ALASKA EARTH STUDY
DATA SUMMARY 2008

ALASKA

EARTH

EDUCATION AND RESEARCH TOWARDS HEALTH

Report from the Alaska EARTH Research Team

ALASKA EARTH
EDUCATION AND RESEARCH TOWARDS HEALTH

Thank you for your interest and participation in the Alaska EARTH Study.

The EARTH (Education and Research Towards Health) Study was designed to identify protective and risk factors for chronic diseases among Alaska Native people. The study enrolled 3,828 Alaska Native and American Indian participants living in Alaska from 2004 through 2006. Funding was provided by a grant from the National Cancer Institute.

This report provides key data from all participants combined. Three Tribal Health Organizations collaborated with the Alaska Native Tribal Health Consortium to conduct the study: Southeast Alaska Regional Health Consortium, Southcentral Foundation, and the Yukon-Kuskokwim Health Corporation. Approximately 1,000 people enrolled from each of the three regions. Specific data from each of the regions has been provided to the appropriate Tribal Health Organization.

We would like to thank all study participants for their time and energy. In addition we want to thank the many staff who were members of the Research Team. We would also like to thank the three Tribal Health Organizations, their Health Boards, the EARTH Tribal Advisory Board, the Scientific Advisory Board, the tribal and traditional councils of the participating communities, and many others who were helpful and supportive of this project.

These data provide information on the health status of a large number of Alaska Native and American Indian people. We hope these data will be used to further improve the health of Alaska Native people.

NCI Grant R01 CA96095

ACKNOWLEDGEMENTS

The contents of this report are solely the responsibility of the authors and do not necessarily represent the official view of the National Cancer Institute or the Indian Health Service. We would like to acknowledge the contributions and support of the Indian Health Service, the Alaska Native Tribal Health Consortium, Southcentral Foundation (SCF), Southeast Alaska Regional Health Consortium (SEARHC), the Yukon-Kuskokwim Health Corporation (YKHC), and Tribal Advisory Board Members. Thanks also to Marty Slattery, PhD and the research team at the University of Utah.

Anne Lanier, MD
Principal Investigator

The Alaska EARTH Study was funded by **NCI Grant R01 CA96095** to the Alaska Native Tribal Health Consortium.

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CHAPTER ONE

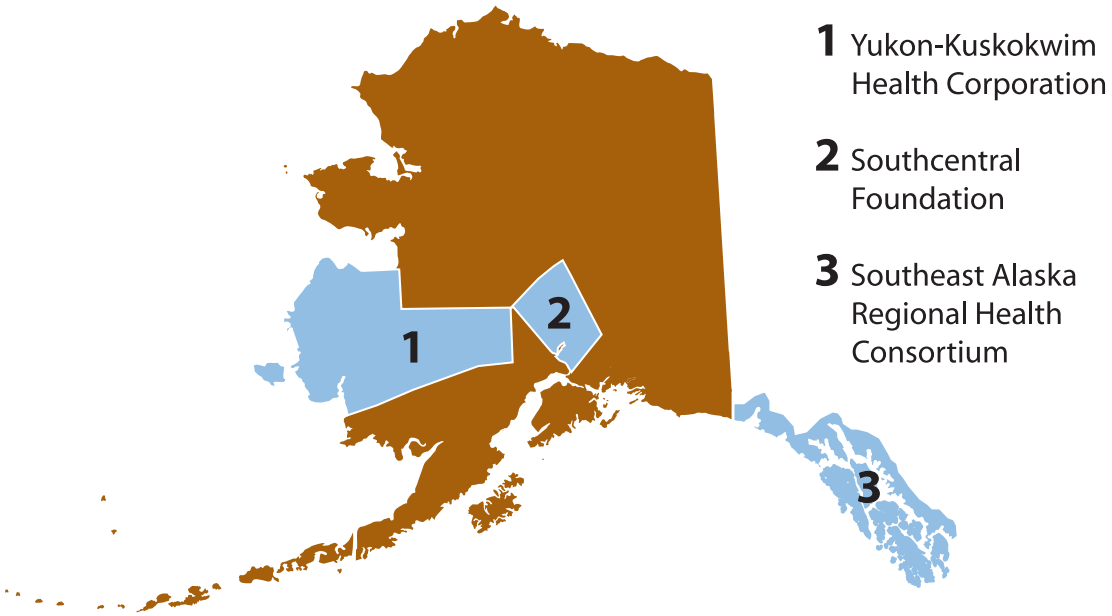
Who Participated?

In March of 2004 through August 2006, the Alaska Native Tribal Health Consortium along with investigators from the University of Utah in collaboration with Southcentral Foundation, Yukon-Kuskokwim Health Corporation, and Southeast Alaska Regional Health Corporation enrolled participants into the Alaska Education and Research Towards Health (EARTH) Study. The goals of the study were to examine factors important to the health and well-being of Alaska Native and American Indian people living in Alaska.

Who Participated?

A total of 3,828 participants completed the study visit. The study visit included questionnaires about personal health, family health history, diet, physical activity, history of environmental exposures, questions about lifestyle such as using a seat belt or smoking, and basic background questions about place of residence, education and employment. Computerized questionnaires allowed participants to read and answer questions on a touch screen while listening to an audio version of the questions through headphones in English or Yu'pik. Participants also had their height, weight, waist and hip circumference, blood pressure, blood glucose and lipids measured. The study visits were completed at two fixed study offices in Anchorage and Sitka. An additional 24 communities participated by hosting a temporary study location for three to ten weeks. Figure 1A shows the tribal health organizations that participated in the study.

▼ **Figure 1A** Tribal health organizations participating in the Alaska EARTH Study



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Who Participated?

Of the 3,828 participants who completed the study, 1,506 were men and 2,322 were women. Study participants from different age groups, education levels, and employment and marital statuses were well represented. More than two-thirds of the study participants were between 20 and 49 years of age, with an age range of 18 to 94. Almost 43% of participants reported being currently married or living as married while 37% reported never being married. Approximately 64% reported having worked in the past year. Over 77% of participants completed high school *(Figures 1B-1E)*.

▼ **Figure 1B** Participants by age: Alaska EARTH Study

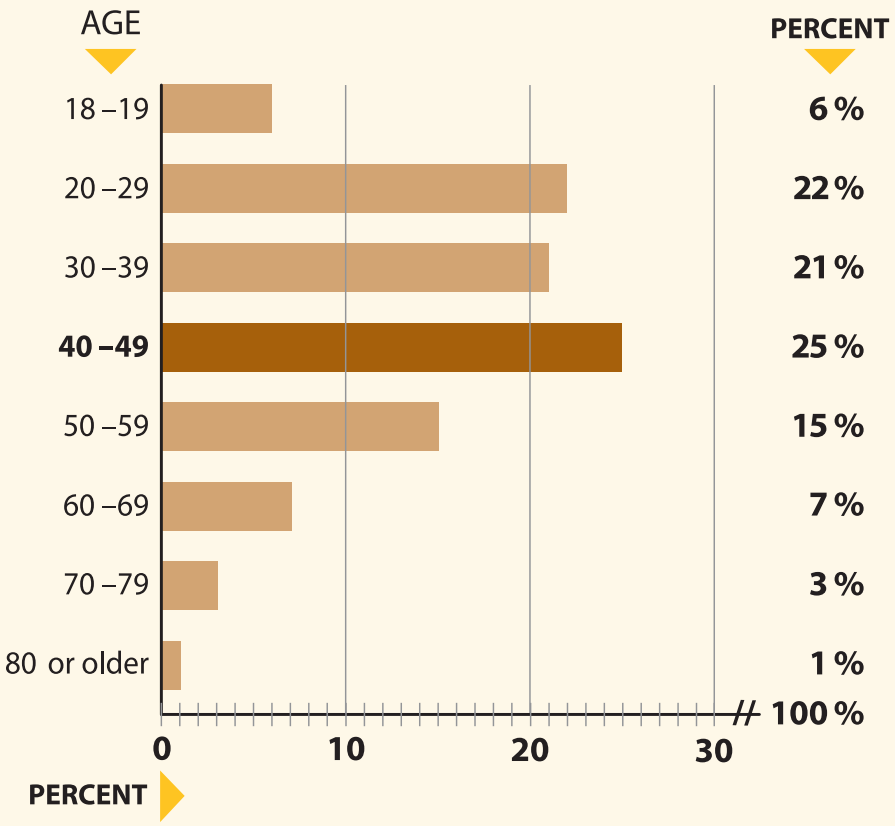

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Figure 1C Participants by marital status: Alaska EARTH Study

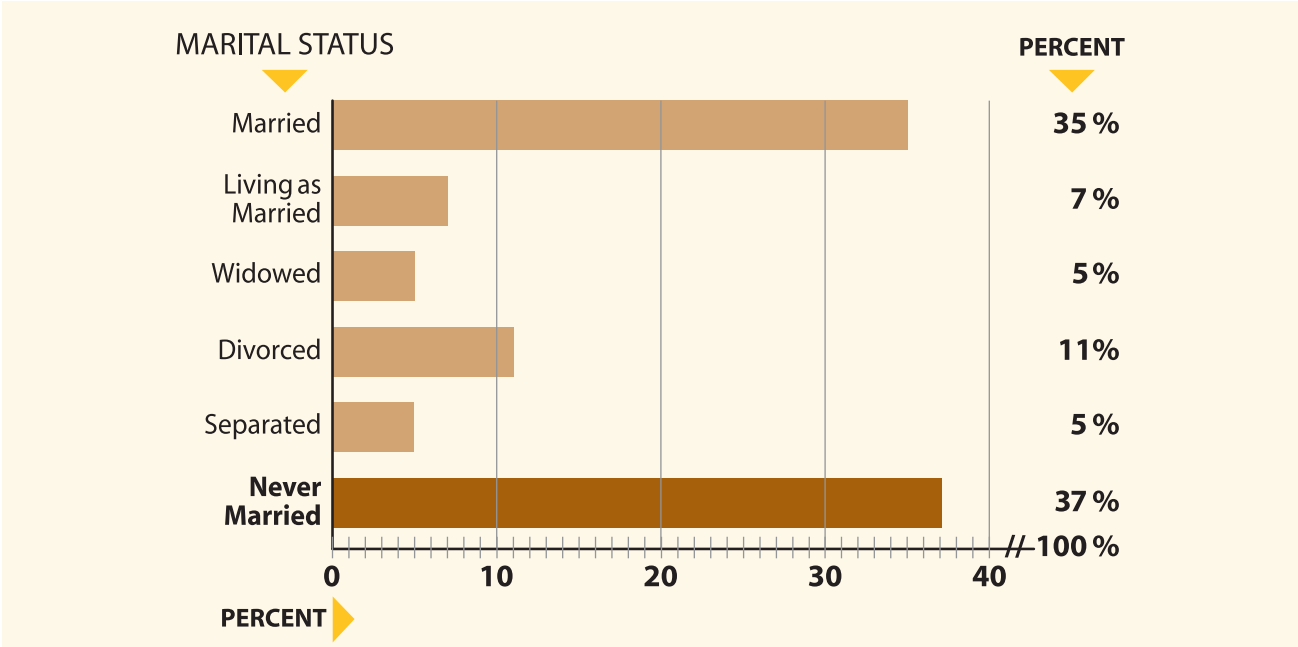

Figure 1D Participants by employment status: Alaska EARTH Study

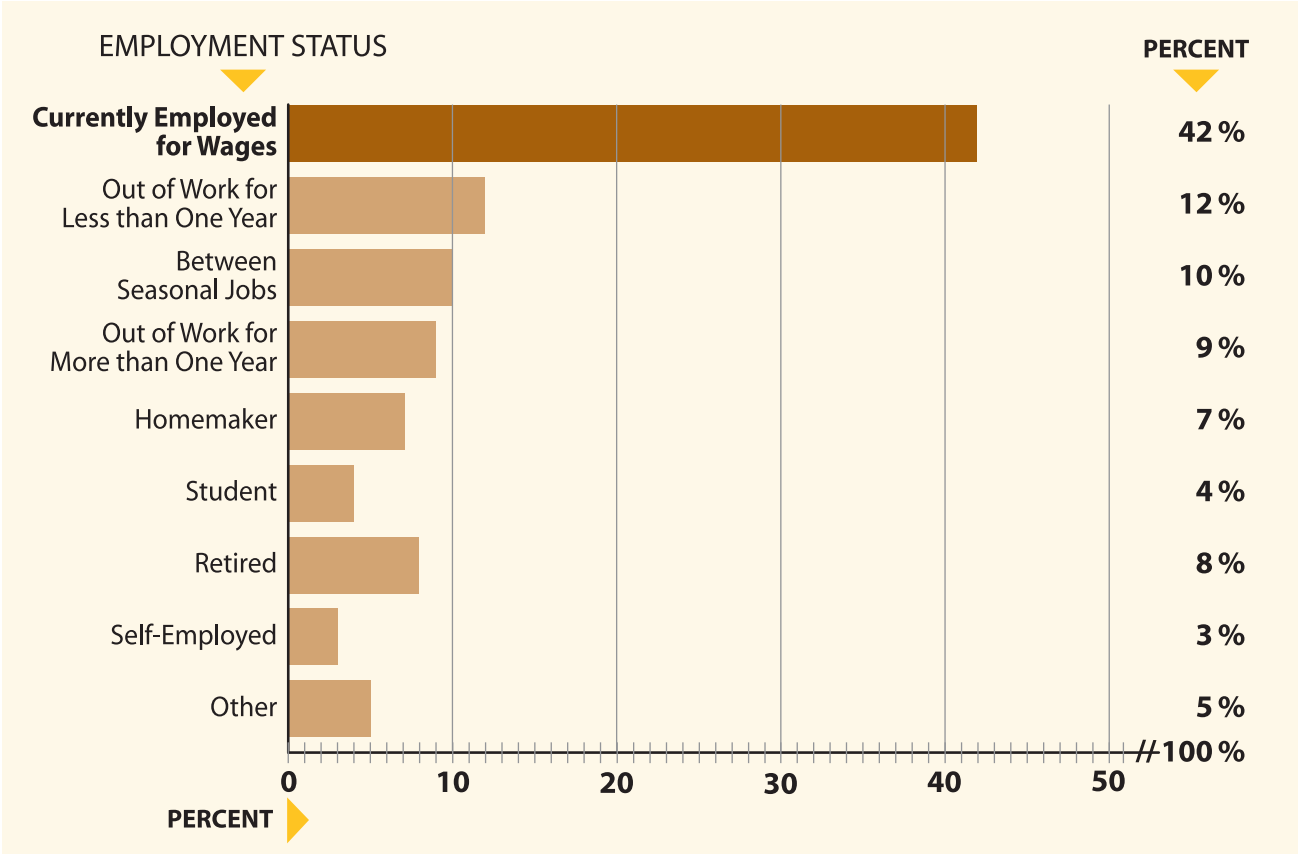

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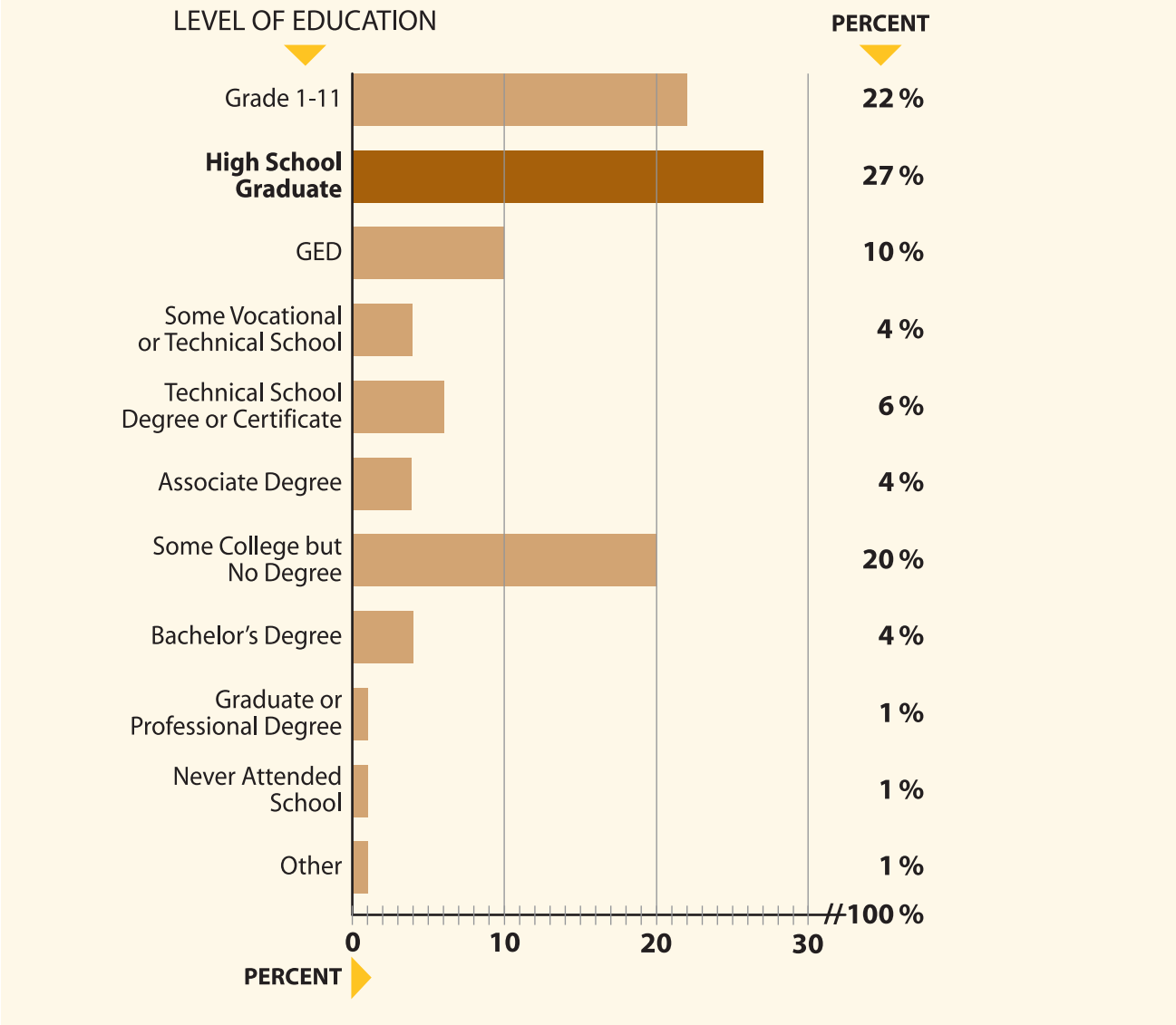
Figure 1E Participants by level of education: Alaska EARTH Study



The following data present a snapshot of participant health and lifestyle characteristics and factors important for many chronic diseases.

Enrollment was open to all adults in each study site. Given the large number of people who participated and their sociodemographic similarities to census data, we believe that this study provides important information on the health status of the Alaska Native people. This is the largest, most comprehensive health study to have been conducted among Alaska Native people.

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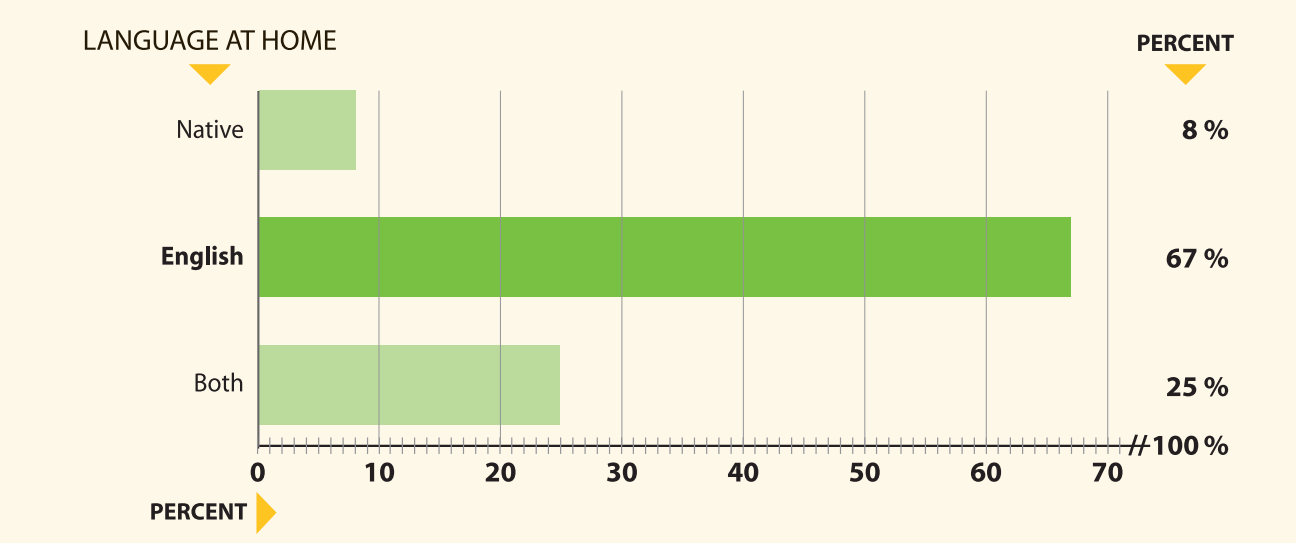
CHAPTER TWO

Traditional Practices Reported by Alaska EARTH Study Participants

The Alaska EARTH Study included questions about traditional practices. Participants were asked if they usually spoke their "Native language," "English," or "both" at home; identified "a lot," "some," "a little," or "not at all" with their tribal tradition; attended or participated in traditional events; ever used traditional medicines; or sought advice and/or treatment from a traditional healer in the past year. This chapter discusses responses to those questions having to do with Alaska Native traditional practices.

Languages and oral traditions have always been valued by Alaska Native people as they tell stories to convey their history, cultural patterns, thoughts, and beliefs. Figures 2A and 2B depict the percentage of Alaska Native people who participated in the EARTH Study who use their Native or English language, or both, at home. One-quarter of study participants reported speaking both their Native language and English at home, while 67% reported speaking only English at home, and eight percent reported speaking only their Native language at home *(Figure 2A)*.

▼ **Figure 2A** Language spoken at home: Alaska EARTH Study



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Traditional Practices Reported by Alaska EARTH Study Participants

About half as many people 18–24 years of age (25%) spoke their Native language at home as did people 60 years of age and older (54%) *(Figure 2B)*. A larger proportion of men (36%) than women (31%) reported speaking their Native language at home alone or in combination with English *(Figure 2C)*.

Figure 2B Language spoken at home by age: Alaska EARTH Study

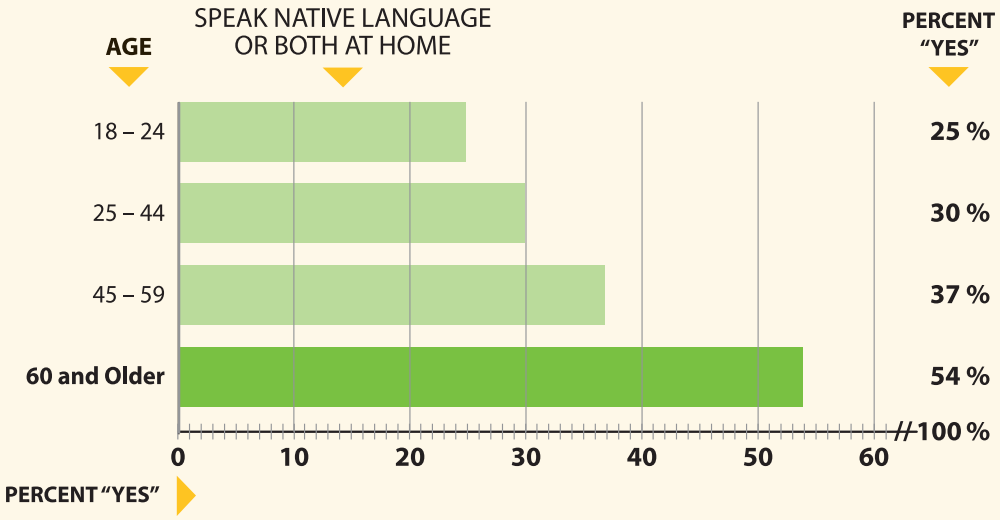
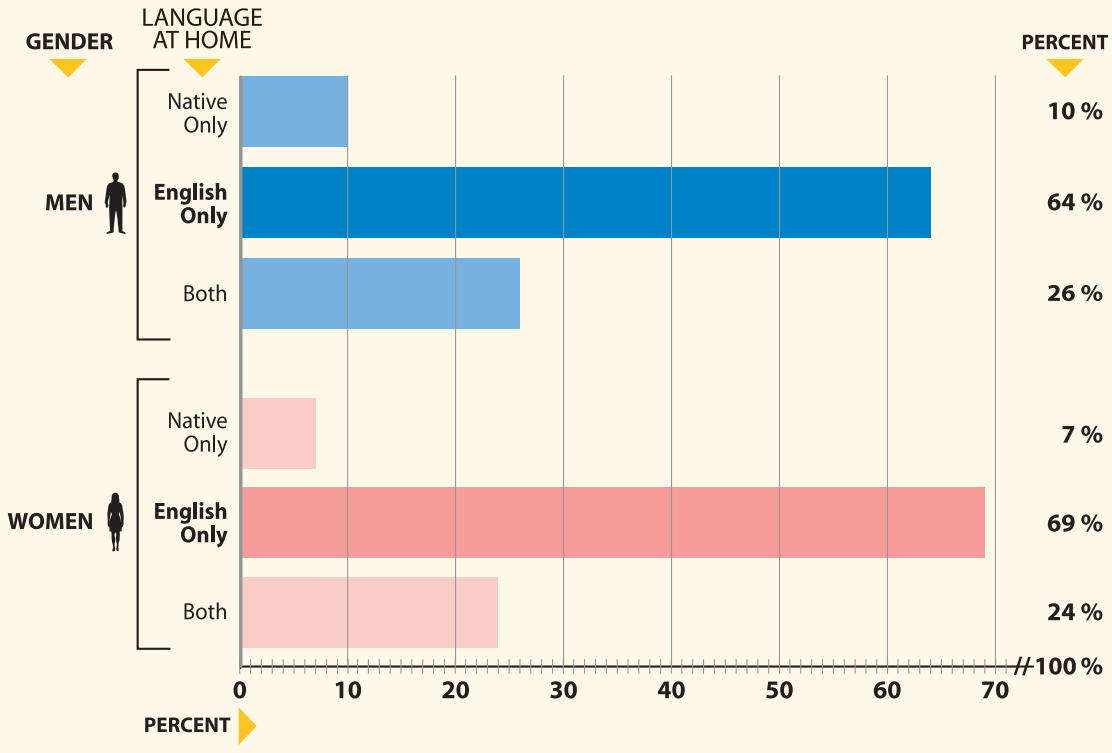


Figure 2C Language spoken at home by gender: Alaska EARTH Study



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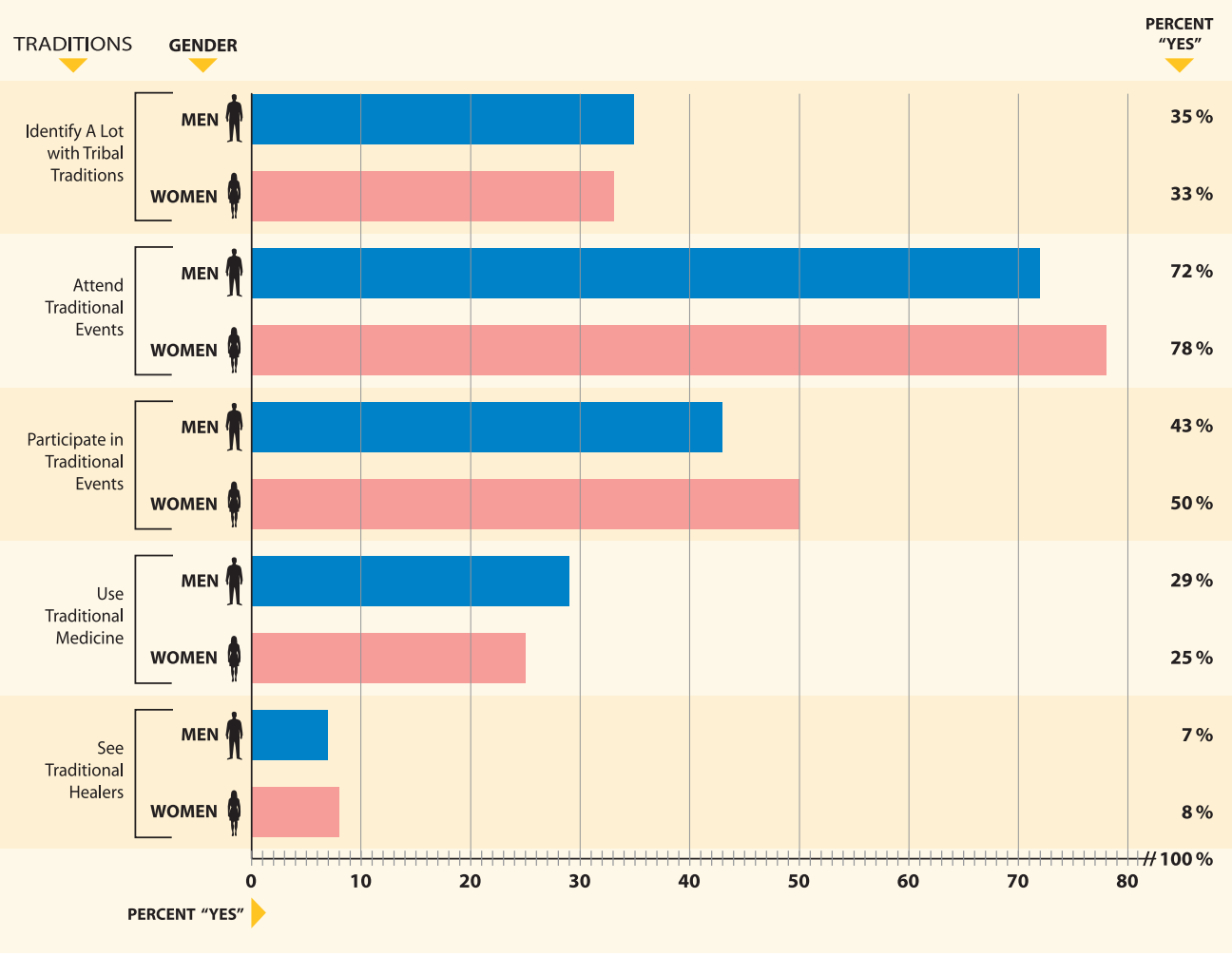
About the same percentage of men (35%) as women (33%) said that they identified with tribal tradition "a lot" *(Figure 2D)*. A higher percentage of women (78%) reported attending traditional events than did men (72%). Women were also more likely to participate in traditional events (50%) than were men (43%). About the same percentage of men (29%) and women (25%) reported using traditional medicines in the past year. Also a similar percentage of men (7%) and women (8%) reported seeing a traditional healer in the past year.

