures of any department and all inter-departmental transfers of appropriated funds shall be by ordinance. The request for any supplemental appropriation shall be submitted to the council as soon as the city manager becomes aware that the total expenditure for any line item has exceeded the budgeted expenditure for that line item by five thousand dollars (\$5,000). [Ord. 17-43 § 2; Ord. 04-05 § 2; Ord. 161 § 2, 1985.]

### **Modification of budget info**

At this time we need a total of \$58,112 for the purchase of the x7 tasers, quote expires 05/15/21

In order to obtain this amount, we need to move funds from the following line items into line item 10-61-561 supplies.

**There is currently \$23,965.00 in line item 10-61-561 supplies**, if we conduct line item transfers out of the below line items we will have enough money to purchase the tasers.

**Line item 10-61-669 other purchased services** currently has \$ \$29,126 with a line item transfer of – 12,500 = \$16,626 left in line item

**Line item 10-61-661 Vehicle maint/repair** currently has \$16,515 with a line item transfer of -12,500 = 4,015 left in the line item

**line item 10-61-563 Employee wearing apparel** currently has 21,250 with a line item transfer of – 12,500 = 8,750 left in line item

After moving \$12,500 from each of the above line items, which in total is \$37,500, our supplies account which currently has \$23,965 would then have a total of \$61,465. This would give us roughly \$3,000 room for error.

This still allows us to have enough money in line item 10-61-683 minor equipment to purchase one Ski Doo and still have well over \$ 5,000 left in this line item.

## City of Bethel Action Memorandum

|                         |           |                |                                 |
|-------------------------|-----------|----------------|---------------------------------|
| Action memorandum No.   | 21-09     |                |                                 |
| Date action introduced: | 4-27-2021 | Introduced by: | Peter A. Williams, City Manager |
| Date action taken:      |           | Approved       | Denied                          |
| Confirmed by:           |           |                |                                 |

**Action Title:** Direct Administration to sign Memorandum of Agreement Between State of Alaska and City of Bethel containing grant terms and conditions allowing the City to receive up to \$284,729.75 to support COVID-19 vaccine administration, testing, and other COVID-19 related activities.

**Attachment(s):** Memorandum of Agreement Between State of Alaska – Department of Health and Social Services, Division of Public Health – COVID-19 Emergency Operations Center (DHP-EOC) and City of Bethel CO621-570-CC.

| Amount of fiscal impact: |                                     | Account information: |
|--------------------------|-------------------------------------|----------------------|
| None                     | No fiscal impact at this time.      | TBD                  |
|                          | Funds in City Budget.               |                      |
|                          | Requires funding in FY 2021 Budget. |                      |

### Summary Statement

The City of Bethel was awarded a grant from the Alaska Department of Health and Social Services to request \$284,729.75 in COVID-19 Community funding. The City partnered with Bethel Family Clinic, the Lower Kuskokwim School District, and the Yukon Kuskokwim Health Corporation to develop projects that support vaccinations and testing. Grant funds are reimbursable through the performance period of April 1, 2021 to March 31, 2022.

The project entails Bethel Family Clinic personnel going to one or more of the five schools in Bethel and testing students on a daily basis. The goal is for all students enrolled in a school to be tested once each month. The test being used will yield results in 15 minutes. The cost for this project is \$201,839.

The grant will cover \$82,891.15 of the salary cost for Yukon Kuskokwim Health Corporation nurses to administer vaccines 20 hours per week over the course of a year.



**Memorandum of Agreement Between**  
**State of Alaska - Department of Health and Social Services**  
**Division of Public Health – COVID-19 Emergency Operations Center (DPH-EOC)**  
**- and -**  
**City of Bethel**  
**C0621-570-CC**

**I. PURPOSE AND SCOPE**

The purpose of this MOA is to provide funding to government entities to implement community-driven strategies that support COVID-19 related activities. These activities include improving efforts and increase access to COVID-19 testing in the community, building capacity to increase access to COVID-19 vaccine in the community, and implementing strategies that decrease health inequities, as well as other COVID-19 related recovery and prevention strategies.

**II. THE DPH AGREES TO:**

Provide support to the community on COVID-19 vaccine administration, testing, and other COVID-19 related activities. The COVID-19 EOC Team is available to consult and provide technical assistance to government entities and to pre-approved pass-through recipients of award funding. The team will also ensure that approved activities meet the funding requirements.

**III. THE MOA RECIPIENTS NAME TO:**

Provide COVID-19 vaccine and testing communication and education efforts, provide transportation for COVID-19 testing and vaccine administration, and expand capacity for COVID-19 testing and vaccine administration with pass through funding to the Yukon Kuskokwim Health Corporation, the Lower Kuskokwim School District, the Bethel Family Clinic and other partners.

Recipient must establish/maintain/provide electronic reporting of SARS-CoV2/COVID-19 laboratory data to CDC daily per the guidance provided by CDC (e.g., CELR). This includes all testing (e.g., positive/negative, PCR, Point-of-Care, etc.) and complete data elements (e.g., race/ethnicity).

Any additional activities not specifically stated in this MOA must be approved by the COVID-19 EOC Team prior to those activities occurring.

IV. JOINT RESPONSIBILITIES:

Both parties will make a good faith effort to communicate about any issues that might arise that will impact the timeliness of activities, reporting, or payment.

V. PERIOD OF AGREEMENT AND TERMINATION:

This agreement will terminate on March 31, 2022 and receipts must be for activities prior to this date. Funds are intended to be used to support staff time (including overtime), supplies, and other materials as needed to support COVID-19 related activities.

VI. TERMS OF PAYMENT

The State agrees to pay the City of Bethel up to \$284,729.75 over the term of this agreement.

The Recipient will submit monthly invoices detailing services performed in accordance with APPENDIX A (provided separately).

The invoice must:

- reference the recipient's name, address and phone number
- reference the contract number: C0621-570-CC
- include an invoice number
- Reference the Alaska Division of Public Health – COVID-19 EOC Team

Failure to include the required information on invoices may cause an unavoidable delay to the payment process. The State will pay all invoices within thirty (30) days of invoice approval by the Project Director. The Recipient shall submit final invoices to the address specified below no later than 30 days after March 31, 2022.

Email invoices to:

[covidadmin@alaska.gov](mailto:covidadmin@alaska.gov)

(please reference *Community MOA Reimbursement Request* in the subject line)

Notwithstanding any other provision of this contract, it is understood and agreed that The State shall withhold reimbursement at any time the recipient fails to comply with the terms of the MOA.

VII. GRANT COMPLIANCE FROM THE FEDERAL NOTICE OF GRANT AWARD

- CFDA Number 93.323, U.S. Department of Health and Human Services, Epidemiology and Laboratory Capacity for Infection and Control of Emerging Infections Diseases
- Recipients must comply with the Terms and Conditions of this award and all Code of Federal Regulations.
- Coronavirus Disease 2019 (COVID-19) Funds: A recipient of a grant or cooperative agreement awarded by the Department of Health and Human Services (HHS) agrees, as applicable to the award, to: 1) comply with existing and/or future directives and guidance from the Secretary regarding control of the spread of

COVID-19; 2) in consultation and coordination with HHS, provide, commensurate with the condition of the individual, COVID-19 patient care regardless of the individual's home jurisdiction and/or appropriate public health measures (e.g., social distancing, home isolation); and 3) assist the United States Government in the implementation and enforcement of federal orders related to quarantine and isolation.

- To achieve the public health objectives of ensuring the health, safety, and welfare of all Americans, Recipient must distribute or administer vaccine without discriminating on non-public-health grounds within a prioritized group. This includes, but is not limited to, immigration status, criminal history, incarceration, or homelessness. To this end, and to help achieve the public health imperative of widespread herd immunity to COVID-19, Recipient must administer or distribute vaccine to any and all individuals within a prioritized group in the same timeframe, taking into account available vaccine doses. For example, if meatpacking plant workers are a prioritized group, then all workers in that group, including undocumented immigrants, must be vaccinated to help assure that the plant is in a position to safely resume essential functions. In addition, to the extent applicable, Recipient will comply with Section 18115 of the CARES Act, with respect to the reporting to the HHS Secretary of results of tests intended to detect SARS-CoV-2 or to diagnose a possible case of COVID-19. Such reporting shall be in accordance with guidance and direction from HHS and/or CDC. HHS laboratory reporting guidance is posted at: <https://www.hhs.gov/sites/default/files/covid-19-laboratory-data-reporting-guidance.pdf>.
- Further, consistent with the full scope of applicable grant regulations (45 C.F.R. 75.322), the purpose of this award, and the underlying funding, the recipient is expected to provide to CDC copies of and/or access to COVID-19 data collected with these funds, including but not limited to data related to COVID-19 testing. CDC will specify in further guidance and directives what is encompassed by this requirement.
- This award is contingent upon agreement by the recipient to comply with existing and future guidance from the HHS Secretary regarding control of the spread of COVID-19. In addition, recipient is expected to flow down these terms to any subaward, to the extent applicable to activities set out in such subaward.

#### **Unallowable Costs:**

- Resources or activities funded by another HHS Contract, grant, or MOA
- Purchase of vehicles
- Reimbursement of pre-award costs
- Research
- Indirect costs associated with the award
- Food and/or water
- Hospital bill or insurance claims
- Clinical care
- Publicity and propaganda (lobbying):
- Other than for normal and recognized executive-legislative relationships, no funds may be used for:
  - publicity or propaganda purposes, for the preparation, distribution, or use of any material designed to support or defeat the enactment of legislation before any legislative body
  - the salary or expenses of any grant or contract recipient, or agent acting for such recipient, related to any activity designed to influence the enactment of legislation, appropriations, regulation, administrative action, or Executive order proposed or pending before any legislative body
  - See Additional Requirement (AR) 12 for detailed guidance on this prohibition and additional guidance on lobbying for CDC recipients: [https://www.cdc.gov/grants/documents/Anti-Lobbying\\_Restrictions\\_for\\_CDC\\_Grantees\\_July\\_2012.pdf](https://www.cdc.gov/grants/documents/Anti-Lobbying_Restrictions_for_CDC_Grantees_July_2012.pdf)
  - All unallowable costs cited in CDC-RFA-TP18-1802 remain in effect, unless specifically amended in this guidance, in accordance with 45 CFR Part 75 – Uniform Administrative Requirements, Cost Principles, and Audit Requirements for HHS Awards.

## VIII. CONTACT INFORMATION

DPH-EOC primary point of contact: Maria Caruso  
Division of Public Health, COVID Program Coordinator  
3601 C Street, Suite 722  
Anchorage AK 99503  
Office: 907-310-6092  
Email: [maria.caruso@alaska.gov](mailto:maria.caruso@alaska.gov)

City of Bethel primary point of contact: John Sargent  
City of Bethel, Grant Manager  
Office: 907-543-1386  
Email: [jsargent@cityofbethel.net](mailto:jsargent@cityofbethel.net)

City of Bethel finance contact: Xavier Mason  
City of Bethel, Assistant Director of Finance  
Office: 907-543-1375  
Email: [xmason@cityofbethel.net](mailto:xmason@cityofbethel.net)

City of Bethel additional contact: Peter A. Williams  
City of Bethel, City Manager  
Office: 907-543-1373  
Email: [pwilliams@cityofbethel.net](mailto:pwilliams@cityofbethel.net)

## I. SIGNATURES

By signature of the below, both parties agree to the terms of this MOA.

### **City of Bethel**

By: \_\_\_\_\_ Date: \_\_\_\_\_  
Peter A. Williams, City Manager, City of Bethel

### **State of Alaska**

By: \_\_\_\_\_ Date: \_\_\_\_\_  
Maria Caruso, DPH-EOC Program Coordinator

By: \_\_\_\_\_ Date: \_\_\_\_\_  
Heidi Hedberg, EOC/Unified Commander & DPH Director

By: \_\_\_\_\_ Date: \_\_\_\_\_  
Jason Grove, Procurement Manager



# CITY OF BETHEL

## CITY MANAGER NEGOTIATED AGREEMENT

This Employment Agreement (Agreement) entered into this 1st day of May, 2021, by and between the City of Bethel, Alaska, a municipal corporation, hereinafter referred to as "City" and Peter A. Williams, an individual, hereinafter referred to as "Employee or City Manager." Under this Agreement, the City offers, and Employee accepts, employment as City Manager of the City.

