Reported Health and Health-influencing Behaviors Among Urban American Indians and Alaska Natives

An Analysis of Data Collected by the Behavioral Risk Factor Surveillance System

March 2008
Updated July 2008

Urban Indian Health Institute, Seattle Indian Health Board, P.O Box 3364, Seattle, WA 98114
Tel: (206) 812-3030 Website: www.uihi.org

Table of Contents

Acknowledgments

The UIHI would like to acknowledge the
Urban Indian Community and
Public Health - Seattle and King County
for their assistance in making this report possible.

This report was made possible by a grant from the Indian Health Service
Division of Epidemiology and Disease Prevention.

Executive Summary

This analysis of the national Behavioral Risk Factor Surveillance System (BRFSS) was conducted in an effort to better understand the health and health-influencing behaviors of urban American Indians and Alaska Natives. BRFSS is an annual telephone-based survey of adults carried out by states and US territories with the assistance of the Centers for Disease Control and Prevention, and is the world's largest ongoing telephone survey.

This is the first report using BRFSS that focuses on American Indians and Alaska Natives (AIAN) living in counties served by the network of 34 Title V urban Indian health organizations. It shows a number of areas where AIAN living in these urban areas are not doing as well as the general population. Many of the reported disparities will come as no surprise to those working in urban AIAN health, and this report will serve to reinforce the importance of work already being done.

However, additional analyses comparing income groups showed a complicated picture, where the relationship between income and certain health indicators among American Indians and Alaska Natives differed from the general population. This report does not focus on the causes of these differences, however it is hoped that these findings may lead to further investigation into which societal and personal factors may be most important in impacting the health of urban American Indians and Alaska Natives. Through a better understanding of the reasons for health disparities, interventions aimed at the root causes of poor health outcomes can be developed and advocated for. This report also helps to establish a baseline for the discussion as to why culturally appropriate care is necessary in addressing health needs of urban AIAN communities. Care designed for the general population may not be as effective for this population, given that the needs and underlining causes of health outcomes may be different, as seen in this report.

Key Findings:

- Differences exist between urban American Indians and Alaska Natives (AIAN) and the rest of the population in terms of access to healthcare, risk behaviors, threats to health, and certain health outcomes. For example:
  - ⇒ Almost 30% of urban AIAN reported not having health insurance, compared with 18% of non-AIAN
  - ⇒ 25% of AIAN reported that they currently smoke cigarettes, compared with 18% of the rest of the population
  - ⇒ Approximately twice as many urban AIAN as non-AIAN rated their own health as "poor"
  - ⇒ Nearly one-third of urban AIAN were obese (had a body mass index >30 based on reported height and weight), compared with 20% of non-AIAN
- Income differences played a role in explaining some of these disparities, but major differences still existed between AIAN and non-AIAN who were in similar income groups
- Prevalence of reported diabetes, hypertension, obesity, and smoking were not associated with income differences for urban American Indians and Alaska Natives. This was not the case in the general population, where those with lower incomes tended to have higher rates of these health problems.
- Income appears to be associated with some health indicators more profoundly among non-AIAN living in urban areas than their American Indian and Alaska Native counterparts, especially access to healthcare. Other factors in addition to income must exist to explain the significant health disparities seen in these communities.

Introduction

Our population: Urban American Indians and Alaska Natives

American Indians and Alaska Natives (AIAN) living in urban areas are a diverse and growing population. Over the past three decades, AIAN have increasingly relocated from rural communities and reservations into urban centers. This so-called "invisible" population now makes up more than half of all American Indians and Alaska Natives living in the United States.[1]

Urban AIAN are a very diverse group, and include members, or descendents of members, of many different tribes. Represented tribes may or may not be federally recognized, and individuals may or may not have historical, cultural, or religious ties to their tribal communities. Individuals may travel back and forth between their tribal communities or reservations on a regular basis, and the population as a whole is quite mobile. Urban AIAN are also generally spread out within the urban center instead of localized within one or two neighborhoods, and thus are often not seen or recognized by the wider population.[2]

While data are difficult to gather, studies have found that urban AIAN suffer from significant health disparities compared with the general population. These disparities include higher rates of tobacco use, infant mortality, late prenatal care, interpersonal violence, attempted suicide, and deaths due to diabetes, accidents and chronic liver disease.[3,4,5,6] Work currently taking place by the Urban Indian Health Institute and others is attempting to better understand health risks and strengths of this diffuse population.

Urban Indian Health Organizations

A bright spot in urban Indian health remains the high-quality, culturally-appropriate health and referral services offered to AIAN through a network of urban Indian health organizations (UIHO). While often under financial pressure and risk of budget elimination, these UIHO continue to serve the health needs of AIAN living in 34 urban centers around the country. Established through Congress under Title V of the Indian Health Care Improvement Act in 1976, UIHO are independent, not-for-profit entities with urban AIAN majority boards of directors. UIHO range in size and services from small referral sites to large major medical and dental clinics that serve the wider community. UIHO serve individuals in approximately 94 counties in 19 states, and manage to provide services to more than 150,000 clients each year with a budget from the Indian Health Service of just $34 million.

Often seen as centers for cultural activities and news, UIHO offer AIAN living in these urban areas a place where they can receive health information and services in a culturally appropriate manner. This report focuses on urban American Indians and Alaska Natives living in these 34 urban centers served by Title V UIHO, with the acknowledgment that many AIAN living in other urban areas are not represented. For a complete list of UIHO and their service area, see Appendix A.

Introduction

The Behavioral Risk Factor Surveillance System

The Behavioral Risk Factor Surveillance System (BRFSS) is a national phone-based survey administered annually by states and territories with the assistance of the Centers for Disease Control and Prevention (CDC). The survey includes a series of questions about health and health-related behaviors that are asked nationwide. States also have the option to include additional questions on certain topics that may change each year. BRFSS uses a system of random digit dialing, and interviews non-institutionalized adults age 18 and older. More about BRFSS can be found at www.cdc.gov/brfss.

Limitations of BRFSS

Only households with phone service are included in this survey, which eliminates certain segments of the population that may be most at risk of poor health outcomes. American Indians and Alaska Natives as a whole were more likely to report not having home telephone service than the general population in the 2000 census (2.4% of all households vs. 11.9% of AIAN households). This holds true even for those living in urban areas (2.2% vs. 7.0%). For all results shown below, one must remember that only housed adults with telephone service are represented in the findings.

Another limitation with phone surveys is the possible bias introduced by who chooses or declines to answer the questions. There may be something about the people who agree to answer phone surveys that makes them different from those who do not answer. We do not have information about individuals who chose not to answer the questions.

Other limitations relate to self-reported survey questionnaires: individuals may have difficulty recalling information accurately; they may choose not to answer questions truthfully, especially any seen as highly personal; and how the question is worded may influence how an individual interprets it and responds.

Benefits of BRFSS

While BRFSS has a number of limitations, there are benefits that make examining it worthwhile. It is the world's largest on-going telephone survey, and includes enough American Indian and Alaska Native respondents for meaningful analysis. Since many of the same questions are asked each year, multiple years' data can be combined to allow for increased accuracy when looking at small populations (such as urban AIAN). This also allows for examining trends over time.

Unlike many other health-related data sources, such as death certificates or disease-based registries, race is self-reported in BRFSS. Since 2001 respondents also have had the ability to report more than one race. Self-reported race eliminates issues of racial misclassification, which can be a major concern when examining health issues among AIAN using other data sources. In addition, self-reported race can more accurately capture one's cultural identity when someone is of multiple ethnicities.

Another benefit of BRFSS is its inclusion of demographics (income, education level, age, etc.) in addition to health-related information. This allows for more in-depth analyses that can help uncover possible reasons behind observed health disparities. In this report, certain health and behavior outcomes are examined by income, but in the future this dataset can be used for further exploration of how health outcomes may or may not be interrelated with poverty, age, self-reported health, disability and other personal factors.

Report Structure

Part I of this report examines the response for certain health indicators of American Indians and Alaska Natives living in selected urban areas compared with non-AIAN in those same areas. See Page 8 for more information about the selected urban areas. Information from multiple years (2001-2005) were combined for an aggregate analysis.

Chosen indicators were categorized into broader topic areas for this report. See Appendix B for a detailed description of these indicators and the associated BRFSS questions. These topic areas and related indicators are as follows:

Access Issues
- Could not see a doctor because of the cost
- Has a personal care provider
- No health insurance (Age < 65 years)

General Health
- Self-Reported health status
- One or more days of poor physical health in last 30 days
- One or more days of poor mental health in last 30 days

Risk Behavior
- Any alcohol in last 30 days
- Binge drinking among those who drink alcohol
- Heavy drinking
- Currently smokes cigarettes
- No leisure-time physical activity in last 30 days

Weight and nutrition
- Overweight/obese (BMI>=25)
- Obese (BMI>=30)
- Eat five or more fruits/vegetables each day

Oral Health
- Visit to dentist for any reason in last year
- Dental cleaning in last year
- Has dental insurance

Disease-specific Issues
- Ever told by doctor that you have diabetes (excludes pregnancy)
- Ever told by doctor that you have high blood pressure (excludes pregnancy)
- Ever tested for HIV (excludes blood donation)

Part II (The "Income Analysis") reports most of the same health indicators broken out in two income groups for both AIAN and non-AIAN: those living above and below 200% of the federal poverty level (FPL). See Page 8 for more details about these income designations.

Personal income is associated with many health outcomes and risk behaviors - those with lower incomes as a whole tend to have worse health and higher rates of risky behavior than those with higher incomes. Reasons for this are many and complex, as income can both influence and be influenced by one's health. While reported income is only part of one's socioeconomic status, and not necessarily the most important factor in one's health, it is one place to start an examination of how social and economic factors relate to health.

Methods and Definitions

Selected Urban Areas

This report highlights health issues faced by American Indians and Alaska Natives living in counties served by the network of Title V urban Indian health organizations (UIHO). Because BRFSS data are not released from counties with fewer than 50 respondents, not all service area counties are represented in this analysis. However, all UIHO are represented and only very small counties were not included. The counties served by certain UIHO have been updated in recent years. However because this analysis covers years 2001-2005, service-area counties that were identified in earlier years are used in this report. For a list of counties included in this analysis, see Appendix A.