Figure 2D Traditional practices by gender: Alaska EARTH Study



Older participants were more likely to identify with tribal traditions and use tribal medicines and healers than were younger people *(Figure 2E)*. There was less difference between age groups for attending or participating in traditional events.

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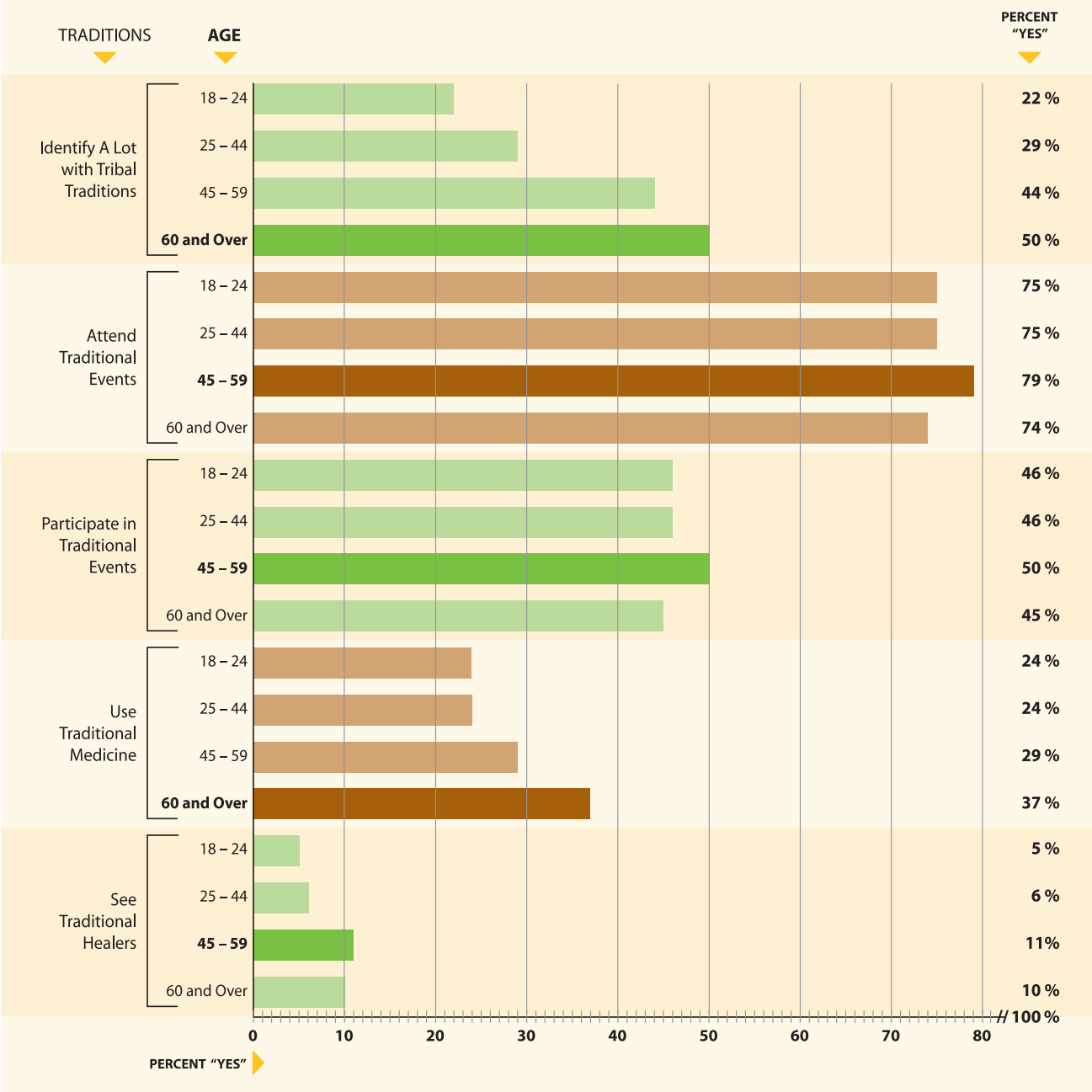
Figure 2E Traditional practices by age: Alaska EARTH Study



Summary and Recommendations

In summary, this chapter shows that traditional practices vary by age group and gender. A third of participants reported speaking their Native language in the home. More women reported participating in traditional activities, while about the same numbers of men and women participate in traditional healing. The proportion of people who identify a lot with tribal traditions increased with age. Tribal traditions and practices remain strong among Alaska EARTH participants. These practices may influence health practices and health status.

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CHAPTER THREE

Reported Medical Conditions and Measurements Among Alaska EARTH Participants

This chapter presents medical conditions self-reported by Alaska EARTH Study participants. It also describes results of medical measurements and blood tests from the study visit.

Reported Medical Conditions

Study participants were asked to report medical conditions that a health care provider had told them they currently or ever had, including: high blood pressure; heart disease (including congestive heart failure and other heart problems); high cholesterol; stroke; gallbladder disease (including gallstones); kidney failure; liver disease (including cirrhosis or hepatitis); any disease of the thyroid; a bone fracture or break as an adult (after age 18); arthritis; asthma; chronic bronchitis, emphysema or chronic obstructive pulmonary disease (COPD); glaucoma; cataracts; depression which required treatment with medication; diabetes; and cancers.

Among men and women combined the most frequently reported conditions included adult bone fractures, high blood pressure, high cholesterol, arthritis, and depression, occurring in over 40% of study participants. Among men, the five most commonly reported conditions were adult bone fractures (34%), high blood pressure (28%), high cholesterol (21%), arthritis (18%) and depression (14%) *(Figure 3A)*. Among women, the same conditions were in the top five most commonly reported medical conditions but in different rank order: depression (28%), high blood pressure (26%), arthritis (25%), adult bone fractures (24%), and high cholesterol (21%) *(Figure 3A)*. Women more often reported each medical condition than did men, except for adult bone fractures, high blood pressure, heart disease, and liver disease. The most marked gender differences were for depression, asthma, arthritis, gall bladder and thyroid diseases in which women exceeded men, and adult bone fractures, in which men were higher than women.

The percentage of participants reporting medical conditions varied with age. Depression (17%), adult bone fractures (13%) and asthma (12%) were the most commonly reported conditions among study participants 18 to 24 years of age, while among those age 60 and older, high blood pressure (58%), arthritis (54%), and high cholesterol (43%) were the most commonly reported medical conditions *(Figure 3B)*.

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Reported Medical Conditions and Measurements Among Alaska EARTH Participants

Figure 3A Self-reported medical conditions by gender: Alaska EARTH Study

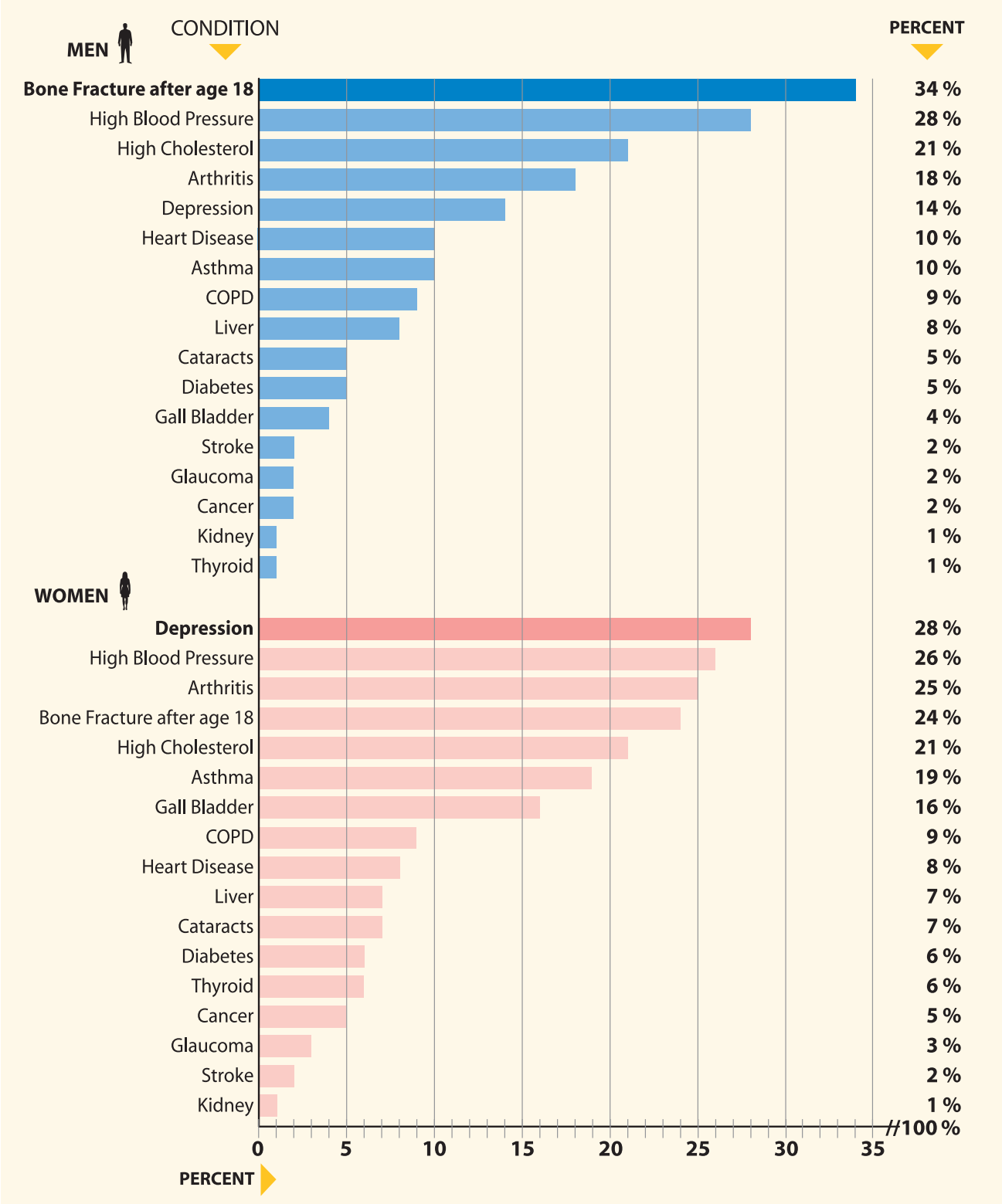

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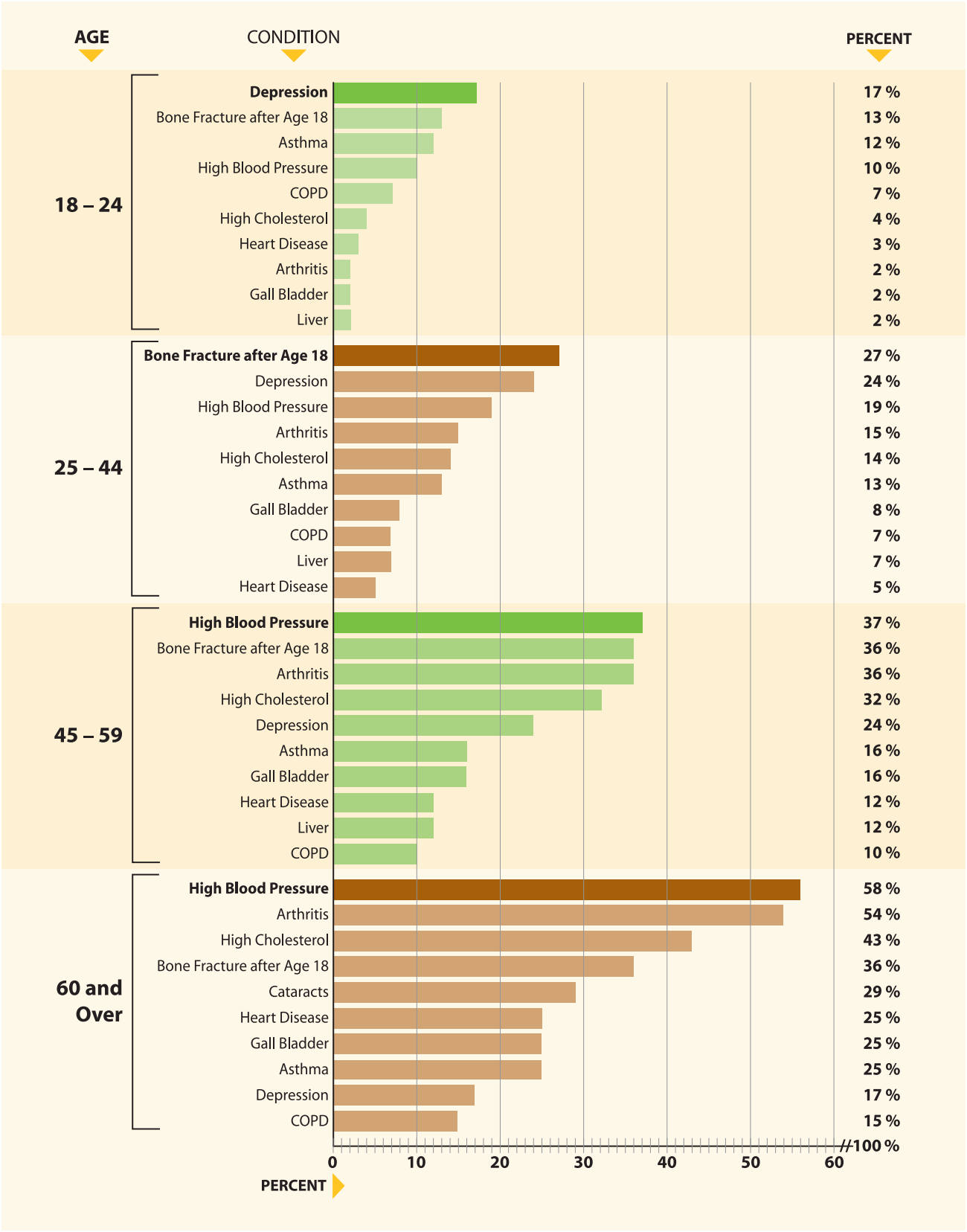
Figure 3B Top ten self-reported medical conditions by age: Alaska EARTH Study



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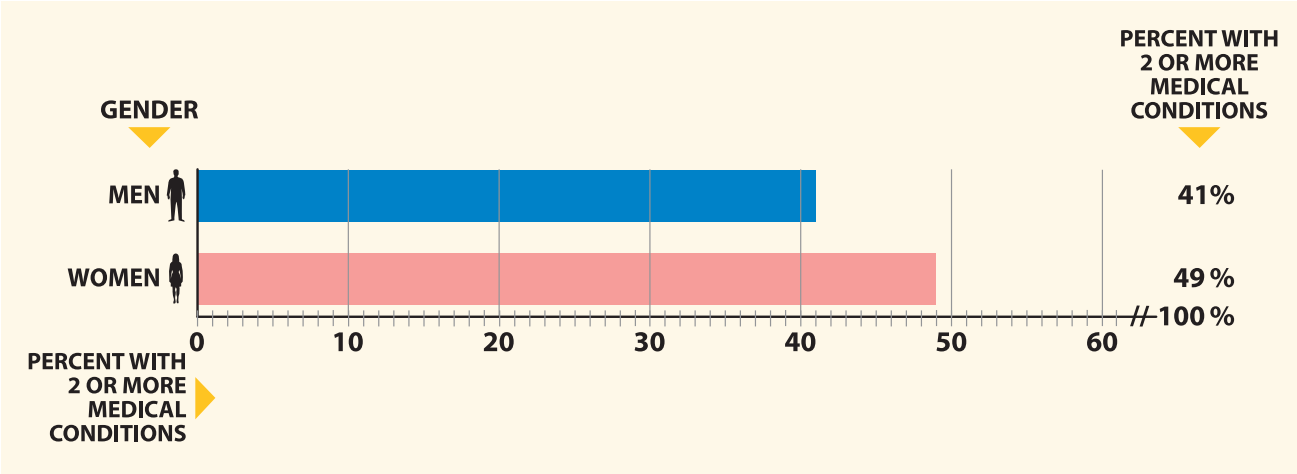
Forty-six percent of the population reported having two or more medical conditions, with more being reported among women (49%) than men (41%) *(Figure 3C)*.

Figure 3C Multiple Self-reported medical conditions: Alaska EARTH Study



General Health Status

Self-reported general health was measured by asking participants, "In general, would you say your health is excellent, very good, good, fair, or poor?" Figure 3D shows the self-reported general health for the participants in the Alaska EARTH Study. The most participants (44%) rated their general health as "good", followed by 23% rating their health as "very good", and eight percent "excellent." Health was rated as "fair" by 22% of participants and three percent rated their health as "poor." Overall, 75% of participants reported their general health to be good or better, while 25% reported that their health was "fair" or "poor".

Figure 3E shows the percentage of participants who reported their health as good to excellent for men and women by age group. The largest difference in the perceived general health as reported at the study visit was among men and women aged 18 to 24. Approximately 84% of younger men reported their health as good to excellent while 79% of younger women reported having good to excellent health. There was little difference in the percentage of men and women 25 years of age and older who reported their health as good to excellent.

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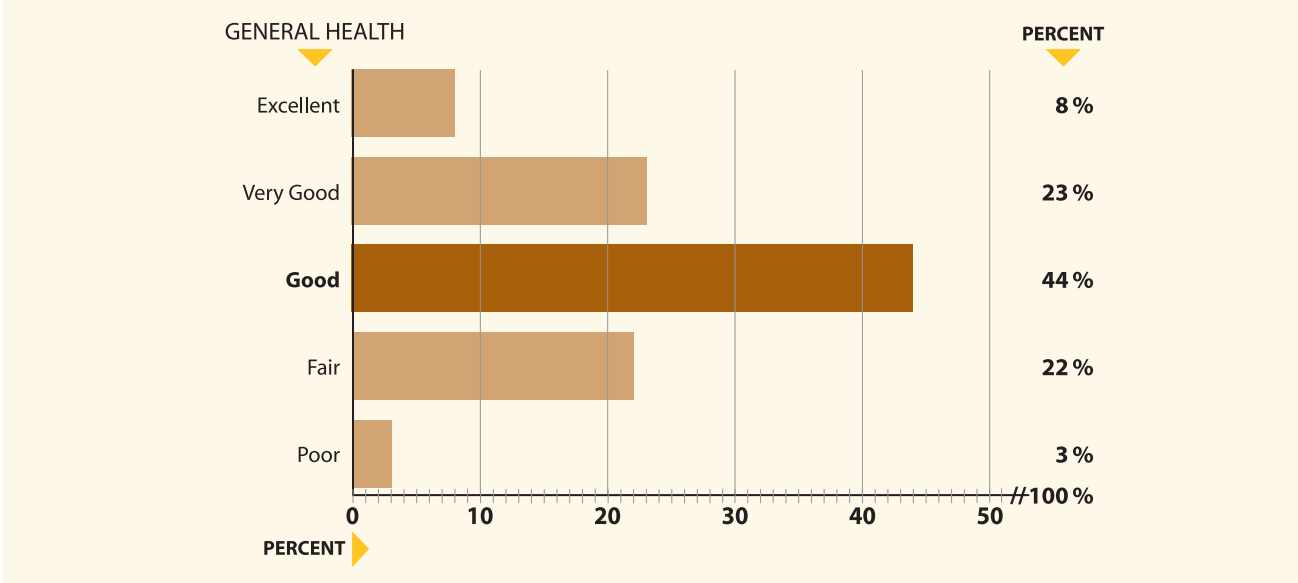
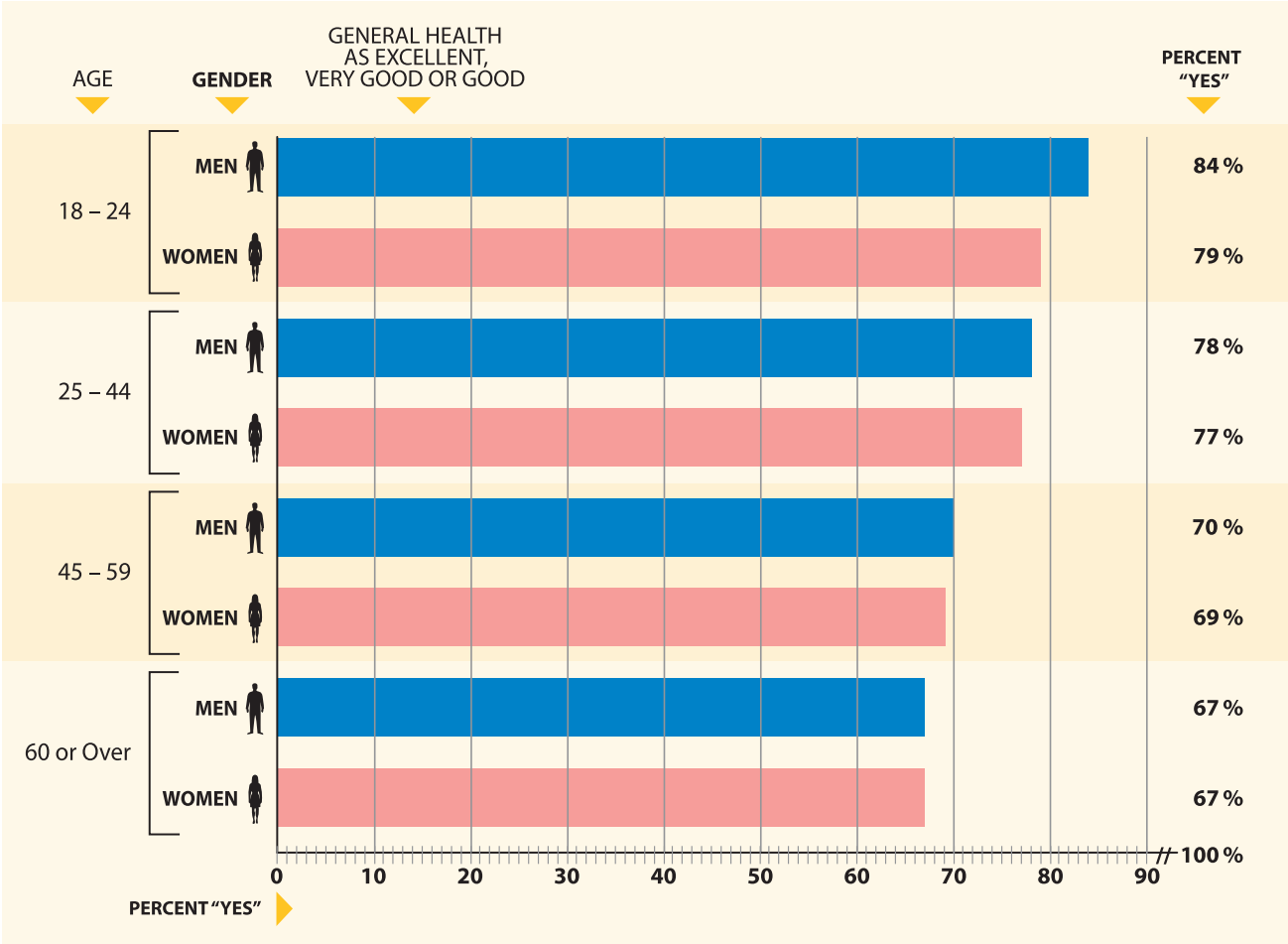
▼ **Figure 3D** Self-reported perceived general health: Alaska EARTH Study



▼ **Figure 3E** Self-reported perceived general health by age and gender: Alaska EARTH Study



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Measured Indicators of Health: Lipid, Glucose and Blood Pressure

Using a finger stick procedure we measured blood glucose (sugar) and lipids (types of fat). Participants were requested not to eat for nine hours prior to the blood test. The blood lipids measured were triglycerides and cholesterol [total, low-density lipoprotein (LDL), and high-density lipoprotein (HDL)]. The recommended levels for triglycerides are less than 150 mg/dL, for total cholesterol are less than or equal to 200 mg/dL, for LDL are less than or equal to 130 mg/dL, and for HDL are greater than or equal to 40 mg/dL for men and greater than or equal to 50 mg/dL for women. LDL is sometimes referred to as the "bad" type of cholesterol, while HDL is referred to as the "good" type of cholesterol.

About 40% of participants had total cholesterol levels that were higher than recommended. Over 28% of participants had triglycerides that were higher than the recommended level *(Figure 3F)*. Almost one-third (31%) of women and 24% of men had levels of HDL that were lower than recommended. LDL was elevated in 32% of men and 23% of women. Both levels of HDL and LDL are important to the risk of heart disease.

Diabetes is a disease in which the body does not use sugar properly and the blood glucose level is too high. It is measured by testing the level of glucose in the blood after fasting. Measured fasting glucose was above normal (110 mg/dL) in 45% of men and 36% of women.

High blood pressure is another risk factor for heart disease. The recommended levels for blood pressure are less than 140/90 mm Hg. About 13% of men and 11% of women had blood pressure higher than recommended.

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Figure 3F Lipids (cholesterol), fasting blood glucose and blood pressure by gender: Alaska Earth Study

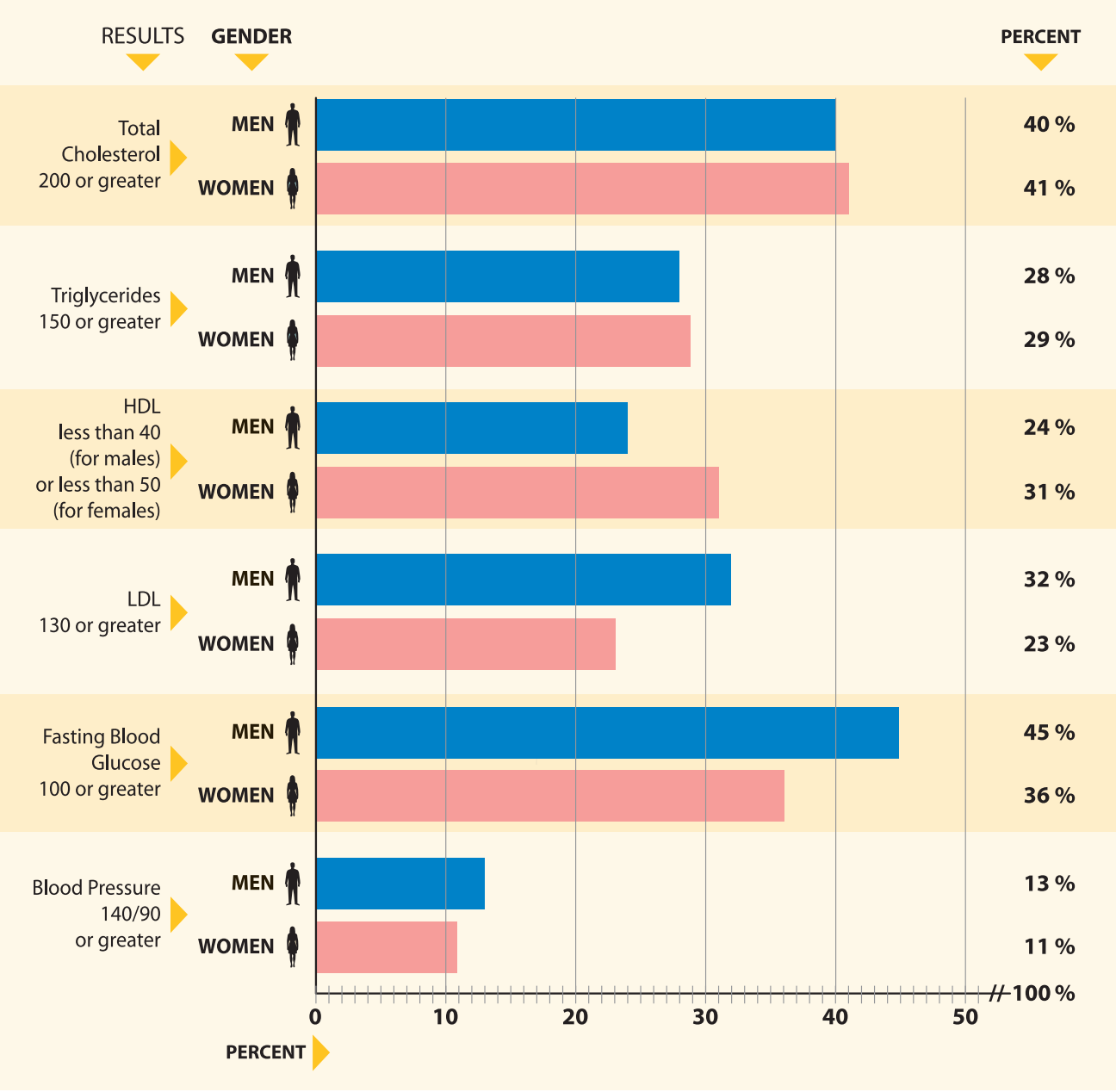

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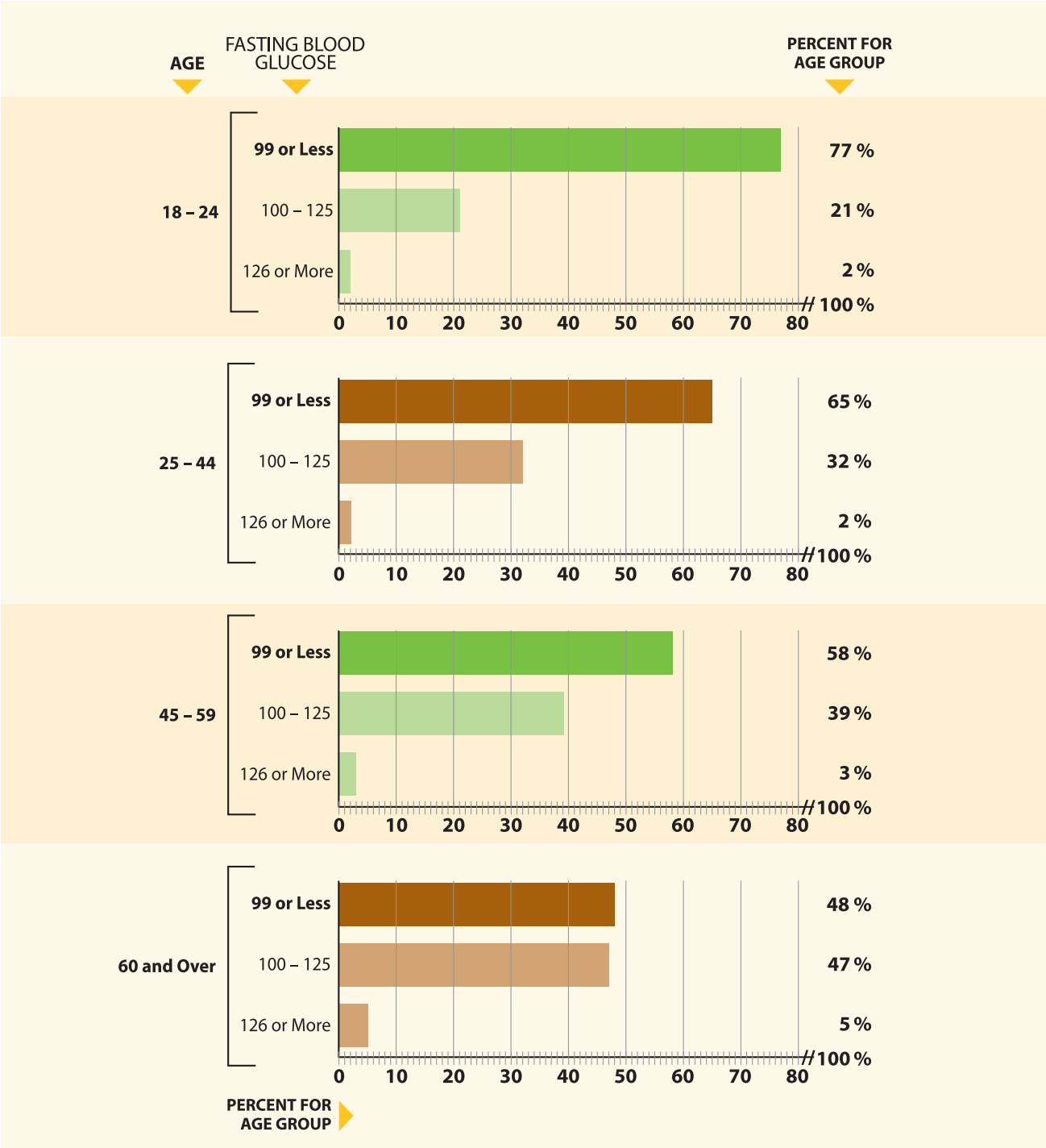
Figure 3G Fasting blood glucose levels of participants without self-reported diabetes by age: Alaska EARTH Study