### **Section 1     Duties**

- A. City hereby agrees to employ Peter A. Williams as City Manager of the City, effective January 27, 2021, to perform the functions, powers and duties specified in AS 29.20.500 and Bethel Municipal Code, as well as other legally permissible and proper duties and functions as the Council shall from time-to-time assign.
- B. Employee is the Chief Administrative Officer of the City and shall faithfully perform the duties as prescribed in the job description and as set forth in the City's ordinances and as may lawfully be assigned by the City, and shall comply with all lawful governing body directives, state and federal law, City policies, and rules and ordinances as they exist or may hereafter be amended.
- C. Direct, assign, reassign, and evaluate all of the Department Directors of the City consistent with policies and procedures, ordinances, and state and federal law.
- D. Provide for management, development and training, and develop leadership qualities as necessary to ensure the highest standards of managerial practices throughout the organization.
- E. Enforce policies that organize, reorganize, and arrange the staff of the City and that develop and establish internal regulations and rules and procedures that are deemed necessary for the efficient and effective operation of the City consistent with the lawful directives, policies, ordinances, and state and federal law.
- F. Evaluate administrative practices that may result in greater operational effectiveness or economy in City government and develop and recommend to the City Council long range plans to improve City operations and prepare for the City's growth and development.
- G. Prepare and present a timely annual budget to the City Council and ensure audits are completed in accordance with City, state, and federal laws and standards.

Perform the duties of City Manager of the City of Bethel with reasonable care, diligence, skill and expertise. Attend all meetings of the City Council and upon request attend the City's Board and Commissions meetings.

The Employee shall act in the City's best interest at all times and perform Employee's duties in a competent and professional manner.

## **Section 2      Term**

- A. Employee shall serve at the pleasure of the City Council and is an at-will employee of the City. Nothing in this Agreement shall prevent, limit, or otherwise interfere with the right of the Council to terminate the services of the Employee at any time with or without cause, subject only to the provisions set forth in Section 7 of this Agreement. The City shall comply with the City's insurance policy endorsement regarding any termination.
- B. Nothing in this Agreement shall prevent, limit, or otherwise interfere with the right of the Employee to resign at any time from the position of City Manager, subject only to those provisions set forth in Section 7 Agreement.

## **Section 3      Salary and Benefits**

- A. Compensation. City agrees to compensate Employee an annual base salary of \$141,000 payable in installments at the same time that the other management employees of the City are paid. Employee's base salary shall be increased annually between zero (0) and three (3) percent dependent on the City's financial situation and at the discretion of the Council upon a very good performance evaluation.
- B. Health and Medical Benefits Insurance. Employee shall not be enrolled in or participate in the City employee's Life Insurance group coverage plan, Accidental Death & Dismemberment, Short Term, Long Term Disability, Dental, Vision or Health Insurance program equal to that which is provided to all other management employees.
- C. Pension. The city manager position will be exempt from participating in the Alaska Public Employees' Retirement System (PERS).
- D. Utility Benefit. Employee shall have the opportunity to participate in the City Utility Services Benefit for the same monthly fee paid by all other City management employees.
- E. Personal Time Off (PTO). Upon Employment, the Employee will begin with 80 hours of PTO with the City. PTO shall accrue at the rate of twenty (20) hours per month of service. PTO may be accrued to a maximum of three hundred fifty (350) hours. Employee shall use a minimum of Eighty (80) hours per year. PTO should be requested of the Council two (2) weeks in

advance. The City does not recognize or endorse “comp time.” Unscheduled PTO shall be utilized only for the illness of the Employee or illness in the Employee’s immediate family. Should the Employee be absent for more than three (3) consecutive working days, the Employee shall be required to provide a physician’s certificate to the Mayor. PTO is a benefit with no cash value. PTO may not be cashed-in, borrowed against, or withdrawn at any time during or following employment.

- F. Jury Duty. In accordance with BMC 3.60.070, Court Leave, as amended.
- G. Holidays. All holidays recognized by the Employer shall be granted to the Employee. It is understood that from time to time, Employee’s duties may require him to work on such holidays at no additional compensation.
- H. Family Medical Leave. Employee may become eligible for family medical leave pursuant to federal and state law. Upon eligibility, Employee shall have all the rights and protections of the Family Medical Leave Act as any other regular full-time employee of the City.
- I. Worker’s Compensation. Should the Employee become injured on the job, he will be entitled to the compensation benefits if and as provided by Alaska’s Worker’s Compensation Act.
- J. Administrative Leave. The Employee may be granted administrative leave with pay by a majority vote of the Council for reasons specified, including attendance at professional conferences.
- K. Emergency Leave. The City agrees to grant Employee up to forty (40) hours of emergency leave for the death or serious illness of an immediate family member. For the purposes of this type of leave, Employee’s immediate family member includes the spouse of Employee, child, son-in-law, daughter-in-law, parent, father-in-law, mother-in-law, sibling, or grandchild.
- L. Cell Phone and Laptop. The Employee will be provided a cell phone and laptop computer for use in the performance of his official duties. While some personal use may occur, the equipment is issued for City purposes and any information gathered or stored on the equipment is subject to public disclosure. The Employee is responsible for any charges in excess of the basic monthly service fee for the cell phone coverage.

#### **Section 4      Hours and Days of Work**

The Employee’s position requires the exercise of independent judgment on the part of the Employee and requires periods of extended work to exceed the normal office hours, work day, and work week established by the Employer. Employee will be available during regular business hours. Employee is expected to work whatever hours are needed based upon the demands of the job. Employee is exempt from the overtime provisions of the Fair Labor and Standards Act,

as amended, but is expected to engage in those hours of work that are necessary to fulfill the obligations of the Employee. Any time worked in excess of the normal hours in a day or week is not compensated or credited in any manner by the Employer.

**Section 5      Performance Evaluation**

Employee shall be evaluated, in writing, by the Council within six (6) months of commencing employment, and then annually thereafter on or about the anniversary date of hire.

**Section 6      Outside Employment**

Outside employment and business pursuits are prohibited unless first authorized by Council. Any outside employment or business pursuits other than those authorized by Council must occur while Employee is on leave and must occur outside the regular business hours of the City. Notwithstanding the foregoing or any authorization by Council, the Employee is required to perform the duties of the Employee when the interests of the City require, without regard to regular work hours or days or the competing needs of the Employee's outside employment or business permits.

Before Employee may serve as a paid officer, director, or advisor for any company (whether or not for profit), the City must determine that Employee's accepting such a role is in the best interests of the City. Such determinations will be made by the City Council. Any issues Employee may be contemplating regarding outside employment should be resolved prior to Employee accepting such employment.

**Section 7      Termination and Severance.**

- A. Termination for Cause: In the event the Employee is terminated for cause, no severance pay will be provided. The Council shall include in a notification of termination of Employee, a statement of cause. Termination by the City of the Employee for cause shall include, but not limited to, termination based on any of the following grounds: (a) failure to perform the duties of the Employee's position in a satisfactory manner; (b) fraud, misappropriation, embezzlement, or similar acts of dishonesty; (c) conviction of a felony involving moral turpitude; (d) illegal use of drugs or excessive use of alcohol in the workplace; (e) intentional and willful misconduct that may subject the City to criminal or civil liability; (f) breach of the Employee's duty of loyalty, including the diversion or usurpation of corporate opportunities properly belonging to the City; (g) willful disregard of City policies and procedures; (h) breach of any of the material terms of this Agreement; and (j) insubordination or deliberate refusal to follow the instructions of the City Council.
- B. Termination without Cause: In the event the City Council wishes to terminate the Employee without cause during the Employee's employment, the City agrees to provide the Employee with one month of severance pay for each full year of service, with a maximum payout of three months of severance pay.

- C. Voluntary Resignation: In the event Employee voluntarily resigns his position, the Employee shall give the City thirty (30) days advance written notice. In the event of voluntary resignation, the Employee is not entitled to severance pay.

**Section 8      Notices**

Notices shall be either hand delivered or sent by mail to the following:

EMPLOYER – CITY OF BETHEL  
Attn: Mayor  
P.O. BOX 1388  
Bethel AK 99559

EMPLOYEE -PETER A. WILLIAMS  
P.O. BOX 3631  
Bethel, AK 99559

**Section 9      General Provisions**

- A. The text herein shall constitute the entire Agreement between both parties.
- B. Any modification or amendment shall be enforceable only if approved by a majority vote of the Council in a duly convened public session and if transcribed in a written document signed by both parties.
- C. Employee shall not assign any interest in this Agreement, and shall not transfer any interest in the same without the prior written consent of City.
- D. If any provision, or any portion thereof, contained in this Agreement is held unconstitutional, invalid, or unenforceable, the remainder of this Agreement, or portion thereof, shall be deemed severable, shall not be affected and shall remain in full force and effect.
- E. The failure of the City at any time to enforce a provision of this Agreement shall in no way constitute a waiver of the provisions, nor in any way affect the validity of this Agreement or any part thereof, or the right of the City thereafter to enforce each and every protection hereof.
- F. This Agreement is being executed by the parties following negotiations between them. It shall be construed according to the fair intent of the language as a whole, not for or against any

party. The titles of the sections in this Agreement are not to be construed as limitations or definitions but are for identification purposes only.

- G. The Council, in consultation with Employee, shall fix any other such terms and conditions of employment as it may deem necessary from time to time relating to the performance of Employee, provided such terms and conditions are not inconsistent with or in conflict with the provisions of this Agreement, the City Code, or any other applicable law.
- H. This Agreement shall be governed by the laws of the State of Alaska and the City of Bethel, and any litigation shall be brought in Bethel, Alaska. Employee expressly waives any rights she might otherwise have as provided in Alaska Rules of Civil Procedure to remove any action from Bethel, Alaska.

**Section 11 Indemnification**

In accordance with Bethel Municipal Code 2.48 as amended.

EMPLOYEE

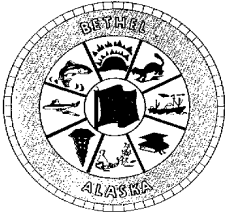
CITY OF BETHEL

\_\_\_\_\_  
Peter A. Williams, Employee

\_\_\_\_\_  
Michelle DeWitt, Mayor

\_\_\_\_\_  
Date

\_\_\_\_\_  
Date



## CITY OF BETHEL

P.O. Box 388  
Bethel, Alaska 99559  
Ph. (907) 543-4150  
Fax (907) 543-3817

# MEMORANDUM

DATE: March 17, 2021, 2021 to March 30, 2021

TO: City Council

FROM: Peter Williams, City Manager

RE: City Managers' Report

---

**COVID-19** – The Grant for *Community Funding* from FEMA is underway despite not having a MOA signed or clear direction how LKSD, YKHC and the Family Clinic is to invoice what is spent we can begin spending the funds. All three organizations will be working together. Kudos to the Grant Manger for putting this together. More information is attached to this report. The *Incentive* and the *Food Distribution Programs* are underway.

**Finance Dept** – Discussed Budget too Actuals (BTA), reviewing the general ledger and budget modifications. Accountants have started to send notices to those who owe sales tax to the city. Utility Billing is doing well. We are still in search of a Finance Director. The AFD is reviewing the general ledger and has reviewed the budget modifications to ensure they are being entered. A problem has been identified with our chart of accounts in that there are to many of them.

**Aquatic Ctr.** – DOWL, Agnew- Beck and City Admin. met to discuss the feasibility study for a new recreation ctr. at the pool.

**Public Works** – Discussed the roads, steaming culverts and moving snow berms with foreman of *S&R*. Looked at the various neighborhoods and voiced my concerns. of **DOT**-Requested a update about the *Akakeek-Ptarmgin-DeLapp* project,the State Trans. Improvement Program , Amendment #1, reports that this project will not be completed till after 2023. There is \$425,000 scheduled to be spent in FY-21. Requested a update from the DOT area planner. *Tundra Ridge Road*

**American Rescue Plan** – Listened in to a Zoom meeting with the National League of Cities, these funds will be pass through the State to municipalities. I'm

scheduled to attend another meeting on April 21. The latest is that we will receive \$1.367M.

## **City Managers Daily Log**

April 7 -1) Worked with the finance Dept on the FY-22 Ops Budget and CIP. 2) Asked Finance Dept to check with Empower regarding employees Def. Comp 3) The SSoA is responsible for leasing properties and buildings for the State of Alaska. They notified us our plans for the DMV would have change. We have picked another spot in the courthouse for the DMV in the courthouse. 4) Reviewed comments about short term rentals and discussed the City Planners plan to move this ordinance forward.

April 8 – 1) ANHTC arrived to look at the COBs W&S services. This is the first part in trying to identify efficiencies in the W&S services. 2) Starting to work on the application for this year's insurance with the Combs Insurance agency. 3) Continue to supply information to BDO, our auditors. 4) Received a report of illegal gambling online. The States of Alaska Gaming Manger is aware of the problem and reportedly notified the alleged offenders. The information has been sent to the Alaska State Troopers according to the States Gaming Manger. 5) Reviewed and signed a change order for the Main Lift station

April 9 –1) Review KYUKs public announcement for the Town Hall meeting concerning sexual assaults. 2) Discussed the Port revenues and billing with the auditors. 3) Discuss and review proposed equipment in the CIP with various department heads. 4) Continue to work with our insurance broker to turn in the City's FY-222 application with APEI. 5) Zoom meeting with BDO concerning questions about W&S services. 6) Met with DOWLS CEO who thank us for working with them.