Race classification

From 2001-2005, respondents were asked two questions regarding race during the BRFSS interview: (1) Which one or more of the following would you say is your race and (2) Which one of these groups would you say best represents your race. For the purpose of this report, individuals were considered "AIAN" if they selected American Indian, Alaska Native as the "group (that) best represents your race." Those who did not make this choice were considered "non-AIAN". The decision not to include people who reported that they were American Indian or Alaska Native but that some other race best represented them was based on an attempt to capture the population most likely to utilize culturally-specific health care such as from a UIHO. This report uses the same language as BRFSS in describing our target population: American Indian and Alaska Natives, or AIAN.

Income definitions

In Part II of this report, we examined the above variables within two income groups: the "lower income" group: individuals living below 200% of the federal poverty level (FPL); and the "higher income" group: those living above 200% of the FPL. The FPL - officially known as federal Poverty Guidelines – are issued by the Department of Health and Human Services each year, and are calculated using household income and number of household members. The Guidelines are used primarily to determine eligibility for federal need-based programs such as the National Food Lunch Program and Head Start. 200% of the FPL - in other words, twice the amount of the actual poverty level - was chosen as the cut-off for the two income groups. With this cut-off, the "lower-income" group included more of the working poor than if 100% of the FPL was used. In 2005, 200% of the FPL amounted to an annual income of $38,700 for a family of four. More information on FPL guidelines and calculations can be found at http://aspe.hhs.gov/poverty/.

Healthy People (HP) 2010 Targets

When available, these national targets were compared with prevalence rates reported for each indicator. The two overarching goals of HP 2010 are to "increase quality and years of healthy life" and to "eliminate health disparities". This report highlights instances of health disparities faced by members of urban AIAN communities with the hope that future analyses can show improvement over time. More information about HP 2010 can be found at www.healthypeople.gov.

Statistical methods

Each year, states weight their sample to account for the likelihood of being chosen as well as for differences in race, age, and gender. Non-response and non-coverage are also adjusted for. Standard weighting calculations provided by the Centers for Disease Control and Prevention (CDC) were used in this analysis. Prevalence and 95% confidence intervals were calculated for each group. Differences between groups by chi-squared test were considered statistically significant at the .05 level. Values for all statistical tests can be found in Appendices D and E. All statistical analyses were done using Stata version 9.0.

Results: Respondent Demographics

Between 479 and 676 American Indians and Alaska Natives were surveyed each year in the selected urban areas, with the highest number surveyed in 2005 (Table 1). Each year, AIAN represented 1.4% - 1.6% of the total sample (data not shown). Women made up approximately 60% of the sample among both groups. AIAN respondents were younger as a group than other respondents (mean age 43 years vs. 48 years).

Table 1: Yearly Numbers and Demographics

Characteristic	AIAN Number (Percent)	Non-AIAN Number (Percent)
Year of Survey		
2001	479 (17%)	27953 (16%)
2002	483 (17%)	30936 (17%)
2003	577 (20%)	34624 (19%)
2004	635 (22%)	39032 (22%)
2005	676 (24%)	46912 (26%)
TOTAL	2850 (100%)	179457 (100%)
Gender		
Male	1188 (42%)	72538 (40%)
Female	1662 (58%)	106919 (60%)
Age		
18-29 years	640 (23%)	27536 (15%)
30-49 years	1298 (46%)	72213 (40%)
50-64 years	627 (22%)	43962 (25%)
>65 years	271 (10%)	34696 (19%)

Un-weighted data

Table 2: Income

Characteristic	AIAN Number (Percent)	Non-AIAN Number (Percent)
Income		
<$10,000	265 (10%)	7155 (5%)
$10,000 – 25,000	876 (34%)	32221 (20%)
$25,000 – 35,000	422 (16%)	20953 (13%)
$35,000 – 50,000	416 (16%)	27442 (17%)
> $50,000	597 (23%)	70605 (45%)
Income		
<100% FPL	471 (18%)	9660 (6%)
<200% FPL	1364 (53%)	42199 (27%)

Un-weighted data

AIAN respondents were more likely to report lower household incomes than non-AIAN respondents (Table 2). Differences were seen especially in the highest and lowest income categories. American Indians and Alaska Natives were also more likely to be living in poverty. Approximately 50% of American Indians and Alaska Natives respondents reported living under 200% of the federal poverty level (FPL), almost twice the rate among non-AIAN.

American Indians and Alaska Natives in the selected urban areas were less likely to be currently employed than non-American Indians and Alaska Natives (Table 3). They also on the whole had less formal education. They were half as likely to have graduated from college as non-AIAN, and twice as likely to report not graduating from high school.

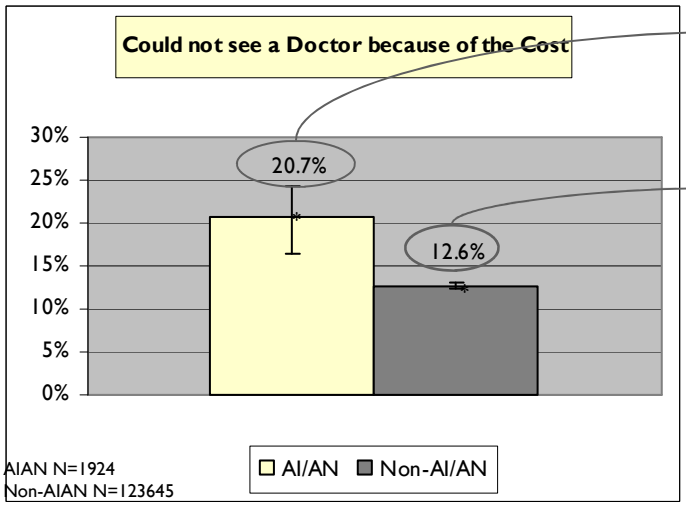
Table 3: Employment and Education

Characteristic	AIAN Number (Percent)	Non-AIAN Number (Percent)
Employment		
Employed	1686 (85%)	110969 (93%)
Not employed	291 (15%)	8703 (7%)
Education		
< 9 grade	168 (6%)	4826 (3%)
Some High school	345 (12%)	8766 (5%)
HS Diploma/GED	855 (30%)	43319 (24%)
Some college/ Technical School	911 (32%)	50604 (28%)
College Graduate	569 (20%)	71625 (40%)

Un-weighted data

Part I: Initial Comparison

Access Issues



Twenty-one percent of urban American Indians and Alaska Natives reported that they were unable to see a doctor in the past year because of cost issues.

This compares to 13% of non-American Indians and Alaska Natives.

Regardless of cost, access to prompt, preventable care must be improved.

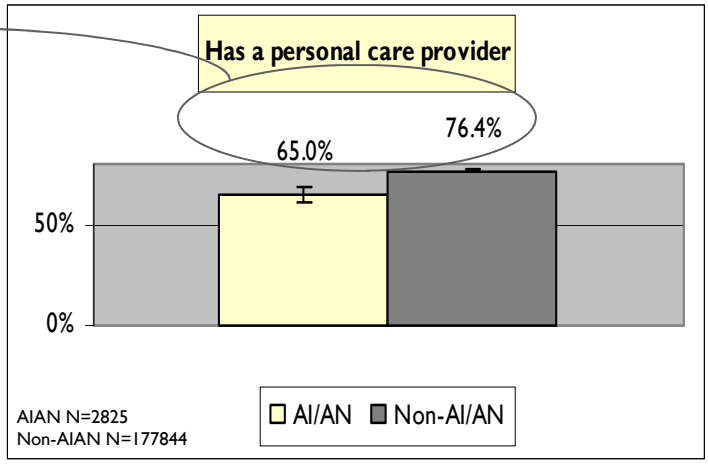
HP 2010 Goal:
"Reduce the proportion of families that experience difficulties or delays in obtaining health care or do not receive needed care for one or more family members" ***Target: 7%***

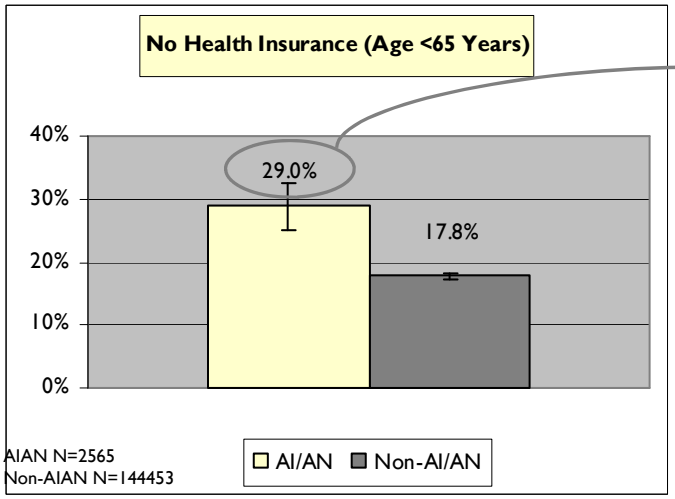
*The vertical bars in all graphs represent the 95% confidence interval.

Urban American Indians and Alaska Natives were significantly less likely to report having a personal care provider than the rest of the population.

A regular personal care provider offers continuity for patients, and shows an ongoing relationship with the healthcare system.