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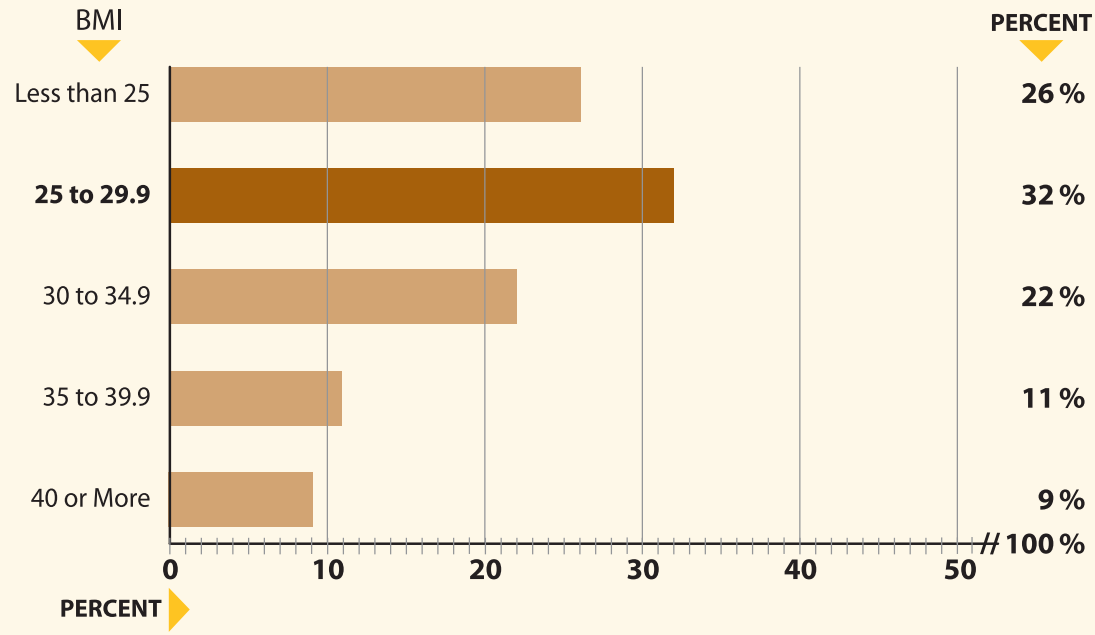
For people who do not report being previously diagnosed with diabetes, a fasting blood glucose level between 100 and 125 mg/dL suggests impaired fasting glucose or pre-diabetes, while a fasting blood glucose level 126 mg/dL and above suggests diabetes. The proportion of diabetes and pre-diabetes among individuals with no prior history of diabetes increased with age. About 21% of the youngest participants (18–24 years of age), 32% of those ages 25 to 44, 39% of those ages 45 to 59, and 47% of those over age 60 with no history of diabetes had measured fasting blood glucose levels in the pre-diabetic range *(Figure 3G)*.

BODY SIZE MEASUREMENTS

Body Mass Index (BMI) is calculated by the formula of weight in kilograms divided by height in meters squared. Height and weight were measured as part of the medical measurement component of the study visit. BMI is a useful indicator of body size. A BMI of less than 25 is recommended; 25 to 29 is considered overweight; and 30 or more is considered obese by international standards.

Only 26% of participants had a BMI that was considered normal *(Figure 3H)*.

Figure 3H Body Mass Index (BMI) levels (% normal, overweight, obese) of participants: Alaska EARTH Study



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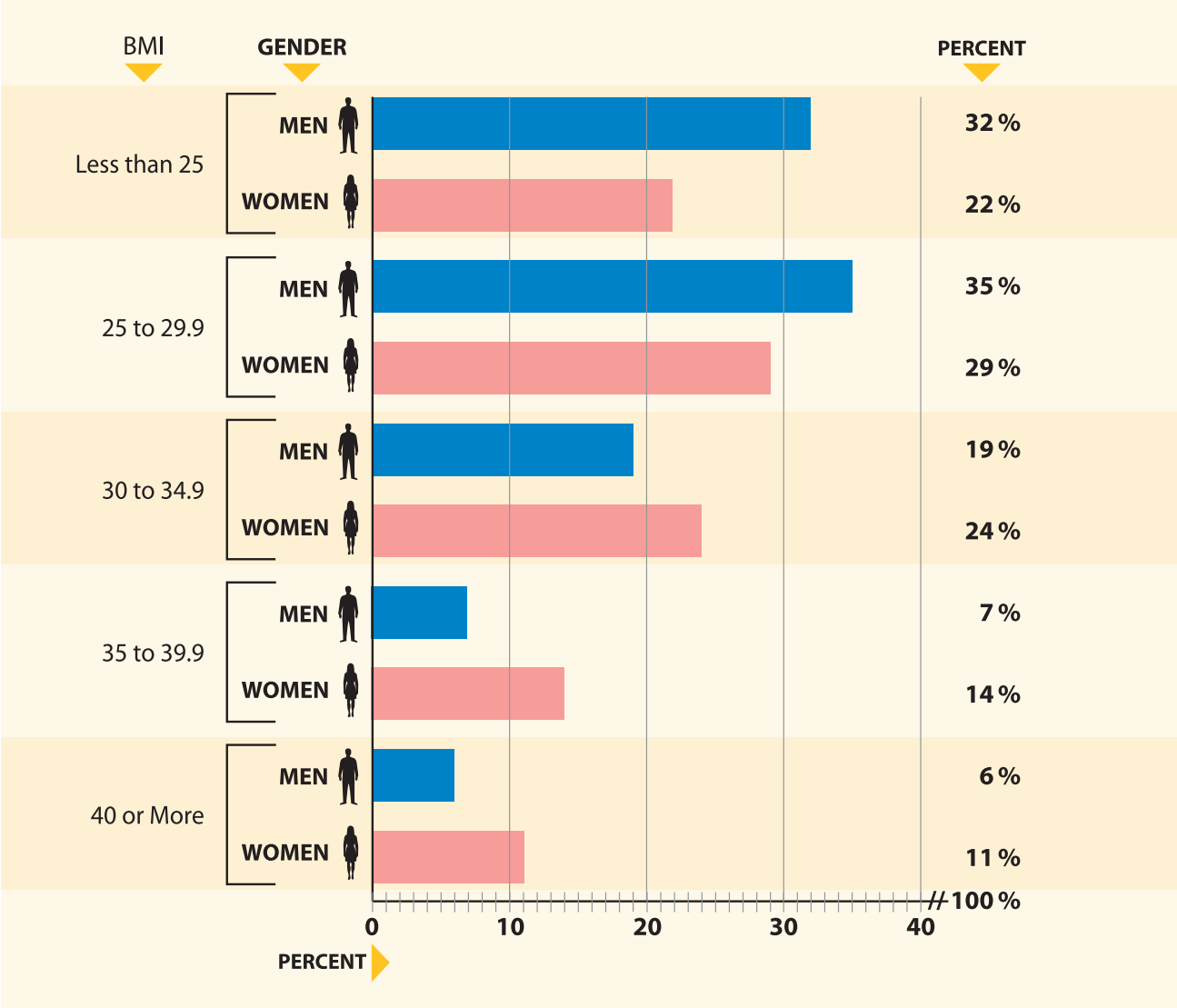
One-third of the participants had a BMI indicating overweight and almost one-half of the participants (42%) had a BMI defined as obesity. More women (49%) than men (32%) had a BMI over 30 (*Figure 3I*).

Figure 3I Body Mass Index (BMI) levels (% normal, overweight, obese) by gender: Alaska EARTH Study



Although BMI over 30 was common among people of all ages, it was most common among people 60 years of age and older and least common among those between 18 and 24 years of age (*Figure 3J*). About 49% of participants over 60 years of age were considered to have medical obesity, and 17% of those had a BMI of 35 or more. This compares to roughly 12% of those 18 to 24 years of age, 22% of those 25 to 44 years of age, and 23% of those between 45 and 59 years of age.

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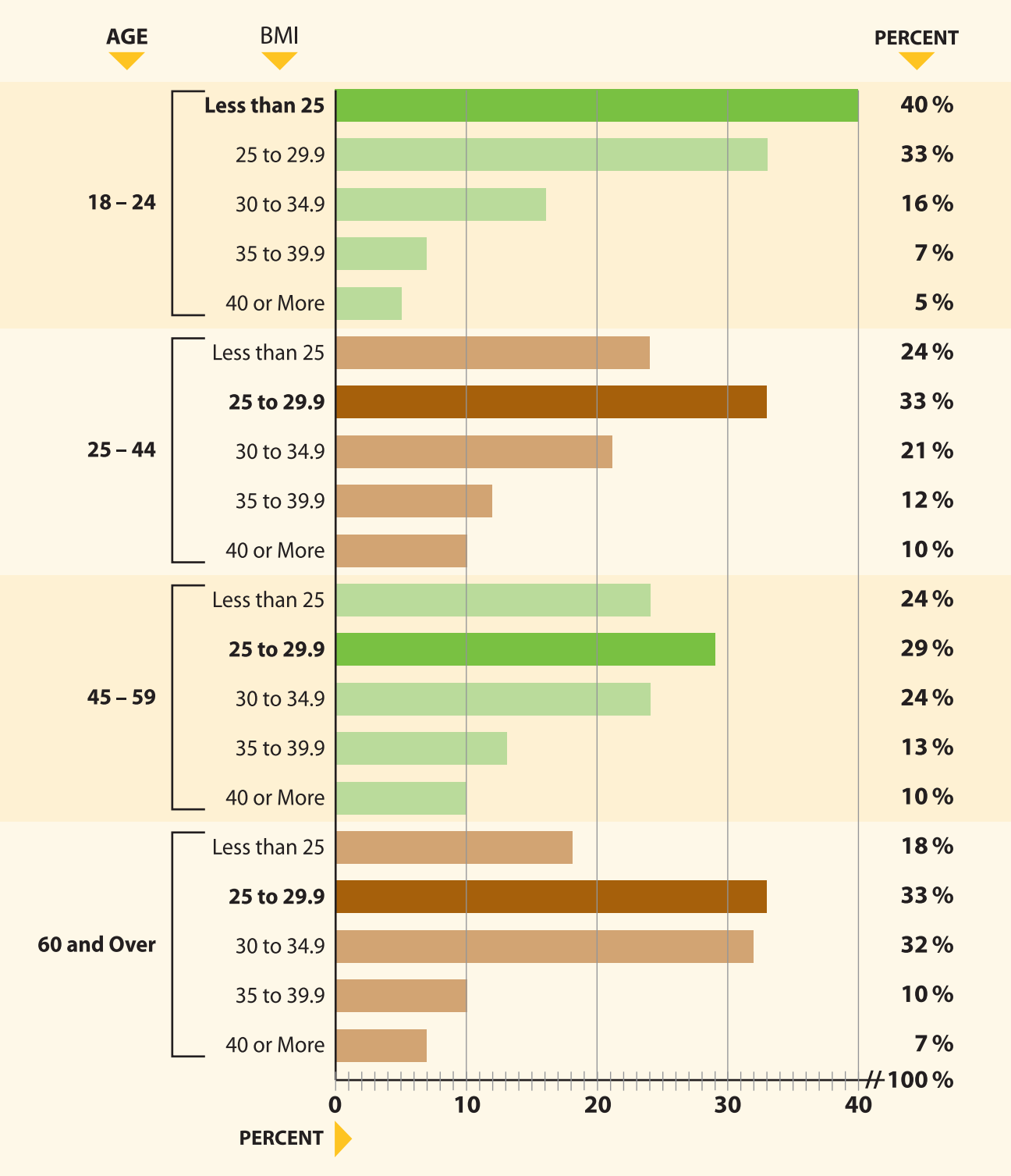
▼ **Figure 3J** Body Mass Index (BMI) levels (% normal, overweight, obese) by age: Alaska EARTH Study



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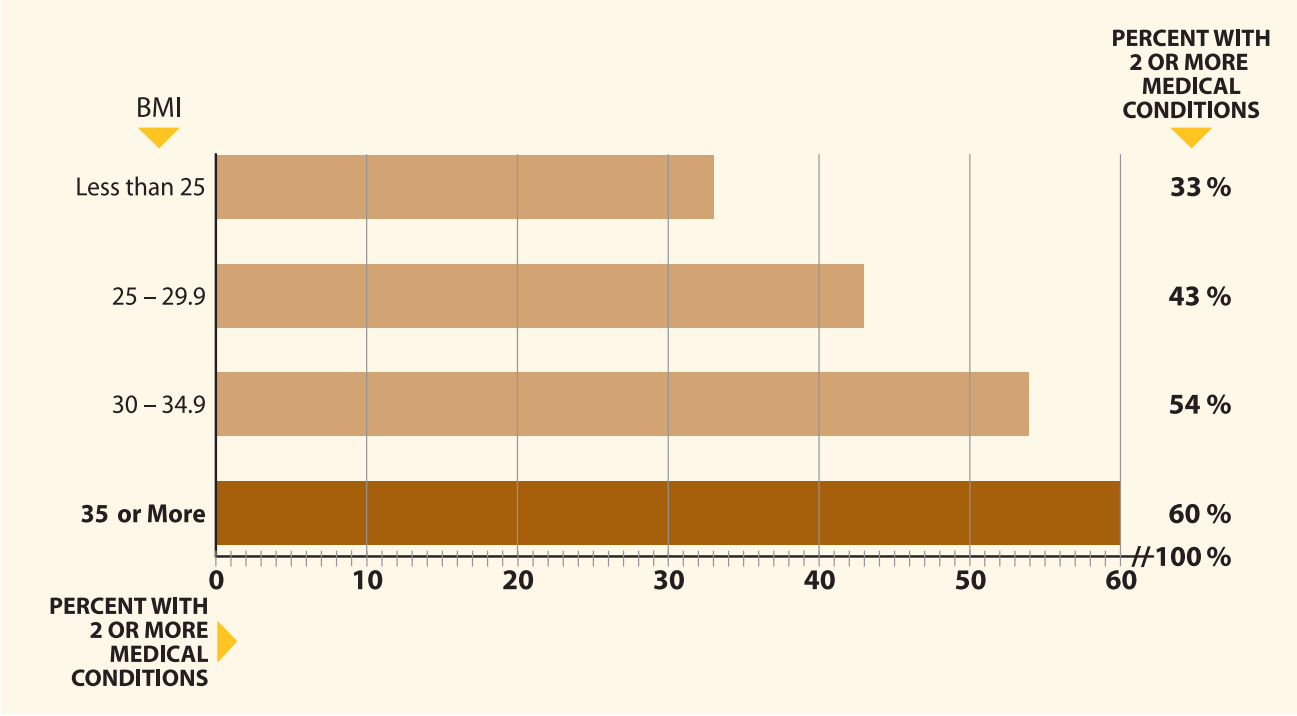
Among participants with a BMI in the recommended range of 25 or less, 33% had two or more medical conditions *(Figure 3K)*. As BMI increased, the percentage of participants reporting two or more medical conditions also increased. Among those with the highest BMI, 60% reported two or more medical conditions. By age group, there was a trend towards a larger percentage of the population reporting multiple medical conditions as level of BMI increased (data not shown in figures).

Figure 3K Percentage of participants with two or more medical conditions by BMI level: Alaska EARTH Study



Waist and hip circumference measurements were measured at the study visit. High waist circumference measurements have been shown in other studies to increase risk for chronic diseases such as diabetes and heart disease. It is recommended that men have a waist circumference of 40 inches or less and women have a waist circumference of 35 inches or less. Nearly twice as many women (68%) as men (34%) had a measured waist circumference higher than the recommended level *(Figure 3L)*.

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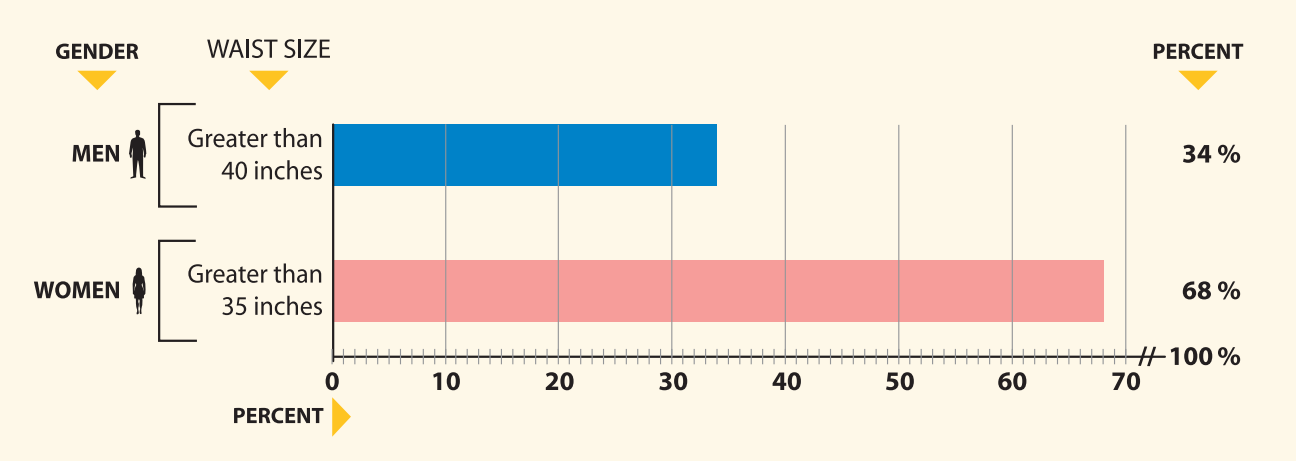
Figure 3L Percentage of waist measurements over the recommended level by gender: Alaska EARTH Study



Metabolic Syndrome

Metabolic syndrome is defined by the presence of three of the following health problems:

- High blood pressure *(greater than or equal to 130/85 mm Hg)*
- High blood glucose "sugar" *(greater than or equal to 110 mg/dL)*
- History of diabetes
- High triglycerides *(greater than or equal to 150 mg/dL)*
- Low HDL cholesterol *(men less than 40 mg/dL, women less than 50 mg/dL)*
- Large waist measurement *(men greater than 40 inches, women greater than 35 inches)*

People who have metabolic syndrome are at greater risk of developing diabetes, heart disease, and some forms of cancer. Among Alaska EARTH participants, a large percentage met the definition for metabolic syndrome (25% of men and 30% of women) (data not shown in figures).

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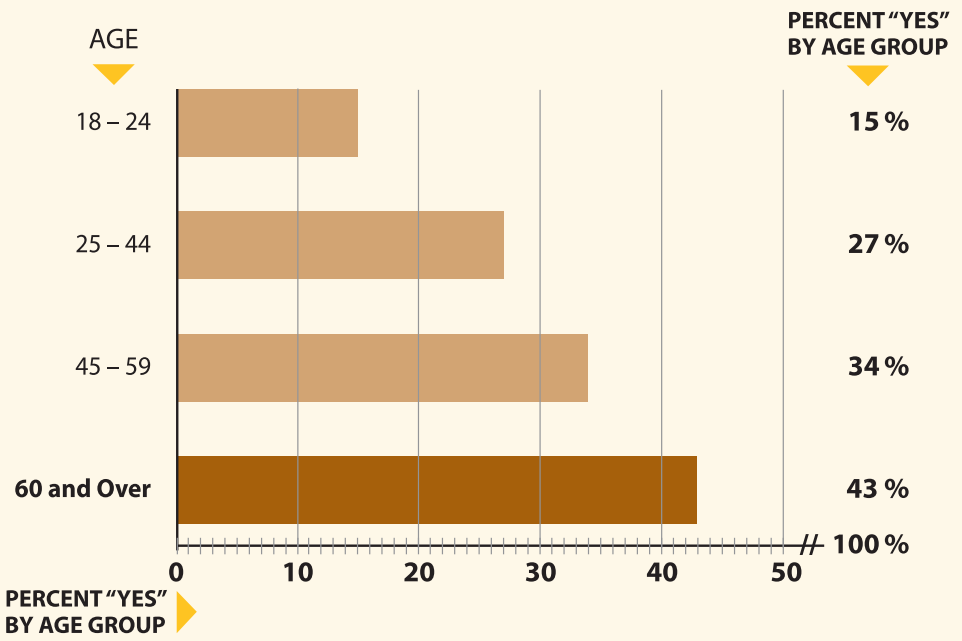
The proportion of participants having metabolic syndrome was higher among older people than younger people *(Figure 3M)*. Among those over 60 years of age, 43% of participants had metabolic syndrome compared to 15% of those in the 18–24 years of age group.

Figure 3M Presence of metabolic syndrome by age: Alaska EARTH Study



A large waist circumference was the most common component among participants with metabolic syndrome *(Figure 3N)*. High triglycerides and low HDL were the next most common factors among participants with metabolic syndrome. Men with metabolic syndrome were more likely than women to have elevated blood pressure and blood glucose, while women were more likely than men to have low HDL (good cholesterol) or high triglycerides.

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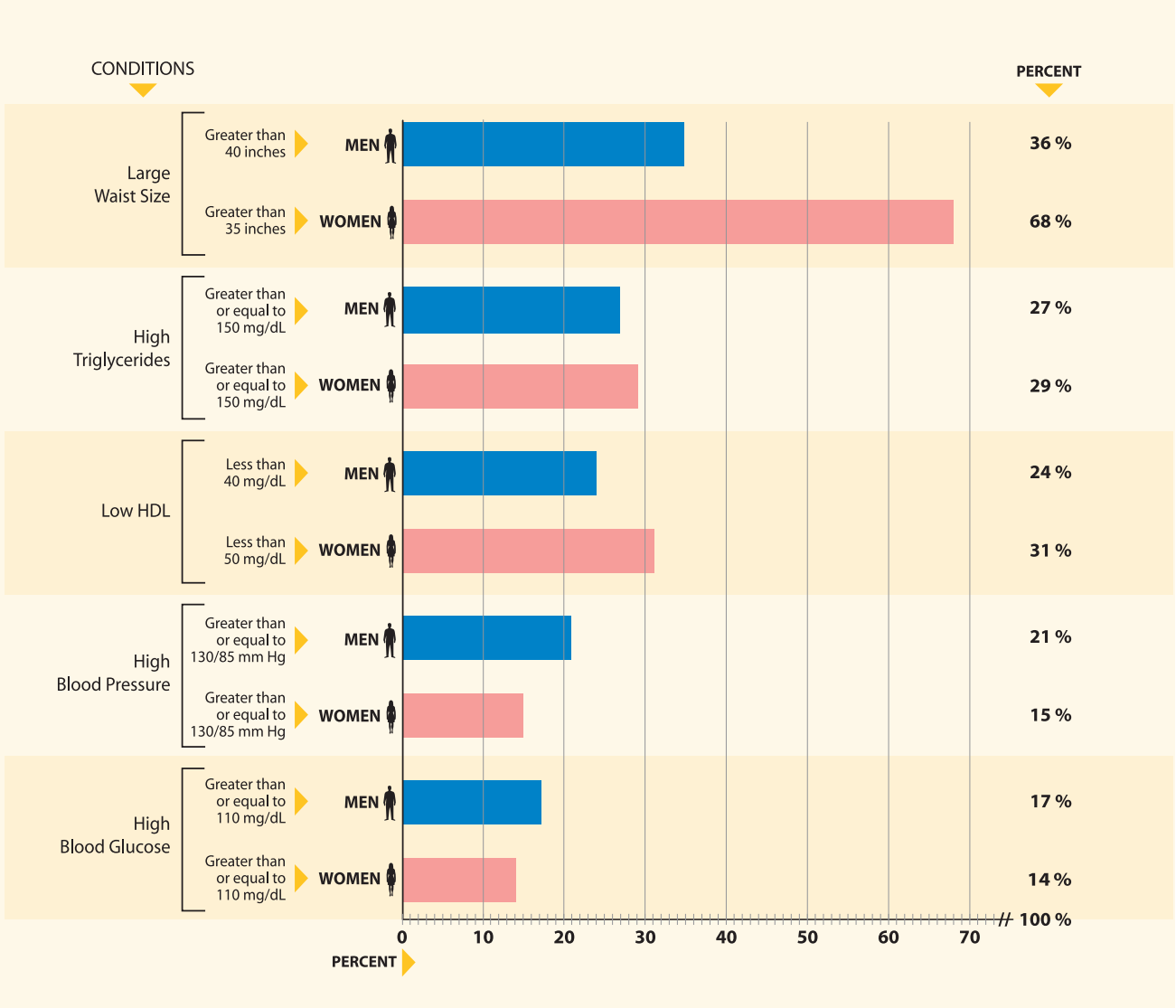
Figure 3N Factors associated with metabolic syndrome by gender: Alaska EARTH Study



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Measurements Among Participants With and Without a History of Disease

Among those who reported a history of high blood pressure, 49% of men and 48% of women had high blood pressure (greater than or equal to 140/90 mm Hg) as measured at the EARTH Study visit. Among those with a history of high cholesterol, 54% of men and 60% of women had high cholesterol (greater than or equal to 200 mg/dL). Among those who reported a history of diabetes, 64% of men and 46% of women had abnormally high levels of blood sugar (greater than or equal to 110 mg/dL)

Among participants without a history of disease, a fairly large proportion of persons had results exceeding the recommended values. These include high blood pressure among 20% of men and 12% of women, high cholesterol among 36% of both men and women, and high blood sugar among 15% of men and 10% of women *(Figure 30)*.

Figure 30 Percentage of participants with elevated blood pressure, total cholesterol and glucose based on prior diagnosis by gender: Alaska EARTH Study

CONDITIONS	PERCENT			
	MEN		WOMEN	
	With Prior History	Without Prior History	With Prior History	Without Prior History
High Blood Pressure	49 %	22 %	48 %	12 %
High Cholesterol	54 %	36%	60 %	36 %
High Blood Sugar	64 %	15 %	46 %	10 %

Summary and Recommendations

Data on medical conditions reported by participants provide an idea of how relatively common various conditions are among Alaska Native people, particularly in the regions in which the study was conducted. Results of the medical measurements allow us to examine the percentage of persons with medical conditions whose values exceed the recommended levels, and elevated values in those without diagnoses who may be in need of further evaluation. Results indicate that over half of the participants with a history of select medical conditions have values that exceed recommendations. Additionally, 10% to 36% of persons without diagnosed conditions had high measurements. These findings indicate there is need for additional follow-up and management of persons with chronic disease, as well as increased screening to identify those in the general population with abnormal values who may be at risk for disease.

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CHAPTER FOUR

Cancer Screening Reported by Alaska EARTH Study Participants

Participants were asked several questions about screening practices that have been proven to increase survival and reduce death from cancer. Screening tests are those that are done even though the individual may have no symptoms of disease. These tests include Pap test for cervical cancer, mammography for breast cancer, and colonoscopy/sigmoidoscopy for colorectal cancer. Women answered questions about Pap test and mammography and both men and women were asked about colonoscopy and sigmoidoscopy. In addition to detecting asymptomatic cancers that may exist, colorectal screening tests may detect precancerous lesions called polyps. Removal of polyps can completely prevent colorectal cancer from occurring.

There are recommended guidelines for the age at which persons should begin cancer screening tests, and how often they should be tested. The guidelines we used were those recommended for the general population at average risk for developing specific cancers. It is important that persons with a family history of cancer or those at high risk of developing cancer for other reasons should undergo screening tests at an earlier age and more frequently than persons at average risk.

How Many People Reported Meeting Recommended Screening Guidelines?