April 10 & 11- Responded to citizens with problems with W&S deliveries.

April 12 – 1) Responded to citizens questions about W&S services. 2) Instructed HR to be the POC for any changes that a employee wishes to make to their contributions with their deferred compensation with Empower. 3) Instructed PD that employment applications start with the HR Dept. first. 4) Worked on the COB insurance application for FY-22, reviewed schedules for accuracy, trying to finish the application by April 23. 5) Set to meet with DOWL & Agnew/Beck on the 14<sup>th</sup> to discuss the feasibility study for a new rec ctr. 6) Accepted a meeting with the Riverwatch on the 19<sup>th</sup> –7) Telephonically attended the Committee of Parks and Recs. CPR meeting.

April 13 – 1) Review packet & insurance schedules. –2) Ask HR to set up a public forum at the AC Store to advertise city jobs. 3) E-mails from citizens, & council members about the cul-de-sacs in AFHC housing not being plowed. 4) Met with I-Woks to discuss a method for citizens to convey complaints. 5) Meet with DOWLS CEO to discuss our relationship with us.- Met with DOWL, Agnew -Beck and YKFC to discuss the feasibility study for a Recreation center. We hope to present a plan to the CPR on April 26<sup>th</sup>. – 6) Working on insurance application for FY-22. -Council Meeting

April 14 – 1) Discussed the PW Dept tasks with the Acting Public Works Director, Gary Watson. – 2) Reviewed and discussed BTAs, revenues, budget mods and reviewing the ledger with the Assistant Finance Director. He is slowly moving away from being involved in the everyday tasks of utility billing, sales tax, etc. too reviewing their work. – 3) Turned over some more information concerning our insurance application with APEI – 4 ) Worked on improving our scoring with RUBA with Tech. Assit. & Finance Programing Manager. They gave us some points back regarding our Payroll Liability Compliance, a must have for grants. 5) Passed on the PD a citizen complaint about dogs to the PD. –

April 15 – 1) Responded to LKSD about using the BHWTP holding tank for the new school building. 2) Budget modification for PW works W&S drivers, the same for S&R& Prop Maint. 3) Reviewed information about Haroldsens subdivision.

April 16 – 1) Zoom meeting with the NLC about implementing American Rescue Plan. We are now being told that the State will receive the funds first and the distribute the funds to the municipalities. 2) Participated in a Zoom meeting with the Wilson Agency, our health insurance brokers. Administration reviewed the proposed, and we may see a substantial reduction in our premium this year. The Wilson agency is going to compare to AMLs proposed health care plan for municipalities and report back to us.

April 17 – 1) Posted Flyers regarding a rabid fox. 2) Sent information to APEI 3) Responded to auditors request for information.

April 18- 1) Attended a tele-conference with the Kuskokwim Riverwatch Round Table to coordinate a response to the river flooding. The Sate Coordinator is to contact me. 2) Discuss short term rentals with the City Planner.

April 19- 1) Reviewed comment s from DOWL and City Planner about short term rentals and discussed the plan to have this move to the Planning Commission. 2) Reviewed detail ledgers. 3) Ask Port director to put the tank farm on the Port Comm. agenda. 4) received MOU from the State for community funding, budget is attached to this report.

| Bethel Family Clinic Budget                 | YEAR ONE<br>TOTAL |
|---------------------------------------------|-------------------|
| <b>EXPENSES</b>                             |                   |
| <b>Personnel</b>                            |                   |
| Medical Staff                               | \$ 67,746         |
| Non-Medical Staff                           | \$ 19,760         |
| <b>TOTAL PERSONNEL</b>                      | <b>\$ 87,506</b>  |
| <b>Fringe Benefits</b>                      |                   |
| Taxes @ 7.65%                               | \$ 6,694          |
| <b>TOTAL FRINGE</b>                         | <b>\$ 6,694</b>   |
| <b>Vehicle Use</b>                          |                   |
| Mileage - 2,925 miles @ \$0.56              | \$ 1,638          |
| <b>TOTAL TRAVEL</b>                         | <b>\$ 1,638</b>   |
| <b>Equipment</b>                            |                   |
| Computer & software (to make ed. materials) | \$ 5,000          |
| <b>Supplies</b>                             |                   |
| Personnel Protective Equipment              | \$ 2,000          |
| Cleaning supplies                           | \$ 1,000          |
| Testing Supplies                            | \$ 40,000         |
| Vaccines                                    | \$ 10,000         |
| <b>TOTAL SUPPLIES</b>                       | <b>\$ 53,000</b>  |
| <b>Contractual</b>                          |                   |
| IT Support - Setup of new computer          | \$ 500            |
| <b>TOTAL CONTRACTUAL</b>                    | <b>\$ 500</b>     |
| <b>Other</b>                                |                   |
| Transportation - Taxi vouchers              | \$ 4,500          |
| Uniforms-T-shirts promoting tests/vaccines  | \$ 3,000          |
| Education/Marketing - Digital and Print Ads | \$ 40,000         |
| <b>TOTAL OTHER</b>                          | <b>\$ 47,500</b>  |
| <b>TOTAL DIRECT CHARGES</b>                 | <b>\$ 201,839</b> |

| Yukon Kuskokwim Health Corporation<br>Budget | YEAR ONE<br>TOTAL   |
|----------------------------------------------|---------------------|
| <b>EXPENSES - Vaccination Project</b>        |                     |
| <b>Personnel</b>                             |                     |
| Nurse (\$85/hr. x 20 hrs./wk.) x 52 weeks    | \$ 88,400.00        |
| Amount applied to COVID-19 Community Funds   | \$ 82,891.15        |
| <b>TOTAL PERSONNEL</b>                       | <b>\$ 82,891.15</b> |

Total Funding Request \$ 284,729.75

## Schedule, Events and Programs

### Visit [ykfitness.org](http://ykfitness.org) for the most up to date schedules and information

Our largest focus in March was re-opening the facility. Early in March we continued to share policy and procedure updates to make sure everyone was aware of the entry requirements and the covid-19 procedures in place. We adjusted any messaging and signage as needed. We worked closely with our team members to safely welcome fully vaccinated guests to the facility. Prior to opening we had an all staff meeting to review opening procedures and new policies. The front desk team has been diligently completing the entry survey and contact tracing form for all guests who use YKFC. The entry process includes a temperature check and vaccination confirmation. The facility is currently closing each space at designated times throughout the day to allow for sanitizing. We are using an electrostatic sprayer to sanitize difficult to reach places like narrow gaps and weights. Each night UV lamps are utilized to sanitize the spaces after use. We have reminders to wear face masks and remain six feet apart throughout the building. We have also made some areas one way and closed some machines to allow for additional space between patrons. The entry survey coupled with our physical covid-19 mitigation efforts have created a safe and welcoming environment for our guests and staff.



As many of our guests begin to re-build their daily and weekly routines attendance in the fitness center has steadily increased each week. We have had positive feedback from guests regarding our safety procedures and current capacity. Guests are wearing their face masks and making sure they are leaving additional space between themselves and others.

Group fitness classes also returned in March. We are very happily expanding our group fitness classes in April and offering two additional classes. We are planning to continue promoting our group fitness classes throughout April to increase awareness and attendance at these classes. Masks and distancing are required at all group fitness classes, including water aerobics.

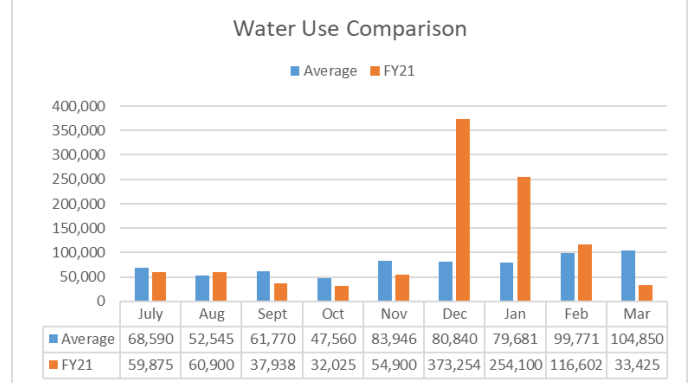
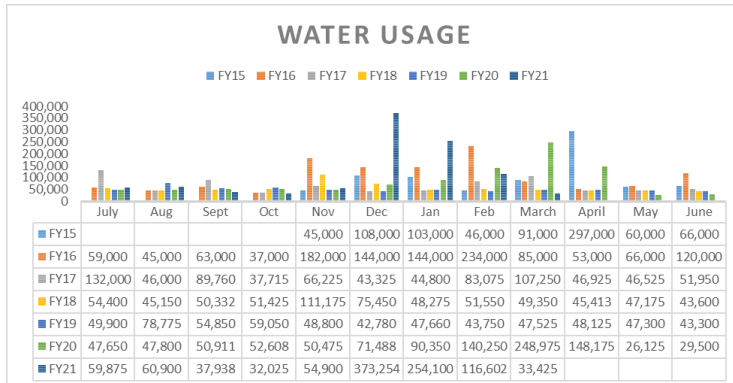


This March YKFC celebrated Nutrition Month. Nutrition Month is annually recognized in March by several organizations including the USDA and the Academy of Nutrition and Dietetics. Several unique aspects of nutrition are explored and highlighted throughout the month. We chose to focus most of our attention on nutrition myths, reading nutrition labels and advertisements, building a healthy and long term diet, and added sugars. We highlighted these topics through our Nutrition Month webpage, social media posts, newsletters, and mini challenges.

Each week we challenged the community to a mini challenge that included activities such as tracking added sugars and trying new ingredients with the goal of establishing small habit changes that can be built on throughout the year. We shared many healthy diet tips and recipes throughout the month. Even though Nutrition Month has ended we plan to continue sharing occasional nutrition and diet updates, especially concerning the dangers of added sugars.

We have continued to share covid-19 updates, vaccination information and procedures on our website and social media as well as local mandates and recommendations. With the millions of resources available it can be very difficult for people to decipher what is fact based and what is not. We have been using our position as a trusted member of the community to share accurate resources and facts. We are happy to be in a position to vet some of the resources to help keep our community informed and up to date.

## Water Use



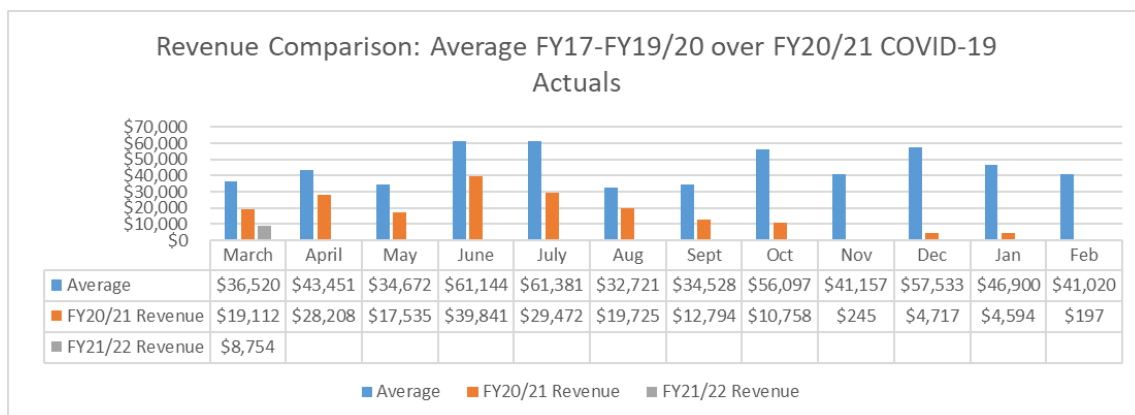
\*Note: Facility opened in November of 2014 (FY15). Starting during maintenance closure in Dec 2019/Jan 2020 hot water has been used to keep pipes from freezing resulting in higher than normal usage. Water was turned off in late March 2020 once outside temps were consistently above freezing temperatures. Problems again arose in Dec 2020 and water was used to assure there were no freeze ups of facility piping through early March.

