Cancer among Alaska Native people

Sarah Nash, PhD MPH CPH
Alaska Native Tumor Registry

Manaliq Board of Directors' Meeting

November 20th, 2019

ALASKA NATIVE TRIBAL HEALTH CONSORTIUM
EPIDEMIOLOGY CENTER

Source: State of Alaska Bureau of Vital Statistics; Alaska Native EpiCenter Alaska Native Mortality Update 2004-2011

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Outline

Alaska Native Tumor Registry

Cancer incidence

Cancer mortality

Cancer prevention

Outline

Alaska Native Tumor Registry

Cancer incidence

Cancer mortality

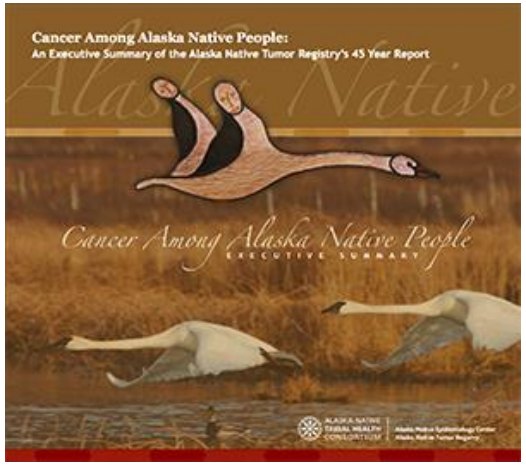
Cancer prevention

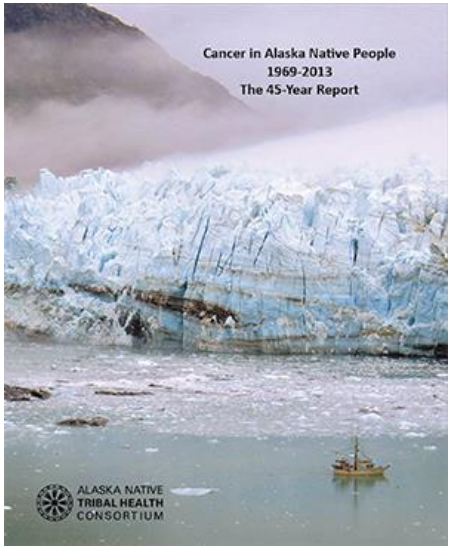
Dr. Anne Lanier

1974

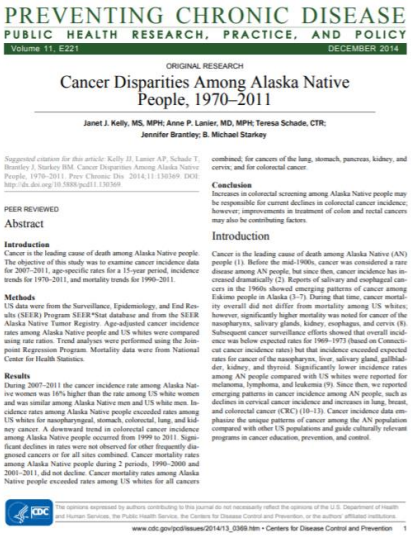
1999

SEER





Today



PREVENTING CHRONIC DISEASE
PUBLIC HEALTH RESEARCH, PRACTICE, AND POLICY
Volume 11, E221 DECEMBER 2014

ORIGINAL RESEARCH

Cancer Disparities Among Alaska Native People, 1970–2011

Janet J. Kelly, MS, MPH; Anne P. Lanier, MD, MPH; Teresa Schade, CTR; Jennifer Brantley; B. Michael Starkey

Suggested citation for this article: Kelly JJ, Lanier AP, Schade T, Brantley J, Starkey BM. Cancer Disparities Among Alaska Native People, 1970–2011. Prev Chronic Dis 2014;11:130369. DOI: http://dx.doi.org/10.5888/pcd11.130369

PEER REVIEWED

Abstract

Introduction
Cancer is the leading cause of death among Alaska Native people. The objective of this study was to examine cancer incidence data for 2007–2011, age-specific rates for a 15-year period, incidence trends for 1970–2011, and mortality trends for 1990–2011.

Methods
US data were from the Surveillance, Epidemiology, and End Results (SEER) Program SEER*Stat database and from the SEER Alaska Native Tumor Registry. Age-adjusted cancer incidence rates among Alaska Native people and US whites were compared using rate ratios. Trend analyses were performed using the Joinpoint Regression Program. Mortality data were from National Center for Health Statistics.

Results
During 2007–2011 the cancer incidence rate among Alaska Native women was 16% higher than the rate among US white women and was similar among Alaska Native men and US white men. Incidence rates among Alaska Native people exceeded rates among US whites for nasopharyngeal, stomach, colorectal, lung, and kidney cancer. A downward trend in colorectal cancer incidence among Alaska Native people occurred from 1999 to 2011. Significant declines in rates were not observed for other frequently diagnosed cancers or for all sites combined. Cancer mortality rates among Alaska Native people during 2 periods, 1990–2000 and 2001–2011, did not decline. Cancer mortality rates among Alaska Native people exceeded rates among US whites for all cancers combined; for cancers of the lung, stomach, pancreas, kidney, and cervix; and for colorectal cancer.

Conclusion
Increases in colorectal screening among Alaska Native people may be responsible for current declines in colorectal cancer incidence; however; improvements in treatment of colon and rectal cancers may also be contributing factors.

Introduction

Cancer is the leading cause of death among Alaska Native (AN) people (1). Before the mid-1900s, cancer was considered a rare disease among AN people, but since then, cancer incidence has increased dramatically (2). Reports of salivary and esophageal cancers in the 1960s showed emerging patterns of cancer among Eskimo people in Alaska (3–7). During that time, cancer mortality overall did not differ from mortality among US whites; however, significantly higher mortality was noted for cancer of the nasopharynx, salivary glands, kidney, esophagus, and cervix (8). Subsequent cancer surveillance efforts showed that overall incidence was below expected rates for 1969–1973 (based on Connecticut cancer incidence rates) but that incidence exceeded expected rates for cancer of the nasopharynx, liver, salivary gland, gallbladder, kidney, and thyroid. Significantly lower incidence rates among AN people compared with US whites were reported for melanoma, lymphoma, and leukemia (9). Since then, we reported emerging patterns in cancer incidence among AN people, such as declines in cervical cancer incidence and increases in lung, breast, and colorectal cancer (CRC) (10–13). Cancer incidence data emphasize the unique patterns of cancer among the AN population compared with other US populations and guide culturally relevant programs in cancer education, prevention, and control.

The opinions expressed by authors contributing to this journal do not necessarily reflect the opinions of the U.S. Department of Health and Human Services, the Public Health Service, the Centers for Disease Control and Prevention, or the authors' affiliated institutions.

www.cdc.gov/pcd/issues/2014/13_0369.htm • Centers for Disease Control and Prevention 1

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CONSORTIUM


The Alaska Native Tumor Registry is a collection of cancer stories

Reports

Research

CHRONIC DISEASE

HPV genotypes detected in cervical cancers from Alaska Native women, 1980–2007

Janet J. Kelly[1]*, Elizabeth R. Unger[2], Eileen F. Dunne[2], Neil Murphy[1], James Tiesinga[1], Kathy R. Koller[1], Amy Swango-Wilson[1], Dino Philemonof[1], Xay Lounmala[1], Lauri E. Markowitz[2], Martin Steinau[2] and Thomas Hennessy[3]

[1]Alaska Native Tribal Health Consortium, Anchorage, AK, USA; [2]Centers for Disease Control, Atlanta, GA, USA; [3]Centers for Disease Control, Anchorage, AK, USA

Potentially preventable cancers diagnosed among Alaska Native people

Sarah H Nash[1]*, Diana G Redwood[1]

[1]Alaska Native Epidemiology Center, Community Health Services, Alaska Native Tribal Health Consortium,

THE JOURNAL OF RURAL HEALTH

ORIGINAL ARTICLE

Timeliness of Breast Cancer Treatment Within The Alaska Tribal Health System

Stacy F. Kelley, MPH; Gretchen M. Day, MPH; Christine A. DeCourtney, MPA; & Sarah H. Nash, PhD, MPH, CPH

Division of Community Health Services, Alaska Native Tribal Health Consortium, Anchorage, Alaska

Original Article

Cancer Survival Among Alaska Native People

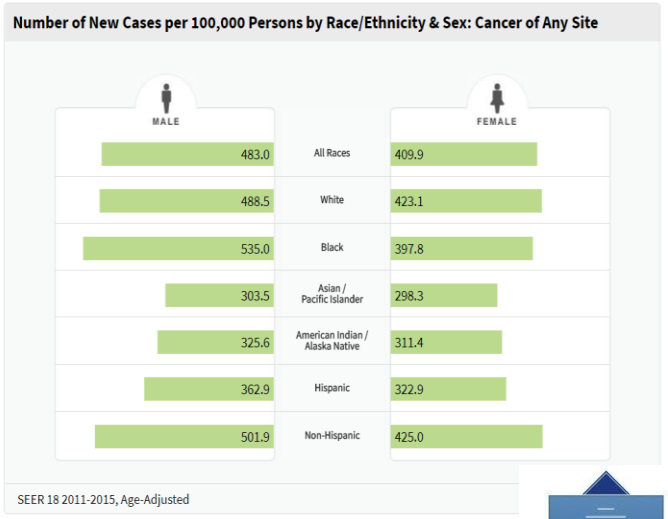
Sarah H. Nash, PhD, MPH[1]; Angela L. W. Meisner, MPH[2]; Garrett L. Zimpelman, BA[1]; Marc Barry, MD[2,3]; and Charles L. Wiggins, PhD[2,4]

ORIGINAL ARTICLE

Helicobacter pylori infection and markers of gastric cancer risk in Alaska Native persons: A retrospective case-control study

James W Keck MD MPH[1,2], Karen M Miernyk BS[2,3], Lisa R Bulkow MS[2], Janet J Kelly MS MPH[3], Brian J McMahon MD[2,3], Frank Sacco MD[4], Thomas W Hennessy MD MPH[2], Michael G Bruce MD MPH[2]

NCI SEER



Community engagement

Contact Alaska Native Tumor Registry:
Email: antr@anthc.org
Phone: (907) 729-3949
Fax: (907) 729-4569