HP 2010 Goal:
"Increase the proportion of people with a usual primary care provider" ***Target 85%***





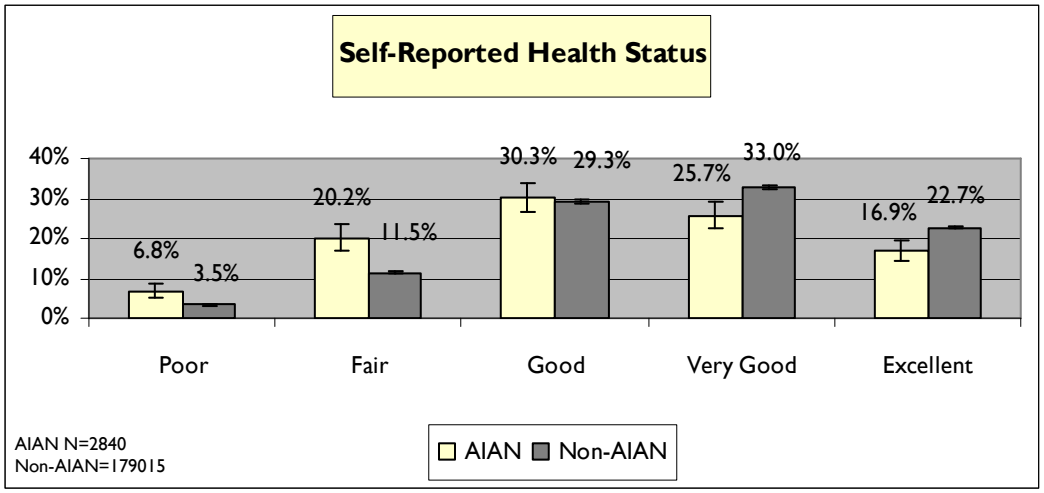
Almost thirty percent of American Indians and Alaska Natives reported not having health care coverage (including "federal programs"), compared to less than 18% of non-American Indians and Alaska Natives.

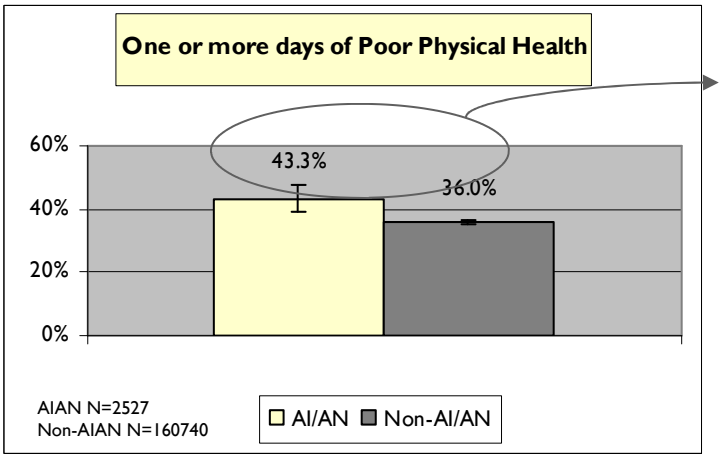
This disparity exists, despite the legal mandate of the federal government to provide healthcare to American Indians and Alaska Natives. Studies have shown that lacking health insurance, in itself, is a risk factor for poor health.[1]

HP 2010 Goal:
"Increase the proportion of persons with health insurance" ***Target: 100%***

General Health

Urban American Indians and Alaska Natives described worse self-reported health than the rest of the population. Almost twice as many AIAN than non-AIAN reported that their own health was "poor" or "fair" overall. And only 43% of urban American Indians and Alaska Natives reported having "very good" or "excellent" health, compared with approximately 56% of the rest of the population.



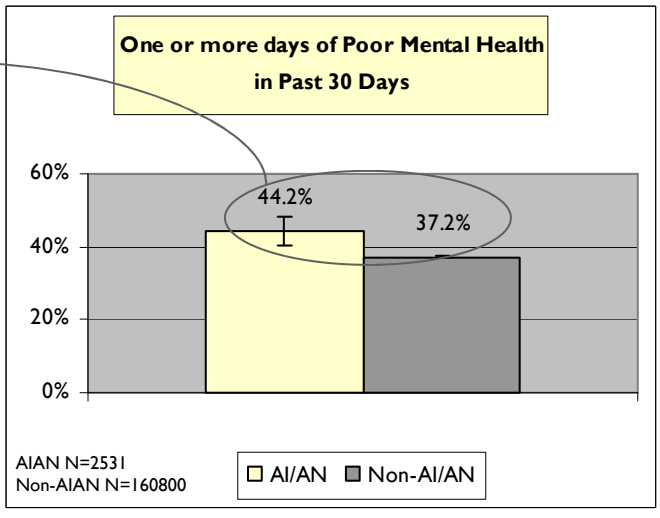


Respondents were asked the number of days in the past month in which their physical health (due to illness or injury) was not good. Approximately 43% of urban American Indians and Alaska Natives reported that this was the case at least one day in the month before the interview, significantly more than the rest of the population.

Similarly, more urban American Indians and Alaska Natives reported that for one or more days in the past month their mental health (stress, depression, and problems with emotion) was not good.

- -

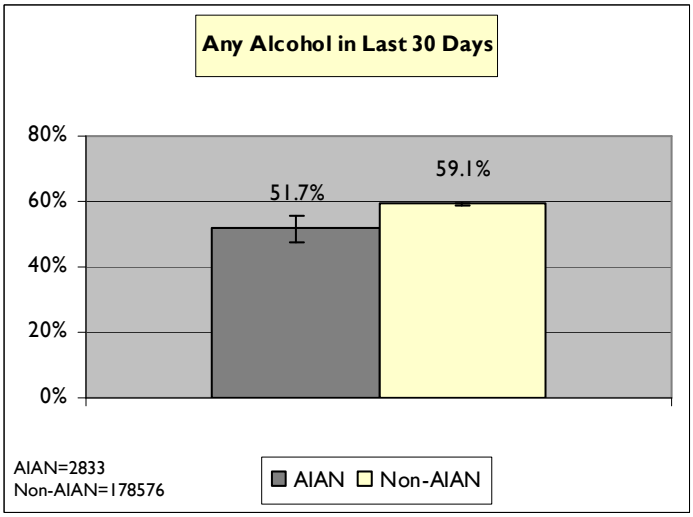
Mental health is a central part of the overall wellbeing of an individual, but its importance is often overlooked. A major report by the Surgeon General in 1999 found that minority populations, including American Indians and Alaska Natives, have less access to mental health services than the general population and that the quality of care is often not as good.[1] *More resources and focus are needed to meet the mental health needs of our communities.*

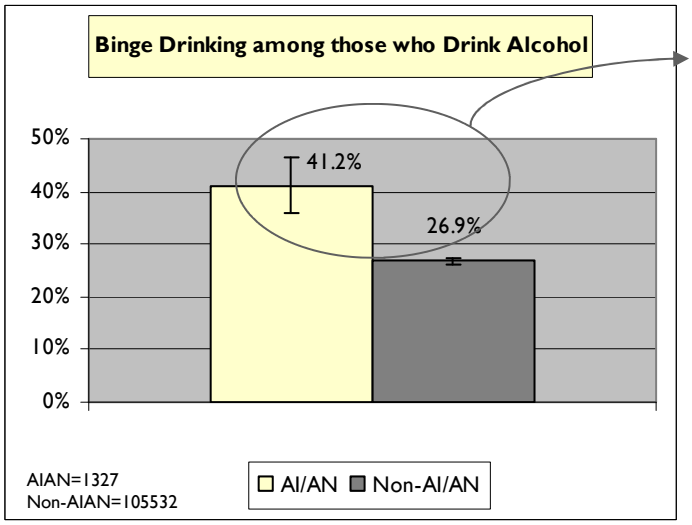


Risk Behavior

Fewer American Indians and Alaska Natives than non-American Indians and Alaska Natives in the selected urban areas reported drinking any alcohol in the past month.

Urban AIAN also reported on average fewer number of days drinking alcohol in the past month than the rest of the population (6.8 days vs. 8.2 days - *data not shown*).





While fewer AIAN drink any alcohol, among those who do drink, more American Indians and Alaska Natives reported at least one episode of binge drinking (five or more alcoholic beverages in one occasion) in the past 30 days.

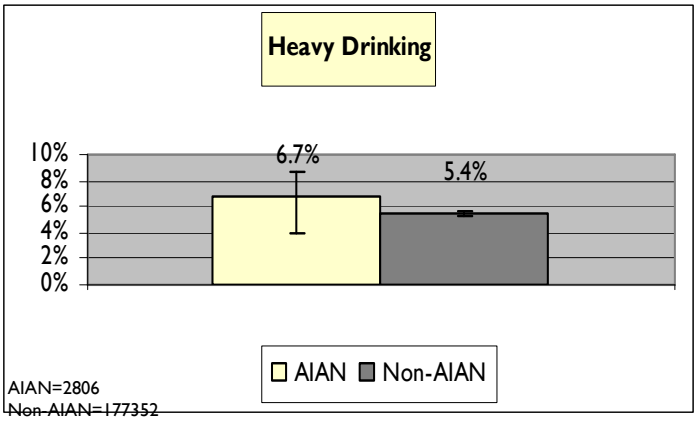
Drinking excessively can lead to accidental or intended injury, impaired thinking and poor decision making, and long term physical consequences such as high blood pressure and liver disease.[1]

HP 2010 Goal:
"Reduce the proportion of persons engaging in binge drinking of alcoholic beverages"
Target 6% *

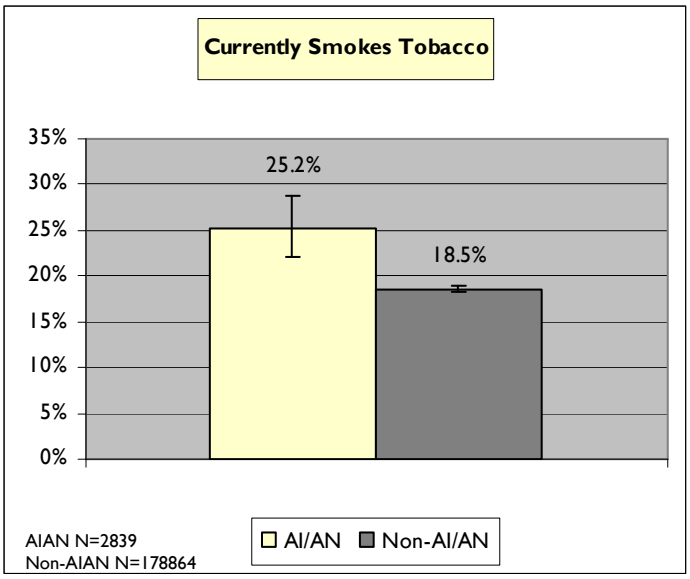
**This HP 2010 Target is not limited to those who drink alcohol. The percent of all AIAN who reported binge drinking was 21.3% and the number of non-AIAN was 15.8%.*

Urban American Indians and Alaska Natives were no more likely to report heavy drinking than the rest of the population.