## Revenue

| Code | Facility Revenue              | Jul-20          | Aug-20          | Sep-20          | Oct-20          | Nov-20       | Dec-20         | Jan-21         | Feb-21       | Mar-21         | Apr-21     | May-21     | Jun-21     | Total           | FY20 Budgeted    | %attained     | Remaining        |
|------|-------------------------------|-----------------|-----------------|-----------------|-----------------|--------------|----------------|----------------|--------------|----------------|------------|------------|------------|-----------------|------------------|---------------|------------------|
| 414  | Memberships                   | \$11,442        | \$4,193         | \$3,451         | \$1,180         | \$0          | \$4,377        | \$0            | \$0          | \$4,538        |            |            |            | \$29,180        | \$350,000        | 8.34%         | \$320,820        |
| 430  | Pro Shop                      | \$4,489         | \$2,920         | \$1,632         | \$1,001         | \$80         | \$47           | \$5            | \$28         | \$863          |            |            |            | \$11,066        | \$44,982         | 24.60%        | \$33,916         |
| 435  | Concessions                   | \$5,124         | \$3,410         | \$2,666         | \$1,753         | \$165        | \$292          | \$207          | \$169        | \$622          |            |            |            | \$14,408        | \$70,092         | 20.56%        | \$55,684         |
| 460  | Entry Fees                    | \$5,994         | \$8,332         | \$3,924         | \$5,857         | \$0          | \$0            | \$5,026        | \$0          | \$1,908        |            |            |            | \$31,041        | \$100,000        | 31.04%        | \$68,959         |
| 463  | Facility Rental               | \$2,264         | \$554           | \$120           | \$312           | \$0          | \$0            | \$0            | \$0          | \$144          |            |            |            | \$3,394         | \$44,600         | 7.61%         | \$41,206         |
| 465  | Program Fees                  | \$160           | \$316           | \$1,000         | \$654           | \$0          | \$0            | -\$643         | \$0          | \$680          |            |            |            | \$2,167         | \$85,817         | 2.52%         | \$83,650         |
| Misc |                               |                 |                 |                 |                 |              |                |                |              |                |            |            |            | \$0             | \$0              |               | \$0              |
|      | <b>Facility Revenue Total</b> | <b>\$29,472</b> | <b>\$19,725</b> | <b>\$12,794</b> | <b>\$10,758</b> | <b>\$245</b> | <b>\$4,717</b> | <b>\$4,594</b> | <b>\$197</b> | <b>\$8,754</b> | <b>\$0</b> | <b>\$0</b> | <b>\$0</b> | <b>\$91,257</b> | <b>\$695,491</b> | <b>13.12%</b> | <b>\$604,234</b> |

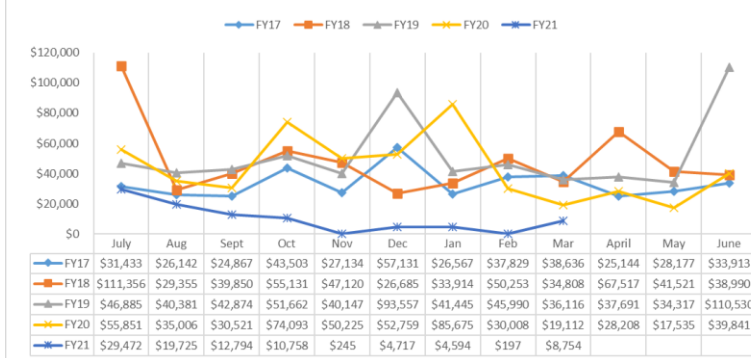
Comparing monthly revenue totals with average monthly revenue over the past 3 years, CoVID-19 related closures and restrictions have resulted in an approximate revenue loss of \$387,692 to date.

| COVID-19 Comparisons | March    | April    | May      | June     | July     | Aug      | Sept     | Oct      | Nov      | Dec      | Jan      | Feb      | Total     |
|----------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|
| Average              | \$36,520 | \$43,451 | \$34,672 | \$61,144 | \$61,381 | \$32,721 | \$34,528 | \$56,097 | \$41,157 | \$57,533 | \$46,900 | \$41,020 |           |
| FY20/21 Revenue      | \$19,112 | \$28,208 | \$17,535 | \$39,841 | \$29,472 | \$19,725 | \$12,794 | \$10,758 | \$245    | \$4,717  | \$4,594  | \$197    |           |
| FY21/22 Revenue      | \$8,754  |          |          |          |          |          |          |          |          |          |          |          |           |
| COVID-19 Deficit     | \$45,175 | \$15,242 | \$17,136 | \$21,303 | \$31,909 | \$12,996 | \$21,734 | \$45,339 | \$40,911 | \$52,816 | \$42,306 | \$40,823 | \$387,692 |