Outline

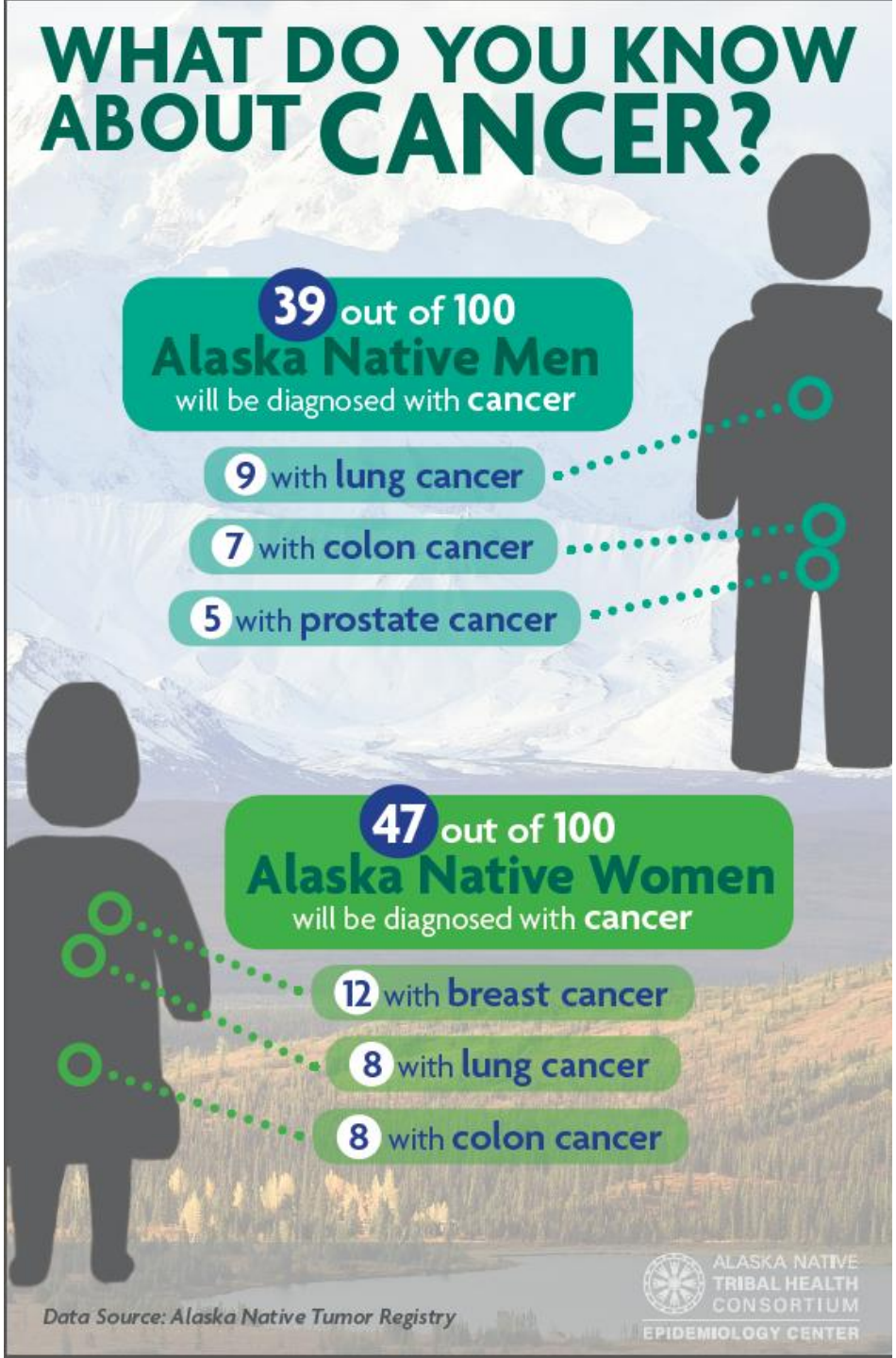
Alaska Native Tumor Registry

Cancer incidence

Cancer mortality

Cancer prevention

WHAT DO YOU KNOW ABOUT CANCER?



Data Source: Alaska Native Tumor Registry

ALASKA NATIVE TRIBAL HEALTH CONSORTIUM
EPIDEMIOLOGY CENTER

Leading cancers among AN people are very similar to US whites

Female Breast	Prostate
Colorectal	Female Breast
Lung	Lung
Prostate	Colorectal
Kidney	Melanoma

But there are distinct differences between the two population groups

Female Breast	Prostate
Colorectal	Female Breast
Lung	Lung
Prostate	Colorectal
Kidney	Melanoma

But there are distinct differences between the two population groups

Female Breast	Prostate
Colorectal	Female Breast
Lung	Lung
Prostate	Colorectal
Kidney	Melanoma