"Heavy drinking" is defined in BRFSS as men who report more than two drinks per day or women who report more than one drink per day.



Risk Behavior, continued



This analysis supports other studies[1,2] that have found high rates of smoking among urban American Indians and Alaska Natives.

Approximately 25% of American Indians and Alaska Natives in the selected urban areas reported smoking cigarettes regularly, twice that of the HP 2010 target (12%).

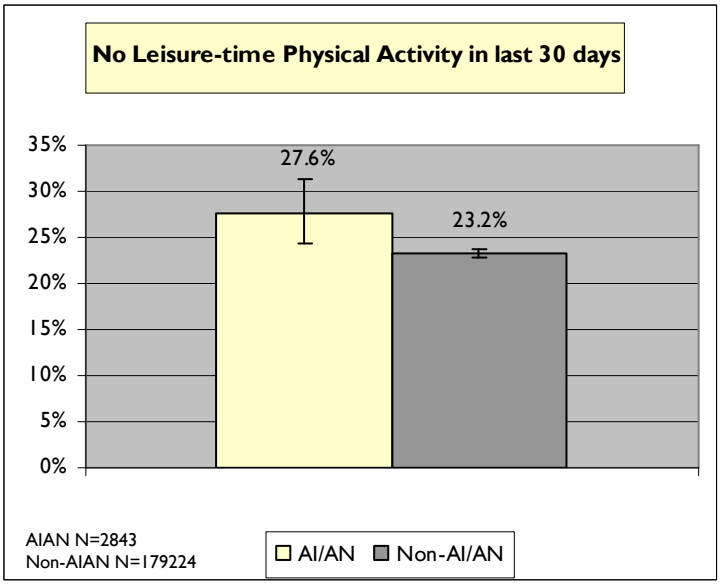
The negative health effects of smoking are well known, but more must be done to find cessation interventions that work in our population and more resources allocated to assure the interventions reach those in need.

HP 2010 Goal:
"Reduction in Tobacco Use by Adults Aged 18 Years and Older" Target: 12%

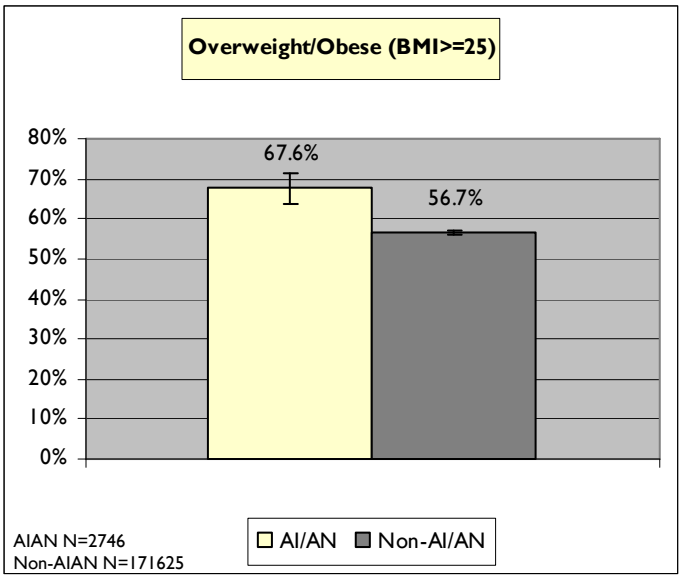
There were more urban AIAN than non-AIAN who reported not participating in any leisure-time physical activity in the last month.

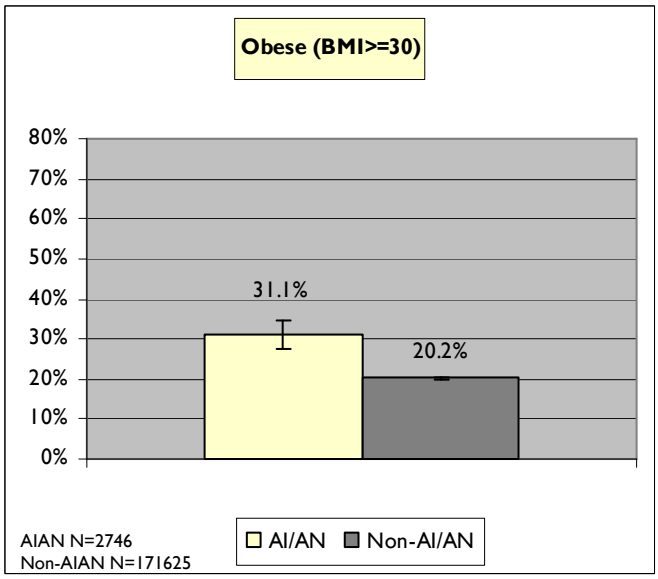
Physical activity is an important factor in maintaining a healthy body weight, and can lead to reduction in unhealthy cholesterol levels, blood pressure, and risk of diseases such as diabetes.

HP 2010 Goal:
"Reduce the proportion of adults who engage in no leisure-time physical activity" Target: 20%



Weight and Nutrition

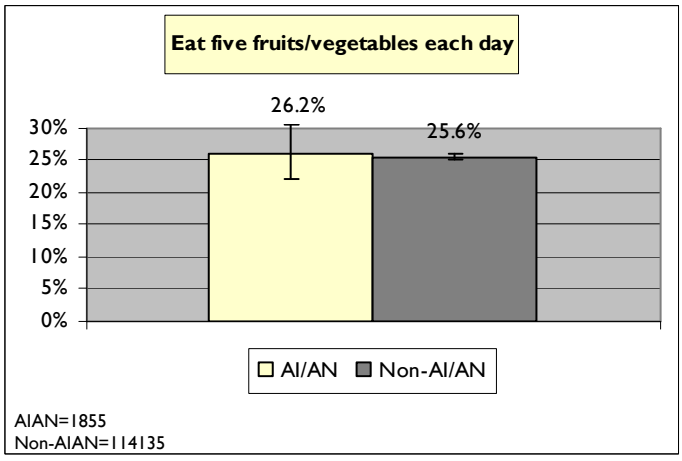




The current epidemic of obesity in our country is especially severe in some American Indian and Alaska Native communities[1]. Urban American Indians and Alaska Natives are no exception, with approximately two-thirds reporting a body mass index (BMI) of 25 or higher and almost a third reporting BMI of 30 or higher—twice that of HP 2010 Target.

Overweight and obesity are associated with increased risk of cardiovascular disease, certain cancers, type 2 diabetes, and premature death.[2]

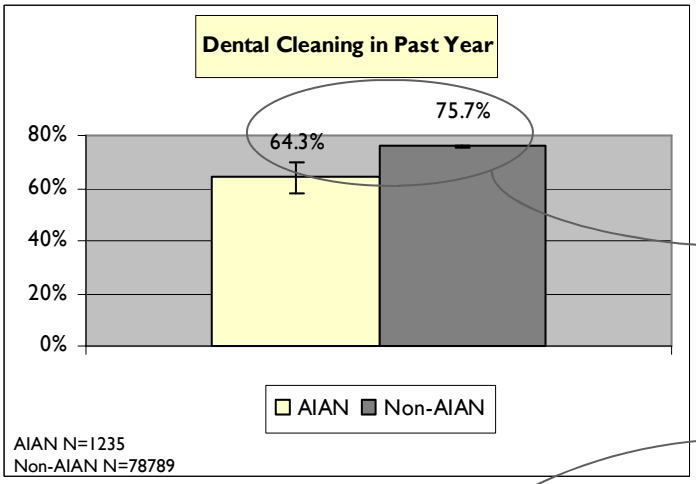
HP 2010 Goal:
"Reduce the proportion of adults who are obese"
Target: 15%

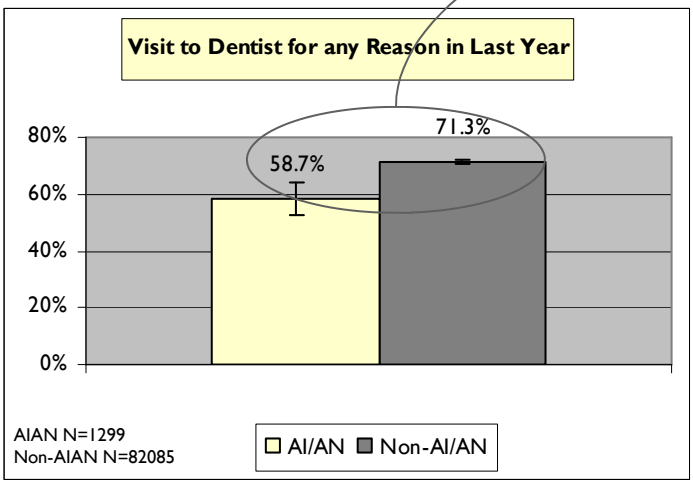


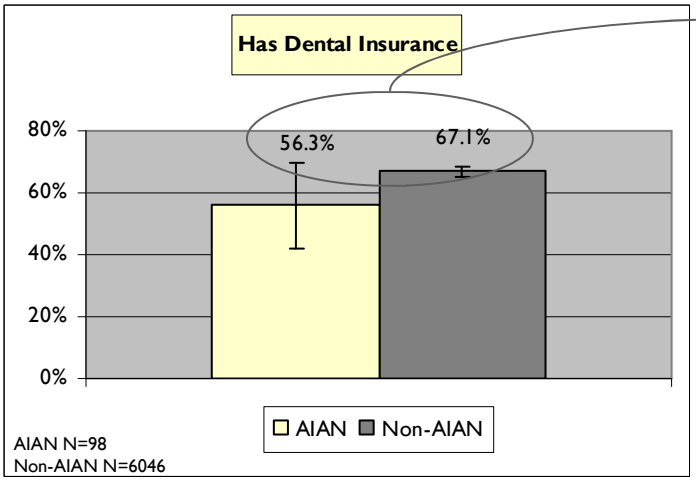
While overweight and obesity rates are high among urban American Indians and Alaska Natives, and physical activity rates are low, urban AIAN were no less likely to report eating adequate amounts of fruits and vegetables each day than the rest of the population

There is no exact corresponding HP 2010 goal, although the reported percentages seen here were well below the HP 2010 targets for eating three servings of vegetables each day (50%) and two servings of fruit a day (75%).