Figure 4A shows the percentage of women participants over age 18 who had a Pap test within the past three years, the percentage of women over age 40 who had a mammogram within the past two years, and the percentage of men and women aged 50 and older who had a colonoscopy or sigmoidoscopy within the past five years. Seventy-five percent of women reported having a Pap test within the past three years. Only five percent of women reported never having had a Pap test (data not shown in figures). Among women 40 years of age and older, 65% reported having had a mammogram within the past two years, and 12% reported never having had a mammogram (data not shown in figures). Among participants 50 years of age and older, an average of 42% reported having had a colonoscopy or sigmoidoscopy within the past five years, while nearly half (49%) reported never having had a colonoscopy or sigmoidoscopy (data not shown in figures).

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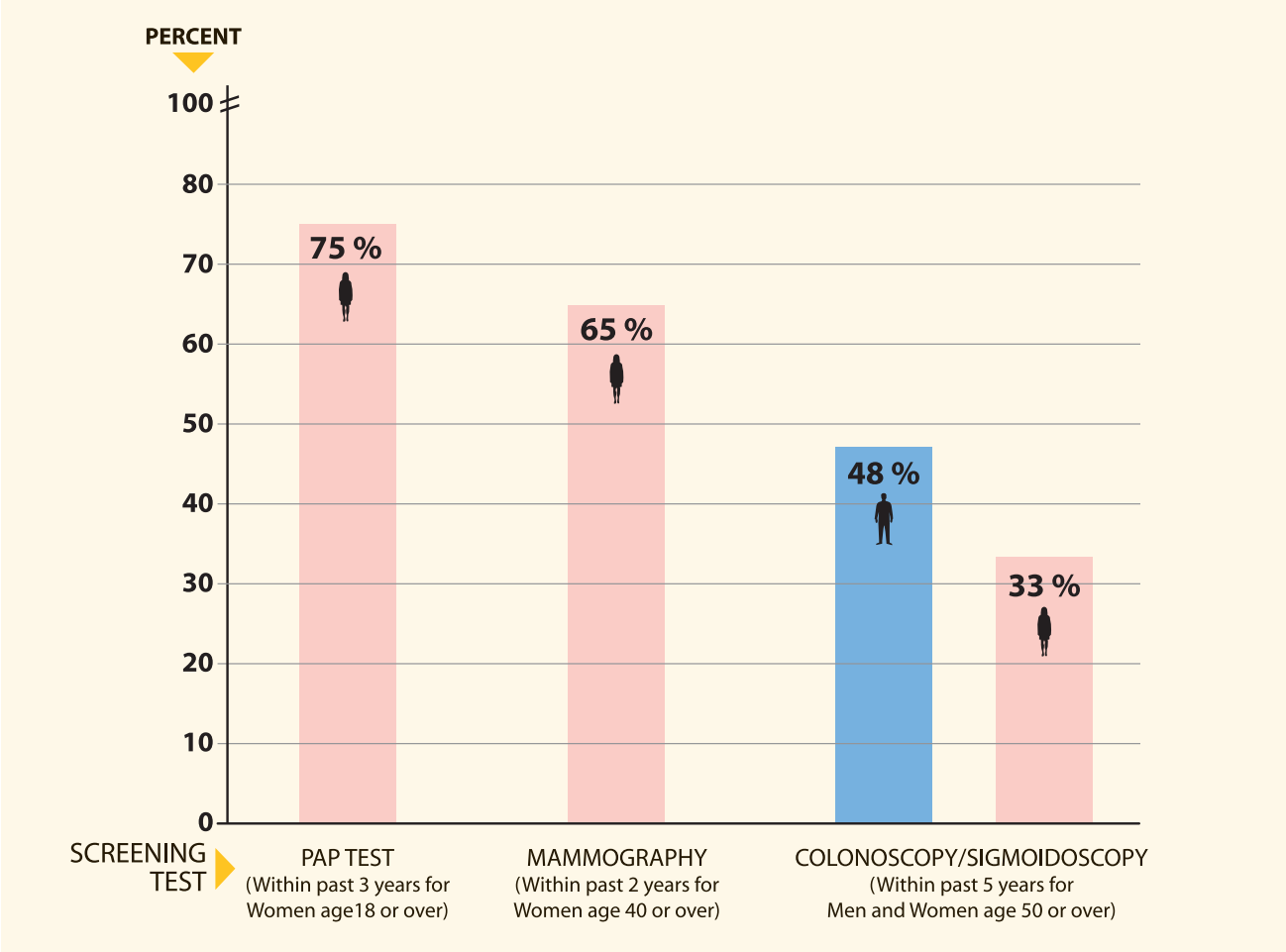
Cancer Screening Reported by Alaska EARTH Study Participants

Figure 4A Percentage of participants who reported meeting the cancer screening guidelines: Alaska EARTH Study



As age increased, participants were more likely to report getting the recommended screening tests *(Figure 4B)*. Women in the 25 to 59 year old age group were most likely to report a Pap test, women aged 60 and older were the most likely to report a mammogram, and men and women over age 60 were most likely to report a colonoscopy/sigmoidoscopy.

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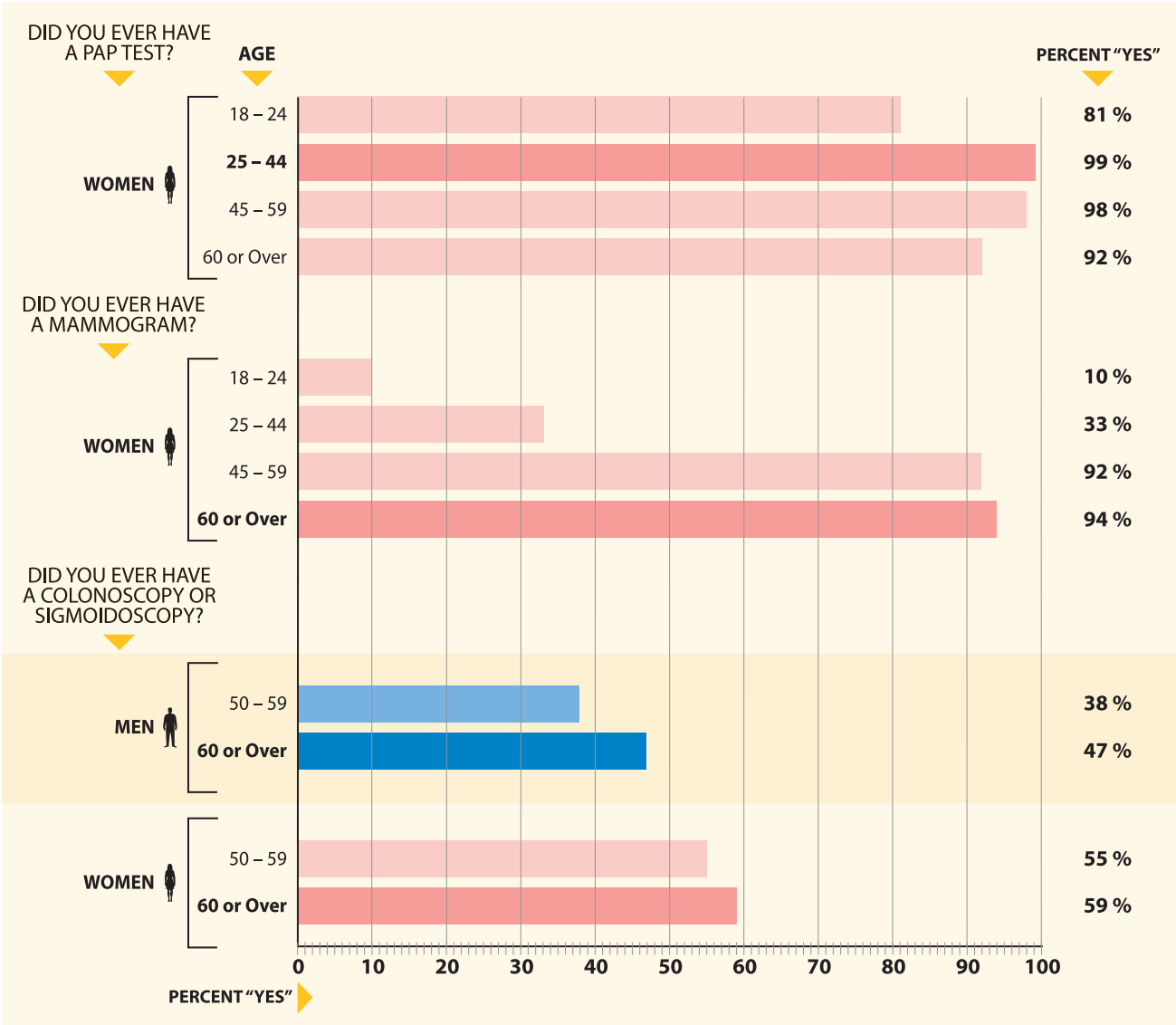
Figure 4B Participants who reported having cancer screening by age and gender: Alaska EARTH Study



Factors Associated with Cancer Screening Tests

In order to obtain a better understanding of why people do and do not have recommended cancer screening tests, we looked at differences in people who did and did not have recommended screening tests. In Figures 4C through 4E, we present the likelihood (odds) of having had a screening test comparing population characteristics. If something increases the likelihood that the screening test would happen, the value is over 1.00; if something is less likely to be associated with the screening test being performed the value is less than 1.00.

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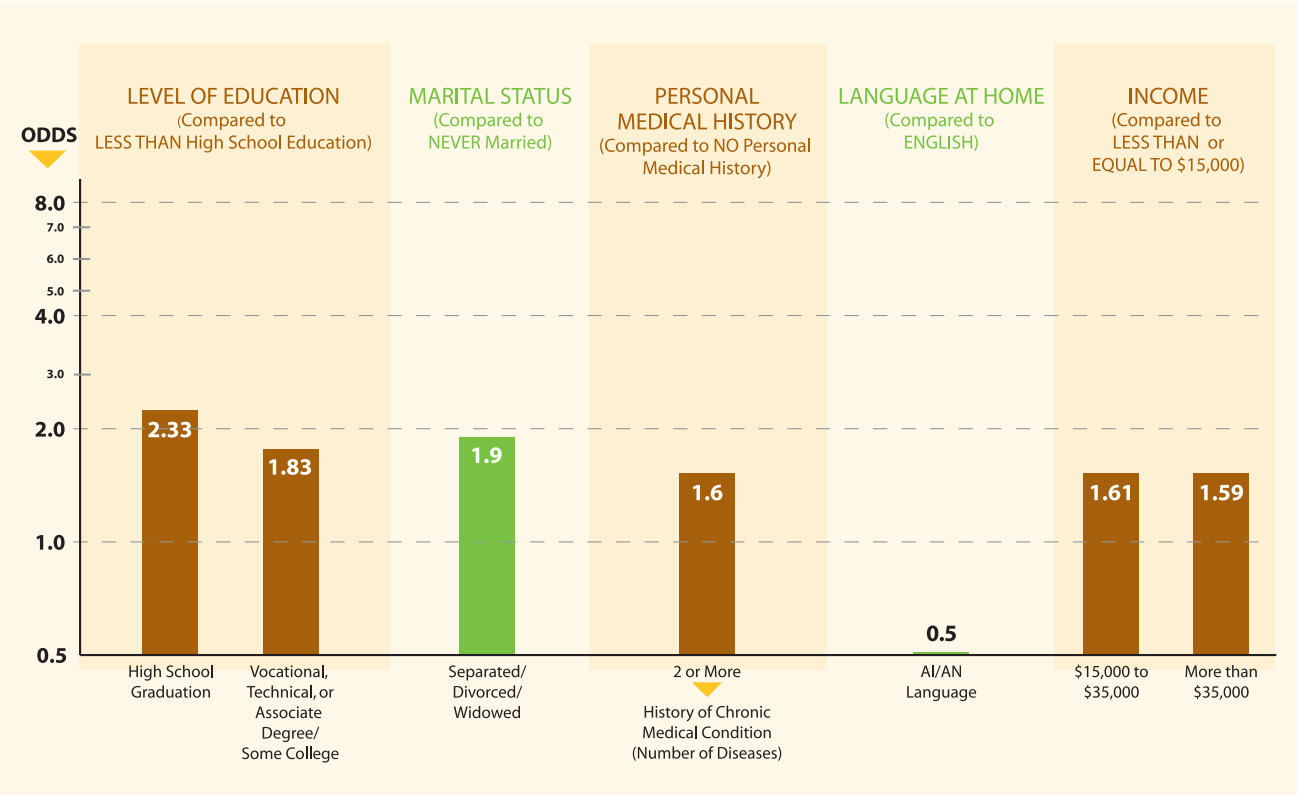
In these figures the number 1.4 suggests that an event is 40% more likely to happen, 2.0 suggests that it is twice as likely to happen; and 2.5 suggests that it is two and one-half times more likely to happen. In these figures we only present data associated with having a screening test after accounting for other factors, and were not felt to occur by chance.

Pap Test

Women who graduated from high school or received additional education were more likely to report having a Pap test *(Figure 4C)*. Women who reported being previously married were almost twice as likely to have a Pap test as were women who reported they had never been married. Women who had two or more medical conditions were 60% more likely to have a Pap test as were women who reported no medical conditions. Those who spoke their Alaska Native language only were less likely to have a Pap test than were those who spoke English only, and women with a higher household income were one and one-half times more likely to have a Pap test than were women with a lower household income.

▼ **Figure 4C** Factors associated with having a Pap test in the past three years: Alaska EARTH Study



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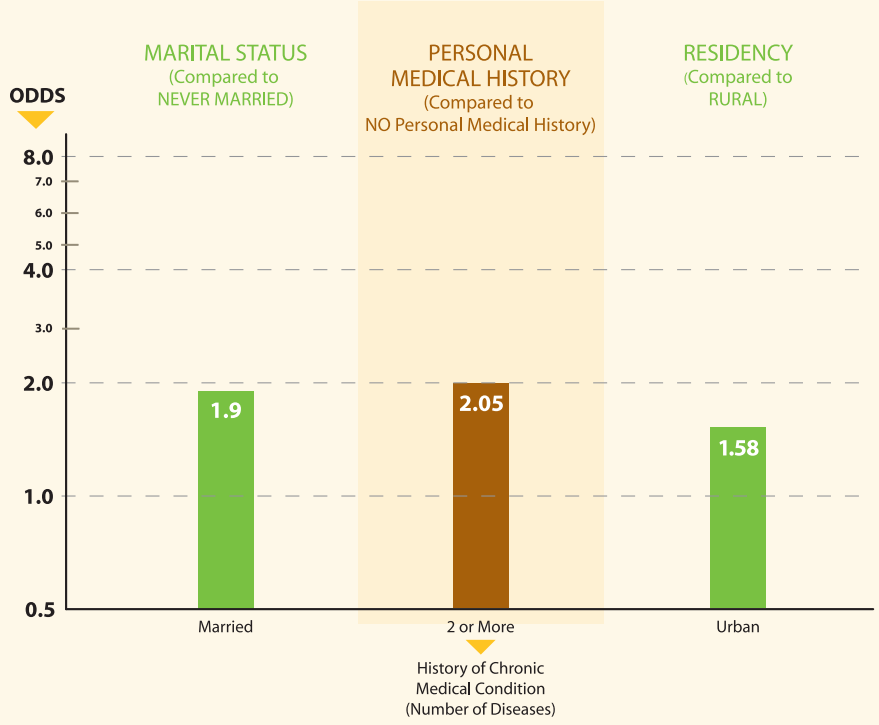
Mammogram

Being married was associated with a significantly greater likelihood of having a mammogram (*Figure 4D*). Women who reported having two or more medical conditions were twice as likely to have a mammogram within the past two years as were women with no medical conditions. Women who lived in a urban area were 60% more likely to have a mammogram than were women living in a rural area.

Figure 4D Factors associated with having a mammogram in the past two years: Alaska EARTH Study



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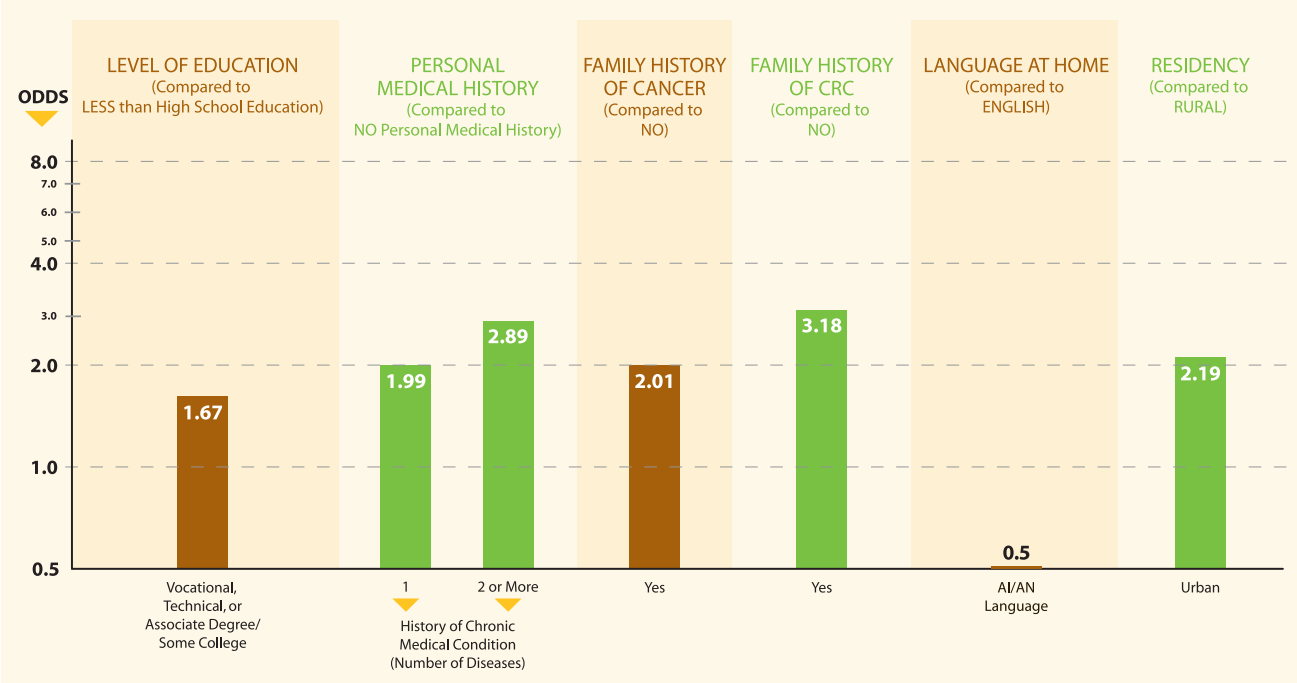
Colonoscopy/Sigmoidoscopy

Alaska study participants who had achieved a higher level of education were more likely to report having a colonoscopy or sigmoidoscopy in the past five years *(Figure 4E)*. Participants who had more personal medical conditions were two to three times more likely to have had colorectal cancer screening than people who reported no personal medical conditions. Participants who reported a family history of cancer were two times as likely to have a colonoscopy or sigmoidoscopy screening, and those with a family history of colorectal cancer were more than three times as likely to have this screening. Participants who spoke Alaska Native language only were less likely to have colonoscopy or sigmoidoscopy screening as were people who spoke English only. Those living in an urban area were twice as likely to have this screening as were those living in a rural area.

Figure 4E Factors associated with having a colonoscopy/sigmoidoscopy in the past five years: Alaska EARTH Study



Summary and Recommendations

Cancer screening has been proven to improve survival and reduce risk of dying from certain cancers, specifically cervix, breast and colorectal. Screening for colorectal cancer and removal of polyps may entirely prevent the cancer from developing. Some people are fearful of cancer screening. They are concerned that they are more likely, rather than less likely, to develop a cancer if they undergo screening. People need more information to reduce the fear of screening, and to know what tests are needed, when they are needed, and where they can be screened. At the same time the capacity for providers to offer the tests, and at accessible locations, must be enhanced. The goal is to ensure that all Alaska Native people receive recommended, proven cancer screening tests.

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CHAPTER FIVE

Dietary Intake Reported by Alaska EARTH Study Participants

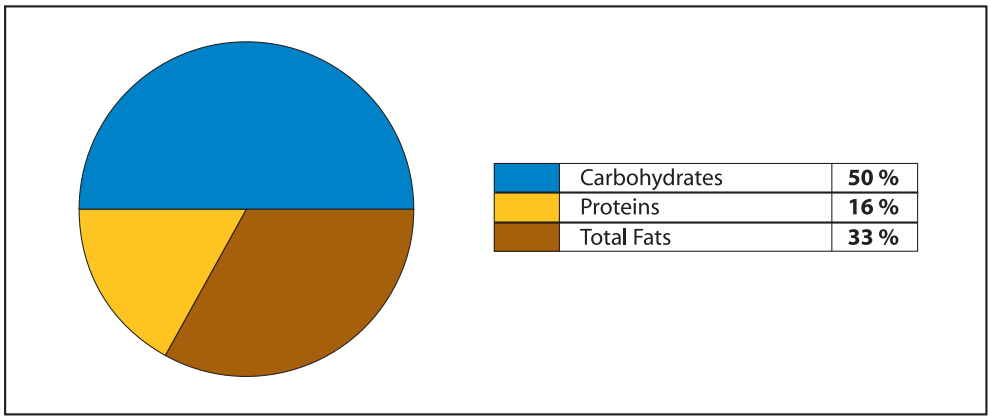
Participants reported the foods that they usually ate by answering a series of questions about which foods they ate and drank, how often they ate those foods, and how much of those foods they usually ate and drank at one time. The responses were converted to an estimate of an individual's usual daily intake. In this chapter we will describe the food and nutrient intakes reported by Alaska EARTH Study participants. This information is based on records from men who reported between 800 and 8500 calories per day, and women who reported between 600 and 6000 calories per day.

Dietary Energy from Carbohydrates, Protein, and Fats

Energy in food comes from calories that are found in carbohydrates, protein, and fats. Carbohydrates are sugars and starchs found in foods such as breads, desserts, cereal, rice, soft drinks, and pasta, as well as in fruits, vegetables, and dairy products. Protein comes from meat, eggs, dairy, and legume foods such as peas and beans. Fats are found in oils, butter, lard, meats, eggs, dairy products, and dessert foods. The Dietary Guidelines for Americans recommends that 45% to 65% of daily calories come from carbohydrates, 20% to 35% of calories from fats, and 10% to 35% of calories from protein. The American Heart Association recommends from 30% to 35% of calories from fats, with less than seven percent from saturated fat and less than one percent from trans-fatty acids to reduce the risk of heart disease.

The proportion of carbohydrates, fats and protein reported by men and women was similar: approximately 50% of calories from carbohydrates, 16% from protein, and 33% from fats. For both men and women participating in the Alaska EARTH Study the proportion of energy from carbohydrates, protein, and total fats fell within the recommended ranges *(Figure 5A)*.

▼ **Figure 5A** Percentage of calories from carbohydrates, proteins and fats: Alaska EARTH Study



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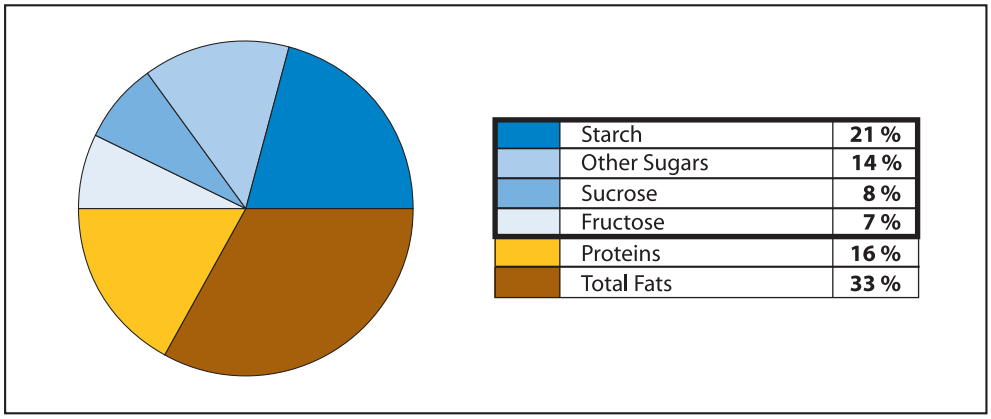
TYPES OF CARBOHYDRATES

Carbohydrates in the diet come from starches, sugars, and other non-starch carbohydrates. Figure 5B shows calories from different types of carbohydrates. Starches, which are present in grains such as wheat and rice, and starchy vegetables such as corn and potatoes, contributed approximately 21% of energy intake for both men and women *(Figure 2B)*.

Figure 5B Percentage of calories from different types of carbohydrates: Alaska EARTH Study

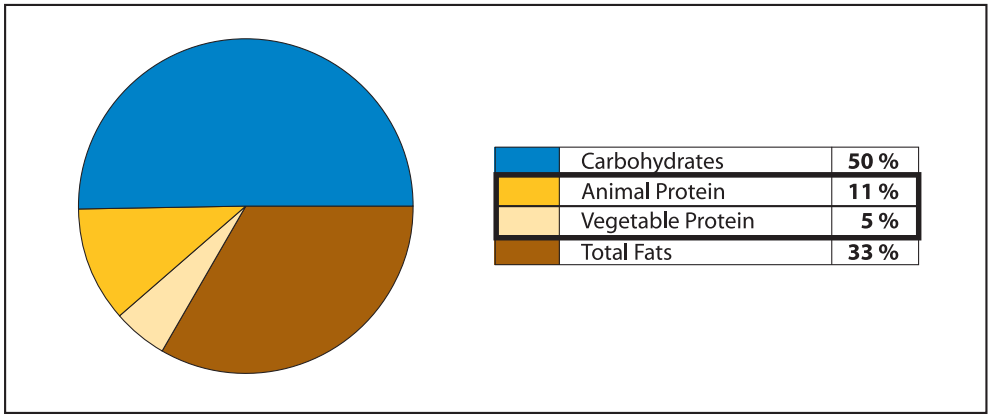


Fructose is the sugar that occurs naturally in fruit but is also added to soda, other beverages, and bakery products as high fructose corn syrup. About seven percent of energy intake came from fructose for both men and women. Sucrose, which includes table sugar and sugar in bakery products, contributed eight percent of calories for men and women.

TYPES OF PROTEIN

Protein in the diet comes from two sources, animal and vegetable. Vegetable sources include grains, legumes, soybeans, nuts, and other vegetables. Approximately 11% of energy intake came from animal protein and five percent came from vegetable protein *(Figure 5C)*. These were similar for both men and women.

Figure 5C Percentage of calories from animal and vegetable proteins: Alaska EARTH Study



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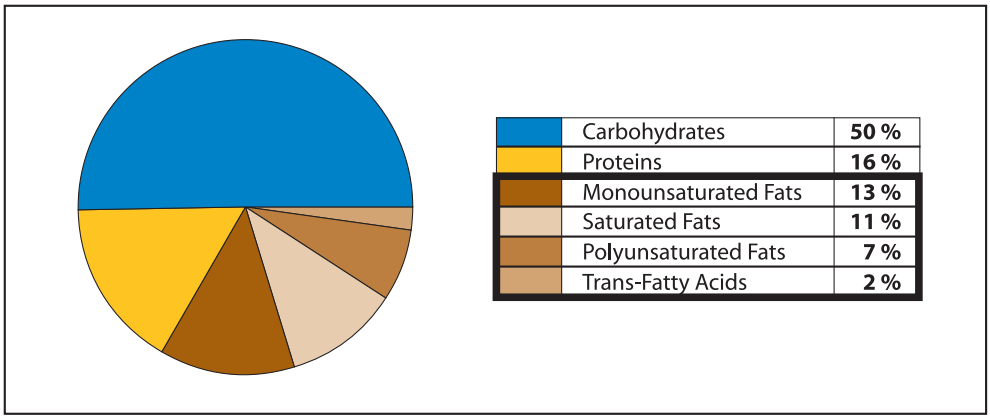
TYPES OF FATS

The various types of fats that have been found to be important to health are monounsaturated fatty acids, polyunsaturated fatty acids, saturated fatty acids, and trans-fatty acids. A diet higher in monounsaturated and polyunsaturated fatty acids and lower in saturated and trans-fatty acids is generally recommended for better health. Of the dietary fat reported, monounsaturated fats coming from olive oil, peanut oil, and other vegetable oils contributed approximately 13% of calories (*Figure 5D*). Eleven percent of calories were from saturated fats which come primarily from animals. Less than seven percent of saturated fat is recommended by the American Heart Association as part of a healthy diet. More than 88% of participants had saturated fat intakes of more than seven percent.

The rest of the fats came from polyunsaturated fats and trans-fatty acids. Almost two percent of calories came from trans-fatty acids which are in snack foods and convenience items such as cookies, crackers, and chips. The American Heart Association recommends that no more than one percent of calories come from trans-fatty acids. Nearly all participants had more than one percent of calories from trans-fatty acids (88%). There was little difference in the fats composition between men and women.

Figure 5D Percentage of calories from different types of fats: Alaska EARTH Study



Reported Frequency of Foods Eaten

TRADITIONAL FOODS

Alaska EARTH participants were asked how often they ate specific foods. Traditional foods were considered to be all foods locally hunted, harvested, fished, and gathered.

Almost all participants (93%) reported eating at least one traditional food in the past year. More than half (54%) reported eating seven or more different foods. A third of respondents (33%) reported eating ten or more foods (data not shown in figures).