Disparities among less common cancers

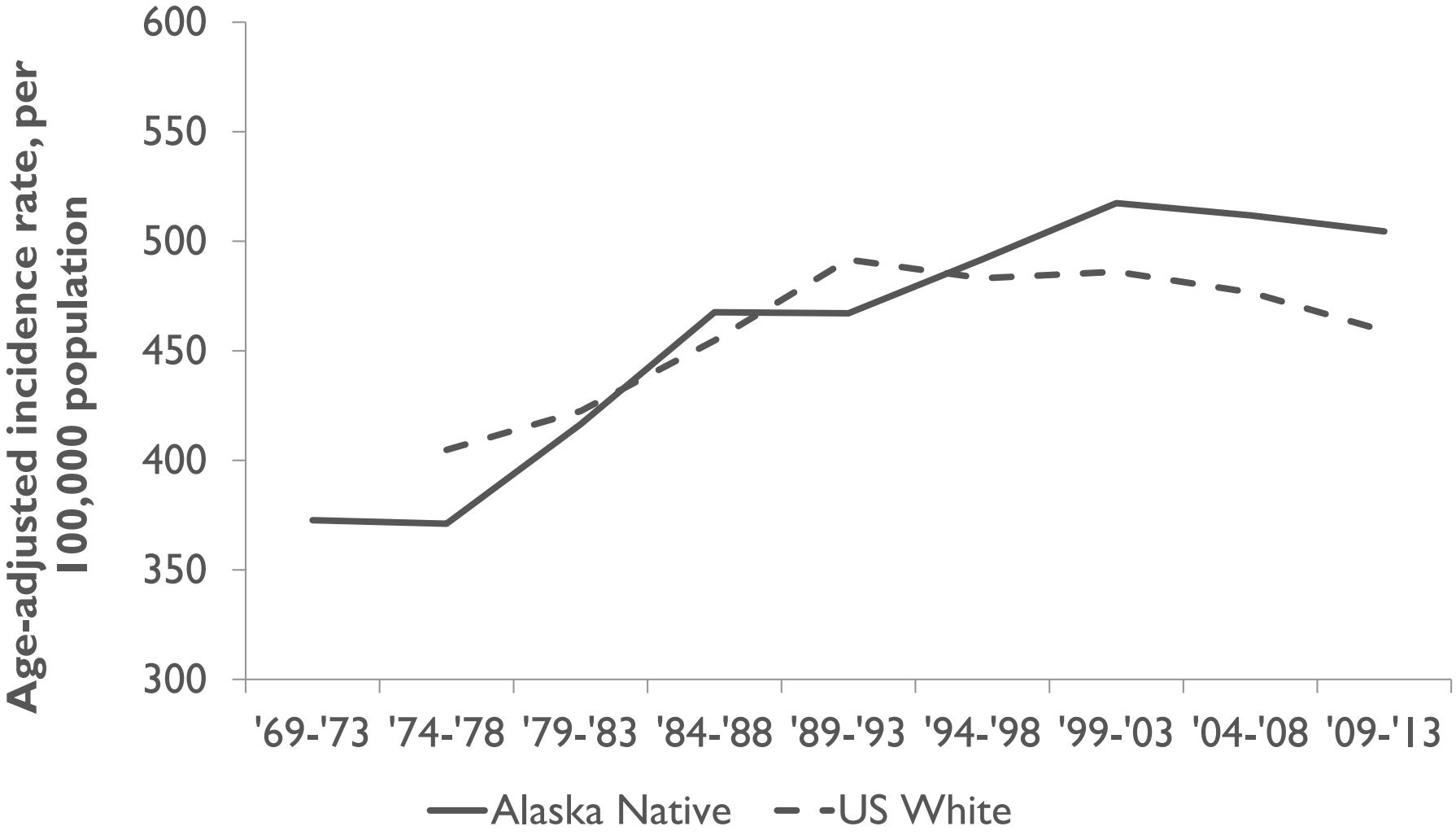
Liver

Gallbladder

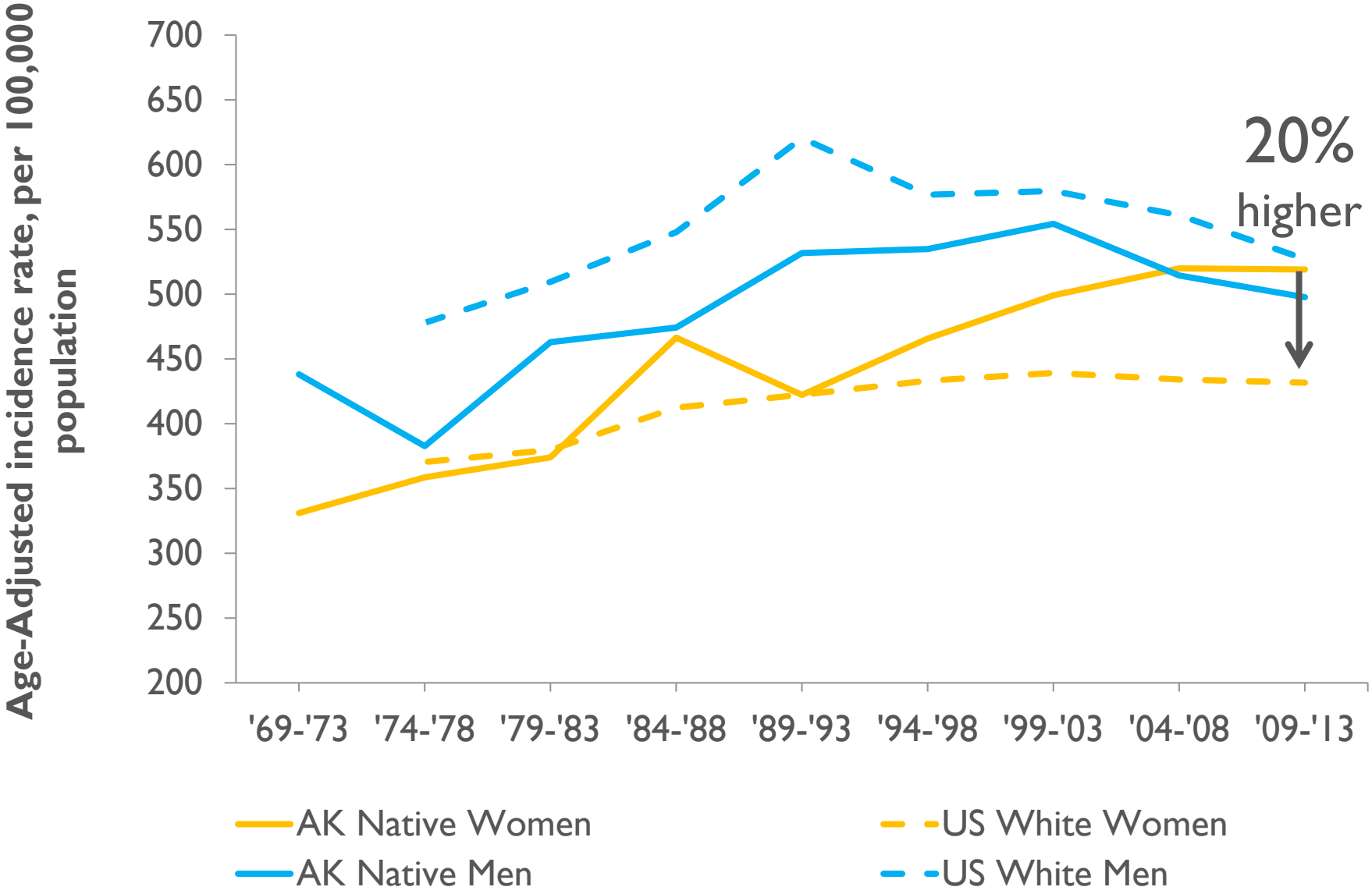
Stomach

Nasopharynx

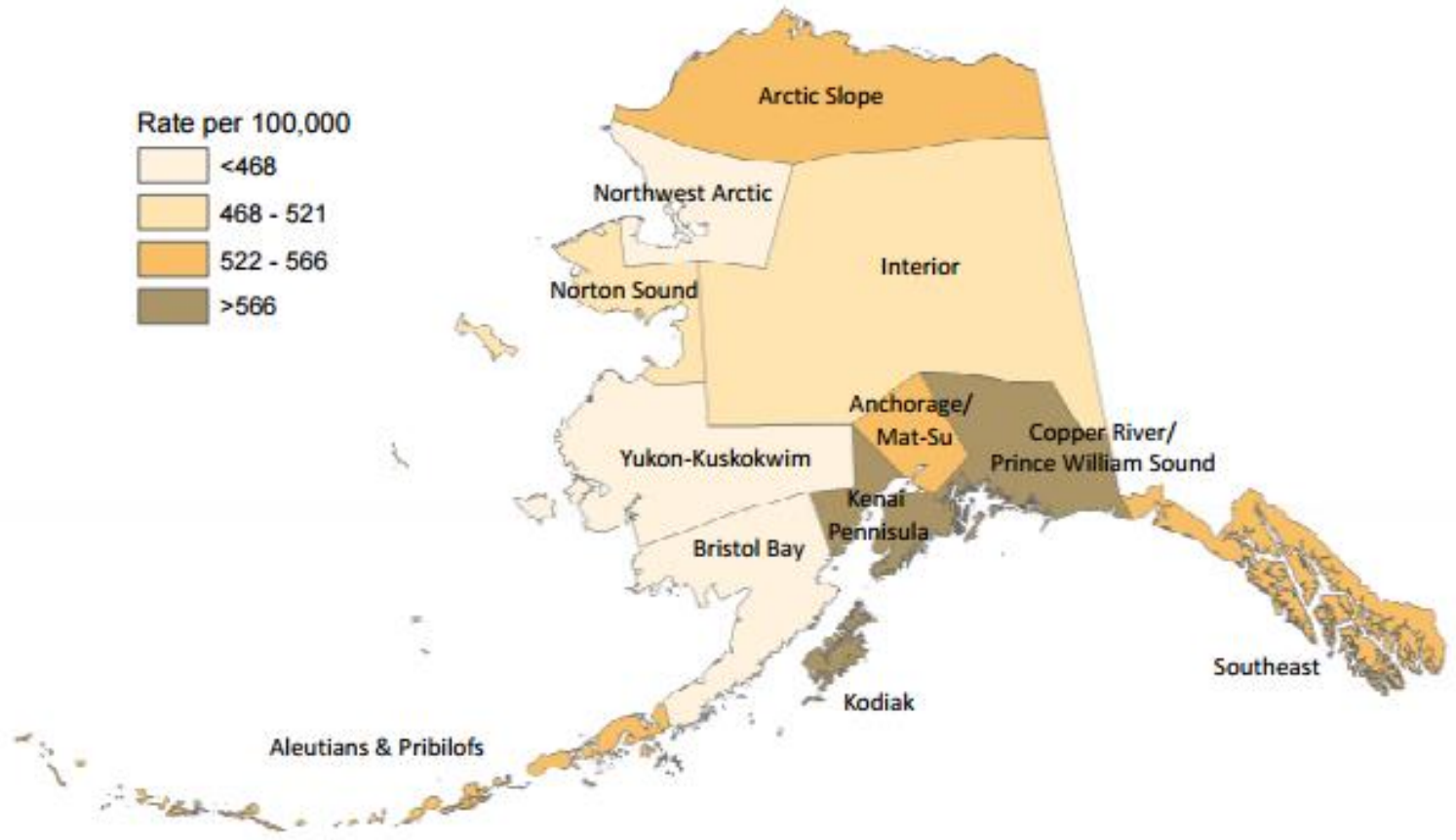
Cancer incidence trends among AN people have mirrored those among US whites



Cancer incidence trends and disparities differ between men and women



Cancer incidence varies by tribal health region



Data source: Alaska Native Tumor Registry, Alaska Native Epidemiology Center Cancer Incidence Factsheet

Outline

Alaska Native Tumor Registry

Cancer incidence

Cancer mortality

Cancer prevention

Cancer mortality is

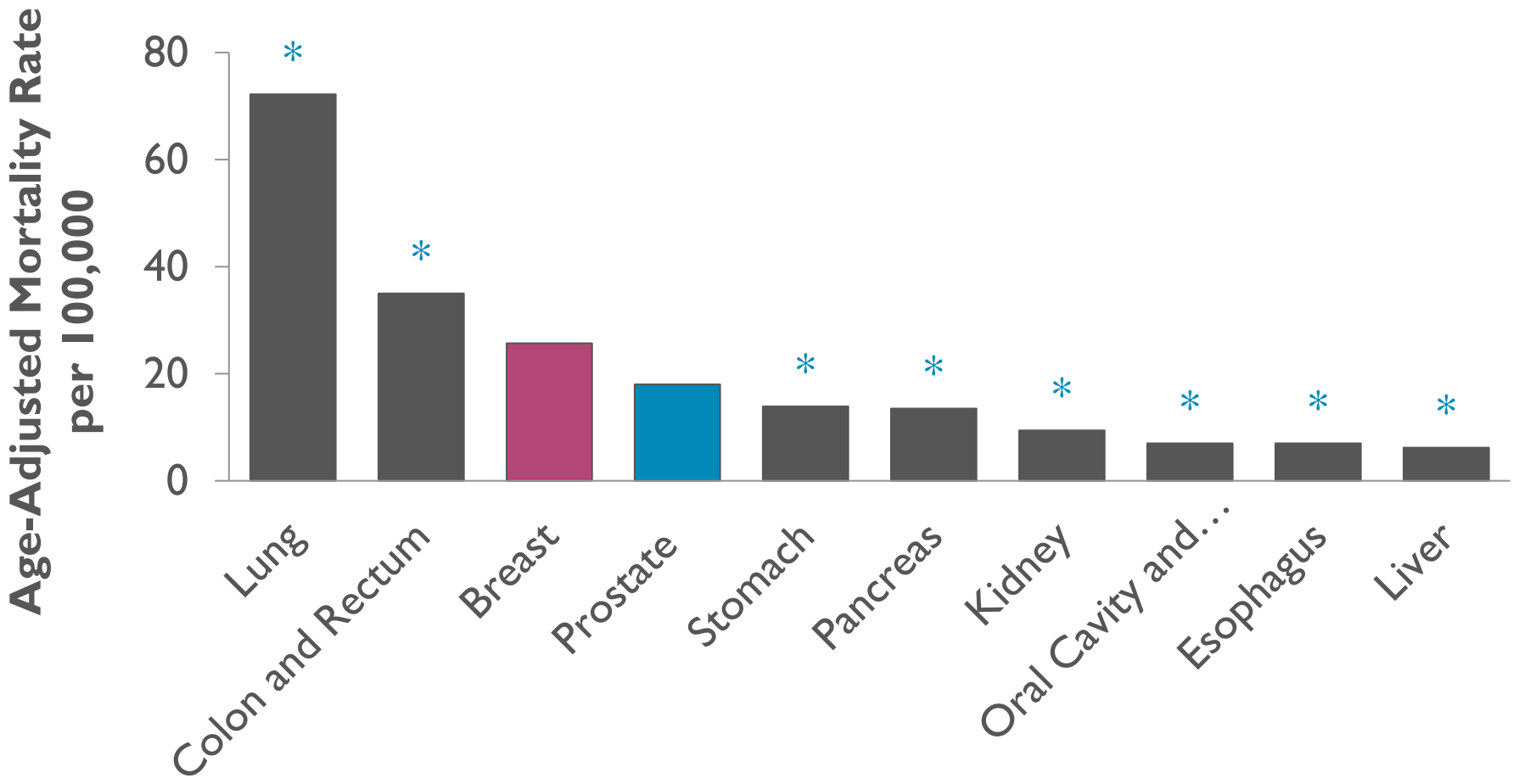
35%

higher

among AN people than the Alaskan average

Data source: Alaksa IBIS Indicator reports 2018

Alaska Native people have higher mortality than US whites for all leading causes of cancer death