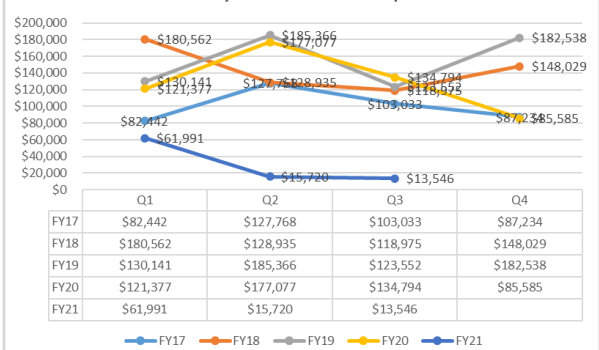


## Revenue Comparisons: Monthly Totals

MONTHLY REVENUE COMPARISON

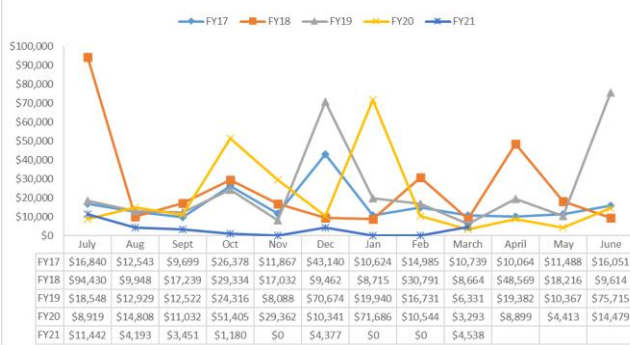


Quarterly Revenue Comparison

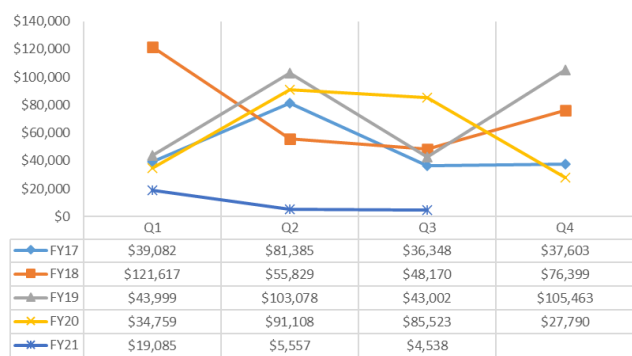


## Revenue Comparisons by line Item:

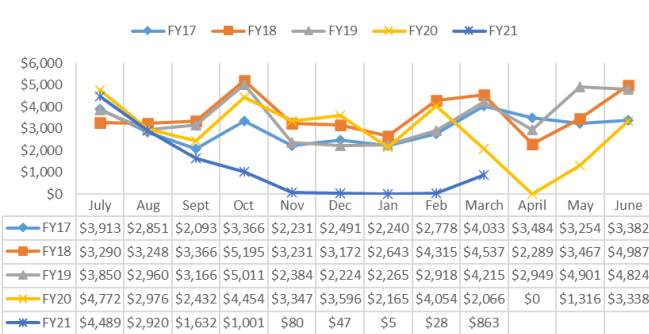
MEMBERSHIP REVENUE



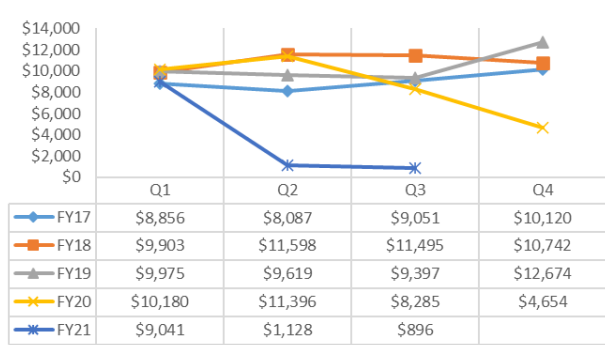
QUARTERLY MEMBERSHIP REVENUE



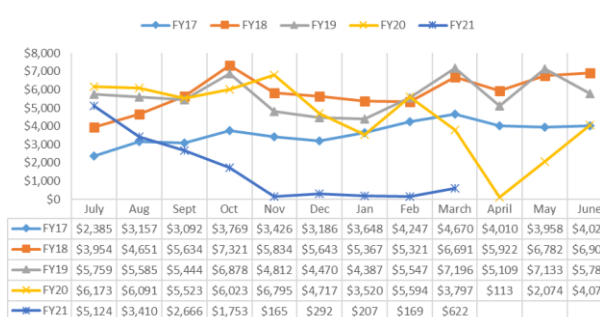
PRO SHOP REVENUE



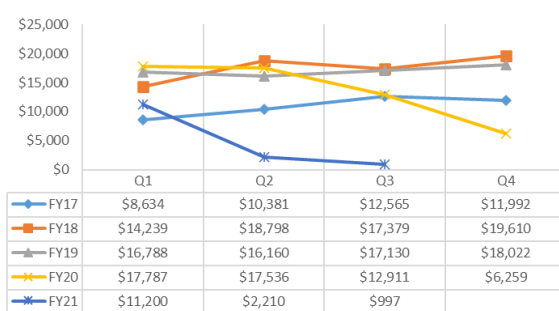
QUARTERLY PRO SHOP REVENUE



CONCESSIONS REVENUE

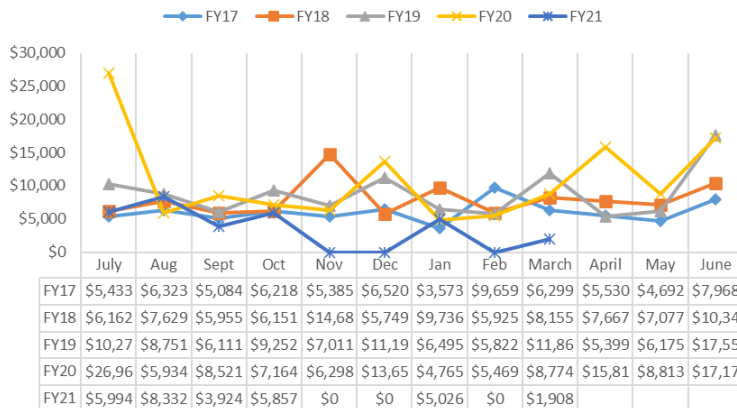


QUARTERLY CONCESSIONS REVENUE

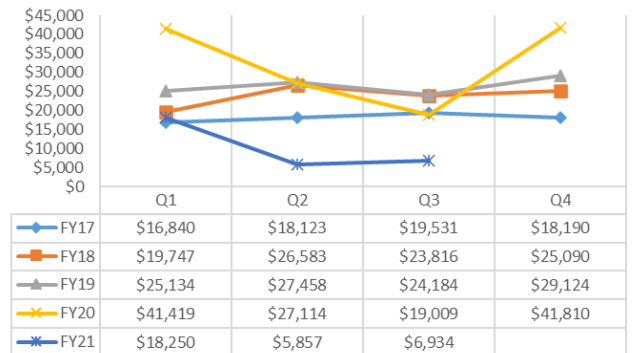


## Revenue Comparisons by line Item:

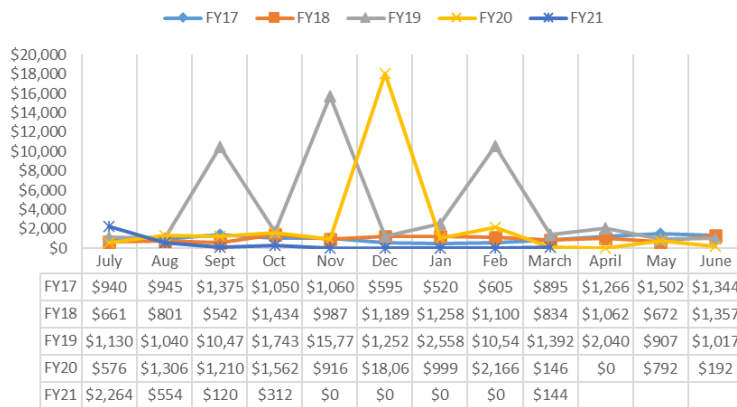
## DAILY ENTRY FEES



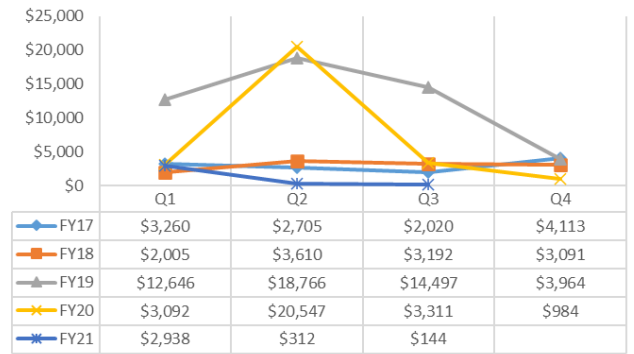
## QUARTERLY ENTRY FEES REVENUE



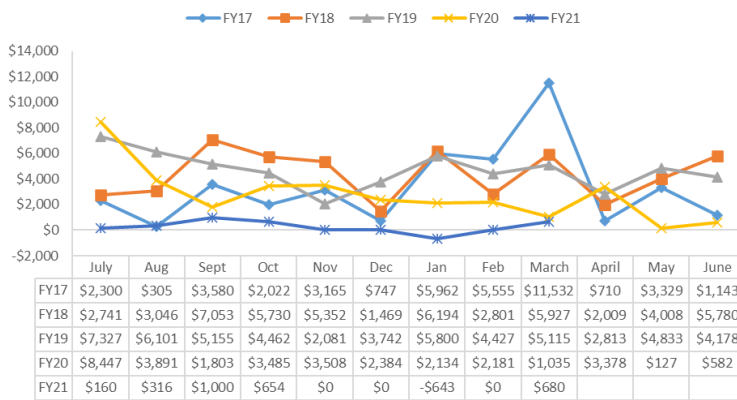
## FACILITY RENTALS



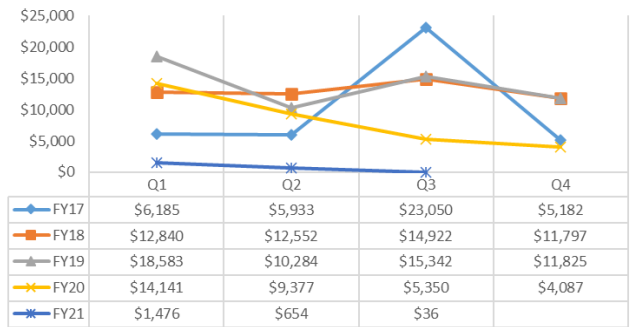
## QUARTERLY RENTAL REVENUE



## PROGRAMS REVENUE



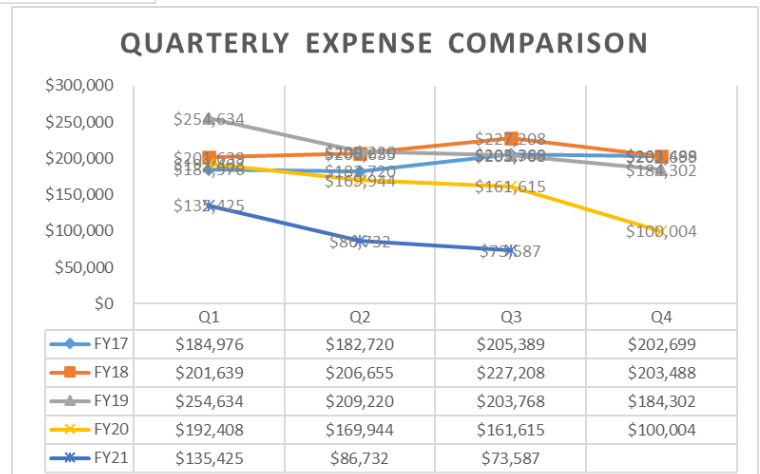
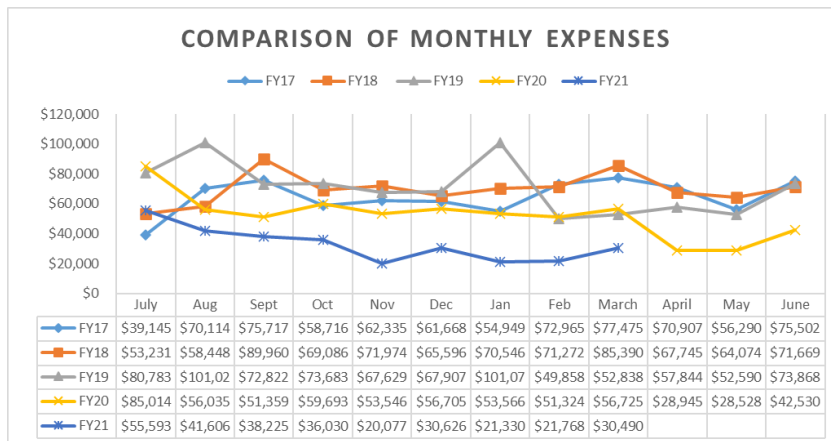
## QUARTERLY PROGRAM REVENUE



## FY21 Expenses

|     | Expenses                     | Jul-20          | Aug-20          | Sep-20          | Oct-20          | Nov-20          | Dec-20          | Jan-21          | Feb-21          | Mar-21          | Total            | Budgeted           | % used        |
|-----|------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|------------------|--------------------|---------------|
|     | Wages                        | \$40,277        | \$27,276        | \$26,273        | \$24,487        | \$11,324        | \$20,501        | \$13,789        | \$13,871        | \$21,698        | \$199,495        | \$671,142          | 29.72%        |
|     | Benefits                     | \$8,835         | \$5,853         | \$5,526         | \$5,232         | \$3,123         | \$5,938         | \$3,934         | \$3,995         | \$5,229         | \$47,665         | \$147,256          | 32.37%        |
| 520 | Housing                      | \$1,545         | \$1,545         | \$1,545         | \$1,545         | \$1,545         | \$2,545         | \$2,545         | \$2,545         | \$2,545         | \$17,905         | \$43,822           | 40.86%        |
| 545 | Travel/Training              | \$0             | \$0             | \$0             | \$49            | \$0             | \$0             | \$0             | \$0             | \$0             | \$49             | \$3,000            | 1.63%         |
| 561 | Supplies                     | \$2,983         | \$4,356         | \$2,010         | \$1,482         | \$328           | \$66            | \$435           | \$40            | \$279           | \$11,980         | \$101,671          | 11.78%        |
| 563 | Wearing Apparel              | \$0             | \$0             | \$518           | \$0             | \$0             | \$0             | \$0             | \$0             | \$0             | \$518            | \$2,731            | 18.96%        |
| 580 | Boiler                       | \$0             | \$0             | \$0             | \$0             | \$0             | \$0             | \$0             | \$0             | \$0             | \$0              | \$6,000            | 0.00%         |
| 661 | Vehicle Maintenance/Repair   | \$0             | \$0             | \$0             | \$0             | \$0             | \$0             | \$0             | \$0             | \$0             | \$0              | \$250              | 0.00%         |
| 663 | Janitorial Supplies/Services | \$39            | \$707           | \$372           | \$220           | \$3,459         | \$1,257         | \$392           | \$1,205         | \$107           | \$7,757          | \$20,400           | 38.03%        |
| 668 | Software Licenses            | \$717           | \$214           | \$136           | \$223           | \$100           | \$100           | \$100           | \$100           | \$100           | \$1,789          | \$8,146            | 21.97%        |
| 669 | Other Purchased Services     | \$0             | \$0             | \$0             | \$2,233         | \$0             | \$0             | \$0             | \$0             | \$0             | \$2,233          | \$25,160           | 8.88%         |
| 683 | Minor Equipment              | \$0             | \$665           | \$1,024         | \$0             | \$0             | \$0             | \$0             | \$0             | \$0             | \$1,689          | \$21,000           | 8.04%         |
| 684 | Donations and Awards         | \$0             | \$0             | \$0             | \$0             | \$0             | \$0             | \$0             | \$0             | \$0             | \$0              | \$500              | 0.00%         |
| 724 | Dues/Subscriptions           | \$186           | \$186           | \$402           | \$186           | \$186           | \$190           | \$0             | \$0             | \$0             | \$1,334          | \$2,100            | 63.52%        |
| 727 | Advertising                  | \$64            | \$0             | \$0             | \$137           | \$0             | \$10            | \$122           | \$0             | \$201           | \$534            | \$8,000            | 6.68%         |
| 733 | Postage                      | \$0             | \$0             | \$0             | \$0             | \$0             | \$0             | \$0             | \$0             | \$0             | \$0              | \$200              | 0.00%         |
| 736 | Bank Charges                 | \$947           | \$728           | \$421           | \$235           | \$13            | \$18            | \$12            | \$12            | \$332           | \$2,718          | \$15,377           | 17.67%        |
| 790 | Allowance for Special Events | \$0             | \$0             | \$0             | \$0             | \$0             | \$0             | \$0             | \$0             | \$0             | \$0              | \$850              | 0.00%         |
| 799 | Miscellaneous                | \$0             | \$78            | \$0             | \$0             | \$0             | \$0             | \$0             | \$0             | \$0             | \$78             | \$12,150           | 0.64%         |
|     | <b>TOTAL</b>                 | <b>\$55,593</b> | <b>\$41,606</b> | <b>\$38,225</b> | <b>\$36,030</b> | <b>\$20,077</b> | <b>\$30,626</b> | <b>\$21,330</b> | <b>\$21,768</b> | <b>\$30,490</b> | <b>\$295,745</b> | <b>\$1,089,755</b> | <b>27.14%</b> |

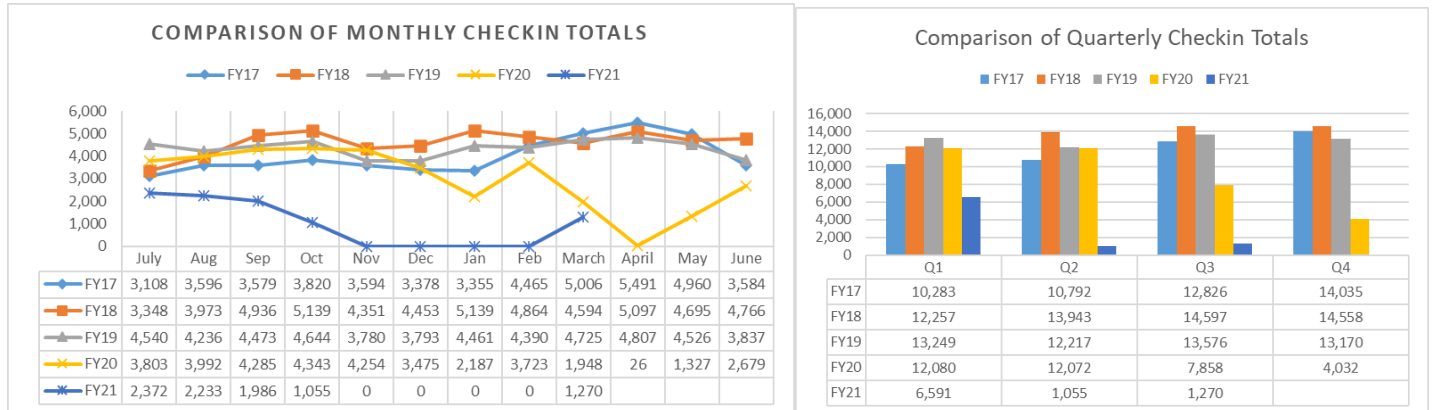
Expense totals do not include purchases for the building that have been made by City of Bethel Property Maintenance.



We have actively worked to keep expenses low through this time of reduced revenue due to CoVID-19 while still making seasonal purchases that are dependant on barge service and purchases for maintenance and cleaning projects. Due to our 2 week pay period structure there are 2 months out of each year in which 3 pay periods fall, instead of just 2. For FY21 those months were July 2020 and Dec 2020.

### Facility Utilization

**Facility Check-In:** Facility Check-In numbers represent the total number of patrons who visited the facility and are based on a compilation of the number of members who checked-in, the number of daily passes sold and the number of participants in programs, activities, rentals and special events. These numbers represent facility visits, not individuals as most individuals visit the facility multiple times over the course of the month.

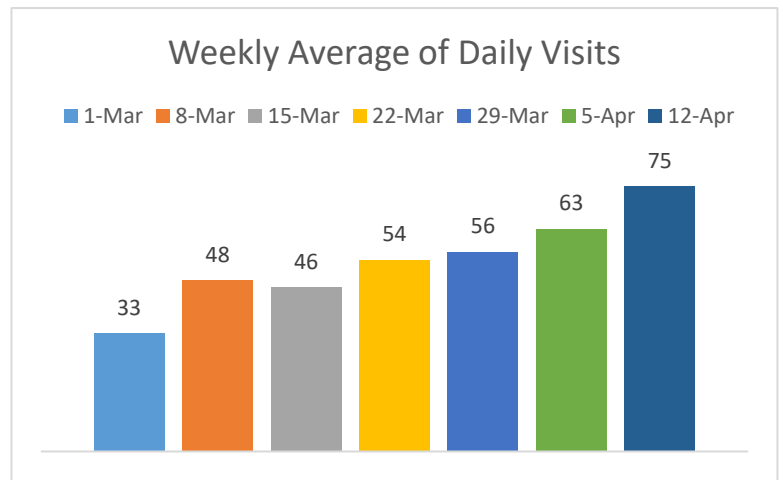


Concerns about COVID-19 began impacting facility utilization in February 2020 and into the facility closure which started by Governor mandate at 5pm March 18<sup>th</sup>. The facility reopened on May 9<sup>th</sup> at limited capacity and continued to be open through the summer with COVID-19 safety protocols in place. As COVID-19 cases and concerns about community spread rose through the fall the decision was made to close the facility in October 2020. We reopened March 1<sup>st</sup> to vaccinated individuals only.