Oral Health







Fewer American Indians and Alaska Natives living in the selected urban areas reported having their teeth cleaned in the past year compared with non-AIAN.

The same held true for those reporting a visit to a dentist or dental clinic for any reason.

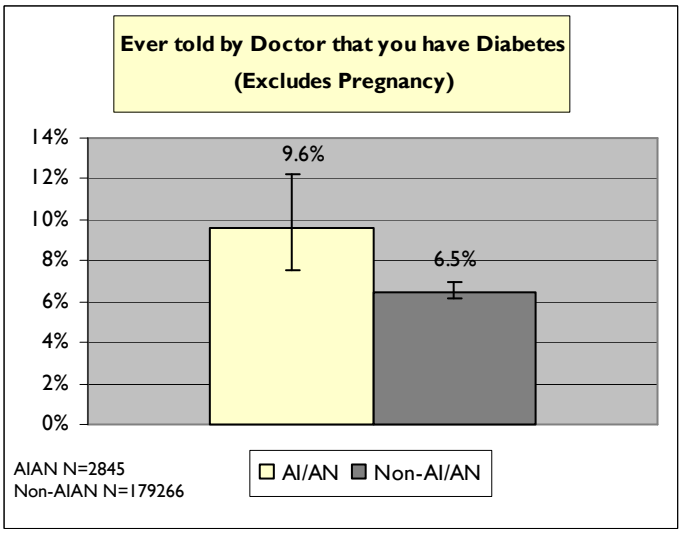
- -

Oral health is a critical but often over-looked area of healthcare, and one which involves major disparities between populations. Preventative dental care especially is important, and affordable adult dental services are in short supply in much of the country.[1] *Poor oral health can be associated with other health conditions, such as heart disease*[2] *and diabetes.*[3]

- -

While the number of respondents was too small to show a statistical difference, fewer urban American Indians and Alaska Natives reported having dental insurance in 2001, the only year this question was asked. This may help explain the difference in receipt of dental services but may not be the only reason.

Disease-Specific Indicators



Evidence of high numbers of American Indians and Alaska Natives diagnosed with diabetes is not new information to those working in urban Indian health. Other studies have shown similar or even more extensive disparities in the prevalence of diabetes.[1,2,3,4]

- -

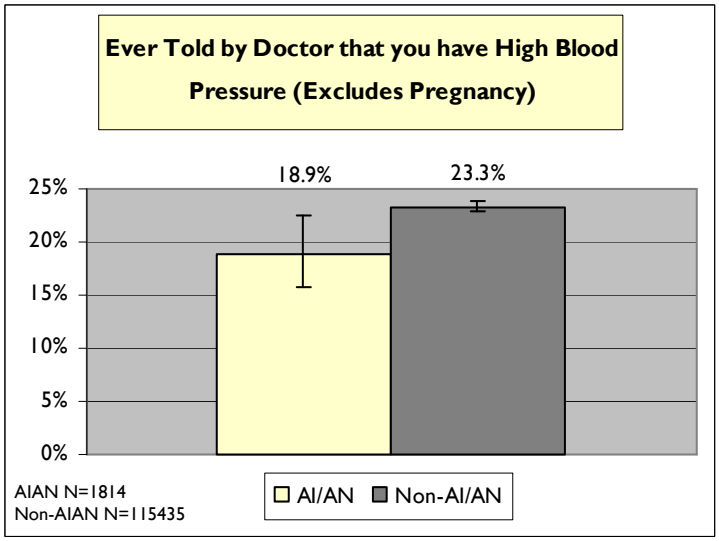
Diabetes has the potential to cause significant health problems including kidney damage, heart and circulation problems, and nerve damage.[5] These outcomes are especially likely when the patient is left untreated. The major efforts in recent years to provide preventative and ongoing care for individuals with and at-risk for diabetes must continue.

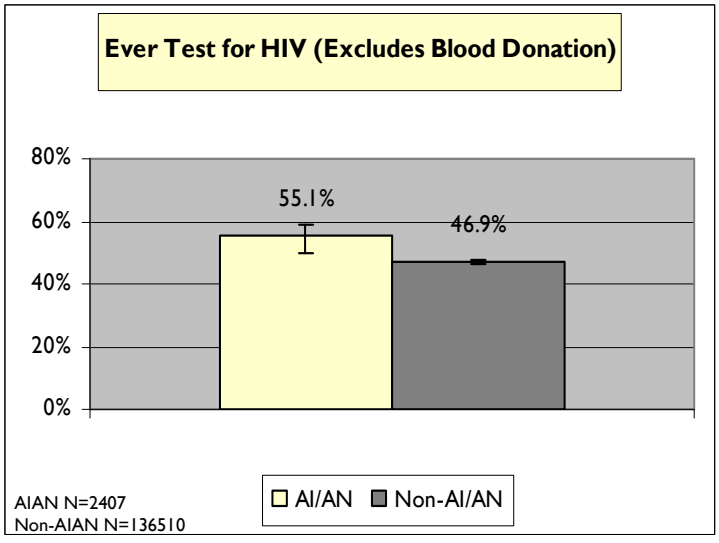
Fewer urban American Indians and Alaska Natives reported being told that they have high blood pressure.

Others studies have shown, however, that AIAN may actually be at increased risk for hypertension.[3,4]

- -

This discrepancy could indicate an access problem – individuals who do not have regular preventative healthcare may not be screened adequately for high blood pressure and thus may not be diagnosed. Further studies among urban AIAN may be needed to determine the extent of hypertension in our communities.





More urban American Indians and Alaska Natives reported being tested for HIV than non-AIAN.

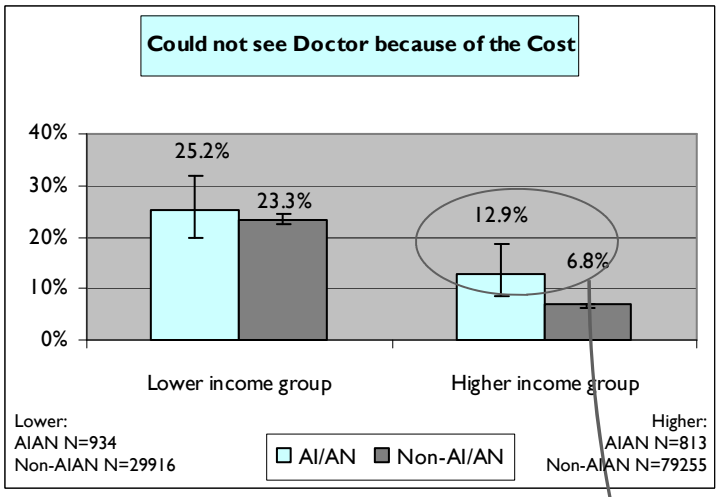
This could be a positive finding, showing adequate access to HIV testing services. But this could also indicate our population is at increased risk for HIV and thus more in need of testing.

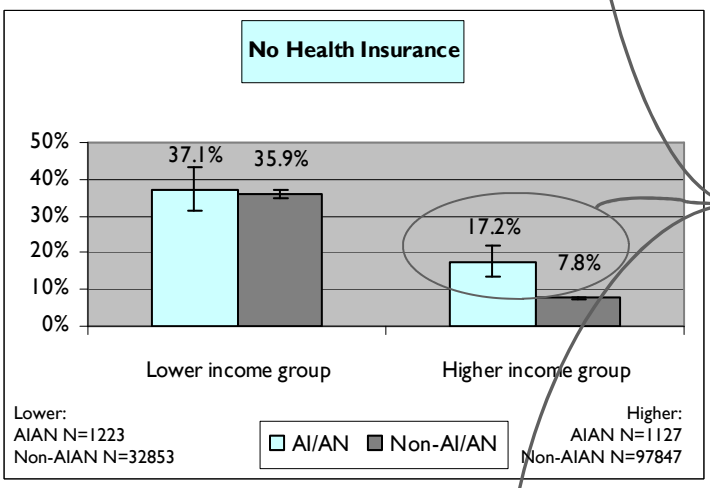
- -

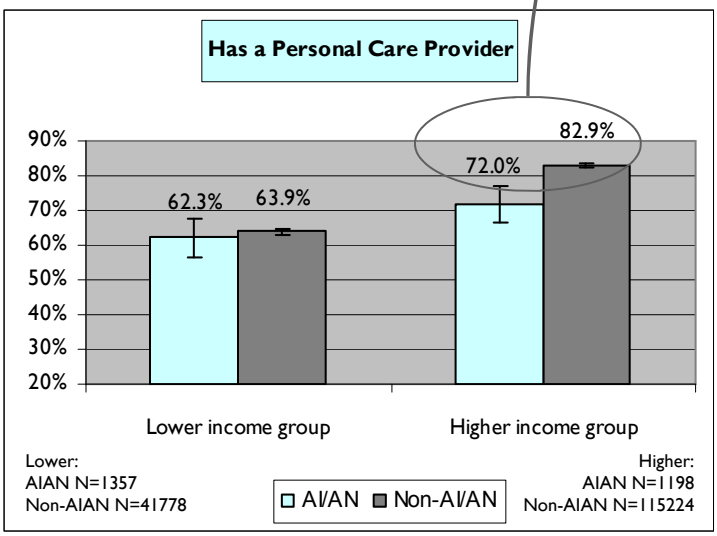
National surveillance by the Centers for Disease Control and Prevention (CDC) show American Indians and Alaska Natives currently have the third highest rate of HIV, behind African Americans and Hispanics, and are more likely to be diagnosed at a later stage of the disease than the general population.[6]

Part II: Income Analysis

Income Analysis: Access Issues







As expected, people with higher incomes reported better access to healthcare than those with lower incomes. Those living over 200% of the federal poverty level (FPL) reported less difficulties seeing a provider due to cost, more health insurance, and that they were more likely to have a personal care provider than those with lower incomes.