Alaska Native Tumor Registry, 1992-2011

Cancer mortality has been

1.5 times higher

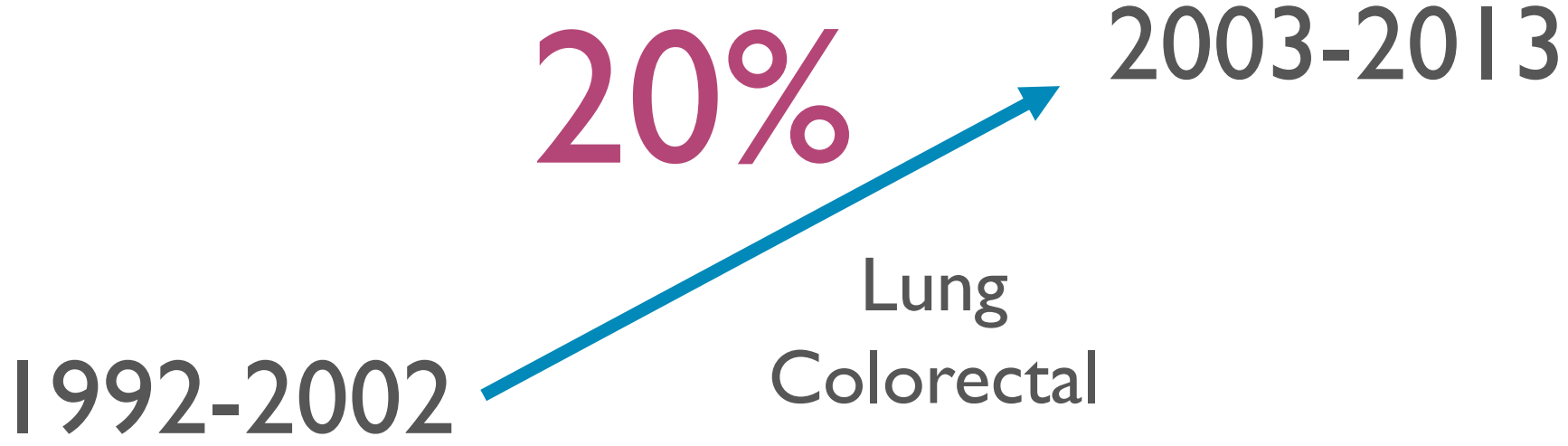
among Alaska Native people than US whites for over

two decades

Cancer survival varies by cancer site

Nash et al *Cancer* 2018


1992-2002
?
2003-2013


20%
2003-2013
Lung
Colorectal
1992-2002

Outline

Alaska Native Tumor Registry

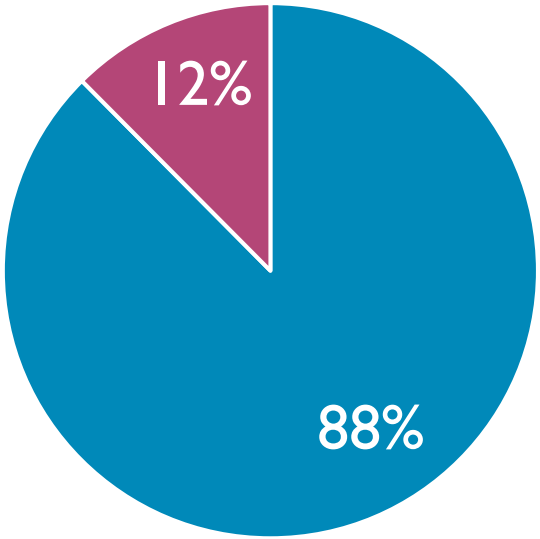
Cancer incidence

Cancer mortality

Cancer prevention

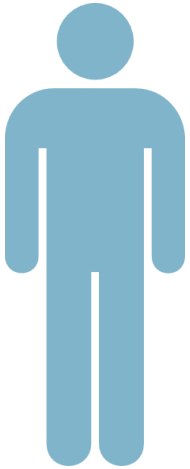
Alaska Native Health Campus, Anchorage

Most Preventable: Lung Cancer (Men)