From our reopening to vaccinated individuals on March 1<sup>st</sup> we have seen a slow but steady increase in the average number of visits per week as more individuals become fully vaccinated and the weather becomes easier to navigate.

We currently have a plan ready to implement to allow unvaccinated individuals to use the pool. The implementation of Phase 2 (see plan below) will be based on rates for COVID-19 infection in the Bethel Census area reaching the moderate transmission

threshold or 'yellow zone' as determined by guidance from the Yukon Kuskokwim Health Corporation. Once rates meet the Moderate Transmission guidelines and remain steady for at least 2 weeks Phase 2 will be implemented.





## Table of Contents

|                                                             |    |
|-------------------------------------------------------------|----|
| Summary .....                                               | 8  |
| Use Conditions .....                                        | 8  |
| Vaccinated Adults .....                                     | 8  |
| Unvaccinated Adults .....                                   | 8  |
| Youth and Household Groups .....                            | 8  |
| Fitness Areas .....                                         | 9  |
| Aquatic Areas .....                                         | 9  |
| Locker Rooms .....                                          | 9  |
| Lobby & Concessions .....                                   | 9  |
| Capacity Limit: 40% Capacity .....                          | 10 |
| Personal Safety Measures Before Visiting the Facility ..... | 11 |
| COVID-19 Exposure .....                                     | 11 |
| COVID-19 Symptoms .....                                     | 11 |
| Travel .....                                                | 11 |
| Personal Safety Measures: While Visiting the Facility ..... | 12 |
| Check-In .....                                              | 12 |
| Vaccine Confirmation .....                                  | 12 |
| Contact Information .....                                   | 12 |
| Mandatory Thermal Body Temperature .....                    | 12 |
| COVID-19 Symptoms .....                                     | 12 |
| Personal Protective Equipment .....                         | 12 |
| Social Distancing .....                                     | 12 |
| Disinfection .....                                          | 13 |
| Personal Hygiene .....                                      | 13 |
| EPA Approved Disinfectant .....                             | 13 |
| Electrostatic Sprayers .....                                | 13 |
| UV Sanitation .....                                         | 13 |
| Procedure for Confirmed COVID-19 Exposure .....             | 13 |
| Memberships .....                                           | 13 |
| Group Fitness Classes .....                                 | 13 |



## Summary

The goal of this plan is to provide a safe environment for our community to be able to remain active and healthy through the COVID-19 pandemic. The protocols below are based on guidance gathered from the Center for Disease Control, Alaska Department of Health and Safety Services, Yukon Kuskokwim Health Consortium, and Health Fitness/Trustmark. Protocols follow mandates and best practices currently in place. Updates or changes to mandates, best practices or COVID-19 knowledge base may result in changes to these protocols. Additionally, changes in community infection rates and vaccination rates may result in changes to protocols.

All facility users, whether patrons or employees, are required to follow all safety protocols and directions from YKFC Management. Abundant signage will be available throughout the facility and online providing instructions and reminders of safety protocols to patrons and employees. Patrons or employees who do not follow safety protocols will not be allowed to utilize the facility.

The implementation of Phase 2 will be based on rates for COVID-19 infection in the Bethel Census area reaching the moderate transmission threshold or 'yellow zone' as determined by guidance from the Yukon Kuskokwim Health Corporation. Once rates meet the Moderate Transmission guidelines and remain steady for at least 2 weeks Phase 2 will be implemented.

Under Phase 2 the Fitness Areas of the facility will be open to adults age 16 and older who have been *fully vaccinated* against COVID-19 by receiving the final dose of vaccine (2<sup>nd</sup> dose for 2 dose vaccines, 1<sup>st</sup> dose for single dose vaccines) **14 days before visiting**. Aquatic areas of the facility will be open for all (youth and adults with or without vaccine) to reserve a designated area for use. **Unvaccinated Aquatic area users will be required to remain in their reserved area and to use the family locker room.** The Spa will remain designated for vaccinated individuals only.

There will be *capacity limits* and COVID-19 mitigation policies in place for everyone's safety. Please review our policies carefully before visiting.

## Use Conditions

### Vaccinated Adults

Fully vaccinated adults (age 16+) are eligible to use all areas of the facility. Eligibility begins 14 days after receipt of the final dose of vaccine (2<sup>nd</sup> dose for 2 dose vaccines, 1<sup>st</sup> dose for single dose vaccines). Vaccinated adults will be required to show their vaccination card and photo ID at check in. Masks, social distancing and other COVID-19 mitigation strategies remain in place.

### Unvaccinated Adults

Adults who are not vaccinated are eligible to reserve a designated space of the pool individually or as a household group for up to 90 minutes. Unvaccinated individuals are eligible to use only their reserved pool space and the family locker room. Fitness areas and the Spa are not available.

### Youth and Household Groups

Household groups of up to 6 individuals (total of adults and youth) are eligible to reserve a designated space of the pool for up to 90 minutes. Household members visiting as a group will be restricted to their



reserved area and should maintain their distance from other households and swimmers. Unvaccinated individuals (adult and youth) are required to remain in their reserved space and to use the family locker room.

All youth under the age of 16 years must be accompanied by an adult. For youth under the age of 5 there must be 1 adult in the water for every 2 youth. Adults are responsible for assuring youth remain in their designated areas, wear their designated face masks when not in the water and remain distanced from patrons not in their household group. Adults who are not swimming with their group must remain in the reserved area. Seating near the reserved area may be requested. Bleachers and benches are closed.

### Fitness Areas

Fitness areas of the facility, including the Cardio/Weight Room, Studio and Bicycles, will be available to vaccinated adults age 16 and over only for exercise activities only.

### Aquatic Areas

All users over the age of 2 years are required to wear a designated face covering while on the pool deck. Swimmers may remove masks while swimming.

Bleacher Area is closed. Slide is closed.

Spa area is designated for vaccinated adults only and spa capacity limit is 4 adults. Adults are required to wear a designated face covering in the spa. Youth and unvaccinated adults must remain in their reserved area.

Lap lanes designated lap lanes will be available for vaccinated swimmers to use on a first come first served basis. Up to 3 vaccinated adults from different households may share a lap lane, and swimmers are asked to social distance from other swimmers as much as possible.

Lap lanes will be available for reservation by unvaccinated adults and households interested in lap swimming. Unvaccinated patrons will be restricted to their reserved area and should maintain their distance from other household groups and other swimmers.

### Locker Rooms

Adult locker rooms will be restricted to vaccinated adults age 16 and over only. Adults are reminded to wear designated face coverings over the mouth and nose at all times except while showering.

Family Locker Room: **Unvaccinated adults and household groups with youth under age 16 will be required to use the family locker room.** Designated waiting areas will be available for patrons waiting for the family locker room to become available. Adults are responsible for keeping young children with the group, for making sure everyone wears their designated face covering, and for assuring social distance is maintained between other patrons not from the household group.

### Lobby & Concessions

The lobby area will be open for check-in only and patrons are reminded to maintain distance from others.

The hallway leading to the fitness areas and adult locker rooms will be restricted to vaccinated adults age 16 and older.



The seating area of concessions will be closed except for designated areas available to families/household groups who are waiting to use the family locker room. All patrons waiting must wear a face covering unless under the age of 2 years and must remain in their designated waiting area.

Concessions will be available for take away only.

### Capacity Limit: 40% Capacity

The below tables specify the allowed activities and expectations for each area under the designated capacity allowances. Reservations may be required, especially during peak hours, to assure compliance with capacity limits.

The following areas are designated for vaccinated adults only.

| Open to Vaccinated Adults | Facility Area      | Capacity | Allowed Activity                                          | Mask Required?          | Additional Information                                                                                                                                                                                        |
|---------------------------|--------------------|----------|-----------------------------------------------------------|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                           | Adult Locker Rooms | 12       | Showering<br>Changing<br>Use of Restrooms<br>Hand Washing | NO<br>YES<br>YES<br>YES | For activities that require mask removal such as brushing teeth or washing or putting lotion or makeup on the face please be sure to maintain distance from others and replace your mask as soon as possible. |
|                           | Bathrooms          | 4        | Use of Restrooms<br>Hand Washing                          | YES<br>YES              |                                                                                                                                                                                                               |
|                           | Cardio/Weight Room | 18       | Workouts                                                  | YES                     |                                                                                                                                                                                                               |
|                           | Pool               | 35       | Lap Swimming<br>Water Exercise<br>Walking on Deck         | NO<br>NO<br>YES         | Lap Swimmers must wear mask while on the pool deck.                                                                                                                                                           |
|                           | Spa                | 4        | Stretching                                                | YES                     | 10 minute limit                                                                                                                                                                                               |
|                           | Studio             | 16       | Workouts<br>Stretching<br>Group Fitness                   | YES<br>YES<br>YES       |                                                                                                                                                                                                               |
|                           | Hallway            | 16       | Walking<br>Stretching<br>Exercise                         | YES<br>YES<br>YES       |                                                                                                                                                                                                               |
|                           | Bicycles           | 3        | Cycling                                                   | YES                     |                                                                                                                                                                                                               |

The following areas are open to unvaccinated adults and to family/household groups.

| Open to Unvaccinated Adults and | Facility Area | Capacity                                       | Allowed Activity                              | Mask Required?  | Additional Information                                                                                       |
|---------------------------------|---------------|------------------------------------------------|-----------------------------------------------|-----------------|--------------------------------------------------------------------------------------------------------------|
|                                 | Pool          | Up to 6 household members per designated space | Swimming<br>Water Exercise<br>Walking on Deck | NO<br>NO<br>YES | Reservations of designated spaces will be required. Household members must remain in their designated spaces |



|  |                         |                                                                                                                                                                                                                                                                           |  |  |  |
|--|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|
|  | Concession seating area | Concession seating area will have designated spaces available to families/household groups who are waiting to use the family locker room. All patrons waiting must wear a face covering unless under the age of 2 years and must remain in their designated waiting area. |  |  |  |
|  | Family Locker Room      | 1 household                                                                                                                                                                                                                                                               |  |  |  |

The below areas are open to all patrons. Designated facial coverings and social distancing are required at all times.

| Facility Area | Capacity                                                                                                                                                                         | Allowed Activity         | Mask Required? | Additional Information |
|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|----------------|------------------------|
| Lobby         | 8                                                                                                                                                                                | Check-In<br>Shoe Removal | YES<br>YES     |                        |
| Concessions   | Concessions seating area is available only to families/household groups who are waiting to use the family locker room.<br>Concessions items will be available to take away only. |                          |                |                        |

## Personal Safety Measures Before Visiting the Facility

### COVID-19 Exposure

Patrons with knowledge that they have been exposed to COVID-19 may visit the facility if they meet all the following criteria:

- Are fully vaccinated and it has been at least 2 weeks since your final dose.
- It has been less than 6 months since receipt of second dose.
- Have remained asymptomatic since the current COVID-19 exposure.

**Patrons who do not meet all 3 of the above criteria should not visit the facility and should follow [current quarantine guidance](#) after exposure to someone with suspected or confirmed COVID-19.**

### COVID-19 Symptoms

Employees and Patrons experiencing even mild symptoms of illness are instructed to stay home and not enter the facility until they have been symptom free for at least 72 hours or have received a negative COVID-19 test. Adults should carefully monitor children and do not bring youth to the facility who are experiencing any symptoms.

### Travel

Vaccinated Travelers are reminded that under City of Bethel Emergency Ordinance 21-06 you are exempt from quarantine, but not from testing. You may visit the fitness center, but we ask you to be extra cautious about wearing your mask and maintaining your distance from others and please be sure to get tested for COVID-19 approximately 7 days after your return to Bethel to help protect the community.

Unvaccinated individuals should not visit the facility until 14 days after travel and are reminded to test on arrival in Bethel and again 7 days after your return.



Please visit the [City of Bethel COVID-19](#) website for up to date travel requirements.

## Personal Safety Measures: While Visiting the Facility

---

### Check-In

#### Vaccine Confirmation

At check-in, all vaccinated patrons will be required to show a picture ID and proof they received their final dose of the COVID-19 vaccine at least 2 weeks prior to the date of visit.

Picture ID may be a state ID, Diver License, employee card, school ID or Tribal ID (with photo).

Vaccination proof will be the CDC vaccine card provided at time of vaccination. Digital pass cards and immunity passport options will be reviewed as data on those emerging technologies becomes available.