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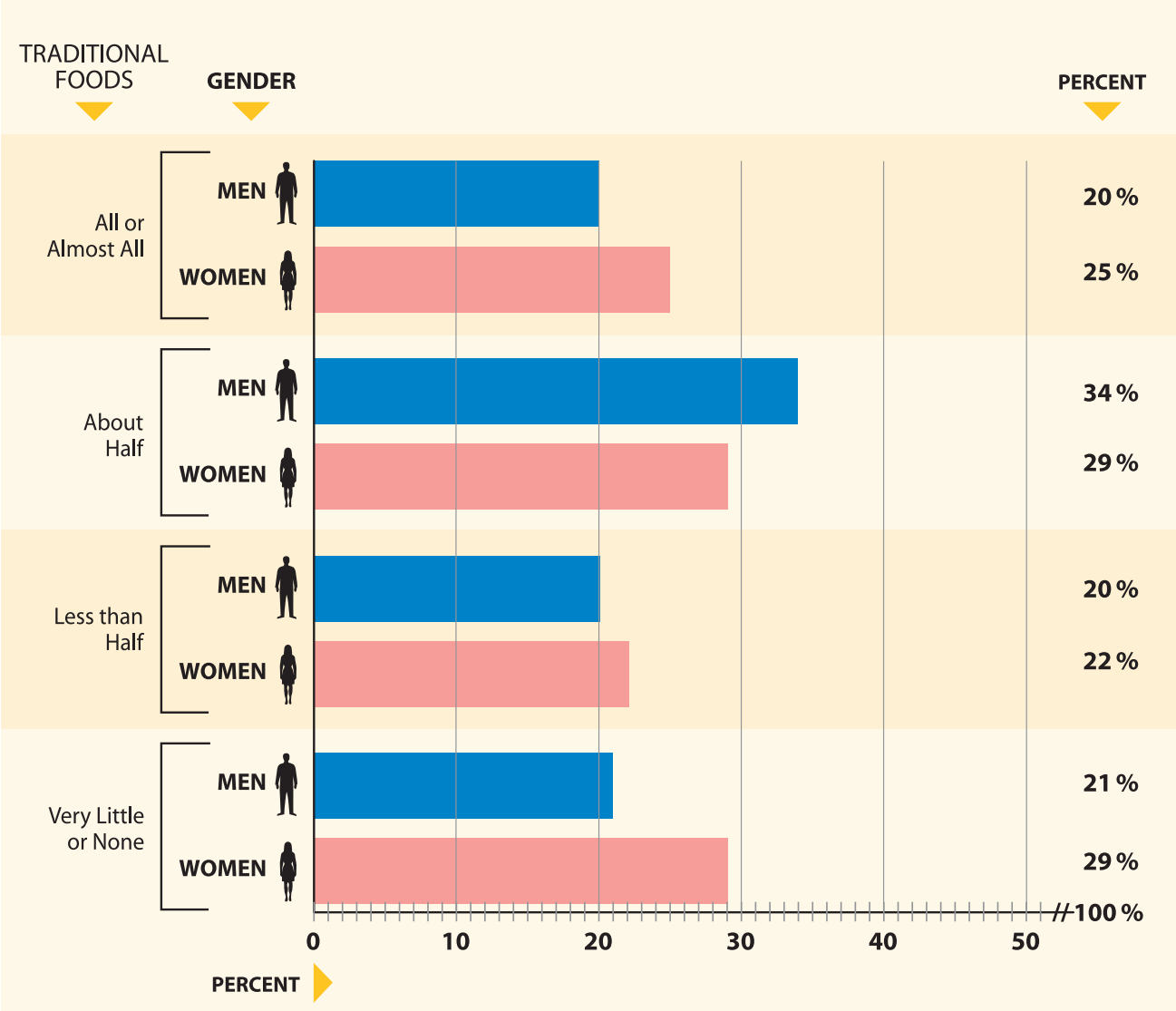
Dietary Intake Reported by Alaska EARTH Study Participants

Participants were asked what proportion of their diet came from traditional foods. Almost a quarter of participants (20% of men and 25% of women) reported getting all or almost all of their food from traditional foods, while an additional 34% of men and 29% of women reported getting half of their food from traditional foods (*Figure 5E*). Participants over age 60 were the most likely to report getting all or almost all of their food from traditional foods (*Figure 5F*).

Figure 5E Traditional foods reported by participants by gender: Alaska EARTH Study



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▼ **Figure 5F** Traditional foods reported by participants by age: Alaska EARTH Study

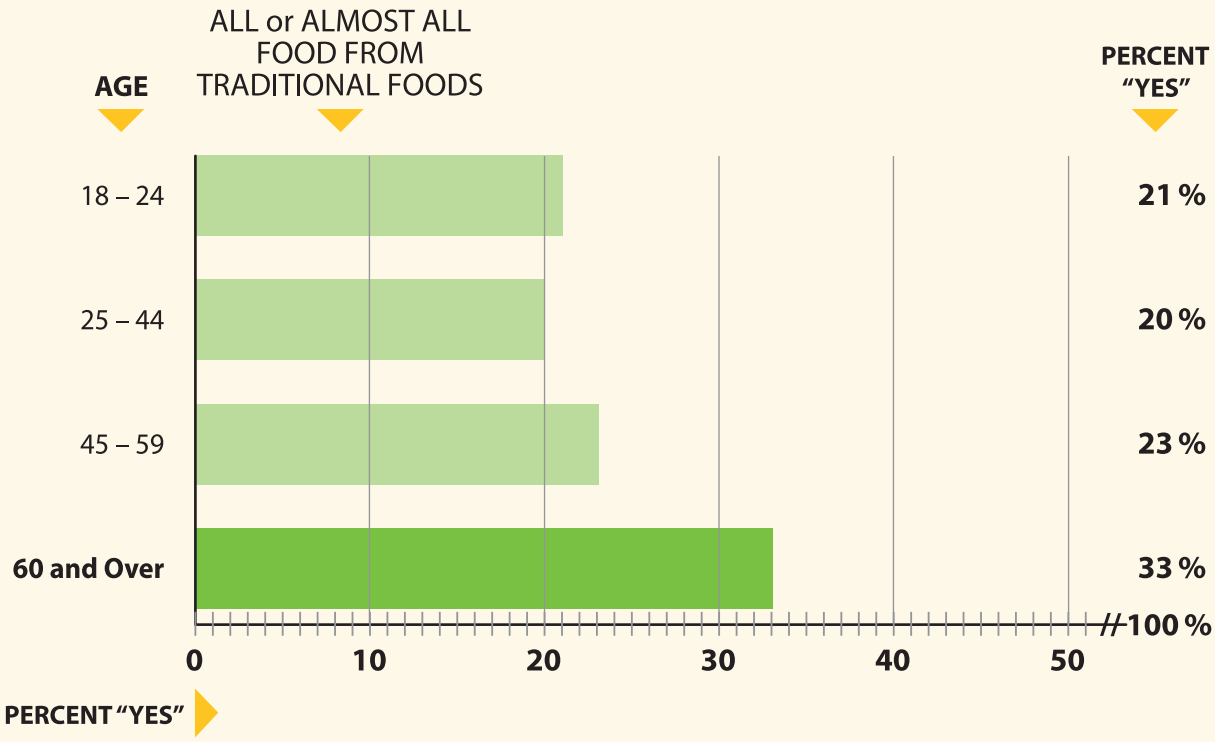

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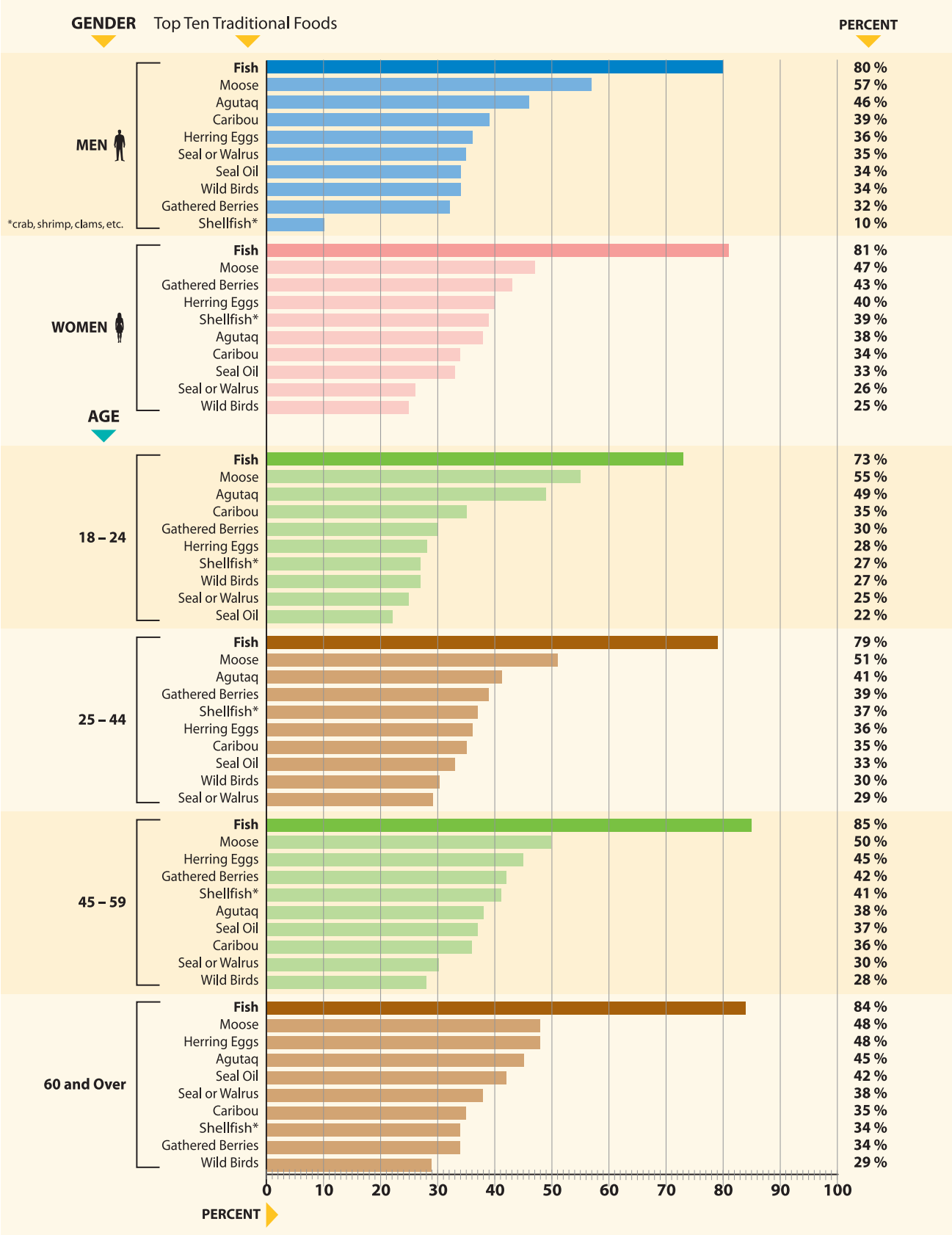
Figure 5G Frequency of traditional foods: Alaska EARTH Study



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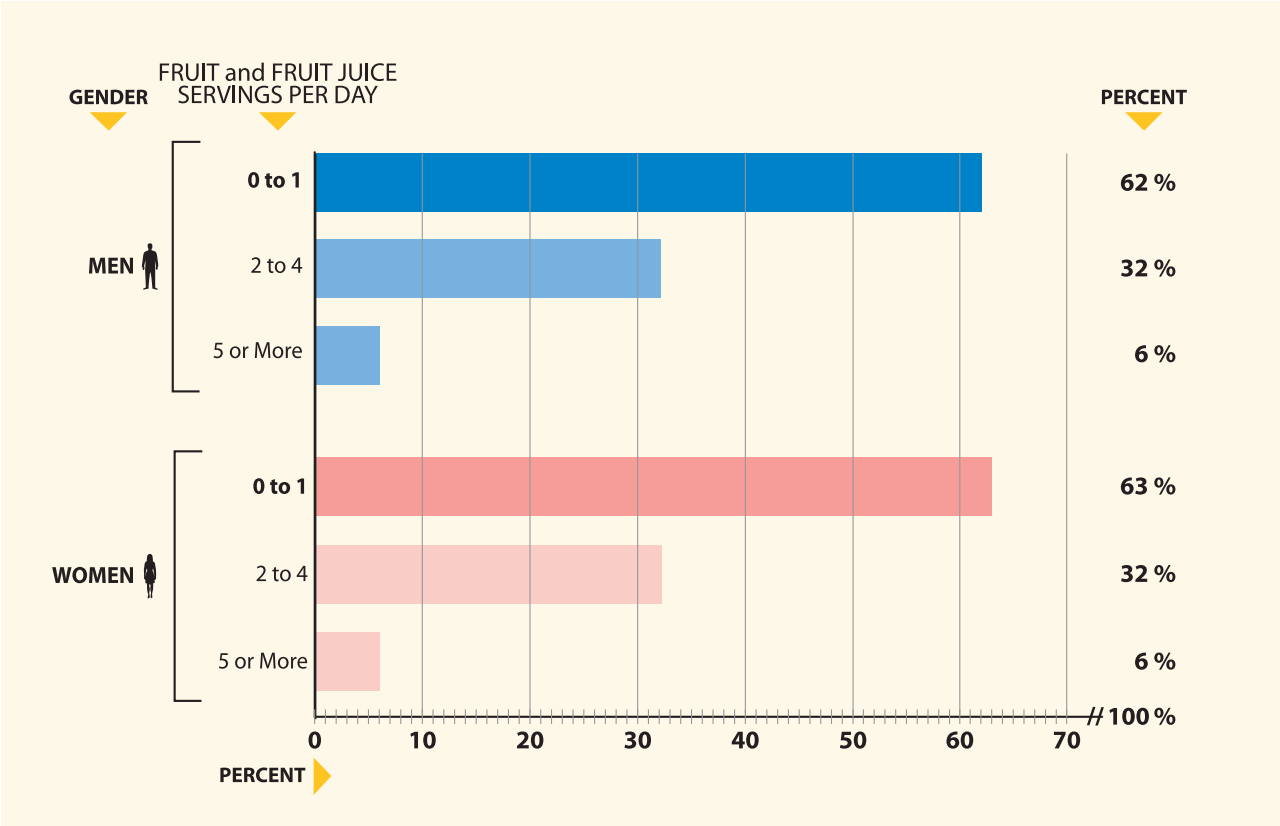
Overall, fish was the most frequently reported single traditional food (80%), followed by moose (51%), agutaq (42%), gathered berries (39%), and herring eggs (39%) for men and women combined. Rank order of foods eaten by participants varied by age and gender (*Figure 5G*).

FRUIT AND VEGETABLES

Fruit and fruit juices are sources of many vitamins, soluble fiber, and other nutrients important for health. It is recommended that people eat at least two to four servings (1–2 cups) of fruit or 100% fruit juice (not fruit drinks or fruit flavored beverages) per day. More than 62% of men and 63% of women reported having fewer than two servings of fruit or 100% fruit juice daily (*Figure 5H*). About 38% of men and 38% of women met the minimal recommendation for fruit servings per day.

Figure 5H Servings of fruit eaten per day by gender: Alaska EARTH Study



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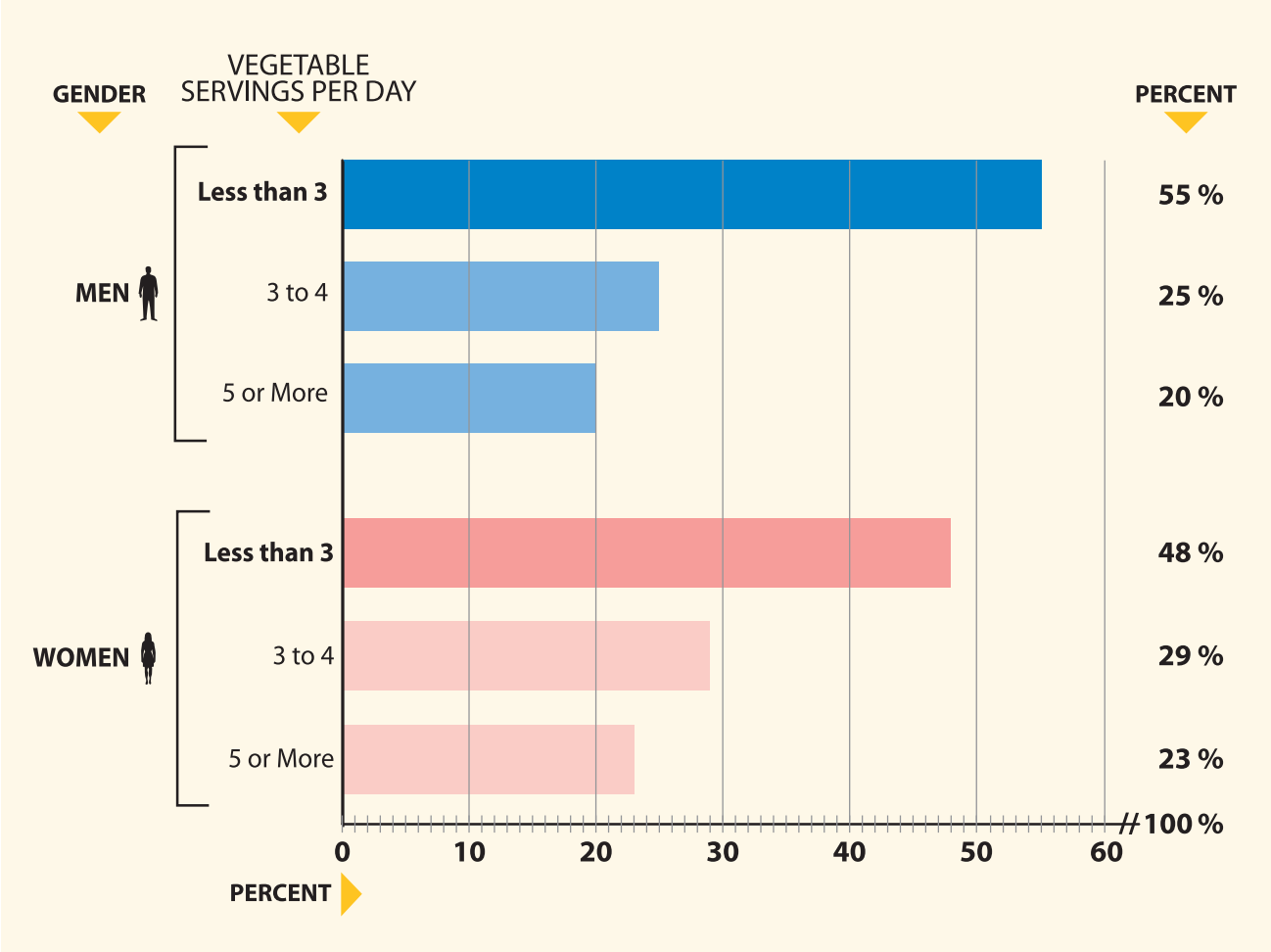
Dietary Intake Reported by Alaska EARTH Study Participants

Vegetables have many vitamins, minerals, and other nutrients that are important to health. Five or more servings (2.5 cups or more) per day are recommended as part of a healthy diet. Only 20% of men and 23% of women reported consuming five or more servings of vegetables per day (*Figure 5I*). About 55% of men and 48% of women reported having fewer than three servings of vegetables per day and about 25% of men and 29% of women reported having three to four servings of vegetables per day.

Figure 5I Servings of vegetables eaten per day by gender: Alaska EARTH Study



DAIRY PRODUCTS

Dairy products such as milk, yogurt, and cheese are good sources of calcium, protein, and vitamins A and D. Three or more servings of dairy products are recommended daily to get adequate calcium for strong bones and teeth. Only 14% percent of men and 11% of women participants reported eating three or more dairy servings on a daily basis (*Figure 5J*). The largest percentage of men (58%) and women (62%) reported eating one serving of dairy products per day, and about 12% to 15% reported eating two servings per day.

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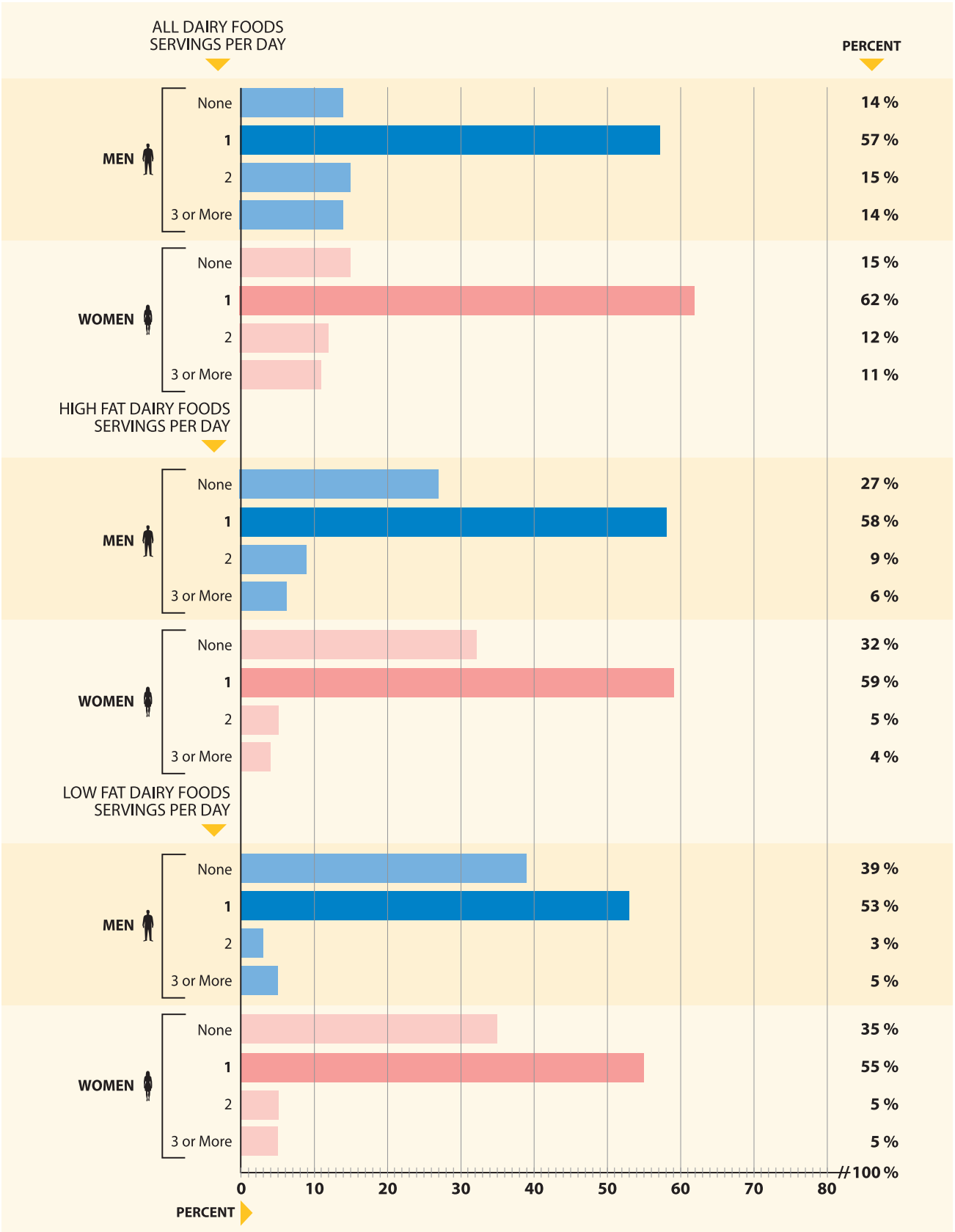
Figure 5J Servings of dairy foods per day by gender: Alaska EARTH Study



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Some dairy products such as whole milk, yogurt, fruited yogurt, ice cream, and cheeses are high in fat, especially saturated fats; they also contain more calories than low-fat dairy products such as low-fat milk, cheese, and yogurt. Twenty-seven percent of men and 32% of women reported not using high-fat dairy products *(Figure 5J)*. Most participants (59%) reported eating one serving of high-fat dairy products. About nine percent of men and five percent of women reported using two servings of high-fat dairy products per day. Only six percent of men and four percent of women reported using three or more servings of high-fat dairy products per day.

The pattern of reported low-fat dairy product use is similar to the pattern for high-fat dairy products *(Figure 5J)*. Again, one serving of low-fat dairy products per day was most commonly reported (men 53%, women 55%).

FAST FOODS

Fast foods, such as fast food chicken, hamburgers, and French fries, are high in calories and eating them frequently may contribute to being overweight or obese. Here we report how many times per week EARTH participants reported eating fast food chicken and chicken sandwiches, hamburgers, and cheeseburgers. Forty percent of the men reported that they do not usually eat these fast food sandwiches or chicken while 30% reported having one of these fast food items per week, 14% had two, 7% had three, and 9% had four or more fast food sandwiches or chicken per week *(Figure 5K)*. The findings were similar for women except that a larger proportion reported not eating these foods.

French fries and fried potatoes are high in fat and calories. Forty-two percent of men and 46% of women reported that they did not usually eat French fries or fried potatoes. Thirty-six percent of men and 37% of women reported eating them once per week. Twelve percent of men and 10% of women reported eating these items twice per week; six percent of men and four percent of women had them three times per week; and four percent of men and three percent of women reported eating French fries and fried potatoes four or more times a week *(Figure 5K)*.

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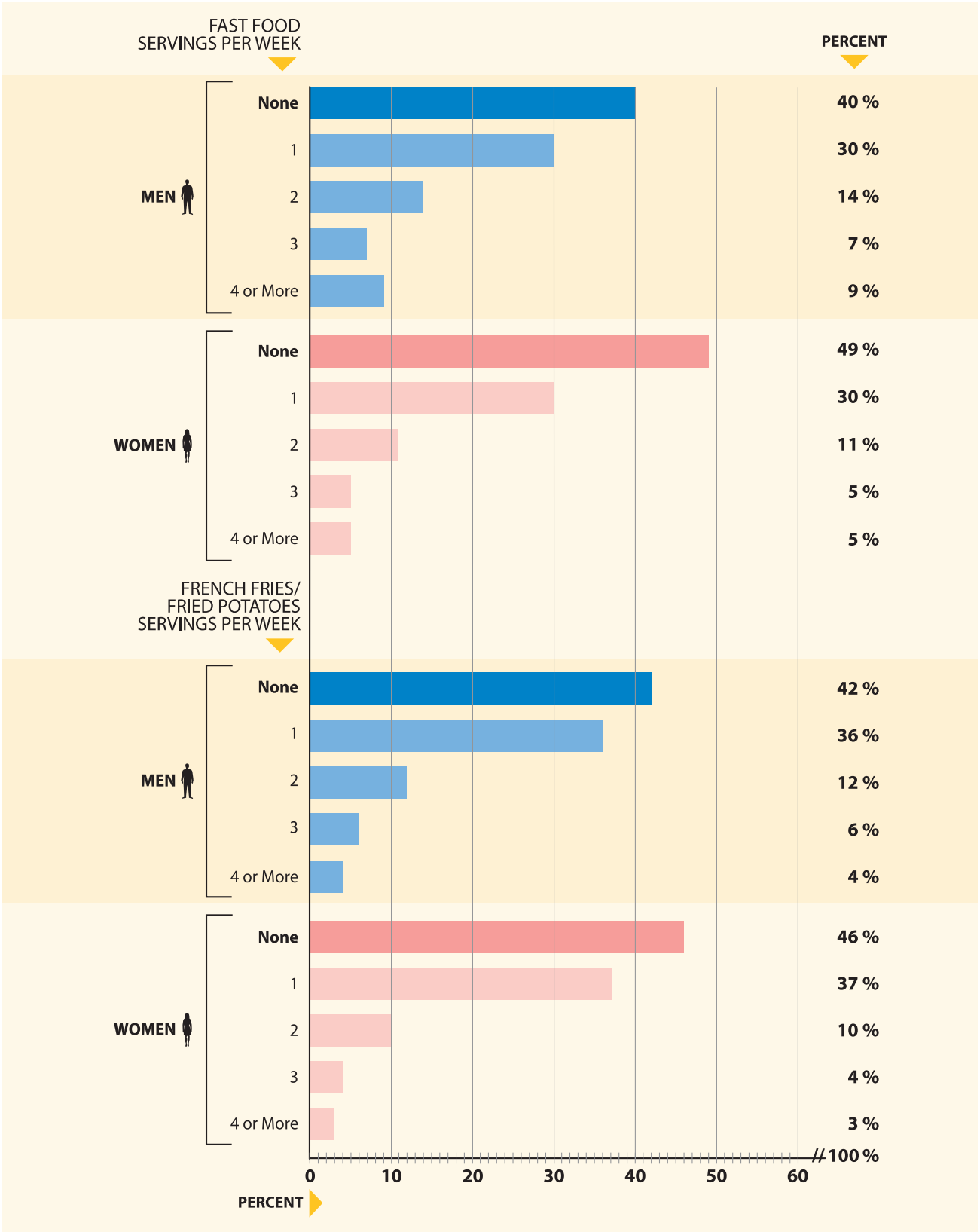
Figure 5K Servings of fast food sandwiches and French fries and fried potatoes by gender: Alaska EARTH Study



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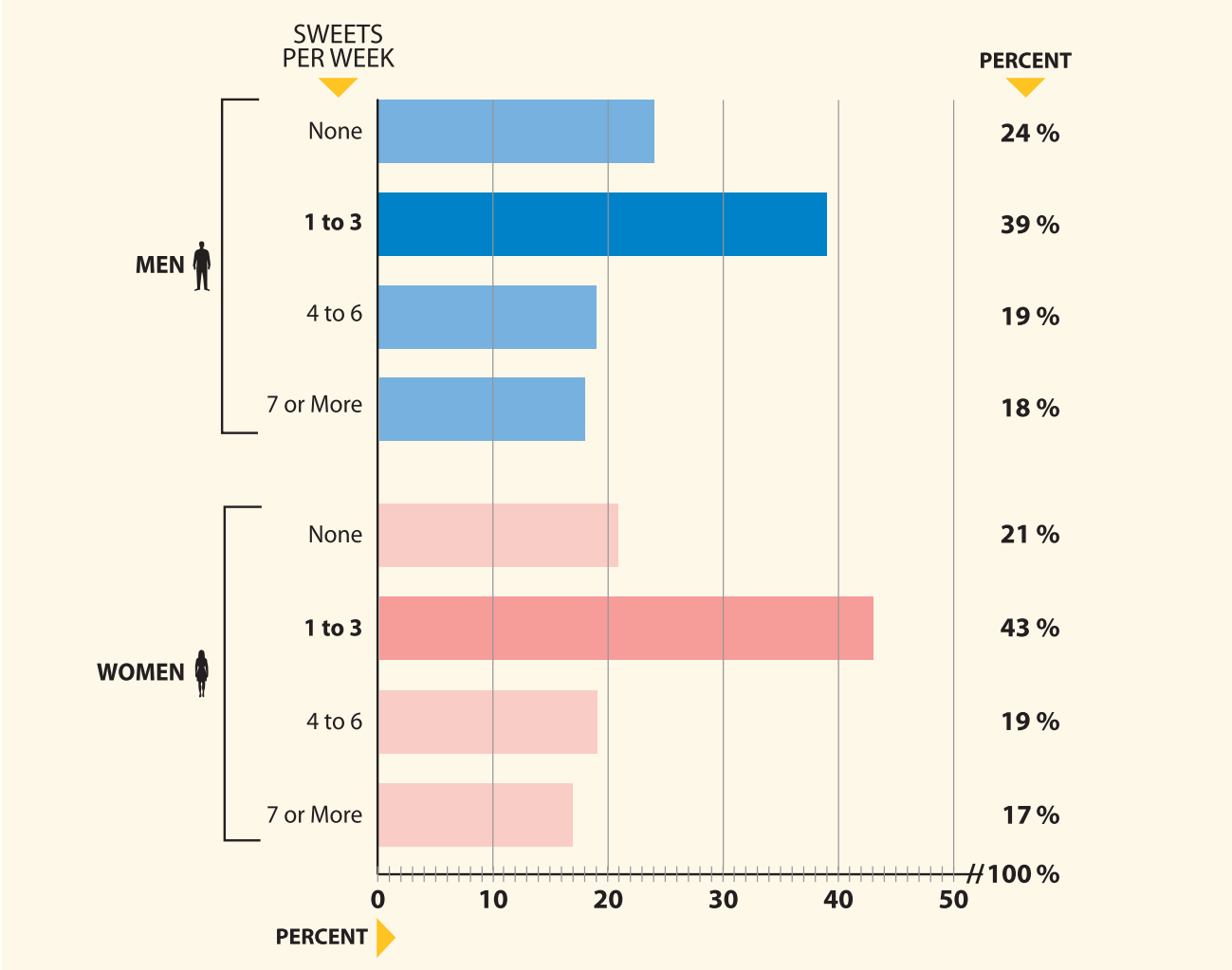
SWEETS AND SWEETENED BEVERAGES

Sugary desserts and sweet bakery items are a source of extra calories. About 25% of men and 22% of women reported that they did not usually eat sweets such as cookies, pies, donuts, cake, pudding, Jell-O, custard or popsicles, and candy on a weekly basis (*Figure 5L*). The largest percentage of men (39%) and women (43%) reported one to three servings of sweets per week. Nineteen percent of men and women reported having these sweet items four to six times per week. Seventeen percent of men and women reported having sweets seven or more times per week.