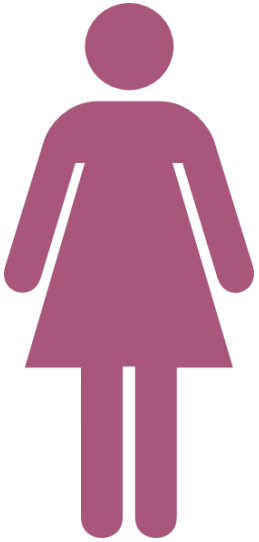


Among women: **69.8%** lung cancers preventable

We may be able to prevent…

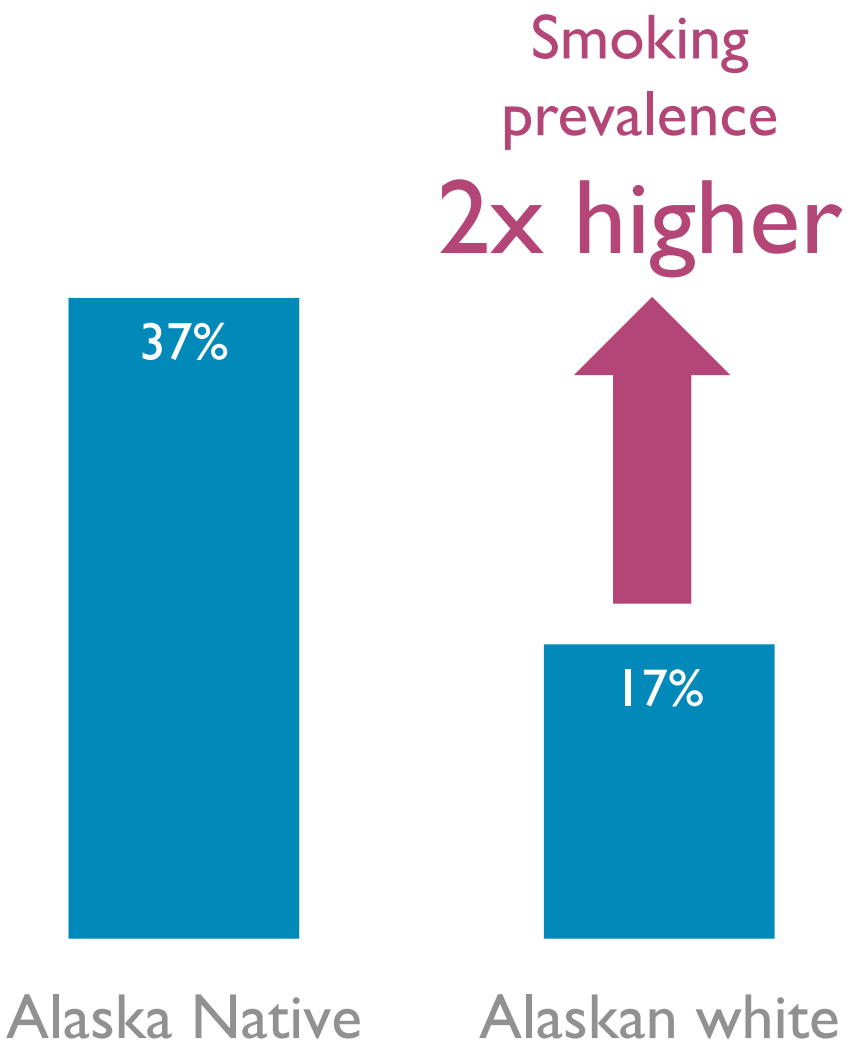


459 cases from
13 cancers

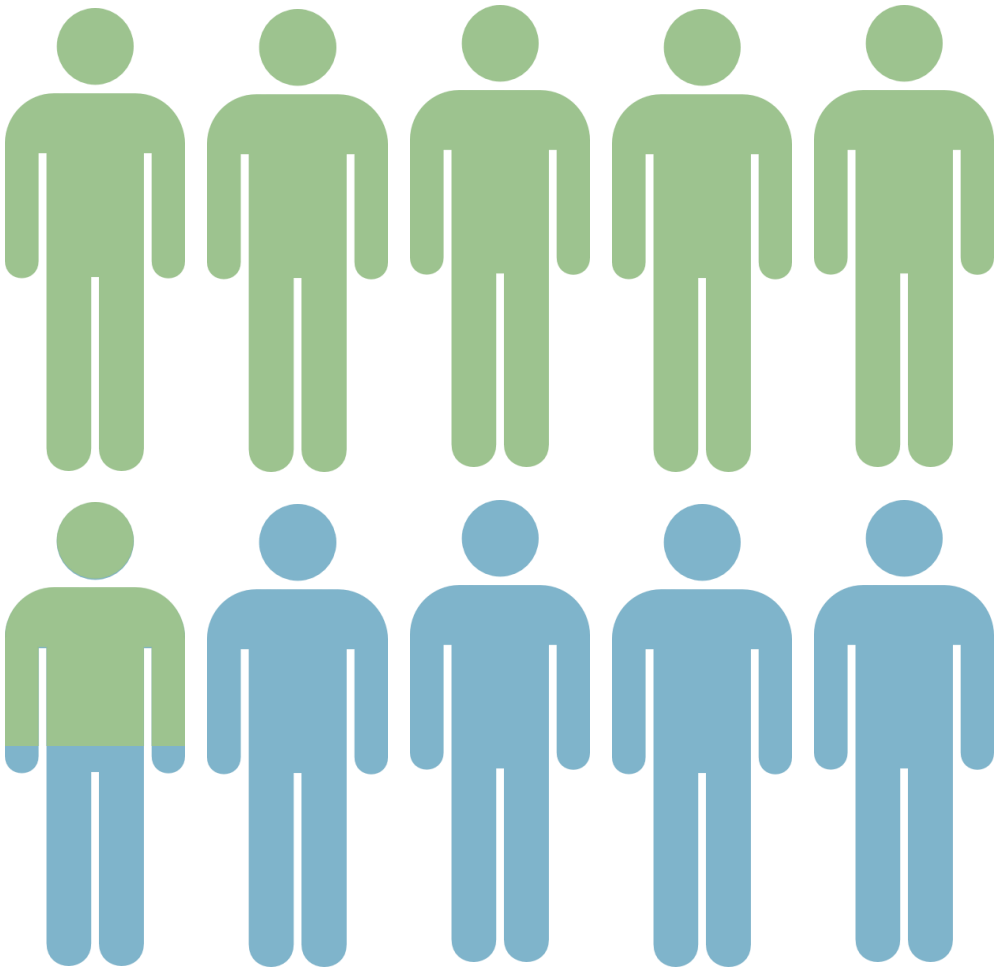


316 cases from
13 cancers

…If we could eliminate smoking



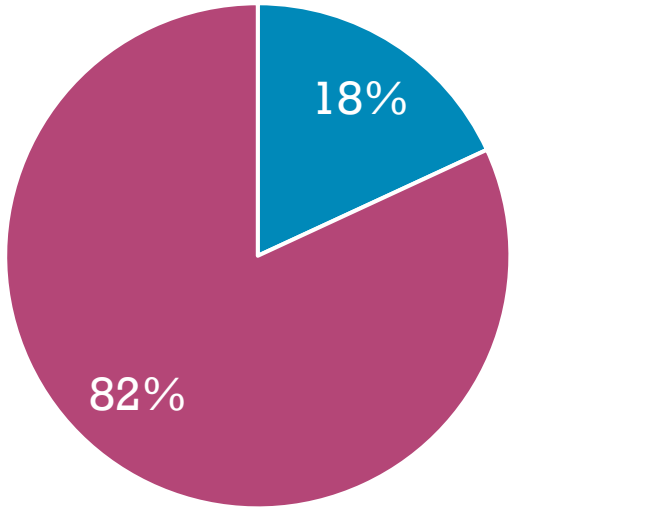
Data source: AK BRFSS: 2009-2017



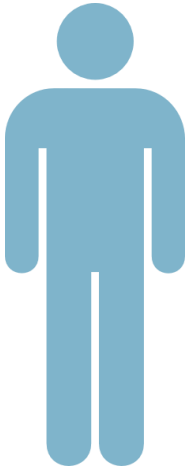
56% of Alaska Native people reported a quit attempt in the last year

Data source: AK BRFSS: 2009-2017

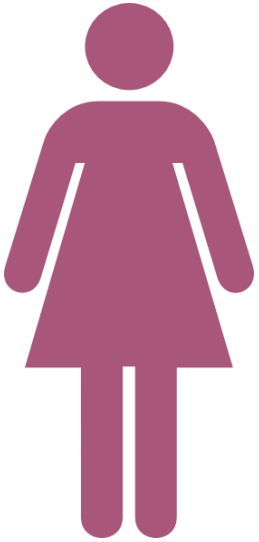
Most Preventable: Endometrial Cancer



We may be able to prevent…



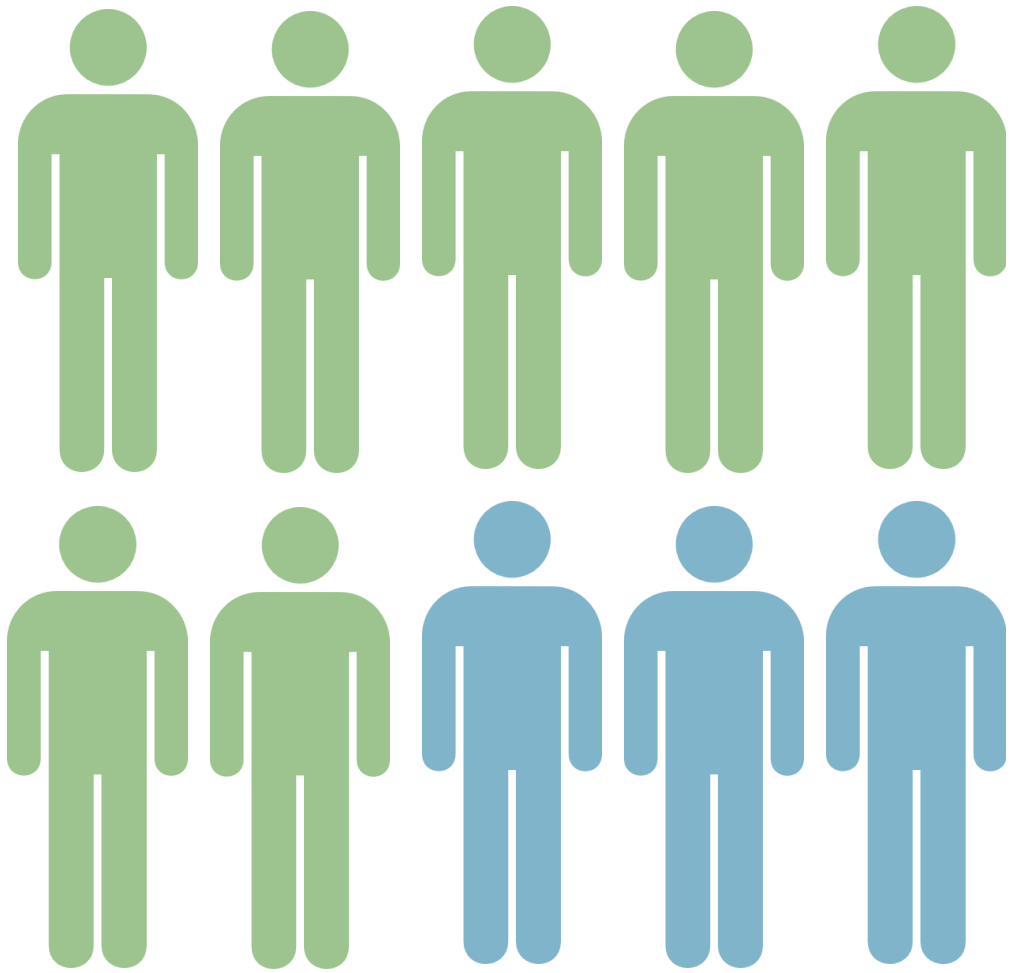
115 cases from 3 cancers



287 cases from 5 cancers

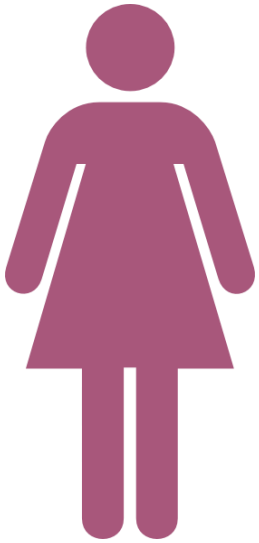
… with guideline-adherent physical activity levels