#### Contact Information

At check-in, all Employees and Adult Patrons will be required to confirm up to date contact information to assure we are able to contact them in the event of a possible COVID-19 exposure.

#### Mandatory Thermal Body Temperature

Employees and all patrons (including youth) will be required to undergo a non-contact, thermal body temperature reading at check-in. Any person with a temperature at or above 100.4°F will not be allowed to use the facility.

#### COVID-19 Symptoms

At check-in all patrons, including youth, will be required to confirm that they are not experiencing even mild symptoms of COVID-19 illness. Patrons experiencing COVID-19 symptoms will not be allowed to use the facility.

### Personal Protective Equipment

Everyone over the age of 2 years will be required to wear a dedicated face mask over their mouth and nose for all activities except swimming and showering. Swimmers are required to wear a dedicated face mask while walking to and from the pool and while in the spa. Patrons may remove their face mask while showering but must wear a mask for all other locker room activities (walking, dressing, using the rest rooms etc.). **Scarves, shirts, or other clothing items are not acceptable substitutes for a dedicated face mask.**

### Social Distancing

Employees and Patrons will be directed to maintain social distancing of 6ft -10ft at all times. The following steps have been taken to facilitate distancing:

- Where possible, separate doors for entrance and exit have been designated.
- Fitness equipment has been re-organized to allow for spacing, by either blocking off equipment or pairing pieces of equipment allowing only one to be used at a time.
- Directional and reminder signage has been placed on the floors, walls, and on seats.
- Designated waiting areas have been established for family/household groups waiting for the family locker room.



## Disinfection

---

### Personal Hygiene

Employees and Patrons are encouraged to wash hands frequently with soap and water utilizing the supplies readily available in all bathrooms and locker rooms. Hand sanitizer will also be made available for use between hand washing.

### EPA Approved Disinfectant

Throughout the facility we use a cleaning solution that has been approved by the EPA as effective at killing viruses including SARS Associated Coronavirus. This cleaning solution will be abundantly available to Employees and Patrons for cleaning of all contact items. Patrons will be encouraged to wipe surfaces before and after use. Employees will conduct regular cleaning throughout the day.

### Electrostatic Sprayers

Employees will use electrostatic sprayers to disinfect surfaces throughout the facility, particularly in fitness areas and locker rooms. The touchless electrostatic technology allows the disinfectant to “wrap around” surfaces, such as gym equipment and provides a high level of disinfectant even on difficult to reach areas. Spraying will occur throughout the day.

### UV Sanitation

UV-C sanitizing lights will be deployed throughout the facility each evening to provide disinfection of surfaces and air. UV-C lamps are a photon-based purification system that is highly effective in deactivating allergens, viruses, bacteria, and mold to purifying the air and surfaces.

## Procedure for Confirmed COVID-19 Exposure

---

At check-in, all Employees and Patrons will be required to confirm up to date contact information. In the event that a patron or employee tests positive for COVID-19, contact tracing lists will be provided to healthcare representatives and Employees and Patrons who may have been in contact with the positive individual will be notified and recommended to testing and self-isolation.

As the facility is being regularly disinfected, the facility will remain open unless directed otherwise by Healthcare Representatives or City of Bethel Administration.

## Memberships

---

At the closing of the facility in October 2020 all memberships were placed on hold. Under the current use structure memberships will be re-activated only for those individuals who choose to use the facility. All other memberships will remain on hold until restrictions are removed.

## Group Fitness Classes

---

Group fitness classes will be available for vaccinated individuals. Instructors and participants will be required to wear a dedicated face mask (including during water aerobics) and maintain 10 feet of distance during exercise.

# City of Bethel, Alaska

## City Clerk’s Office

### Council Meetings

April 27, 2021 Regular City Council Meeting  
May 4, 6, 13, 18, 20, 27 Special City Council Budget Meetings  
May 11, 25 Regular City Council Meeting

### Second half of the week of April 13

- Amended the Special Events Permit Internal Process.
- Reviewed and provided amendments to Deputy City Clerk and City Clerk Job Description
- Worked with the State of Alaska Division of Retirement and Benefits on the amendments to the PERS Agreement to Exempt the City Manager.
- Finalized the City Manager’s Employment Agreement for April 27<sup>th</sup> Meeting.
- Drafted Resolution supporting K300 Race Committee’s application for a grant.
- Processed two passport applications.
- A few weeks ago, the City Clerk’s Office initiated our next large project which will consist of a review and possible update of all municipal forms. Continued working on the creation of an online form for Employment Application.
- Worked with two families on burial services and coordinating permits/reservations.
- Deputy City Clerk attended passport acceptance training.
- Deputy City Clerk attended records management training.
- City Clerk is a member of several Alaska Association of Municipal Clerks Committees. The Education Committee, Chair of the Academy Sub Committee, Mentoring Committee, and the Nuts-and-Bolts Committee. This week there were several meetings held, and as a result, a bit of work required, as the organization works to establish a Conference education schedule for November.
- Working on identifying location options for in person meetings for council and our volunteer boards during the construction period at City Hall.
- Coordinated with Bethel Conference of Churches to identify services that they offer for families in need of memorial services. Will incorporate the information gathered into the cemetery information Page, we are developing.
- Attended the Election Policy Work Group hosted by the State of Alaska.
- Provided support to another municipal clerk in the region; information and steps on a local option petition.

### Week of April 19<sup>th</sup>

- Coordinated with the Committee/Commission Ex Officio staff on the meeting calendar for June, July, and August for the planning of in person meeting space. Drafted a letter on behalf of the City Manager to ONC Chairman Hunter, requesting costs associated with the City’s use of the Multipurpose Building for the time the City Hall is under construction.
- Assisted with the Town Hall Meeting on Sexual Assault Awareness.
- Updated the Emergency Ordinances for the May 11<sup>th</sup> Meeting.
- Researched nonprofit sales tax/exemption issues as a question was raised on Ord. 21-14.
- Created public notice for Administration’s Town Hall Meeting on Sexual Assault Prevention and Awareness and corresponded with Eileen Arnold, TWC, and Kristin Hall, KYUK, on the meeting arrangements.
- Reached out to Planning Commissioners and Council Members for Financial Disclosure Statements.
- Reviewed the Planning Commission/Board of Adjustment Review Process for a reconsideration appeal hearing.
- Updated the Special Events Permit Application to include Restaurant Caterer Permits.

### Committee/Commission/Board Vacancies –

|                                                             | Regular Member | Alternate Member |
|-------------------------------------------------------------|----------------|------------------|
| Parks/Recreation Aquatic Health and Safety Center Committee | 1              | 2                |
| Planning Commission                                         | full           | 1                |
| Port Commission                                             | full           | 1                |
| Public Safety and Transportation Commission                 | 1              | 2                |
| Community Action Grant Technical Review Board               | full           | 2                |
| Public Works Committee                                      | 1              | 2                |
| Finance Committee                                           | full           | full             |
| Ethics Board                                                | full           | full             |

## 2021 Election Calendar

| Date  | Action                                                                                                                                                                                                                                                                                               |
|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1/1   | <b>Absentee By-Mail Ballot Applications are Accepted BMC 7.70.060</b><br>Forms are Available on the online at <a href="http://www.cityofbethel.org">www.cityofbethel.org</a> or through the City Clerk's Office.                                                                                     |
| 7/3   | <b>Deadline for Petition Submission for Certification</b><br>The City Clerk has 10 days to certify petition signatures. July 13 <sup>th</sup> would be the deadline to have an ordinance drafted and ready for legal review in advance of the deadline for packet.                                   |
| 7/27  | <b>Deadline for Ballot Proposition Ordinance Introduction BMC 7.10.070</b><br>The ballot proposition ordinance adoption timeline (through regular meeting processes) requires ordinance introduced at the Council's July 27 <sup>th</sup> regular meeting.                                           |
| 7/26  | <b>Notice of Vacancy in Office Posted to Community BMC 7.30.040</b>                                                                                                                                                                                                                                  |
| 7/29  | <b>Declaration of Candidacy Packets Available BMC 7.30.020</b><br>Printable from the City's website or pick up printed copies at the City Clerk's Office.                                                                                                                                            |
| 8/1   | <b>Notice of Voter Registration Requirements</b><br>The City Clerk's Office provides notice to the voters of the registration requirements.                                                                                                                                                          |
| 8/5   | <b>Declaration of Candidacy Filing Period Opens Mon-Friday 8a-5p BMC 7.30.020</b><br>Residents interested in filing for elected office can begin submitting their filing packet.                                                                                                                     |
| 8/20  | <b>Declaration of Candidacy Filing Deadline 4:00 p.m. BMC 7.30.020</b><br>Anyone interested shall have submitted the completed declaration of candidacy by 4p.                                                                                                                                       |
| 8/20  | <b>Candidate Name Change and Withdrawal Deadline 4:00 p.m. BMC 7.30.060</b><br>Deadline for removing or correcting declaration of candidacy.                                                                                                                                                         |
|       | <b>Write-in Candidate Filing Period Opens BMC 7.30.030</b>                                                                                                                                                                                                                                           |
| 8/22  | <b>Deadline to Adopt Proposition by Ordinance. (45 days before Election Day) BMC 7.10.070</b><br>Council is required to adopt an ordinance to place proposition questions on the ballot. This is the deadline for adoption. <i>The last regular meeting to adopt Ord. is August 10<sup>th</sup>.</i> |
| 9/1   | <b>Notice of Election BMC 7.10.060</b><br>The City Clerk's Office provides notice of the Election to the residents.                                                                                                                                                                                  |
| 9/5   | <b>Deadline to Register to Vote BMC 7.20.010</b>                                                                                                                                                                                                                                                     |
| 9/13  | <b>Test and Security on Election Equipment (at least one week before Election Day)</b>                                                                                                                                                                                                               |
| 9/14  | <b>First Day of Notice for Bond Indebtedness (20 days before Election Day) BMC 7.10.090</b>                                                                                                                                                                                                          |
| 9/20  | <b>Early Voting Absentee By-Mail and Special Needs Voting Opens BMC 7.70.050</b>                                                                                                                                                                                                                     |
| 9/20  | <b>Absentee By-Mail Ballot Mailed BMC 7.70.050</b>                                                                                                                                                                                                                                                   |
| 9/30  | <b>Deadline to Submit Absentee By-Mail Ballot Application</b>                                                                                                                                                                                                                                        |
|       | <b>Deadline to Submit Absentee By Electronic Transmission</b>                                                                                                                                                                                                                                        |
|       | <b>Last Day to Vote Absentee In-Person/Special Needs</b>                                                                                                                                                                                                                                             |
| 10/6  | <b>Election Day BMC 7.10.050</b>                                                                                                                                                                                                                                                                     |
|       | <b>Canvass Board Meeting</b><br>The election canvass board will meet to review and confirm election results                                                                                                                                                                                          |
| 10/12 | <b>Council's Certification of the Election at Regular Meeting</b>                                                                                                                                                                                                                                    |
| 10/18 | <b>Council's Election of Mayor and Vice-Mayor Special Meeting</b>                                                                                                                                                                                                                                    |
| 11/4  | <b>City Clerk's Office Conclusion of Ballot Preservation (30 Days following Election Day) BMC 7.10.140.</b>                                                                                                                                                                                          |



| APRIL 2021

# IN THE LOOP

City of Bethel



## IN THIS ISSUE

**Community Support  
& Response**

**Clean-Up Green-Up**

**Community Resources**

**Site Plan Permits**

**Sexual Assault  
Prevention & Awareness**

**Staying Connect to your Local  
Government**

**Small Boat Harbor Permits**

**Passports**



City of Bethel, Alaska



[www.cityofbethel.org](http://www.cityofbethel.org)



907-543-2047

### BETHEL CITY COUNCIL MEMBERS

Michelle DeWitt , Mayor  
Haley Hanson, Vice-Mayor  
Perry Barr  
Rose Henderson

Alyssa Leary  
CJ McCormick  
Mark Springer



# Community Support & Response

## CEMETERY

The City of Bethel manages the cemeteries within the community and works with the families of the deceased to facilitate burial site preparation. Burial permits and reservations are issued by the City Clerk's Office. Our goal in providing burial support services is to keep the process simple and low cost for the family.

When we can, we provide free burial site preparation with help from AVEC, our community partner.

**Permits: \$50**

**Reservations: \$150**

**Call your City Clerk's Office for more information: 545-4512**

**Families can contact local churches for burial services.**

**ONC Members may receive financial assistance for burial services from their Tribe. Call 543-2608**



## COMMUNITY ACTION GRANT

20% of Sales Tax Collected from the Alcohol Tax is dedicated to the Community Action Grant Program. The City of Bethel has established a Community Action Grant (CAG) Program to allow community organizations and individuals to request financial support from the City for civic programs or events that contribute to the health, welfare and overall lives of the residents of Bethel; especially its most vulnerable populations.