Figure 5L Frequency of eating sugary desserts and sweet bakery foods by gender: Alaska EARTH Study



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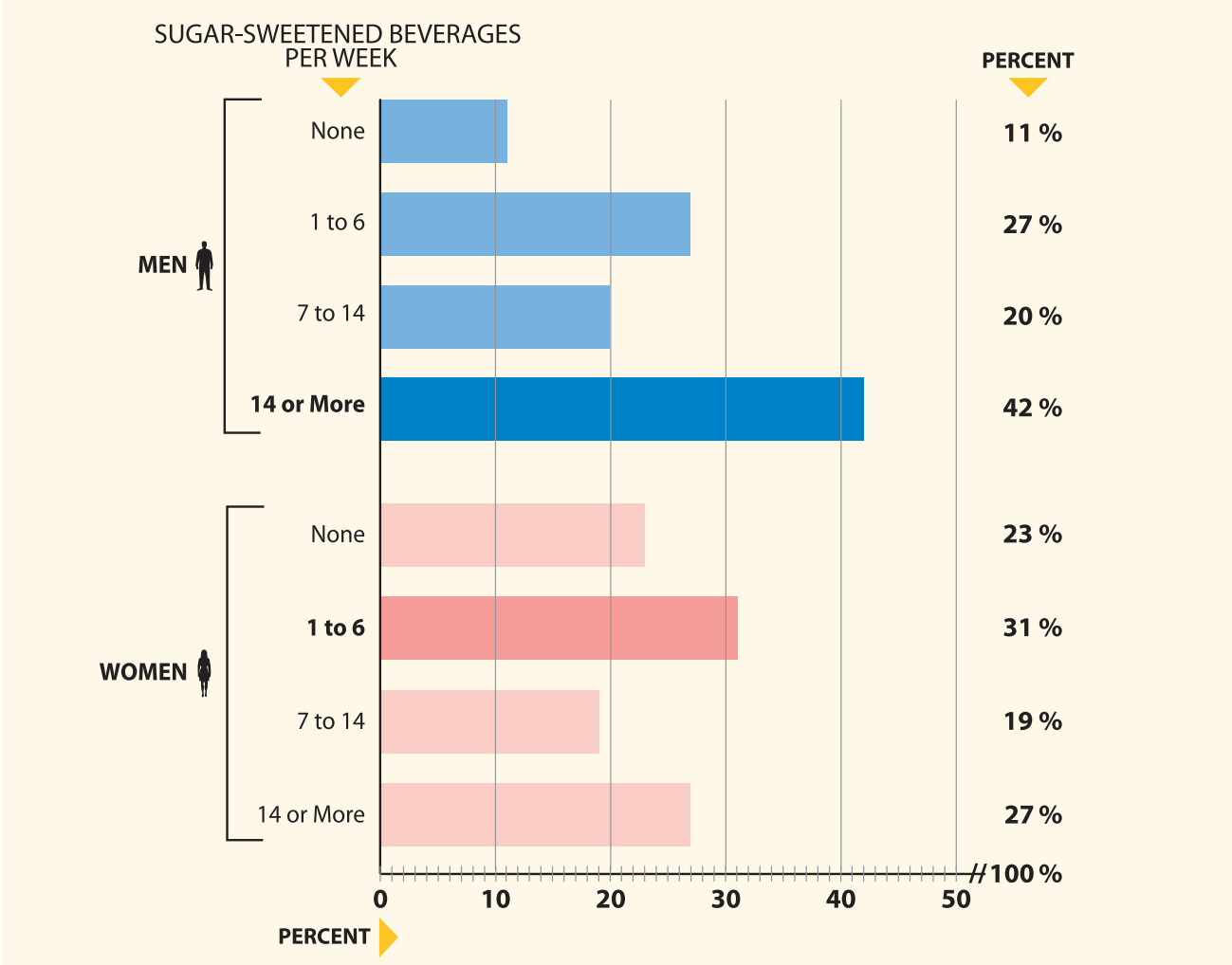
Sugar-sweetened beverages such as soda, sweetened fruit drinks, and fruit flavored sports drinks are a source of calories but contain few healthy nutrients. Reducing intake of sugar-sweetened beverages is a common component of weight management. Men were more likely to report drinking sugar-sweetened beverages than were women. Forty-two percent of men reported having sugared beverages more than 14 times per week *(Figure 5M)*. Twenty percent of men reported having sugar-sweetened beverages seven to 14 times per week, and 27% reported having them one to six times per week. Only 11% of men reported not drinking sugar-sweetened beverages.

Twenty-seven percent of women reported having sugar-sweetened beverages more than 14 times per week. Nineteen percent of women reported having sugar-sweetened beverages seven to 14 times per week, and 31% reported having them one to six times per week. About 23% of women reported not drinking sugar-sweetened beverages.

Figure 5M Frequency of drinking sugar-sweetened beverages by gender: Alaska EARTH Study



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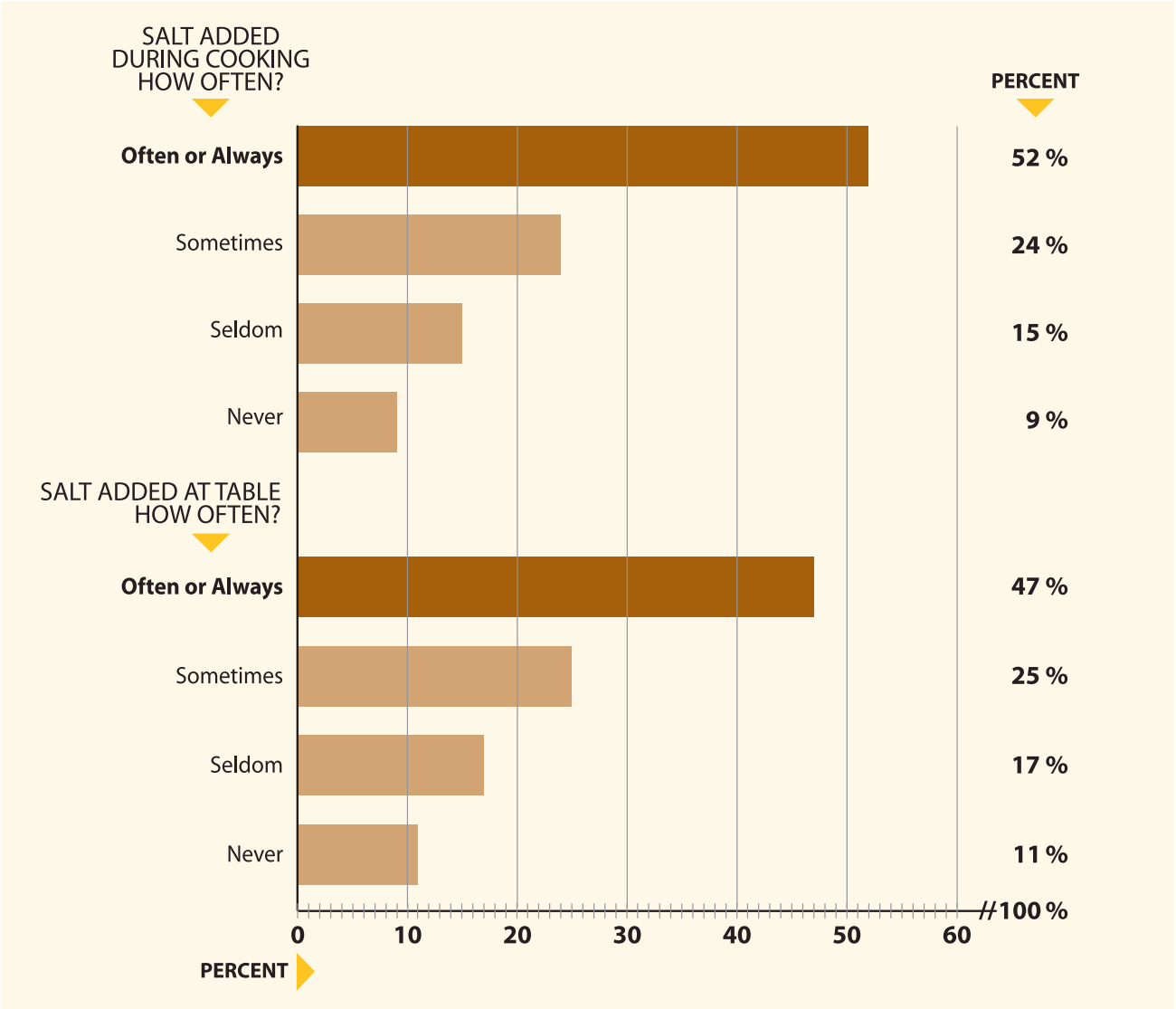
Additions to Food in Cooking and at the Table

ADDING SALT

Salt or sodium consumption has been associated with high blood pressure in other populations. Use of salt in cooking is a common practice. Use of salt in cooking and at the table were commonly reported by Alaska EARTH participants *(Figure 5N)*. Almost half of the participants (47%) reported often or always adding salt to food at the table, 25% sometimes added salt to food at the table, and 28% seldom or never added salt to their food at the table. Most people who reported using salt in cooking also reported adding salt to their food at the table.

Figure 5N Frequency of adding salt to foods in cooking and at the table: Alaska EARTH Study



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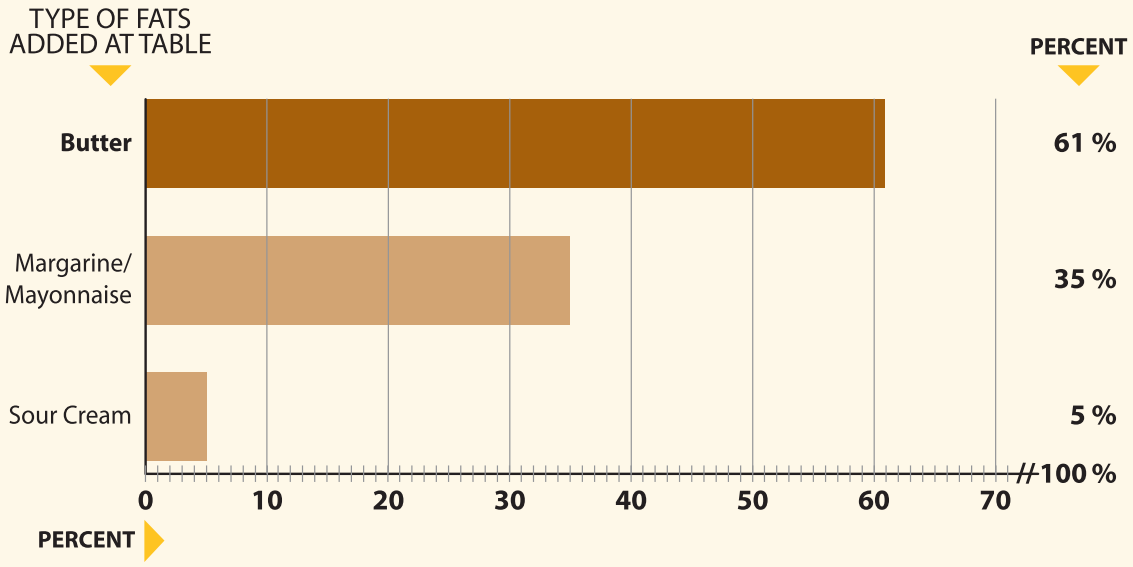
ADDING FATS

Almost all (91%) participants reported that they added some kind of fat to foods at the table. More than half of study participants (61%) reported that they use butter, a source of saturated fat (*Figure 5O*). Use of margarine or mayonnaise at the table was reported by 35% of participants. Fewer reported adding gravy or sour cream to foods at the table (5%).

Figure 50 Types of fats added to foods at the table: Alaska EARTH Study



Supplements

Some participants reported using multivitamins, calcium or other vitamin and mineral supplements. More women (43%) than men (28%) reported use of multivitamins or minerals. Commercial herbal supplements were used by a small percentage of women (6%) and men (4%). Similarly, only a small percentage of women (4%) and men (2%) reported using any traditional herbal supplements (data not shown in figures).

Portion Size

Participants reported how often and how much of the foods they ate. To determine how much someone ate, participants were asked to select the portion size that best represented their usual portion. Portion sizes were divided into a small, medium, or large portion. Those with a BMI greater than 35 were the most likely to choose the medium and large portion sizes and least likely to choose the small portion size (*Figure 5P*).

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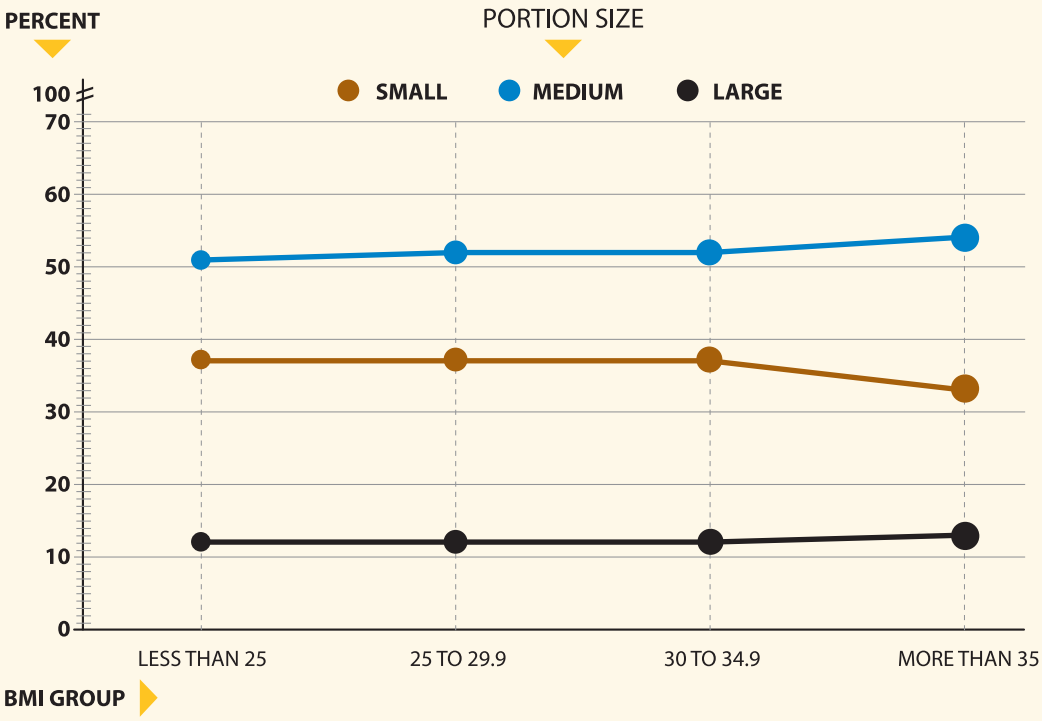
Figure 5P Frequency of portion size selection by Body Mass Index (BMI) group: Alaska EARTH Study



Summary and Recommendations

The proportions of protein, total fat, and carbohydrate reported by participants was similar for men and women and are close to the proportions recommended for a healthy diet. However, the intake of saturated and trans-fatty acids was higher than American Heart Association recommendations in nearly all participants. Reducing saturated fat intake could be accomplished by eating less store-bought meat and smaller portion sizes of meat.

Trans-fatty acids are present in commercially prepared cookies, crackers, and snack-foods and other commercially prepared items. Using trans-fatty acids-free products, or eating these types of foods in smaller portions and/or less often would reduce trans-fatty acids intake.

Less than a quarter of participants reported getting three or more vegetables per day. A diet rich in fruits and vegetables lowers the risk of certain cancers, heart disease and other chronic diseases. A large percentage of study participants, especially men, reported drinking sugar-sweetened beverages on a weekly basis. Use of salt in cooking and at the table is common. For people who have high blood pressure, it is especially important to reduce salt intake from these sources. With the high number of EARTH participants who are overweight, we know that total caloric intake is too high for the amount of energy used. The number of people choosing the larger portion sizes was more common among people with a high BMI. Therefore, reducing portion size may be an important strategy to help people achieve and maintain a healthy weight. Making healthy dietary choices and eating smaller portions of foods is important to increase good health.

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CHAPTER SIX

Physical Activity Reported by Alaska EARTH Study Participants

Physical activity is an important component of health. In the Alaska EARTH Study, we asked participants about the activities that they did over the past year. Participants reported walking for exercise and to get places; team sports such as basketball, volleyball and soccer; individual activities such as tennis or skiing; exercise such as weight lifting or aerobics; recreational activities such as swimming and biking; work related activities; and household or outside activities. We also asked participants about traditional physical activities. These activities included traditional dancing, dog mushing, berry picking, fishing by hand or with a set net, hunting marine mammals, hunting big or small game, trapping, butchering game, cutting and/or smoking fish or meat, and working on animal skins or tanning hides.

We asked participants how much time they spent in these activities. Activities were categorized as vigorous or moderate based on the amount of energy expended doing that activity. Vigorous activities included hiking, lifting weights, downhill skiing and snowboarding, basketball and other team sports such as soccer, aerobics, jogging, canoeing, singles tennis, cross country skiing, and snowshoeing. Moderate activities included traditional and other types of dancing, baseball and other team sports such as volleyball, working out on exercise machines, heavy gardening, heavy work such as lifting or construction, and hunting for large or small game by foot. Both moderate and vigorous activities are important for health. In this report, we focus on moderate and vigorous activities combined.

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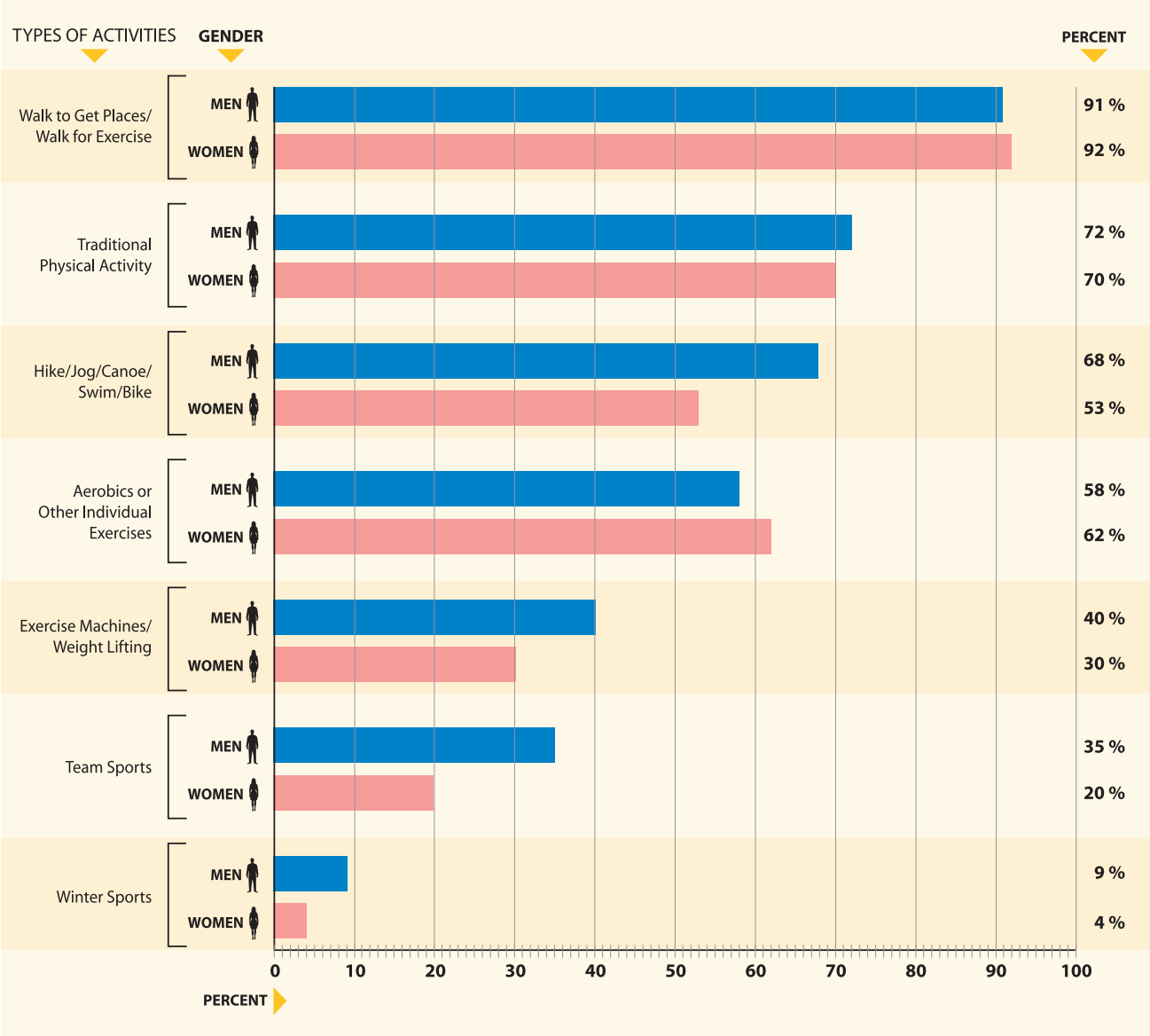
Types of Activity

In general, more men than women reported physical activities, although women reported more walking and aerobics than did men *(Figure 6A)*. A large percentage of men (91%) and women (92%) reported walking to get places or for exercise. Over half of all participants reported leisure activities such as hiking, swimming, and biking. Forty percent of men and 30% of women reported lifting weights or using exercise machines. An average of 26% of people reported participating in team sports. Winter sports were reported by only 9% of men and 4% of women.

Figure 6A Types of activities reported by gender: Alaska EARTH Study



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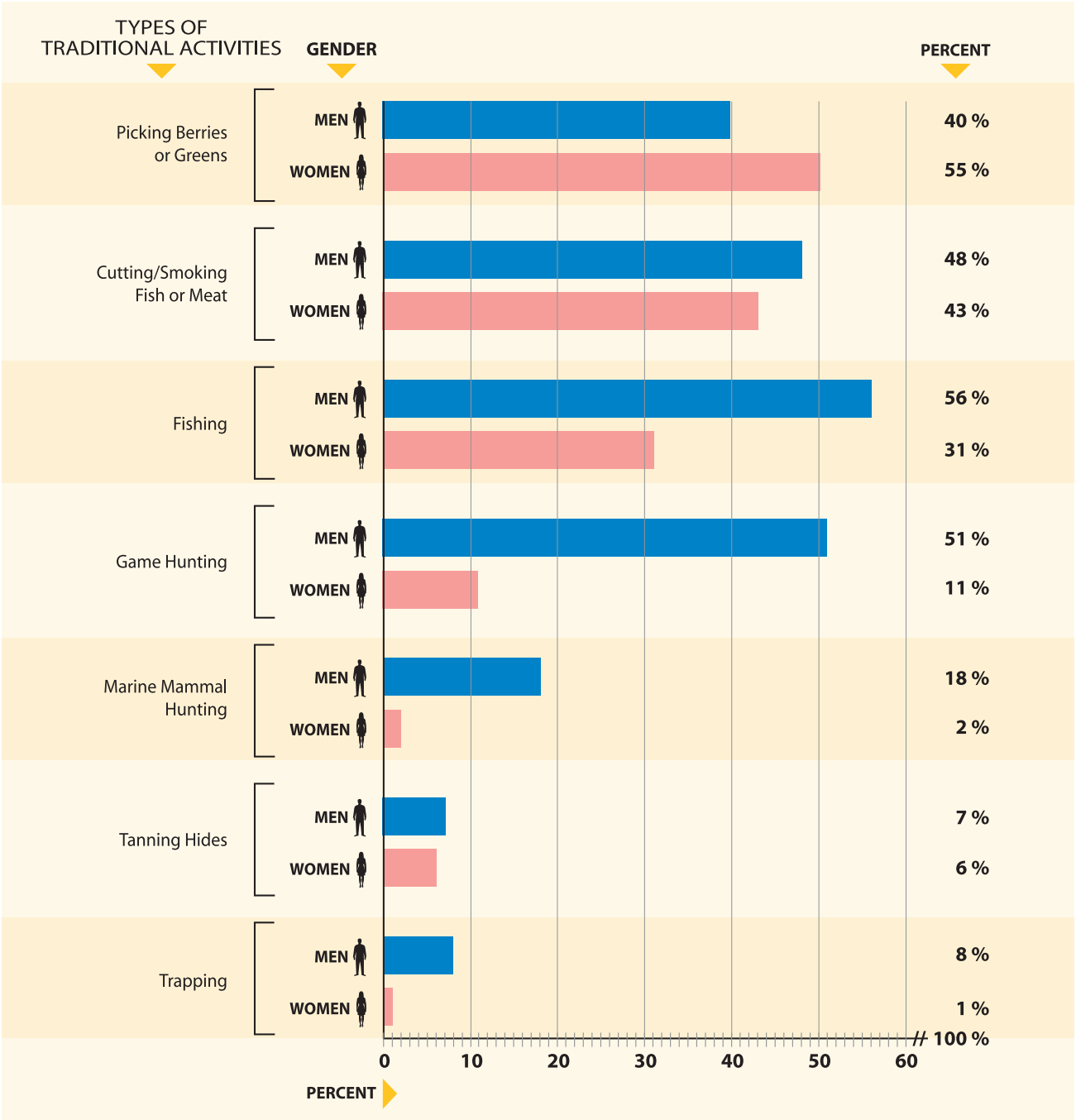
Participation in traditional harvesting activities is an important component of Alaska Native culture. Almost 70% of participants engaged in at least one traditional harvesting physical activity and 34% engaged in three or more traditional activities. The leading traditional activities were picking berries or greens (49%), cutting and smoking fish or meat (45%) and fishing (41%) (*Figure 6B*). Participation in traditional physical activities was higher among men than women except for picking berries or greens.

Figure 6B Types of traditional activities reported by gender: Alaska EARTH Study



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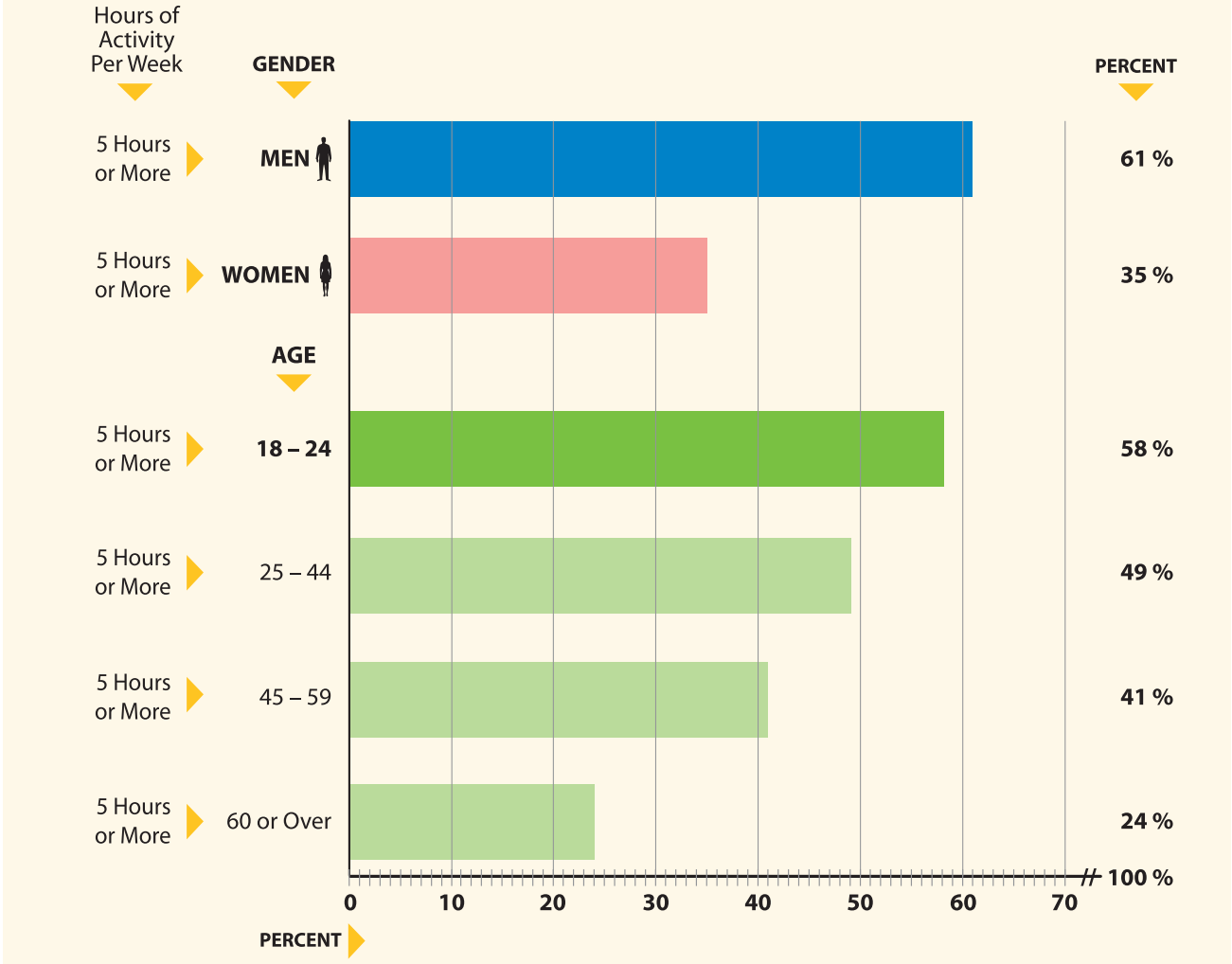
Hours of Activity Per Week

Among men, 61% reported performing five hours or more per week of combined moderate and vigorous activity compared with 35% of women *(Figure 6C)*. The percentage of participants who reported five hours per week of moderate and vigorous exercise decreased with age, from 58% among those 18 to 24 years of age to 24% among participants over 60 years of age *(Figure 6C)*.