71% of Alaska Native people reported engaging in leisure time activity



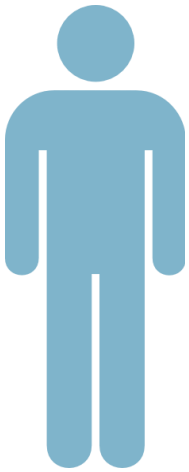
Data source: AK BRFSS: 2011-2015

We may be able to prevent…

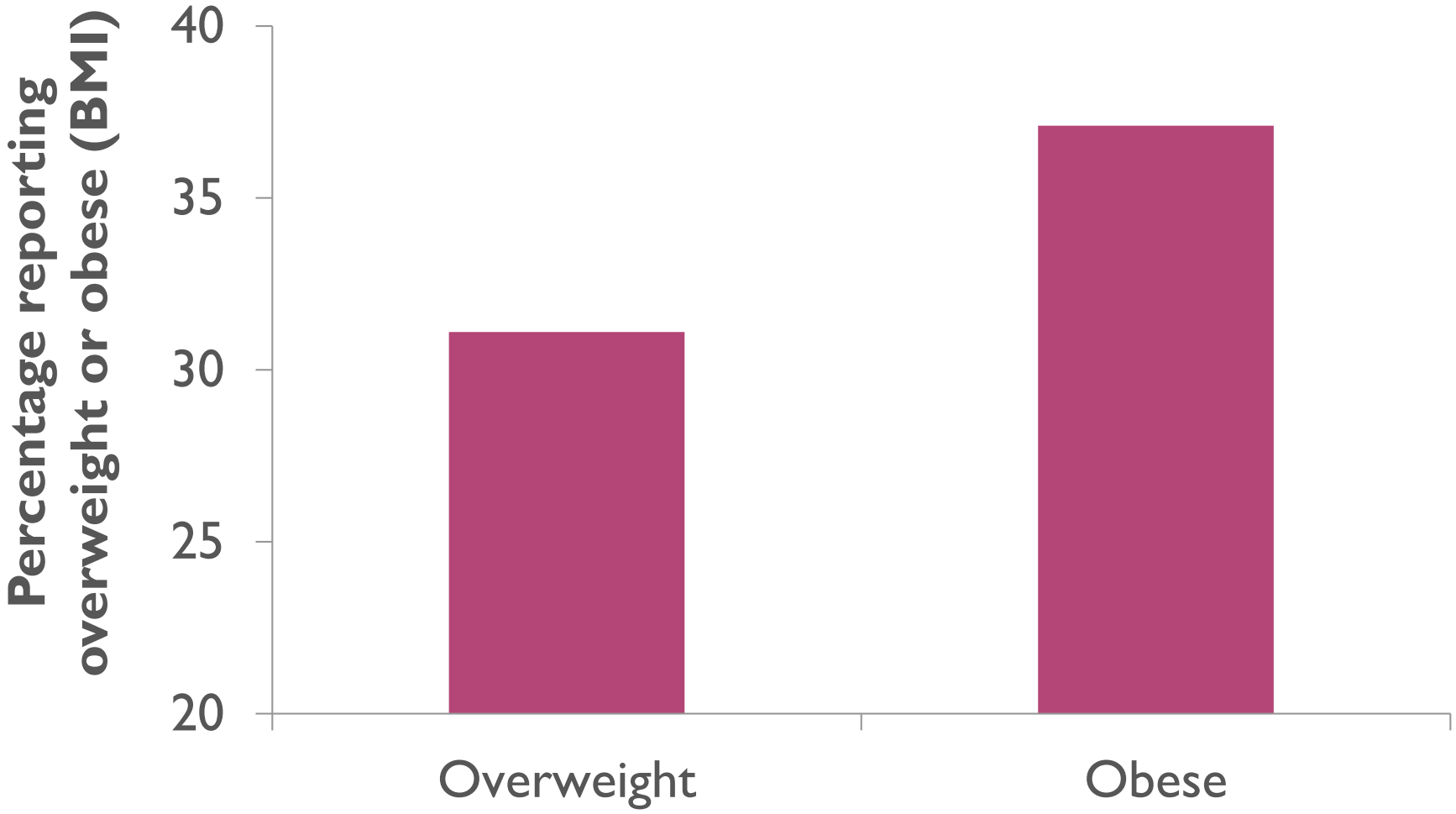


108 cases from
11 cancers

80 cases from 10
cancers



… by maintaining healthy weight



Source: Alaska BRFSS 2013-2017, DHSS

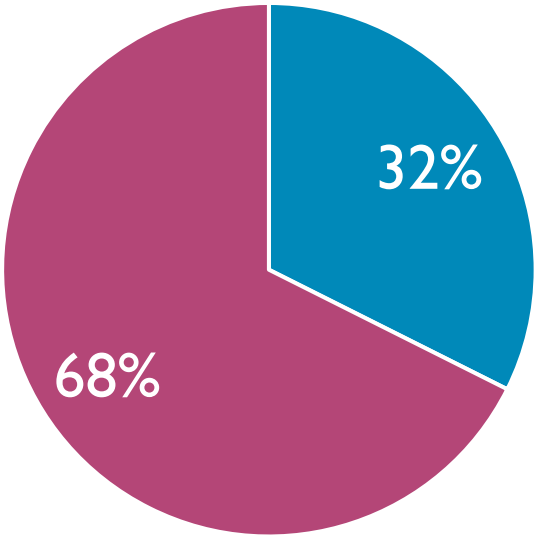
84% of Alaska Native people report eating less than 5 fruits or veggies a day

Source: Alaska Division of Public Health, Informed Alaskans BRFSS, 2013-2017

95% of Alaska Native people reported eating at least one traditional food

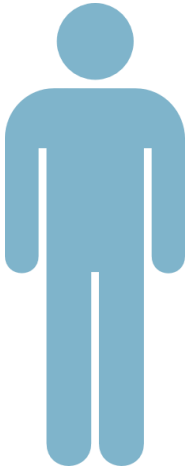
Source: Redwood et al *Current Advances in Nutrition*, In press

Most Preventable: Oral Cavity Cancer (Men)



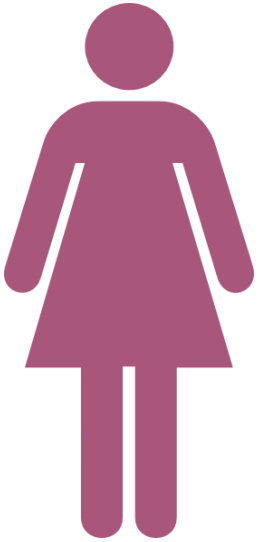
Among women, 27.3% oral cancers could be prevented by eliminating heavy drinking

We may be able to prevent…

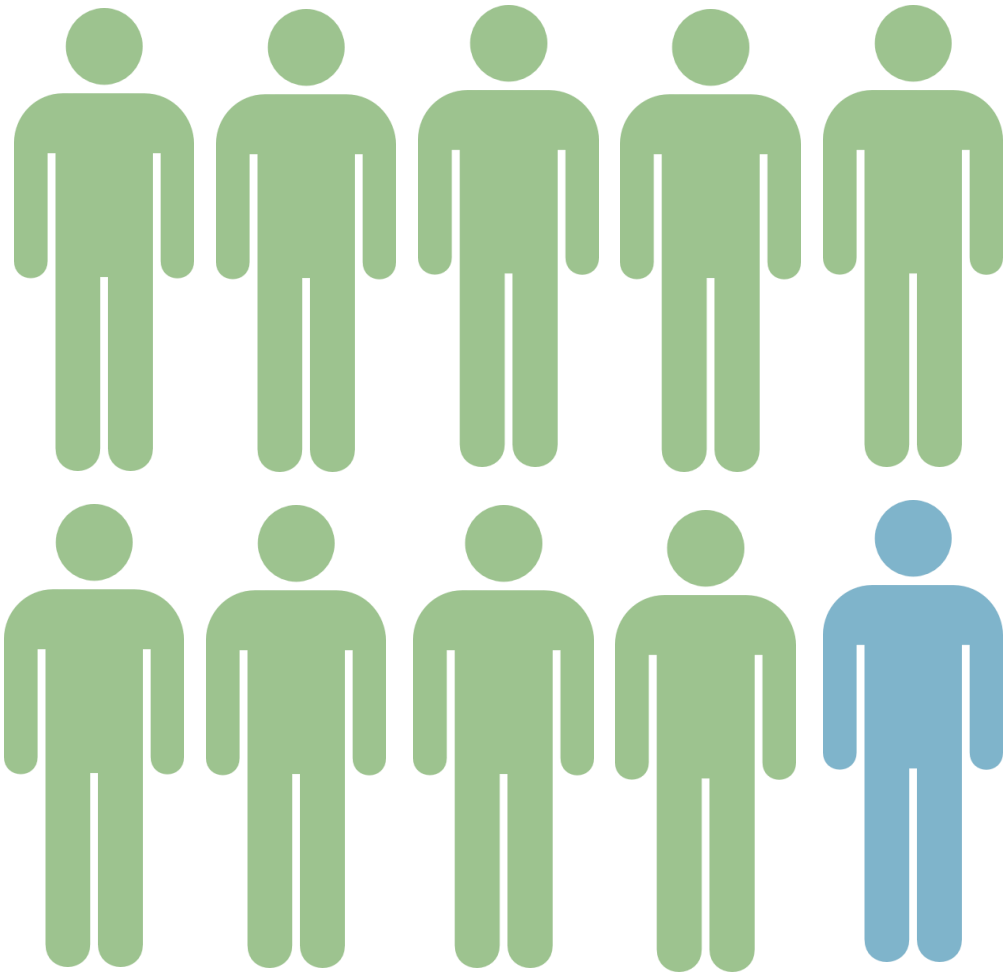


93 cases from 8 cancers

45 cases from 9 cancers



… with elimination of moderate to heavy drinking

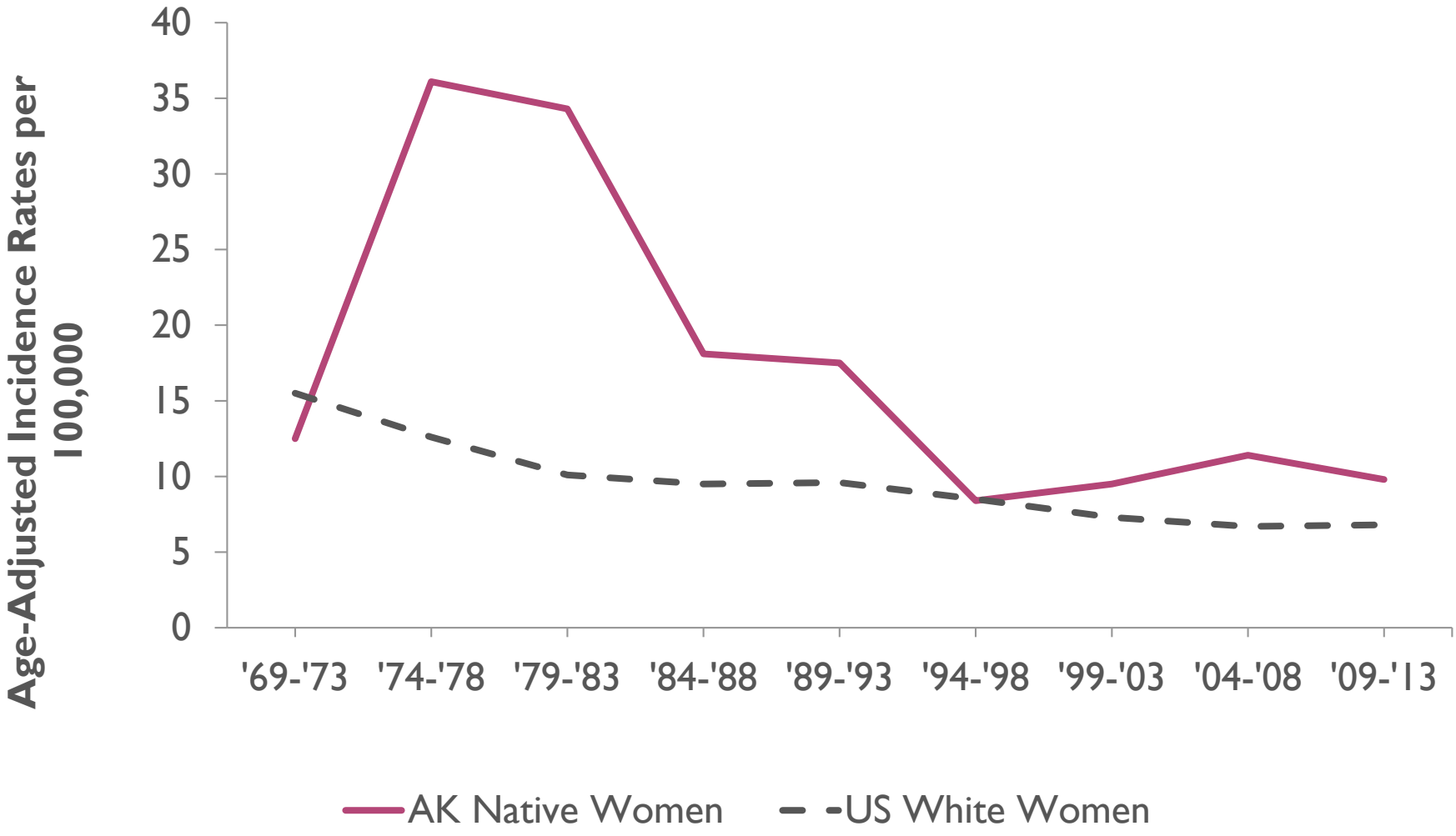


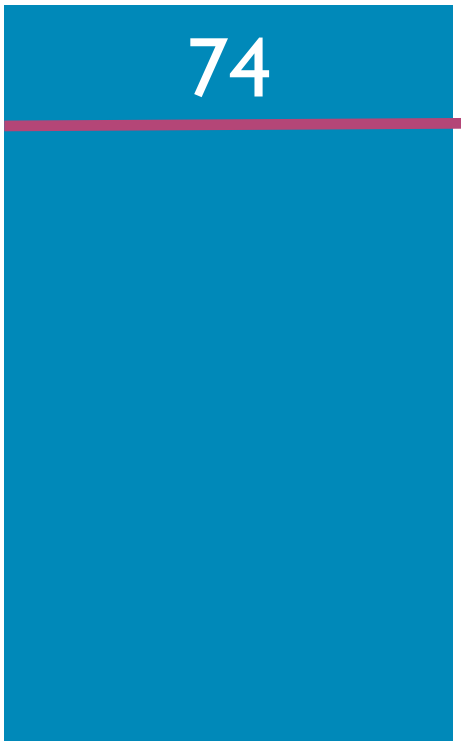
92% of Alaska Native people report that they do not heavily drink

Source: Alaska Division of Public Health, Informed Alaskans BRFSS, 2011-2017


I GOT SCREENED.
Now, I'm talking about it.
I GOT SCREENED.
Now, I'm talking about it.
I GOT SCREENED.
Now, I'm talking about it.
I GOT SCREENED.
Now, I'm talking about it.
I GOT SCREENED.
Now, I'm talking about it.
I GOT SCREENED.
Now, I'm talking about it.