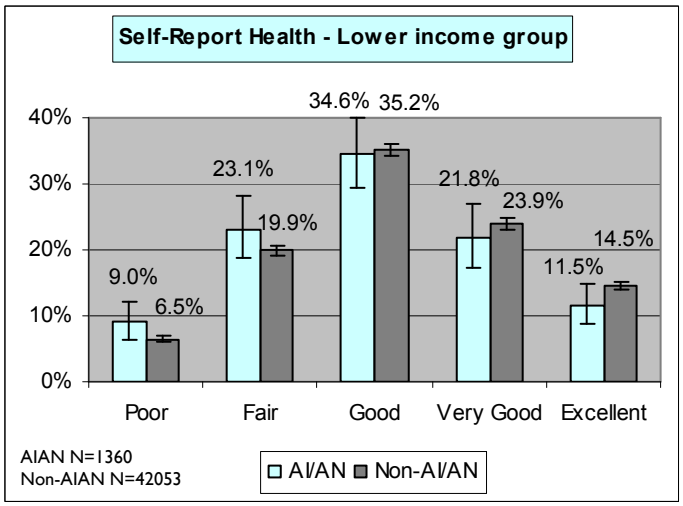
For all indicators as well, the disparities between American Indians and Alaska Natives and the rest of the population disappeared when looking just at the lower income group: there were no statistically significant differences between urban AIAN and the rest of the population.

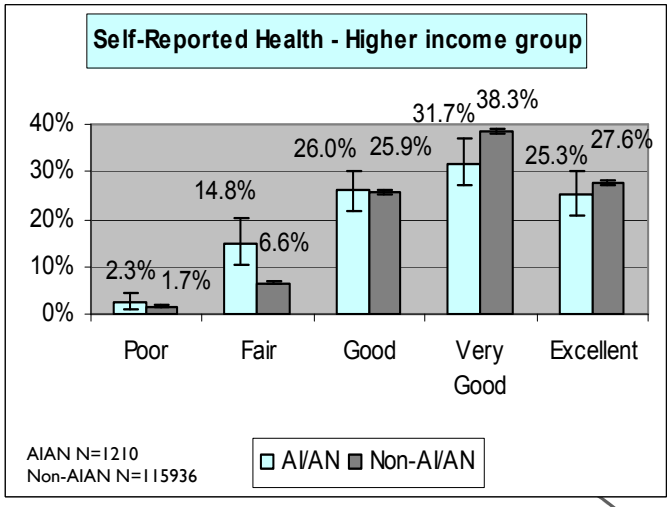
However, among people with higher incomes, disparities remain in all areas. Factors other than income likely play a role in the differences seen between AIAN and non-AIAN regarding healthcare access.

- -

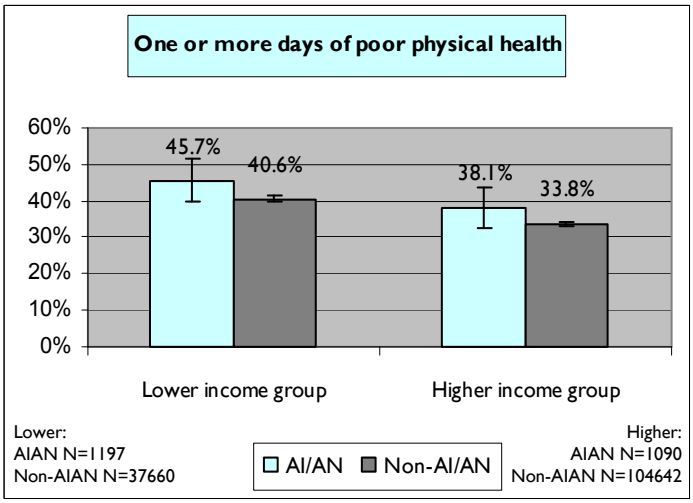
Other factors besides income that may affect urban American Indian and Alaska Native access to healthcare include loss of eligibility/access to Indian Health Service facilities when living in cities; type of employment (those that provide health benefits or not); trust - or lack of trust – of healthcare providers, and sufficient availability of culturally appropriate health care.

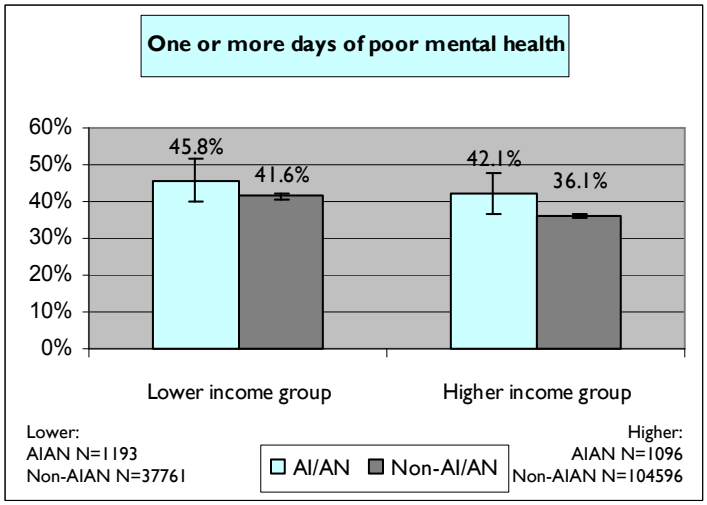
Income Analysis: General Health





Income level had a clear association with self-reported health: among both AIAN and non-AIAN, those with higher incomes reported better health. However, major differences still remain when comparing American Indians and Alaska Natives to the rest of the population, and within these income groups, AIAN reported poorer health than non-AIAN. Again, the disparities were more apparent in the higher income group, where twice as many American Indians and Alaska Natives reported their health was "fair" or "poor" compared with the rest of the population.

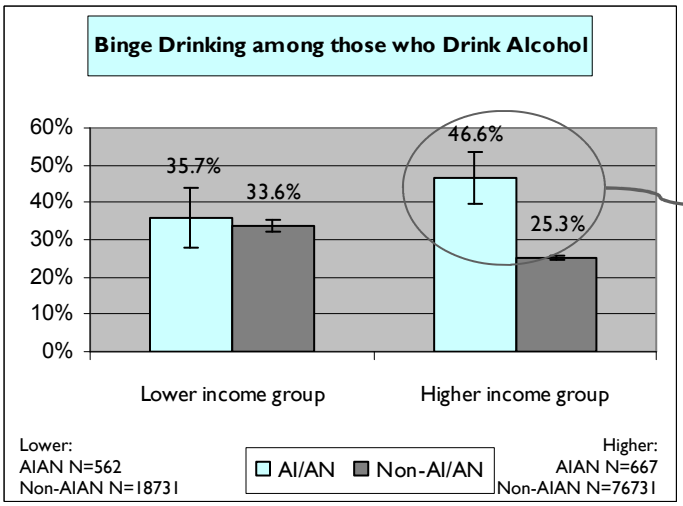




When broken up into the two income groups, the statistically significant differences between AIAN and non-AIAN in poor physical and mental health disappeared. With fewer respondents, showing statistically that two rates are indeed different is more difficult. However, more American Indians and Alaska Natives did tend to report one or more days of poor physical and mental health in the past month than non-AIAN.

There also appeared to be fewer individuals overall in the higher income groups than in the lower income groups who reported poor physical and mental health, which supports the disparity seen in self-reported health status between those with higher and lower incomes (above).

Income Analysis: Risk Behavior



Among lower-income individuals who drink any alcohol, the difference between urban American Indians and Alaska Natives and non-American Indians and Alaska Natives who reported binge drinking was not statistically significant.

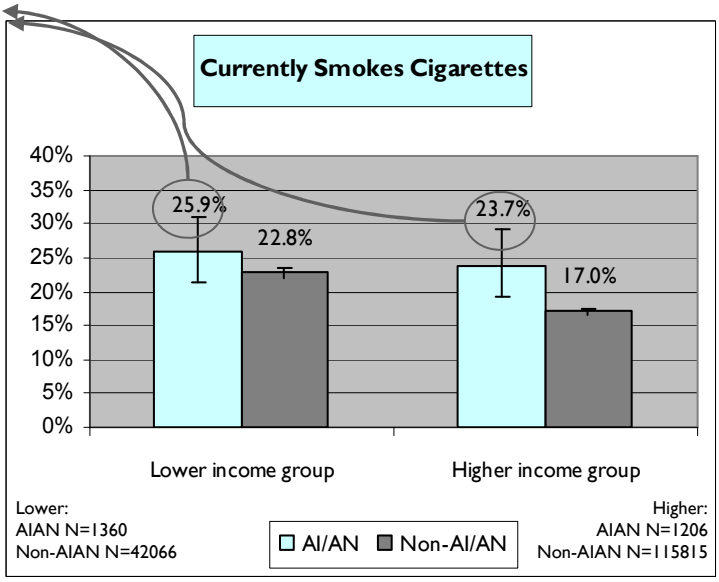
However in the higher income group, almost twice as many urban American Indians and Alaska Natives reported binge drinking. Additionally, rates of binge drinking went *down* with higher income among non-AIAN but went *up* with higher income among AIAN.

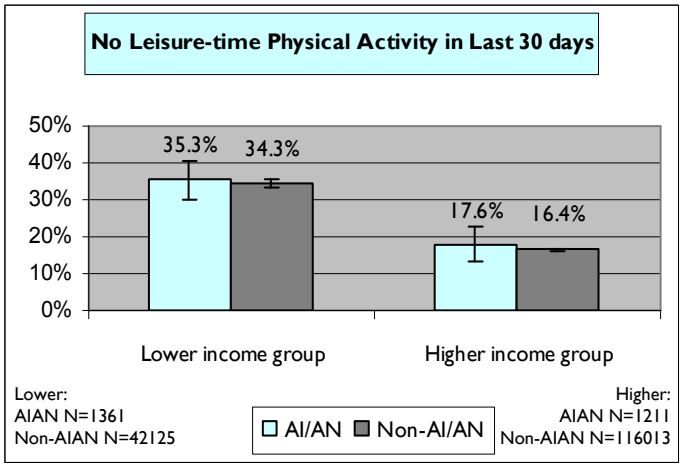
Without more information it is difficult to know why income appeared to have the reverse effect on binge drinking among AIAN as non-AIAN, but it is an area that deserves more examination.