**Sackett Hall – UAF Kuskokwim Campus \$1,896** Jesuit Volunteer/Americorps hire to serve as Wellness Programming Specialist.

**Maria Nicolai \$1,500** Constructing garden boxes and supplies to establish garden at Ayalpik Apartments to grow food for elders and others.

**Cama-i Dance Festival \$10,000** High school rental cost & student activity support.

**Kuskokwim Art Guild – After School Art Pgm \$2,896/Summer Art Camp \$1,994** Artist fee, materials, snacks for art program at the library/teacher fees, supplies, snacks.

**Native Village of Napaimute \$9,995** Plowing and maintenance of Kuskokwim River Ice Road.

**Bethel Friends of Canines \$8,820** Salary of animal shelter worker.

**Orutsararmuit Native Council \$3,500** Senior and caregiver bus passes for one quarter.

**Total CAG Distribution in 2020: \$30,606**

## Agency Support

The City of Bethel provides annual contributions to community agencies and organizations. In this year's operating budget, the City allocated:

- \$72,600 UAF Kuskokwim Consortium Library. Support staff and general operations.
- \$112,000 UAF 4-H. Staff and operational support. The City also provides in-kind contributions in the form of utilities, property/building maintenance,
- The City provides in-kind contributions in the form of utilities, property/building maintenance,

# Sexual Assault Prevention & Awareness Month

Sexual Assault Prevention and Awareness Month seeks to raise public awareness about sexual harassment, assault, and abuse and provides recommitment to our continued efforts as a society to strengthen our response to these crimes and the awareness of services and support for survivors. All children, teenagers, women, and men deserve to be safe from the entire spectrum of sexual violence from sexual harassment, to sexual abuse, to sexual assault. It is critically important to promote access to healing and wellness activities,

## **The following are resources for victims and survivors of sexual assault:**

Bethel Police Department: 911

Tundra Women's Coalition: (907) 543-3456 Toll Free 1-800-478-799

National Sexual Assault Telephone Hotline: 1-800-656-4679

Stronghearts Native Helpline: 1-844-7NATIVE

Office of Victims' Rights (907) 754-3460

YKHC Behavioral Health: (907) 543-6101

Bethel Family Clinic Behavioral Health: (907) 543-3773

Orusararmiut Native Council Social Services: (907) 543-2608

We all have a role in preventing sexual assault, together, we can work together to further reduce, with the goal to eliminate, sexual assault in our community and region



# YOUR VOICE HAS POWER

*speak up to effect change*



### **City Manager**

[citymanager@cityofbethel.net](mailto:citymanager@cityofbethel.net)  
543-2047

### **City Clerk**

[cityclerk@cityofbethel.net](mailto:cityclerk@cityofbethel.net)  
545-4512

### **City Attorney**

[legal@cityofbethel.net](mailto:legal@cityofbethel.net)

### **Planning**

[planning@cityofbethel.net](mailto:planning@cityofbethel.net)  
543-2047 ext. 539

### **Public Work**

[publicworks@cityofbethel.net](mailto:publicworks@cityofbethel.net)  
543-3110

### **Business Licensing/Sales Tax**

[forbusinesses@cityofbethel.net](mailto:forbusinesses@cityofbethel.net)  
543-2047 ext 231

### **Water/Sewer/Garbage Utilities**

[utilities@cityofbethel.net](mailto:utilities@cityofbethel.net)  
543-1393

### **Port**

[port@cityofbethel.net](mailto:port@cityofbethel.net)  
543-2047 ext. 662

### **Police Department**

[policedepartment@cityofbethel.net](mailto:policedepartment@cityofbethel.net)  
543-3781 non emergent

### **Fire Department**

[fire@cityofbethel.net](mailto:fire@cityofbethel.net)  
543-2047 ext 231

### **Human Resources**

[humanresources@cityofbethel.net](mailto:humanresources@cityofbethel.net)  
543-2047 ext. 221

# CLEAN-UP GREEN-UP

## APRIL 22-JULY 12

Kids can Win a Nintendo Switch  
Two Age Groups (5-12yo & 13-17yo)



### Bag Pick-Up Locations

- Fire Department
- City Hall
- Port Office

### Bag Drop-Off Locations

- Fire Department
- Public Works Landfill
- Port Office

*For Landfill Drop Off Appointments Call 543-1393*

## RECORD SNOW FALL



Pothole season is around the corner and our Public Works Team is taking important steps to help reduce the impacts of our heavy snow fall on our roads.

## NEED A PASSPORT?

Are you planning a trip? The processing times for a US Passport are delayed, make sure you plan accordingly. Contact your City Clerk's Office for information on how you can get your first passport or get your current passport renewed.

[cityclerk@cityofbethel.net](mailto:cityclerk@cityofbethel.net)



required doses of the available COVID-19 Vaccines. Go to [www.ykfitness.org](http://www.ykfitness.org) for more information on hours and opportunities. 907-543-0390 or [ykfc@cityofbethel.net](mailto:ykfc@cityofbethel.net)

New to Bethel? Or just needing to get out of the COVID funk, check out the YK Fitness Center! We recently reopened the facility to individuals 16 years of age and over who have received their

# SITE PLAN PERMIT

Planning Department  
[planning@cityofbethel.net](mailto:planning@cityofbethel.net)  
907-543-5306



Are you adding dirt to your property this summer, or to add a shed or steam? Make sure you get your site plan permit from the Planning Department first.

1. Get your application at [www.cityofbethel.org](http://www.cityofbethel.org) and email it to Planning.
2. We will coordinate over the phone payment of the application \$25 for Residential and \$100 for Commercial.
3. Within ten days of a complete application, we will approve, deny or approve with modifications the permit.

## HARBOR PERMITS

Port of Bethel  
[port@cityofbethel.net](mailto:port@cityofbethel.net)  
907-543-5306



It is time to start thinking about summer. We require the users of the Small Boat Harbor (SBH) to obtain permits for the use of this public facility. We have a number of different permit options to consider.

**SBH Ramp Use Permit** (use of SMH ramp to unload and load your boat) \$30

**SBH General Use Permit** (Store your boat on land at the SBH) \$60

**SBH Float Use Permit** (Store your boat on floats at the SBH) \$30 + \$12 per ft.

There is limited space of boat storage at the SBH, float permits are issued to previous year holders first. To get on the wait list contact the [port@cityofbethel.net](mailto:port@cityofbethel.net).



## Log Cabin Demolition



Pinky's Park looks different following the demolition of the Log Cabin building. After years of community use, the Log Cabin faced deterioration too costly to justify repairs, so the City made the difficult decision to tear it down. Prior to the demolition, we enjoyed learning the history of this historic building which we have detailed in the City's Ordinance 20-42. Go to [www.cityofbethel.org](http://www.cityofbethel.org) and look for our legislation link to find out more.

# A COMMUNITY TOGETHER

## **Alaska Village Electric Cooperative**

AVEC and their staff assist the City with burial preparation for our residents during the winter months, and they do so without charge.

## **Bethel Friends of Canines**

This nonprofit dog rescue is a volunteer group works hard around the YK Delta Region. The volunteers rescue dogs and provide adoption opportunities. They also sponsor spay and neuter clinics to help reduce overpopulation.

## **Bethel Winter House**

Bethel Winter House is a homeless shelter, that provides meals and overnight stays to their guests sponsored by the Bethel Lions Club.

## **Bethel Search and Rescue**

An all volunteer team who responds to calls for help for missing persons in the Bethel area. Their work also supports the Alaska State Troopers, Civil Air Patrol City of Bethel and Village Police Safety Officers.

## **Tundra Women's Coalition**

A nonprofit organization that serve people affected by domestic violence and sexual assault in Bethel and the surrounding area.

*Thank You*

### **GET ALERTS**

Are you  
signed up for  
alerts from our  
Police Department?

**Go to:**

**<https://www.nixle.com>**

to receive relevant information  
from our first responders.



### **REPORT PROBLEM**

We have  
an easy way  
for you to  
report a problem  
from your phone.

Go to the City's website:

**[www.cityofbethel.org](http://www.cityofbethel.org) or**

**<https://talktomycity.com/create>**

**Clerk's Office (C.O.) Committee & Commission Document Tracking, Regular Meetings 2021**

|                                           | Jan. | Feb.  | March | April | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|-------------------------------------------|------|-------|-------|-------|-----|------|------|------|-------|------|------|------|
| Pub. Safety and Transportation 1st Wed.   |      |       |       |       |     |      |      |      |       |      |      |      |
| Agenda signed (email to C.O.)             | X    |       | X     | X     |     |      |      |      |       |      |      |      |
| Agenda and Packet (website)               | X    | X     | X     | X     |     |      |      |      |       |      |      |      |
| Draft Minutes (email to C.O.)             | X    | X     | X     |       |     |      |      |      |       |      |      |      |
| Signed Minutes (website)                  |      |       |       |       |     |      |      |      |       |      |      |      |
| Signed Minutes (original to C.O.)         | X    |       |       |       |     |      |      |      |       |      |      |      |
| Planning 2nd Thurs.                       |      |       |       |       |     |      |      |      |       |      |      |      |
| Agenda signed (email to C.O.)             | X    | X     | X     | X     |     |      |      |      |       |      |      |      |
| Agenda and Packet (website)               | X    | X     | X     | X     |     |      |      |      |       |      |      |      |
| Draft Minutes (email to C.O.)             | X    | X     | X     |       |     |      |      |      |       |      |      |      |
| Signed Minutes (website)                  | X    | X     | X     |       |     |      |      |      |       |      |      |      |
| Signed Minutes (original to C.O.)         | X    | X     | X     |       |     |      |      |      |       |      |      |      |
| Port 3rd Mon.                             |      |       |       |       |     |      |      |      |       |      |      |      |
| Agenda signed (email to C.O.)             |      |       | X     |       |     |      |      |      |       |      |      |      |
| Agenda and Packet (website)               |      | X     | X     | X     |     |      |      |      |       |      |      |      |
| Draft Minutes (email to C.O.)             |      |       |       |       |     |      |      |      |       |      |      |      |
| Signed Minutes (website)                  |      |       |       |       |     |      |      |      |       |      |      |      |
| Signed Minutes (original to C.O.)         |      |       |       |       |     |      |      |      |       |      |      |      |
| Community Action Grant Quarterly          |      |       |       |       |     |      |      |      |       |      |      |      |
| Agenda signed (email to C.O.)             |      | March | X     | X     |     |      |      |      |       |      |      |      |
| Agenda and Packet (website)               |      |       | X     | X     |     |      |      |      |       |      |      |      |
| Draft Minutes (email to C.O.)             |      |       | X     | X     |     |      |      |      |       |      |      |      |
| Signed Minutes (website)                  |      |       | X     | X     |     |      |      |      |       |      |      |      |
| Signed Minutes (original to C.O.)         |      |       | X     | X     |     |      |      |      |       |      |      |      |
| Parks Rec. Aquatic Health Safety 2nd Mon. |      |       |       |       |     |      |      |      |       |      |      |      |
| Agenda signed (email to C.O.)             | X    | X     | X     | X     |     |      |      |      |       |      |      |      |
| Agenda and Packet (website)               | X    | X     | X     | X     |     |      |      |      |       |      |      |      |
| Draft Minutes (email to C.O.)             |      |       |       |       |     |      |      |      |       |      |      |      |
| Signed Minutes (website)                  | X    | X     |       |       |     |      |      |      |       |      |      |      |
| Signed Minutes (original to C.O.)         | X    | X     |       |       |     |      |      |      |       |      |      |      |
| Public Works 3rd Wed.                     |      |       |       |       |     |      |      |      |       |      |      |      |
| Agenda signed (email to C.O.)             | X    |       | X     | X     |     |      |      |      |       |      |      |      |
| Agenda and Packet (website)               | X    | X     | X     | X     |     |      |      |      |       |      |      |      |
| Draft Minutes (email to C.O.)             |      |       |       |       |     |      |      |      |       |      |      |      |
| Signed Minutes (website)                  | X    | X     |       |       |     |      |      |      |       |      |      |      |
| Signed Minutes (original to C.O.)         | X    | X     |       |       |     |      |      |      |       |      |      |      |
| Finance 4th Mon.                          |      |       |       |       |     |      |      |      |       |      |      |      |
| Agenda signed (email to C.O.)             | X    | X     | X     | X     |     |      |      |      |       |      |      |      |
| Agenda and Packet (website)               | X    | X     | X     | X     |     |      |      |      |       |      |      |      |
| Draft Minutes (email to C.O.)             | X    | X     | X     |       |     |      |      |      |       |      |      |      |
| Signed Minutes (website)                  |      |       |       |       |     |      |      |      |       |      |      |      |
| Signed Minutes (original to C.O.)         |      |       |       |       |     |      |      |      |       |      |      |      |