Figure 6C Hours of physical Activity by gender and age: Alaska EARTH Study



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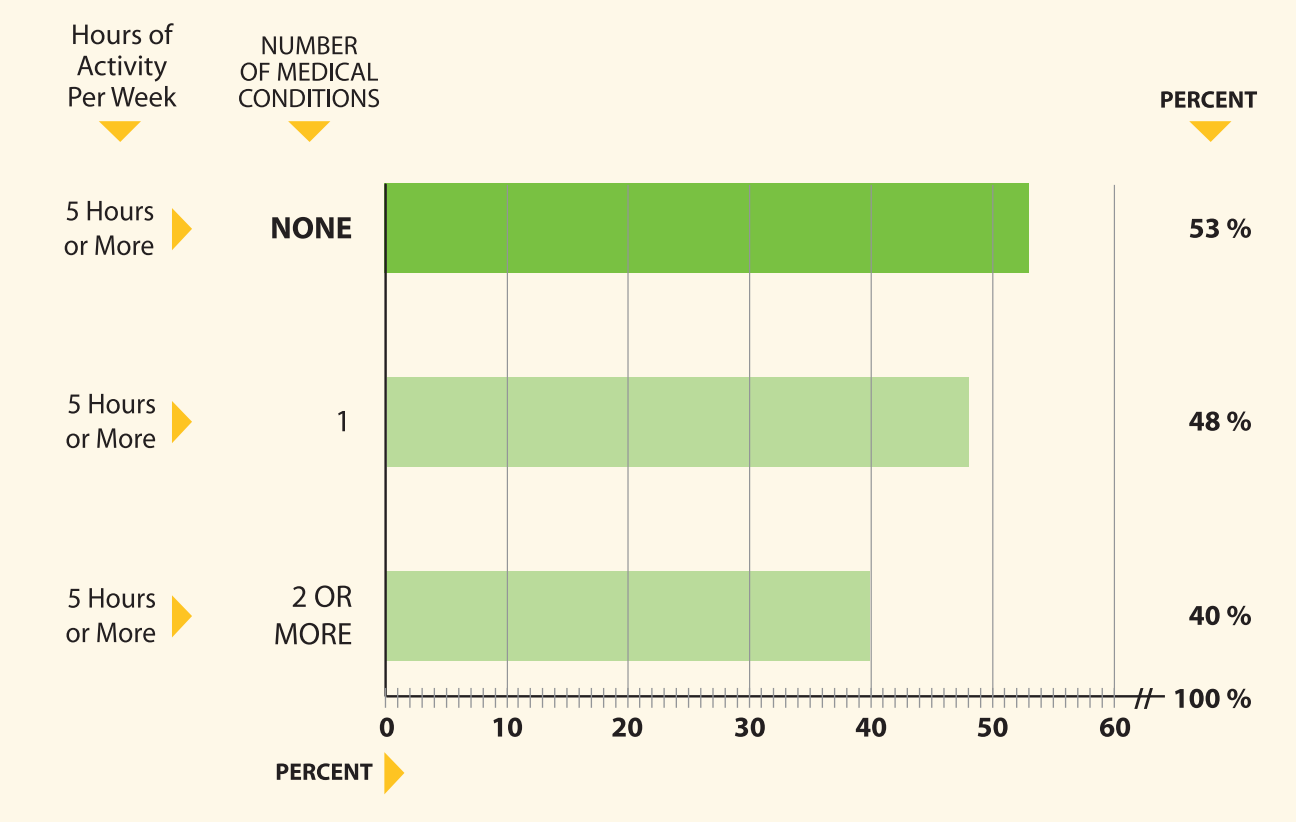
The percentage of participants who reported five or more hours per week of combined moderate and vigorous activity declined with the number of medical conditions reported (*Figure 6D*). Slightly over half (53%) of the individuals who reported no medical problems reported five or more hours of physical activity per week compared to 40% of participants who reported two or more medical conditions (for medical conditions evaluated refer to Chapter 3, Medical Conditions). The lack of physical activity can be the result of some medical conditions but can also contribute to a number of medical conditions. These data do not tell us which circumstances exist, but do support an association between level of physical activity and an array of medical conditions.

Figure 6D Hours of physical activity by number of medical conditions: Alaska EARTH Study



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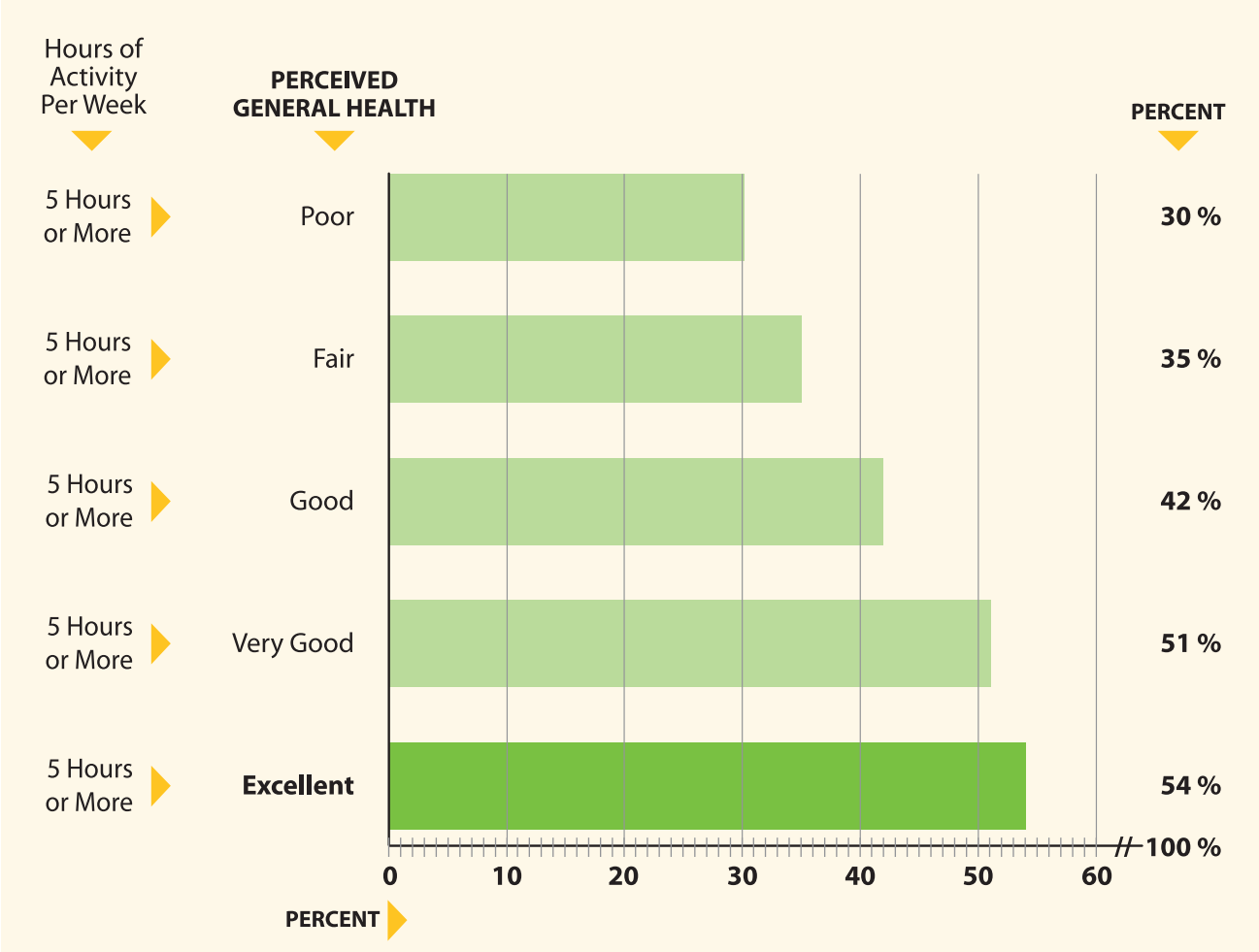
Physical Activity Reported by Alaska EARTH Study Participants

There was an association between perceived health and self-reported moderate and vigorous physical activity (*Figure 6E*). Only 30% of participants who rated their health as poor reported five or more hours of combined moderate and vigorous activity. The percentage of participants who reported five or more hours of physical activity per week increased among those who perceived their health to be better. Half of those who rated their health very good reported five or more hours of activity per week and 54% of the participants who rated their health excellent reported five or more hours of combined moderate and vigorous activity per week.

Figure 6E Hours of physical activity by perceived general health: Alaska EARTH Study



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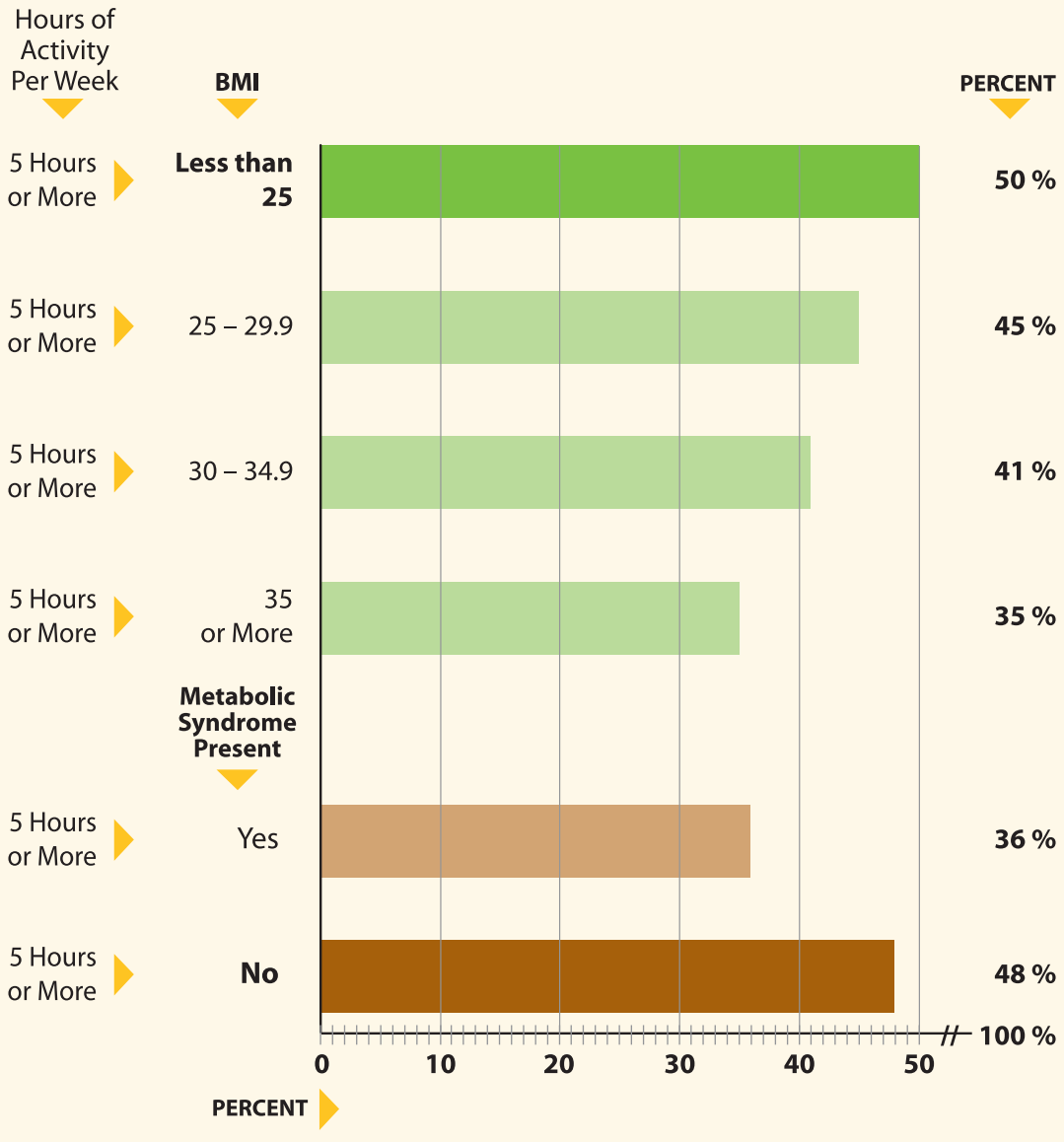
The level of reported activity decreased as BMI increased. Fifty percent of participants with BMIs of less than 25 reported five or more hours of moderate to vigorous activity, while 35% of those with BMIs of 35 or more reported five or more hours. Participants identified as having metabolic syndrome also reported lower levels of physical activity *(Figure 6F)*. Only 36% of the participants with metabolic syndrome reported five or more hours of moderate and vigorous activities in a week compared to 48% of the participants without metabolic syndrome.

Figure 6F Hours of physical activity by BMI and metabolic syndrome: Alaska EARTH Study



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Summary and Recommendations

Several medical groups have made recommendations for maintaining health and reducing risk of developing specific diseases. US Dept. of Health and Human Services recommendations that focus on overall health suggest two hours and 30 minutes per week of moderate-intensity, or one hour and 15 minutes (75 minutes) per week of vigorous-intensity aerobic physical activity, along with muscle-strengthening activities performed on two or more days per week. However, all recommendations agree that people should make an effort to increase their levels of physical activity since most Americans fall short of the recommendations, regardless of which specific recommendations are being used. Many Alaska Native people in the EARTH Study did not report as much physical activity as is recommended for health. More men than women and more younger (less than 25 years) than older (60 years or over) participants reported five or more hours per week of moderate and vigorous activity.

Increases in physical activity should be encouraged. Programs such as "Just Move It," that encourage community walks are important to assist people in increasing their activity levels. Alaska Native people should also be encouraged to practice traditional harvesting activities, which have both physical and nutritional benefits. Because activity patterns can be set at an early age and the health consequences of being physically inactive start at an early age, schools need to give children the opportunity to engage in activities while at school and encourage students to become more physically active. Health care providers can also help by encouraging patients to increase physical activity, eat nutritious foods, and maintain a healthy weight. Recommendations for physical activity among people with medical conditions should be made by health care providers.

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CHAPTER SEVEN

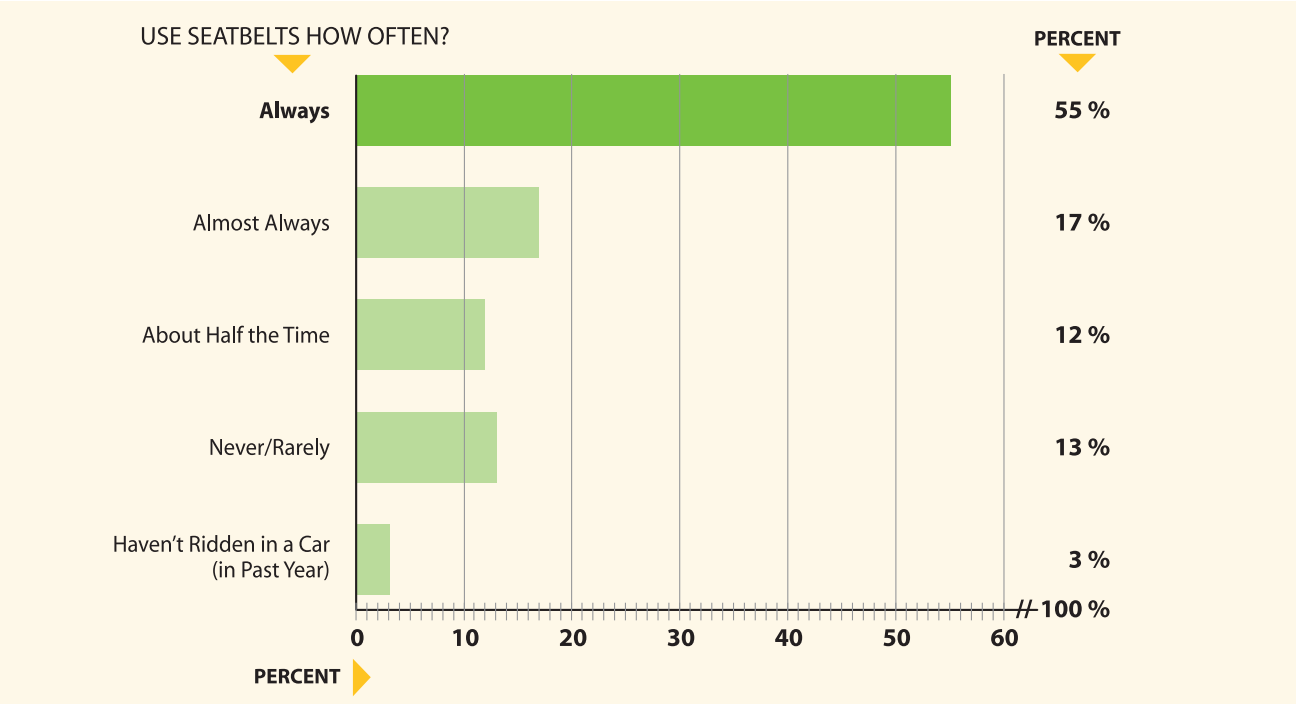
Safety Behaviors and Practices Reported by Alaska EARTH Study Participants

Alaska EARTH study participants were asked questions regarding driving behaviors and other safety practices. Questions included how often they wore a seat belt when riding or driving in a car or truck; how close to the speed limit they usually drove; how often in the last month they drove a boat, car or other vehicle after having more than one alcoholic drink; and how often in the last month they rode in a boat, car or other vehicle after the driver drank more than one alcoholic drink. Participants were also asked how often they used a helmet when riding a bicycle, motorcycle, snowmobile, 4-wheeler or ATV, and how often they wore a float coat, life jacket or personal flotation device when boating. Responses to these questions indicate the relative frequency of these behaviors among participants, and may help identify safety and injury risks for particular groups of individuals.

Seat Belt Use

Most participants who rode in a car or truck in the last year self-reported using a seat belt. The percentage of participants who reported "always" using a seat belt use was 55%. Another 17% reported using a seat belt "almost always," 12% reported wearing a seat belt "about half the time," and 13% reported "never/rarely" wearing a seatbelt (*Figure 7A*).

▼ **Figure 7A** Self-reported seat belt use: Alaska EARTH Study



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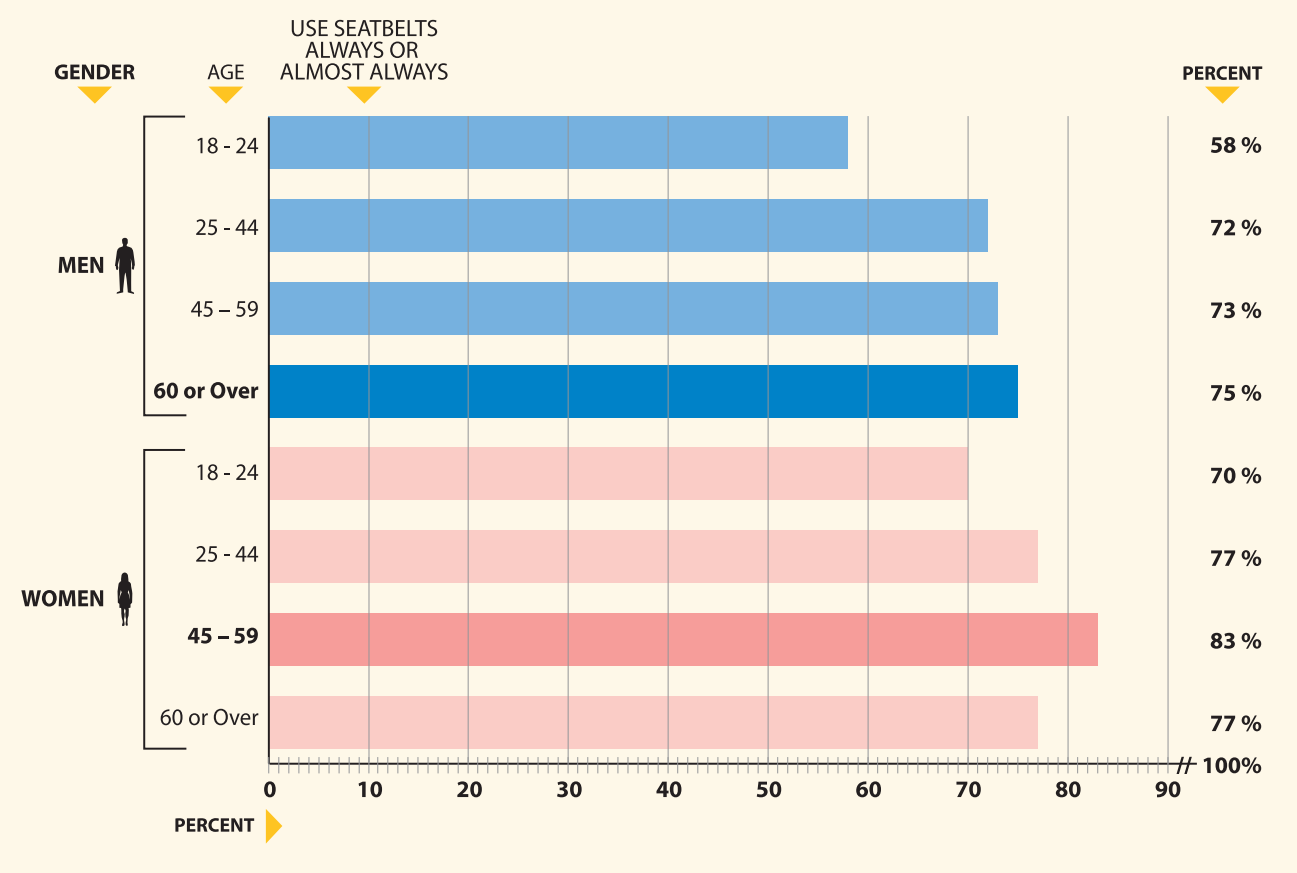
Safety Behaviors and Practices Reported by Alaska EARTH Study Participants

For both men and women seat belt use increased with age. For all age groups a larger portion of women than men reported seat belt use. Among men aged 18 to 24, 58% reported using a seat belt always or almost always *(Figure 7B)*. Almost three-fourths of men over age 25 reported using a seat belt always or almost always. Seventy percent of women aged 18 to 24 reported using a seat belt always or almost always. Women in the 45 to 59 age group had the highest reported use of seat belts (83%).

Figure 7B Self-reported seat belt use by gender and age: Alaska EARTH Study



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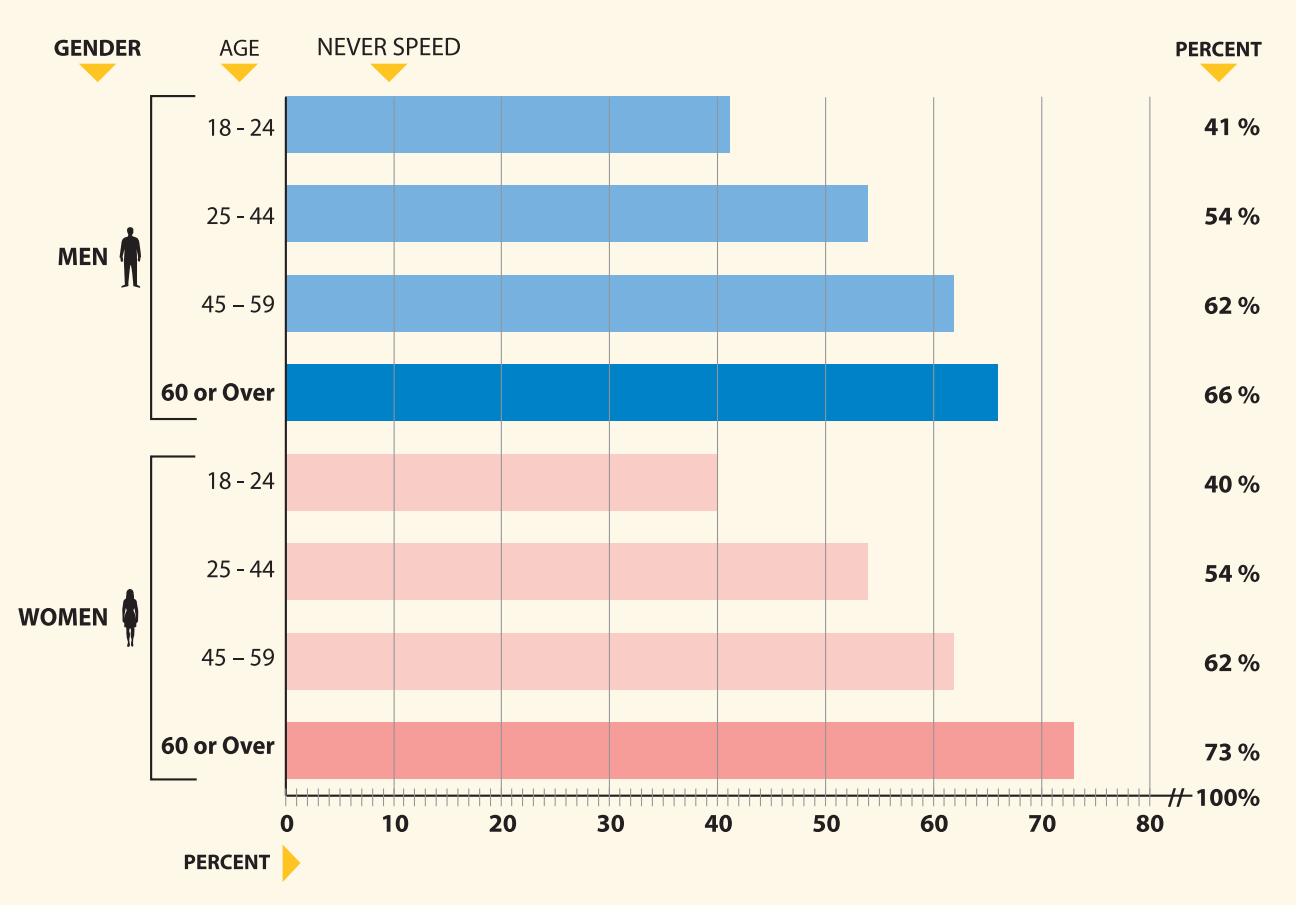
Speeding Behaviors

When asked how close to the speed limit they usually drove (of those who drove), 55% reported always driving the speed limit, 39% reported driving five to 10 miles over the limit, and seven percent reported driving more than 10 miles over the limit. Thirty-three percent of all Alaska EARTH participants reported that they did not drive (data not included in figures).

As age increased the percentage of individuals reporting always driving the speed limit increased (*Figure 7C*). Forty-one percent of men aged 18 to 24 reported driving the speed limit, compared to 66% of men over age 60. Forty percent of women aged 18 to 24 reported driving the speed limit, compared to 73% of women over age 60. The percentages reporting never speeding were similar for men and women except for the 60 and older age group.

Figure 7C Self-reported speeding behavior by gender and age: Alaska EARTH Study



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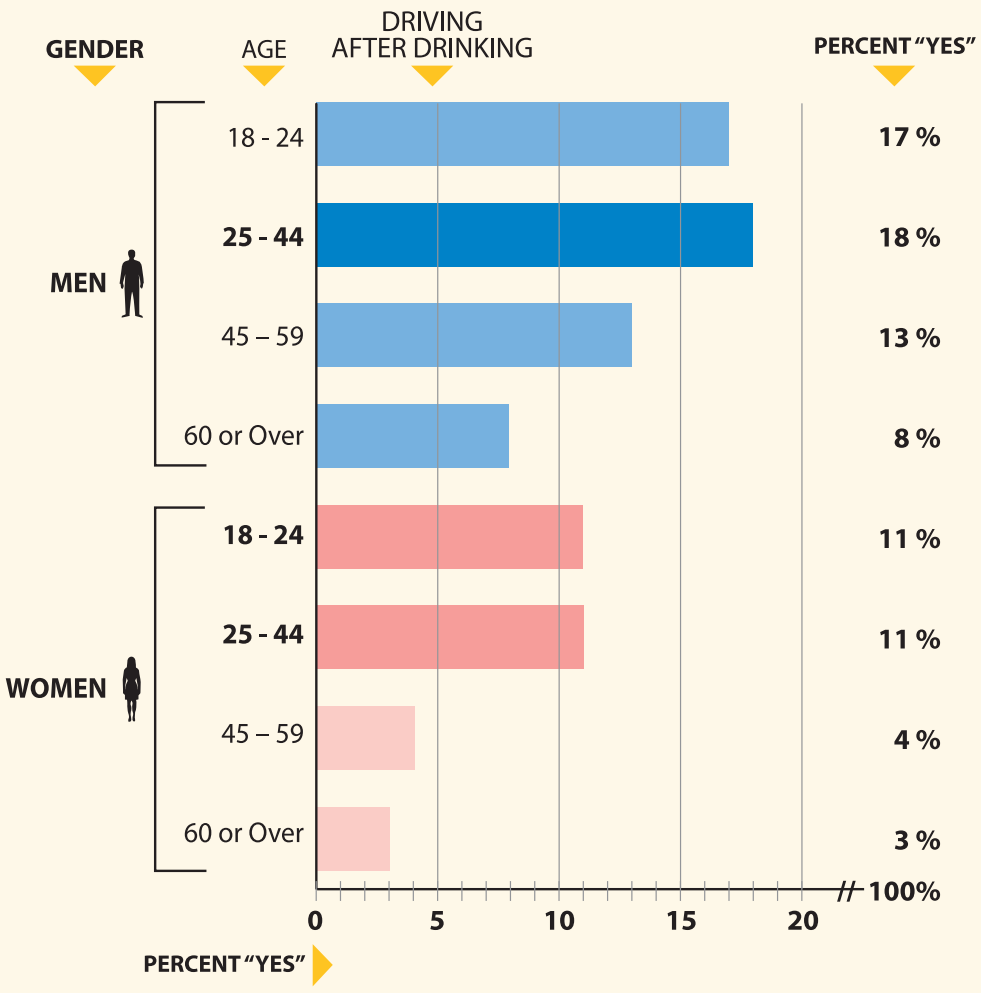
Driving and Riding in a Vehicle after Drinking Alcoholic Beverages

When respondents reported how many times in the last month they drove after drinking more than one alcoholic drink, 89% of participants reported never, eight percent reported driving one or two times after drinking, and three percent reported driving three or more times after drinking in the past month (data not shown in figures).