There was virtually no change in reported smoking among urban American Indians and Alaska Natives for those of higher and lower income: approximately one-fourth of both groups reported currently smoking cigarettes.

This is different among rest of the population, for whom smoking was reported more often in the lower income group (in this and other analyses)[1].

Mainstream interventions that incorporate ideas of income differences - such as increased cigarette taxes and free/ low-cost tobacco replacement products – may not be all that is needed to reduce urban AIAN smoking rates (although they can still be valuable). Effective, culturally appropriate interventions need to be found and replicated, and adequate resources need to be allocated to help bring down smoking rates in our communities.



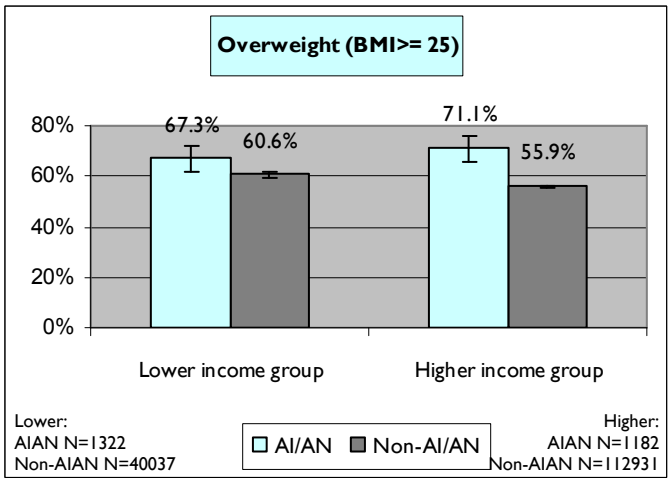


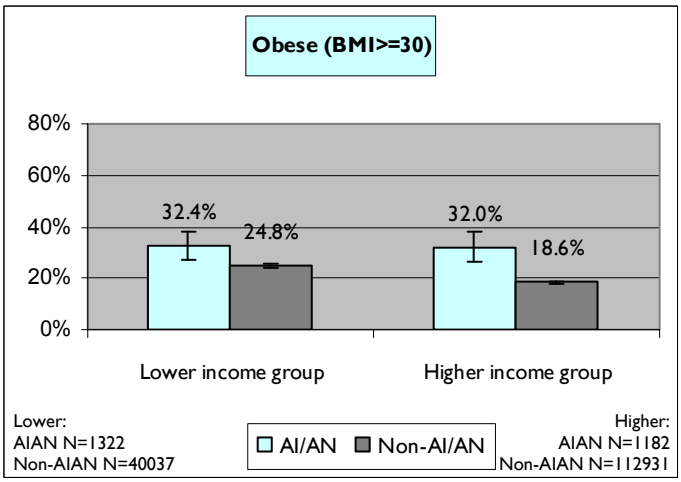
Unlike the above risk behaviors, physical activity appears to be linked closely with income for both AIAN and non-AIAN urban populations.

In this analysis, the disparities between American Indians and Alaska Natives and non-American Indians/ Alaska Natives in regards to exercise were explained by differences in income only.

There are many reasons why income may be associated with leisure-time physical activity, including lack of available free time and lack of safe and accessible locations to exercise.

Income Analysis: Weight and Nutrition

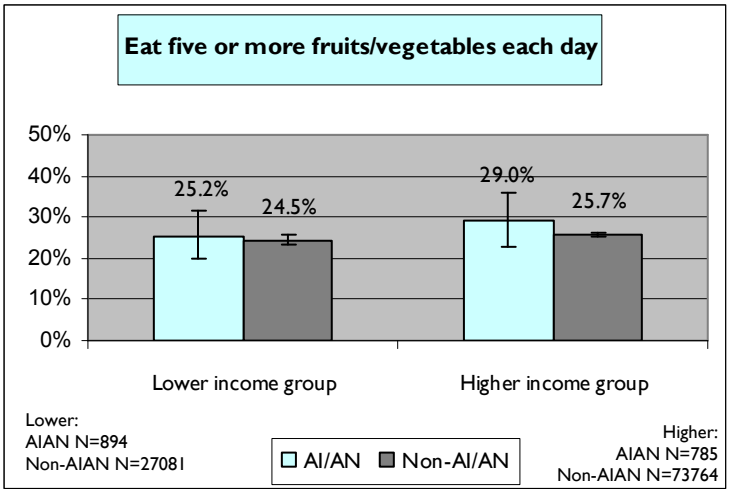




As seen with tobacco use, overweight and obesity did not appear to be tied to income for urban American Indians and Alaska Natives, unlike for non-AIAN. Rates are similar for AIAN between the two income groups, while rates decrease with higher income for the rest of the population.

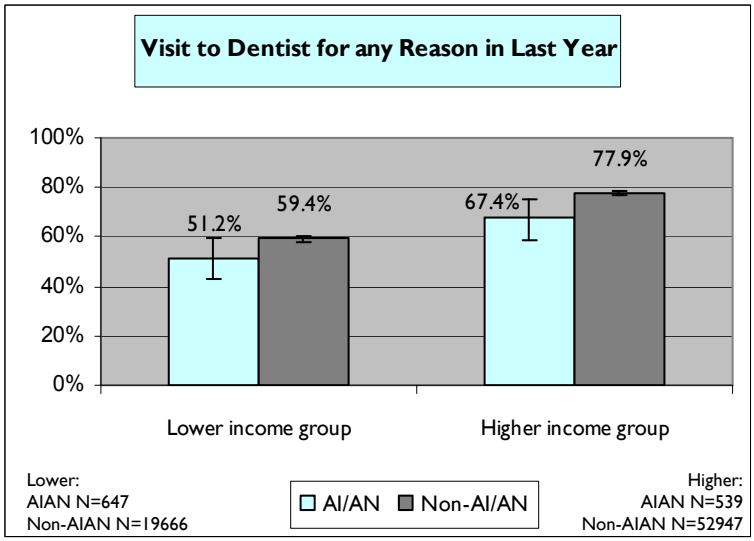
Public health research on obesity shows a difference between divergent income levels[1]; however emerging research also shows that this may be the case primarily for white Americans and not necessarily for other ethnicities.[2] In this analysis, income did not explain the higher numbers of overweight and obese AIAN compared to non-AIAN.

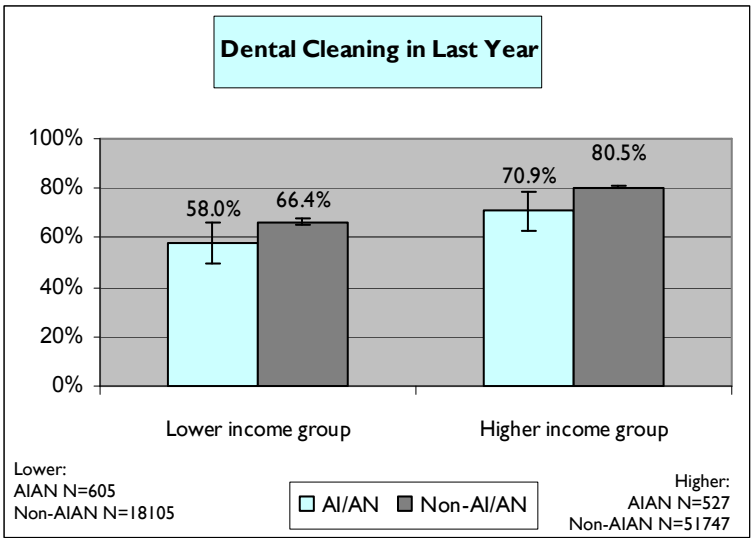
There are numerous explanations for our current obesity epidemic, including increased caloric consumption, reduced physical activity, and genetics. It is important to find interventions that work in the urban AIAN population in order to reduce the long term health consequences of overweight such as cardiovascular disease and diabetes. While the issue is complex, increased attention and resources can lead to positive health outcomes for members of our communities.



Income appeared to play no role in eating the recommended servings of fruits and vegetables each day for urban AIAN nor for the general population: across the board, only one-fourth of the population reported eating five or more servings of fruits and vegetables each day.

Income Analysis: Oral Health





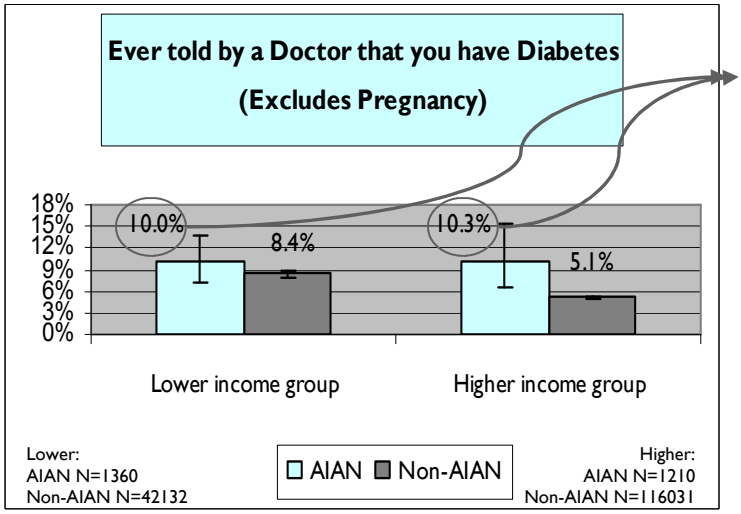
Approximately 80% of higher-income non-AIAN reported having a dental cleaning and visiting a dental clinic within the past year. This was significantly more than the non-AIAN in the lower-income groups.

Similarly, higher-income American Indians and Alaska Natives were more likely to report dental care than those in the lower-income groups, although the differences were not statistically significant. Thus, income appears to play an important role in the receipt of oral healthcare - not surprisingly - however it is possible that this is the case more for non-AIAN than for AIAN.

When looking at disparities in oral healthcare between AIAN and non-AIAN within the lower income group, the differences noted were quite large but were not statistically significant. This means that while there may be differences in the rates of care, there may not have been enough respondents to say so statistically. This was not the case among those with higher incomes: we can say with more certainty that higher-income American Indians and Alaska Natives reported less oral healthcare than their non-AIAN counterparts.