Screening can have a huge impact on cancer rates: the case of cervical cancer

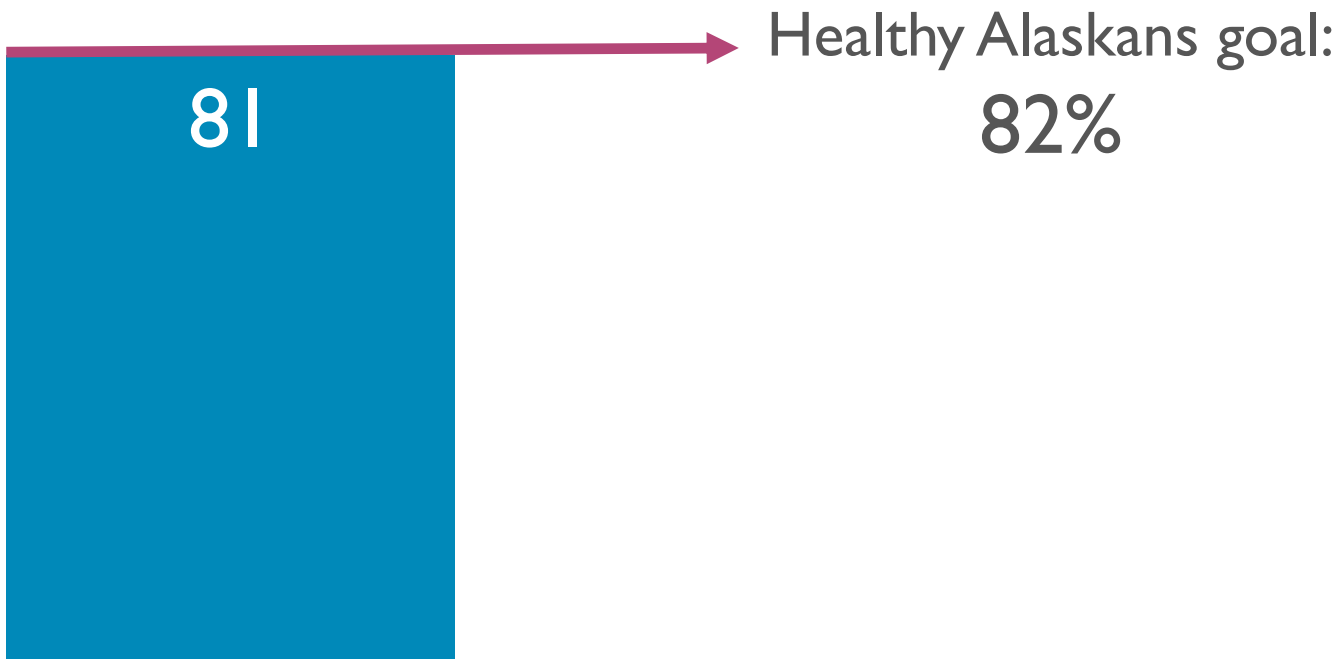




Healthy Alaskans goal:
61%

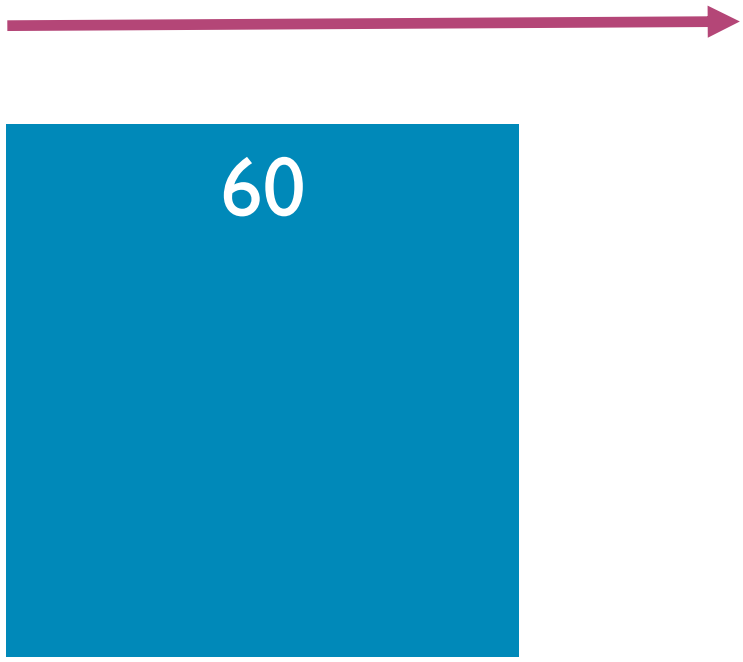
Proportion of Alaska Native women receiving a mammography in the last 2 years

Source: Alaska Behavioral Risk Factor Surveillance System,



Proportion of Alaska Native women up to date on PAP screening

Source: Alaska Behavioral Risk Factor Surveillance System, 2008-2016



Proportion of Alaska Native people up to date with colorectal cancer screening

Alaska Comprehensive Cancer Plan Goal:

80%

Source: Alaska Behavioral Risk Factor Surveillance System, 2010-2016

Together, we CAN prevent cancer among Alaska Native people


ALASKA NATIVE
TRIBAL HEALTH
CONSORTIUM
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qagaasakung · baasee' · tsin'aen · quyanaq
dogedinh · quyanaa · igamsiqanaghhalek
Thank You
gunalchéesh · 'awa'ahdah · chin'an · mahsi'
tsin'e e · way dankoo · háw'aa · quyana
Sarah Nash, PhD, MPH • shnash@anthc.org

Methods: Data Sources and Definitions

Risk Factor Prevalence, 2011 - 2015

Alaska Behavioral Risk Factor Surveillance Survey (BRFSS) (Alaska DHSS, CDC)

Current smokers: smoked >100 cigarettes, and current smoking

Obesity: body mass index (BMI) ≥ 30kg/m^2

Physical inactivity: not meeting the CDC-recommended 150 minute/week of aerobic activity. 2011, 2013, and 2015 surveys only.

Alcohol intake*: moderate drinking =12.5 ≤ 50g (1-4 drinks)/d

heavy drinking = >50 g (4 drinks)/d

*Bagnardi et al 2015

Methods: Cancer Sites

Smoking*: acute myeloid leukemia (AML), bladder, colon and rectum, esophagus, kidney, larynx, liver, lung, oral cavity, pancreas, stomach, and uterine cervix

Obesity:** esophagus, stomach, colon and rectum, liver, gallbladder, pancreas, postmenopausal breast, kidney, advanced prostate, thyroid, and endometrium

Physical inactivity*:** colon, lung, prostate, breast, endometrium, and ovaries

Moderate/heavy alcohol use**:** colorectal, esophageal squamous cell carcinoma, gallbladder, larynx, liver, lung, oral cavity, stomach, prostate, and breast

* Surgeon General's 2014 Report on Smoking and Cancer
** WCRF 2010 Obesity and Cancer Report
***Friedenreich et al 2010, ****Bagnardi et al 2015

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EPIDEMIOLOGY CENTER

Methods: Proportion and number of potentially preventable cases

Population attributable risk (PAR) estimated using Levin's formula:

$$PAR = [P_{pop} \times (RR-1)]/[P_{pop} \times (RR-1) +1]$$

where P_{pop} = risk factor prevalence, RR = relative risk (estimates from recent meta-analyses)

Estimated preventable cancers (EPC) estimated as:

PAR* (Number of cases, AN people, 2011-2015)

Population Attributable Risk: Tobacco

	Tobacco			
	Male		Female	
	PAR (%)	EPC	PAR (%)	EPC
Acute Myeloid Leukemia	3.6	0.7	3.1	0.4
Bladder	47.3	16.6	42.9	7.3
Colorectal	7.3	24.9	8.9	30.2
Esophagus	38.9	13.6	31	6.5
Kidney and Renal Pelvis	19.8	21.3	10.9	9.2
Larynx	71.5	14.3	67.7	4.1
Liver	26.3	13.2	14.7	3.5
Lung	78.8	274.4	69.8	198.2
Oral Cavity	50.5	43.9	46	23.9
Pancreas	20.9	11.7	20.3	10.8
Stomach	23.7	24.4	13.6	10
Female only cancers				
Uterine cervix	--	--	22.6	12
Total		**459.0**		**316.1**

Population Attributable Risk: physical inactivity

	Physical inactivity			
	Male		Female	
	PAR (%)	EPC	PAR (%)	EPC
Colon	13.6	29.9	14.1	35.9
Lung	17.5	61.2	18.1	51.7
Male only cancers				
Prostate	11.1	23.7	--	--
Female only cancers				
Breast	--	--	14.7	92.3
Endometrium	--	--	18.1	14.6
Ovarian	--	--	10.9	92.3
Total		**114.8**		**286.8**

Obesity was associated with a smaller, but still substantial, proportion of cancers