Driving after drinking was more common among younger respondents and men. Eighteen percent of men aged 18 to 44 reported driving after drinking one or more alcoholic drinks, 13% of men aged 45 to 59 reported driving after drinking, and eight percent of men over age 60 reporting driving after drinking one or more alcoholic drinks (*Figure 7D*). Among women aged 18 to 44, 11% reported driving after drinking one or more alcoholic drinks. This decreased to four percent for women aged 45 to 59 and three percent for women over age 60.

▼ **Figure 7D** Self-reported drinking and driving in the last month by gender and age: Alaska EARTH Study



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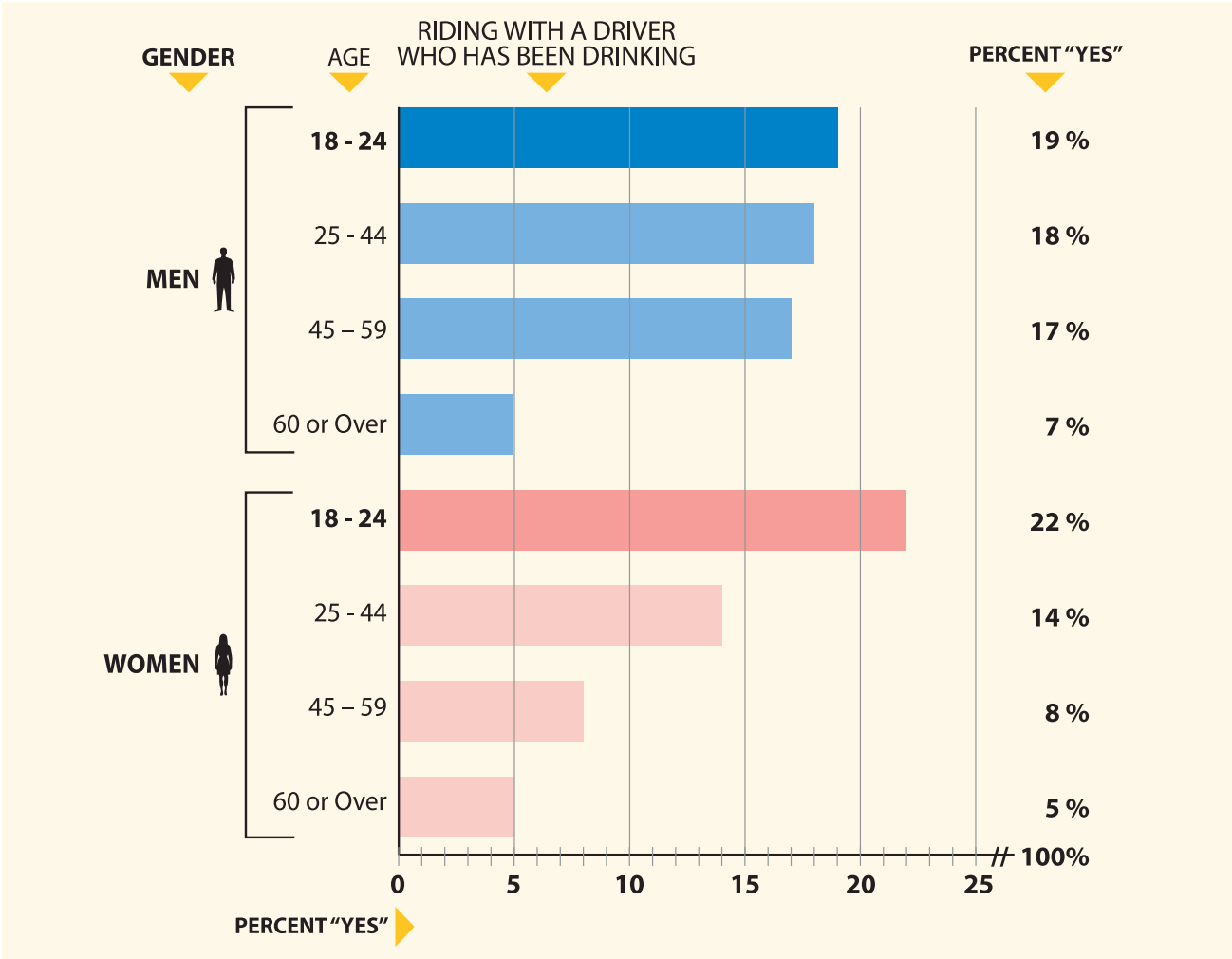
Eighty-six percent of study respondents reported never riding with a driver in the past month after the driver drank more than one alcoholic drink (data not shown in figures). Nine percent reported riding one to two times with a driver who had been drinking, while five percent reported riding three times or more.

Overall, a greater percentage of women than men reported riding in the past month with a driver who had consumed one or more alcoholic beverages. For both men and women, the percentage of those riding in a vehicle when the driver had had one or more alcoholic drinks decreased as age increased (*Figure 7E*). Among men under age 60, about 18% reported riding in a vehicle when the driver had had one or more alcoholic drinks while only seven percent of those over age 60 reported riding in a vehicle when the driver had had one or more alcoholic drinks. Among women aged 18 to 24, 22% reported riding in a vehicle when the driver had had one or more alcoholic drinks with the percentage decreasing to 14% for those between 25 and 44 years of age, eight percent for those between 45 and 59 years of age, and five percent for those over 60 years of age.

Figure 7E Self-reported riding with a drinking driver in the last month by gender and age: Alaska EARTH Study



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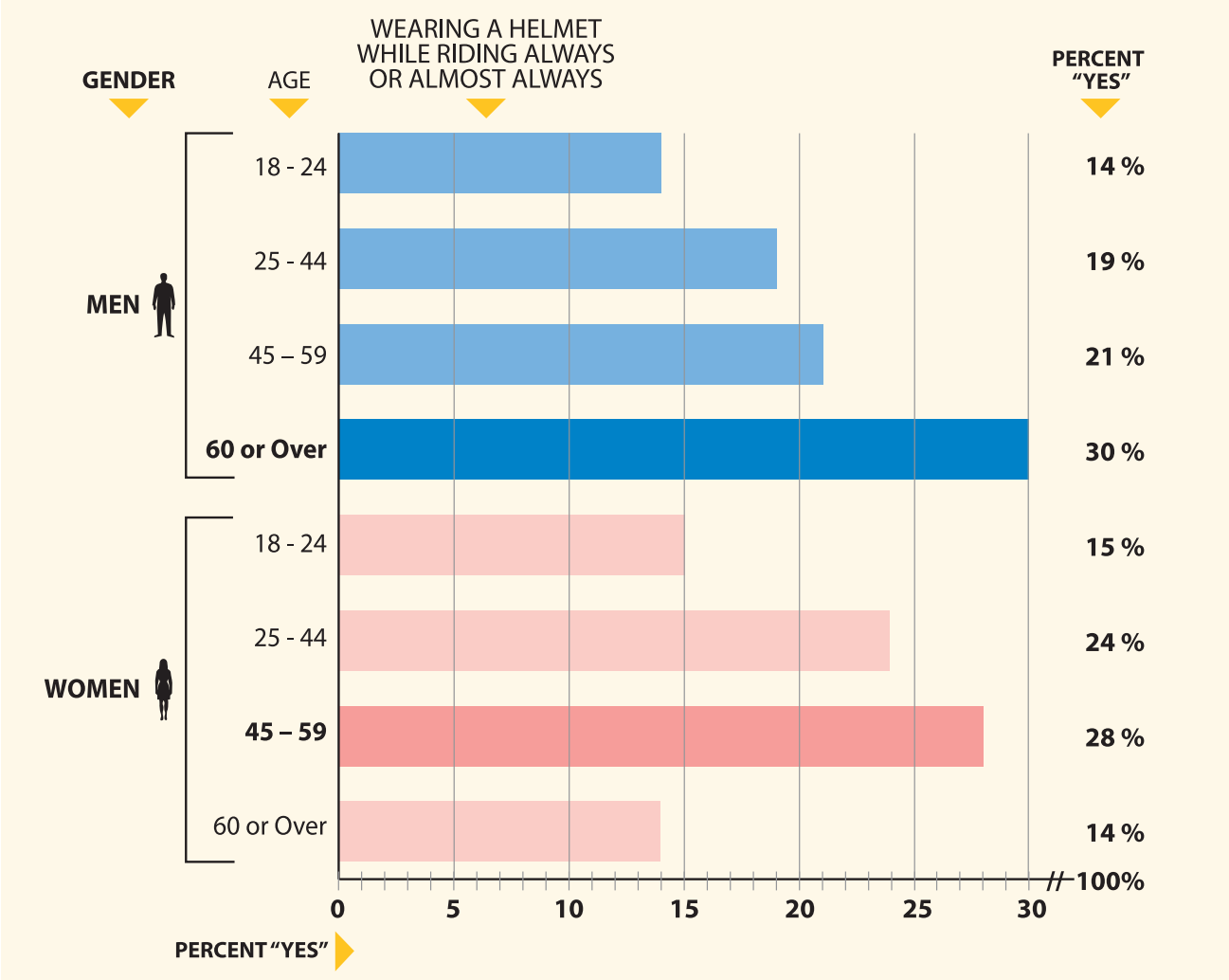
Use of Safety Devices

Most respondents reported not using helmets when riding a bicycle, motorcycle, snowmobile, 4-wheeler or ATV. Of those who rode on these types of vehicles, only 14% reported that they always use a helmet, six percent said they almost always use a helmet, seven percent said they use a helmet about half the time, and 73% said they never or rarely use a helmet (data not shown in figures).

Of those who reported using motorized and non-motorized vehicles, wearing a helmet was more common among older respondents and women. Fourteen percent of men aged 18 to 24 reported using a helmet always or almost always, compared with 19% of men ages 25 to 44, 21% of men aged 45 to 59, and 30% of men over age 60 (*Figure 7F*).

Among women aged 18 to 24, 15% reported using a helmet always or almost always, compared with 24% of women ages 25 to 44, 28% of women aged 45 to 59, and 14% of women over age 60 (*Figure 7F*).

Figure 7F Self-reported helmet use by gender and age: Alaska EARTH Study



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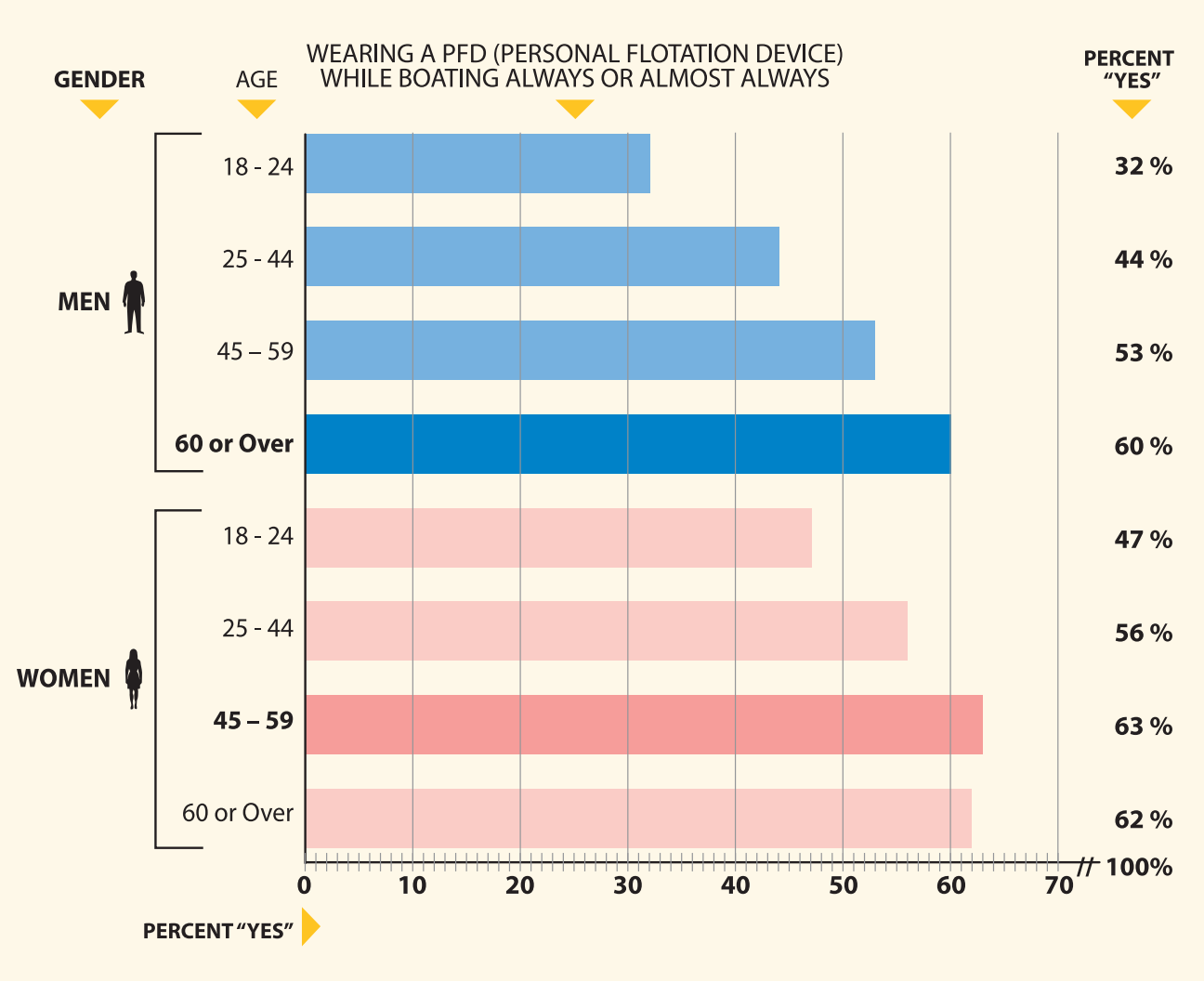
Overall, about half of respondents who used a boat or skiff reported always wearing a float coat, life jacket or personal flotation device (PFD) when boating. Twenty-two percent reported wearing a PFD about half the time, and 26% reported rarely or never wearing a PFD when boating (data not shown in figures).

Of those who reported using boats, wearing a PFD always or almost always was more common among older repondents and women. Less than half (47%) of women under the age of 24 reported using a PFD, whereas 62% of women over age 60 reported using a PDF (*Figure 7G*).

Figure 7G Self-reported personal flotation device (PDF) use by gender and age: Alaska EARTH Study



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Summary and Recommendations

Unintentional injury, including motor vehicle injury, is the third leading cause of death among Alaska Native people and the leading cause of death among individuals aged one to 44 years according to the Centers for Disease Control and Prevention. More information can be found at: **www.cdc.gov/ncipc/wisqars/**.

A study of Alaska Native deaths from 1999–2005 found that the leading causes of unintentional injury death were drowning (20%), motor vehicle crashes (19%), and off-road vehicle crashes (11%). Economic changes in Alaskan communities have led to greater use of mechanized modes of transportation such as motor vehicles, all-terrain vehicles, snowmobiles and motorized boats. However, the use of safety devices such as seatbelts, helmets and PFDs is still not widespread in most of Alaska.

The EARTH Study findings indicate that younger individuals, particularly men, are more likely to participate in behaviors which put them at higher risk. Targeting safety messages specifically towards this group should be a public health priority. An increase in the use of safety devices such as helmets, personal flotation devices (PFDs) and seatbelts may help reduce the injury rates among Alaska Native people.

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CHAPTER EIGHT

Environmental Exposures Reported by Alaska EARTH Study Participants

Alaska Native people are concerned about the impact on their health from contaminants in their environment. The Alaska EARTH Study included questions about work (occupational) exposure. The factors of concern were identified by the Tribal Advisory Group, and included: asbestos, heavy metals, mineral or mining dust, pesticides, gasoline or other petroleum products (not including pumping own gas), radioactive materials including x-ray radiation, and silversmithing or welding. Participants were also asked if they had ever served in the US military, and if the answer was "yes," were they exposed to biological or chemical agents. Participants were to report exposures that occurred at least once a month for six months or more.

Up to 20% of participants responded "don't know" to various exposures. Among those who answered, the percentage of all participants who answered "yes" ranged from two percent to 18%. More men than women reported exposure, the difference often being multifold *(Figure 8A)*. The highest exposure reported was for gasoline and other petroleum products. Among men, the three most commonly reported exposures were petroleum (37%), asbestos (11%), and silversmithing/welding (9%). Among women, the most commonly reported exposure was petroleum (6%), followed by radioactive materials (4%), and asbestos (3%).

Twelve percent of study participants (25% of men and 2% of women) reported they served in the military (data not shown in figures). Among those who did military service, exposure to biological or chemical agents was reported by 25% of men and 17% of women.

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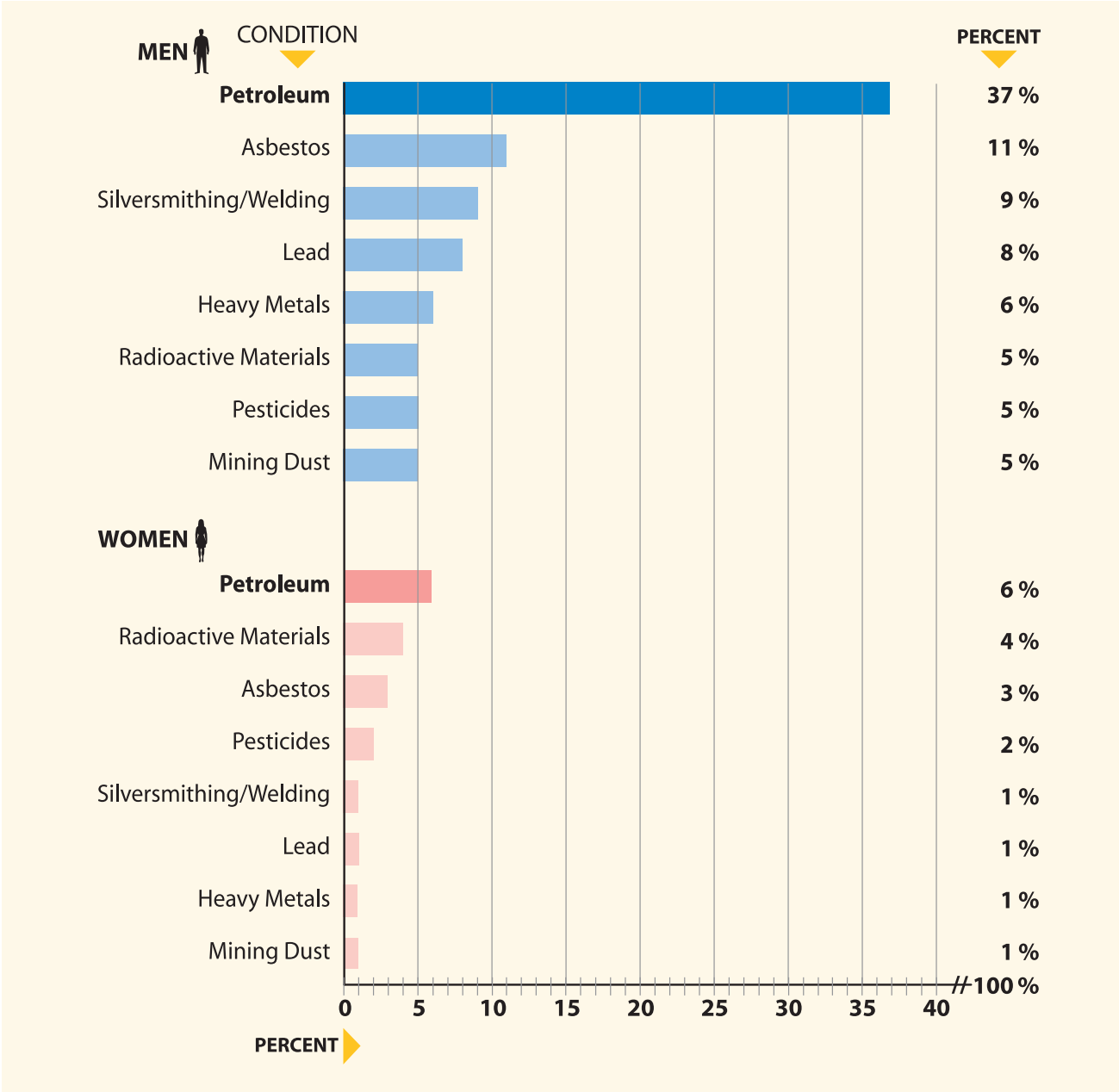
Figure 8A Self-reported environmental exposures by gender: Alaska EARTH Study



Summary and Recommendations

These data provide a picture of self-reported environmental exposures of Alaska EARTH Study participants to select factors during work or while in military service. Exposure (at least once month for at least six months) was reported relatively frequently for the factors queried. As expected, men reported more exposure to all factors than did women. The most frequently reported exposure was to gasoline and other petroleum products. Occupational exposure can be important to health because of the duration and quantity of exposure that may occur.

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Agutaq — a fat and berries mixture, sometimes with dried fish and other ingredients.

Arthritis — an inflammation of one or more joints in the body. A joint is an area of the body where two different bones meet and allows motion (ankle, wrist, shoulder, knee, etc.). Signs of inflammation are swelling, redness, heat, and pain.

Association — a relationship between two or more factors.

Asthma — a breathing problem. People with asthma have shortness of breath, chest tightness, coughing, and wheezing. It may be caused or made worse by the flu, a cold, or allergies.

Blood pressure — the force of blood against the walls of arteries (blood vessels) when the heart beats (systolic pressure) and when the heart is at rest (diastolic pressure).

Body Mass Index (BMI) — a ratio of weight to height that reflects body size or fatness. In this study we use the BMI of weight (kg)/height $(m)^{2.}$

Cancer — diseases characterized by an abnormal, uncontrolled growth of cells. It can occur in many areas of the body. In advanced cancer these cells spread to other parts of the body.

Carbohydrates — the starches and sugars in food. They are an important source of energy (calories). Carbohydrates are found in grains such as wheat, corn and rice, beans, fruits, some dairy products, or sugar.

Cataracts — the clouding of the lens of the eye that affects vision. Most cataracts are related to aging but also can develop in people with other health problems such as diabetes, after an eye injury, or after surgery for other eye problems such as glaucoma.

Cholesterol — a type of fat used for producing cell membranes that is found in the bloodstream and in all the cells of the body.

Colonoscopy — a screening test in which a narrow, lighted tube is inserted in the rectum to examine the entire colon.

Colorectal Cancer — a term used to refer to cancer that starts in either the colon or the rectum.

Chronic Obstructive Pulmonary Disease (COPD) — a disease where the flow of air through the airways of the lungs is partially blocked. Two types of COPD are chronic bronchitis and emphysema.

Data — a collection of facts from which conclusions may be drawn.

Depression — an illness that involves the body, mood, and thoughts. Depression is not the same as feeling sad once in a while. It affects the way a person eats and sleeps, the way one feels about oneself, and the way one thinks about things.

Diabetes — a disease in which the body does not produce or properly use insulin. Insulin is a hormone that is needed to convert sugar, starches, and other food into energy needed for daily life.

Diet composition — the mixture of nutrients provided by foods eaten.

Energy intake — calories or source of energy provided from foods.

Fasting glucose — the measure of sugar in the blood after not eating or drinking anything but water for at least eight hours.

Fracture — a broken bone.

Gall bladder — a small sac under the liver on the right side of the abdomen. It receives bile (waste product) from the liver and stores it until it is needed to help in the digestion of fats and cholesterols.

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Gall bladder disease — an infection or development of stones in the gall bladder causing severe pain.

Glaucoma — an eye problem in which eye pressure is elevated. It is almost always painless, has no symptoms, and can lead to blindness.

Gestational diabetes — a condition in which women without previously diagnosed diabetes exhibit high blood glucose levels during pregnancy.

Glucose — the type of sugar in the blood used for energy.

Heart — a muscular organ that pumps blood throughout the body.

Heart disease — a number of abnormal conditions affecting the heart and the blood vessels in the heart. Types of heart disease include congestive heart failure, heart attack, angina, and coronary artery disease.

Heavy metals — metals that cause pollution such as mercury, cadmium, or lead.

High blood pressure — when blood pressure is more than 130/85 mmHg. If not treated effectively high blood pressure can lead to stroke, heart disease, or kidney problems.

High cholesterol — when cholesterol in the blood is greater than 200 mg/dL. There are no symptoms and if not treated effectively can lead to heart disease.

High-Density Lipoprotein (HDL) — a type of cholesterol. It helps keep cholesterol from building up in the arteries and is sometimes referred to as "good cholesterol".

Kidney — the bean-shaped organs in the middle of the back, just below the rib cage. They perform many functions to keep blood clean and chemically balanced.

Kidney failure — occurs when the kidneys are not working effectively. Sometimes kidney failure is reversible, meaning that the kidneys return to normal. Other times the kidney failure continues to get worse and leads to either dialysis or a kidney transplant.

Legumes — a type of vegetable that includes beans, peas, lentils, and peanuts. They are a good source of protein and fiber.

Lesion — any abnormal tissue found on or in an organism, usually damaged by disease or trauma.

Lipids — refers to fats.

Liver — the largest organ in the body. It has many functions such as changing food into energy, cleaning alcohol and poisons from the blood, and making bile (waste product) that helps with digestion.

Liver disease — a collection of conditions, diseases, and infections that cause the liver to function improperly or cease functioning. Types of liver disease include cirrhosis, biliary cirrhosis, alcoholic liver disease, and several types of hepatitis.

Low-Density Lipoprotein (LDL) — a type of cholesterol. The main source of cholesterol buildup and blockage in the arteries and sometimes referred to as "bad cholesterol".

Mammogram — an X-ray of the breast with the breast in a device that compresses and flattens it. A screening mammogram is used to detect a tumor that cannot be felt. A diagnostic mammogram is done to evaluate abnormalities seen or suspected on a prior screening mammogram, or other breast abnormalities.

Metabolic syndrome — a combination of medical conditions that increase the risk of developing heart disease, stroke, and diabetes.

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mg/dL — milligrams per deciliter; a measure of concentration for things in body fluids such as cholesterol.

mmHg — millimeters of mercury; blood pressure is measured in these units.

Monounsaturated fatty acids — fat that does not raise total cholesterol and LDL (bad) cholesterol while increasing HDL (good) cholesterol. They can be found in nuts, walnuts, almonds, avocado, and canola and olive oil.

Pap Test — a routine screening test for women that checks for cancerous changes in the cells of the cervix, also known as a Pap smear.

Percent — means "out of 100" or a way of expressing a number as a fraction of 100. For example, 45% is equal to 45 out of 100 or 45/100.

Pesticide — any substance used to kill, repel, or control certain forms of plant or animal life that are considered to be pests such as crop or livestock insecticides, weed killers, or fungicides.

Polyp — an abnormal growth of tissue that sticks out from a mucous membrane. They are commonly found in the colon, stomach, nose, bladder, and uterus.

Polyunsaturated fatty acids — fat that does not raise total cholesterol and LDL (bad) cholesterol. They can be found in seafood like salmon and fish oil, as well as corn, soy, safflower, and sunflower oils.

Prevalence — the percentage of a population that is affected with a particular disease at a given time.

Proportion — the size of a subgroup compared to the whole group.

Radioactive materials — materials that occur naturally throughout the environment such as light and heat from the sun and also man-made such as microwaves for cooking and X-rays for medical examinations.

Saturated fatty acids — fatty acids in foods that raise total cholesterol and LDL (bad) cholesterol. They can be found primarily in animal products such as meat, dairy, and eggs.

Sigmoidoscopy — a screening test in which a narrow, lighted tube is inserted in the rectum to examine the lower part of the colon.

Stroke — death of brain cells when the blood supply to a part of the brain is stopped or reduced. It can be caused by a clot in a blood vessel in the brain, or by bleeding into the brain.

Thyroid disease — a disease where the thyroid gland doesn't make the proper amount of hormones needed by the body. Hyperthyroidism is when the thyroid produces too much hormone and hypothyroidism is when the thyroid doesn't produce enough hormone.

Total cholesterol — a measure of all the cholesterol and triglycerides in the blood.

Trans-fatty acids — fatty acids that are modified to improve the stability of fat that are found in many commercially packaged foods, commercially fried food in fast food restaurants, other packaged snacks such as microwave popcorn, as well as in vegetable shortening and hard stick margarine.

Triglycerides — a type of fat in the blood. They are a major source of energy and the most common type of fat in the body. Elevated levels are a risk factor for heart disease.

Tumor — an abnormal growth of body tissue. Tumors can be cancerous or non-cancerous.

Vigorous physical activity — intense physical activity that requires all-out effort and often makes people sweat or become out of breath while performing the activity, such as jogging or running, bicycling, or hunting big game by foot.

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PUBLICATIONS

List of Publications from the Alaska EARTH Study

Slattery ML, Schumacher MC, Lanier A, Edwards S, Edwards R, Murtaugh M, Sandidge J, Day GE, Henderson J, Tom-Orme L. *A Prospective Cohort of American Indians and Alaska Natives: study design, methods, and implementation*. **Am J Epidemiol** 2007 Sep 1; 166(5):606-15.

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NCI Grant R01 CA96095