	Obesity			
	Male		Female	
	PAR (%)	EPC	PAR (%)	EPC
Colon	12.6	27.7	4.4	11.1
Rectum	6.9	8.2	1.8	1.5
Esophagus	3.5	1.2	2.2	0.5
Gallbladder	13.9	1.1	22.2	2.2
Kidney and Renal Pelvis	15.0	16.1	25.7	21.6
Liver	22.9	11.5	14.0	3.4
Pancreas	11.9	6.7	9.6	5.1
Stomach	3.2	3.3	--	--
Thyroid	4.0	1.1	9.0	6.9
Male only cancers				
Advanced prostate	4.3	3.2	--	--
Female only cancers				
Postmenopausal breast	--	--	5.7	26.0
Endometrium	--	--	36.9	29.5
Total		**80.1**		**107.8**

Finally, alcohol use may also be a target for cancer prevention strategies

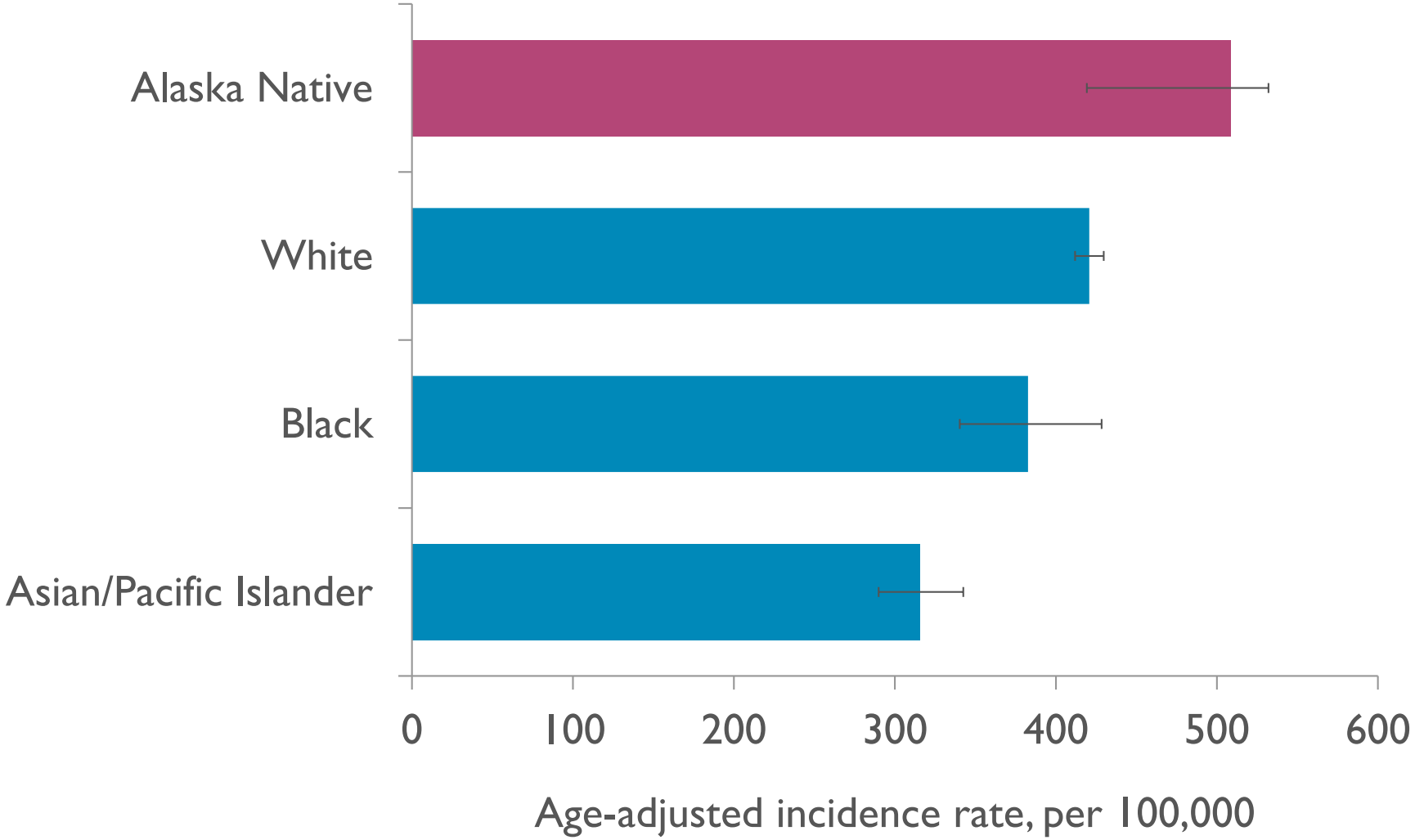
	Moderate drinking				Heavy drinking			
	Males		Females		Males		Females	
Cancer site	PAR (%)	EPC	PAR (%)	EPC	PAR (%)	EPC	PAR (%)	EPC
Colorectal	2.5	8.3	0.4	1.4	5.8	19.5	2.1	7.2
Esophageal SCC	12.9	2.8	6.7	0.5	31.4	6.9	26.4	2.1
Gallbladder	--	--	--	--	16.0	1.3	13	1.3
Larynx	5.0	1.0	2.5	0.1	16.1	3.2	13.1	0.8
Liver	--	--	--	--	11.0	5.5	8.9	2.1
Lung	--	--	--	--	1.7	6.0	1.3	3.8
Oral cavity	9.1	7.9	4.6	2.4	32.4	28.2	27.3	14.2
Stomach	--	--	--	--	2.4	2.4	1.9	1.4
Female only cancers								
Breast	--	--	1.3	8.2	--	--	5.3	32.9
Total		**20**		**4.4**		**73**		**32.9**

Changes in cancer survival over time

Cancer Site	Count	Adjusted Hazard Ratio*	Confidence Interval (95%)	χ^2 *P* Value
Female Breast	996	0.90	0.62-1.31	0.581
Colon and Rectum	1076	0.81	0.66-1.01	0.057
Kidney and Renal Pelvis	233	0.80	0.48-1.35	0.398
Lung and Bronchus	926	0.83	0.72-0.97	0.015
Prostate	331	0.86	0.41-1.82	0.695

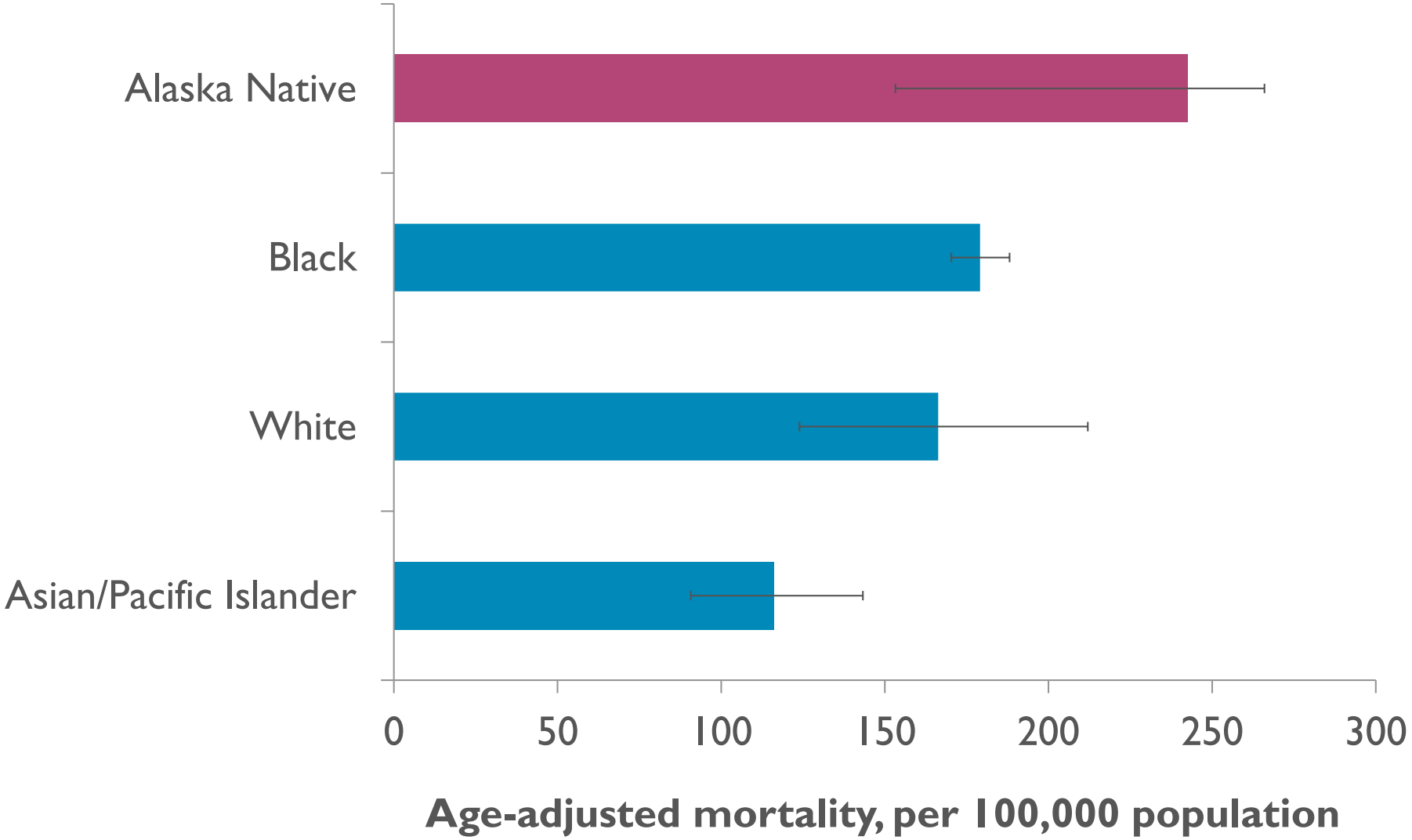
* Multivariable Cox proportional hazards models, adjusted for sex (with the exception of cancers of the prostate and female breast), age at diagnosis, and stage at diagnosis. Reference = earlier period (1992 – 2013)

Alaska Native people have the highest rates of cancer in Alaska



Data source: Alaska Cancer Registry, 1992 - 2012

Alaska Native people have the highest cancer mortality in Alaska



Alaska Cancer Registry, 1996-2012

OUR VISION:

Alaska Native people are the healthiest people in the world.

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TRIBAL HEALTH
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