In summary, among those living over 200% of the federal poverty level, oral healthcare disparities remain between AIAN and non-AIAN populations. Understanding why this disparity exists deserves more in-depth analysis. Meanwhile, adequate resources are desperately needed now to assure members of our communities have access to adequate preventative dental care and treatment.

Income Analysis: Disease-specific indicators



Unlike the general population, there were no income differences among urban AIAN in regards to reporting a diagnosis of diabetes.

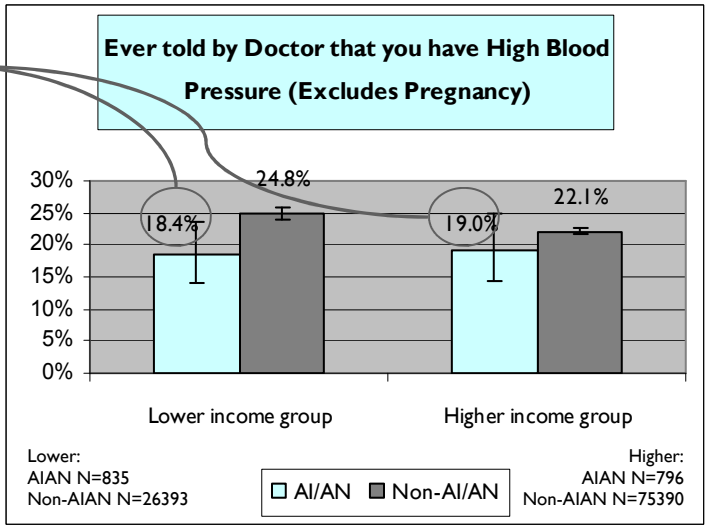
This is similar to the outcome for obesity (page 22), and the two issues may be related.

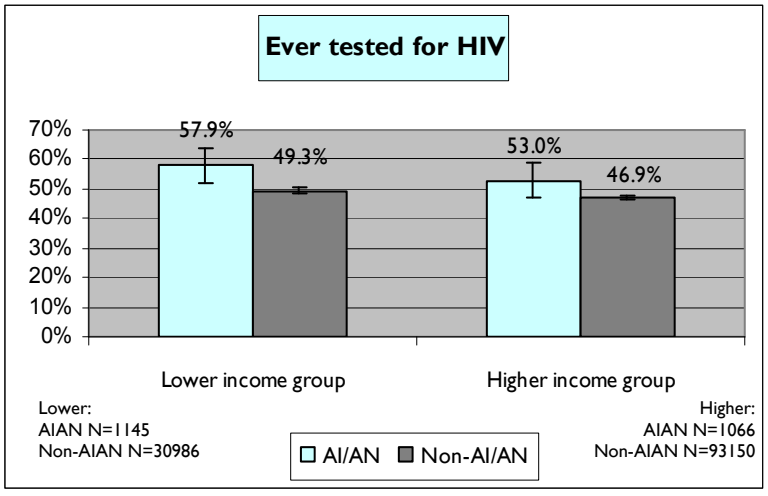
Studies have shown that genetics can play a role in the development of diabetes,[1,2,3] which may be a factor in the numbers seen in this report. It does appear though that income differences do not help explain the different rates of diabetes between AIAN and non-AIAN living in the select urban areas.

Like diabetes, there was virtually no difference between urban AIAN reporting higher and lower incomes in respect to "being told by a doctor that you have high blood pressure."

Again, this was different from the rest of the population where there was a small but statistically significant difference.

Studies have shown higher rates of hypertension among lower-income adults than those with higher income.[4] Understanding why this did not hold true for this sample of urban AIAN deserves more examination.





The difference between reported HIV testing remained statistically significant within both income groups: both higher and lower-income urban AIAN were more likely than non-AIAN to report being tested for HIV.

Conclusion

This initial analysis of the Behavioral Risk Factor Surveillance System among American Indians and Alaska Natives living in counties served by urban Indian health organizations identifies a number of areas where AIAN are not doing as well as the rest of the population. Many of these disparities are known to those working in urban Indian health, and these numbers will only reinforce the importance of the work being done to serve our communities.

The income analysis offered a small step towards teasing out some of the very complicated factors that affect health and health-related behavior. Reported income is only part of an individual's social and economic status, and may not be the most important factor in health outcomes. In addition, 200% of the FPL may not be the ideal income amount to use for analysis, and a different amount or more detailed categories could give different outcomes. It is impossible to determine in this analysis any causality between income and health: income may help cause some of the reported health issues, the health issues may have an effect on income, income and health may be interrelated, or the two may not be related at all but could both be affected by a third unmeasured factor. Other factors that were not examined here but that can play a role in the health of an individual or community include access to adequate education, job access and security, cultural involvement and support networks, intergenerational poverty, institutional and individual racism, and historical trauma. However, income differences between urban AIAN and the general population are well known, and are one place to start an examination of reasons for the alarming health disparities experienced by community members.

The income analysis showed some intriguing results, including apparent differences between AIAN and non-AIAN populations in how income is associated with reported health behaviors and outcomes. Income played no role in rates of smoking, overweight, hypertension and diabetes among urban American Indians and Alaska Natives, while it did for the rest of the population. For other indicators, such as access issues, self-reported health, and oral health care, income appeared to play a more significant role for the general population than for American Indians and Alaska Natives, although it was important in both populations. Income did not appear to be a factor at all in eating recommended fruits and vegetables, however it completely explained the difference between rates of leisure-time physical activity seen between AIAN and non-AIAN. Income had a contradictory effect when looking at binge drinking: rates went up among higher-income AIAN while they went down among higher-income members of the general population.

As stated earlier, this is an initial investigation using BRFSS survey results. More is needed to understand how health and health-related behaviors are interrelated with societal and individual factors in order to truly understand the disparities faced in our communities. Through a better understanding for the reasons for disparities, interventions aimed at the root causes of poor health outcomes can be found and advocated for. It is hoped that this report will lead to increased awareness of issues faced by AIAN urban populations, and will contribute to the ongoing discussion of how best to improve health in our communities.

References

Page 5 (**Introduction**):

[1]*2000 Census of the Population: General Population Characteristics - United States.* Washington DC: Bureau of the Census, 2000.

[2]Forquera R. *Urban Indian Health.* Washington DC: Kaiser Family Foundation, 2001.

[3]Castor ML, Smyser MS, Taualii MM, Park A, Lawson S, Forquera RA. "A Nationwide Population-Based Study Identifying Health Disparities Between American Indians/Alaska Natives and the General Populations Living in Select Urban Counties." *American Journal of Public Health*, 96(8):1478-84, 2006.

[4]Urban Indian Health Institute. *Urban American Indian and Alaska Native Youth: An Analysis of Select National Data Sources.* Seattle Washington, 2007.

[5]Grossman DC, Kreiger JW, Sugarman RJ, Forquera RA. "Health Status of Urban American Indians and Alaska Natives. A Population-based Study." *Journal of the American Medical Association*. Vol 271(11), 1994.

[6]Saylors K, Daliparthy N. "Native Women, Violence, Sustance Abuse and HIV Risk." *Journal of Psychoactive Drugs*. Vol 37(3), September 2005.

Page 12 (**Access Issues**):

[1]National Institutes of Medicine, Committee on the Consequences of Underinsurance, *Care without Coverage: Too Little, Too Late.* Washington DC: National Academy of Sciences, National Institute of Medicine, 2002.

Page 13 (**General Health**):

[1]U.S. Department of Health and Human Services, *Mental Health: Culture, Race and Ethnicity. A Supplement to Mental Health: A Report of the Surgeon General.* Rockville, MD: U.S. Department of Health and Human Services, Public Health Service, Office of the Surgeon General, 2001. *http://www.surgeongeneral.gov/library/mentalhealth/cre/execsummary-2.html.*

Page 14 (**Risk Behavior**):

[1]Centers for Disease Control and Prevention. *Alcohol Frequently Asked Questions.* Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention. Accessed October 2007 from: http://www.cdc.gov/alcohol/faqs.htm#16.

Page 15 (**Risk Behavior, continued**):

[1]Forster JL, Rhodes KL, Poupart J, Baker LO, Davey C. "Patterns of Tobacco Use in a Sample of American Indians in Minneapolis-St. Paul." *Nicotine Tobacco Research*. 9 Supplement; S:29-37, 2007.

[2]Urban Indian Health Institute. *Tobacco Use among Urban American Indians/Alaska Natives.* Seattle, WA, *unpublished.*

Page 16 (**Weight and Nutrition**)

[1]Ali T, Jarvis B and O'Leary M. *Strong Heart Study Data Book: A Report to American Indian Communities.* Rockville, MD: National Institutes of Health, National Heart, Lung and Blood Institute, 2001.

[2]Peeters, A; Barendregt JJ, Willekens F, Mackenbach JP, Al Mamun A, Bonneux, L, "Obesity in adulthood and its consequences for life expectancy: a life-table analysis." *Annals of Internal Medicine*. 138(1):24-32, 2003.

Page 17 (**Oral Health**):

[1]U.S. Department of Health and Human Services, *Oral Health in America: A Report of the Surgeon General.* Rockville, MD: U.S. Department of Health and Human Services, Public Health Service, Office of the Surgeon General, 2000. http://www.surgeongeneral.gov/library/oralhealth/.

[2]Okoro CA, Balluz LS, Eke PI, Ajani UA, Strine TW, Town M, Mensah GA, Mokdad AH. "Tooth Loss and Heart Disease: Findings from the Behavioral Risk Factor Surveillance System." *American Journal of Preventative Medicine.* 29(5Suppl):50-6, December 2005.

[3]Taylor GW, Manz MC, Borgnakke WS. "Diabetes, Periodontal Disease, Dental Caries, and Tooth Loss: A Review of the Literature." *Compendium of Continuing Education in Dentistry.* 25(3), March 2004.

References, cont.

Page 18 (**Disease-specific indicators**)

[1]Centers for Disease Control and Prevention, *Racial and Ethnic Approaches to Community Health (REACH), Addressing Disparities in Health*. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 2003. https://www.cdc.gov/reach/pdf/aag_2003.pdf

[2]Will JC, Strauss KF, Mendlein JM, Ballew C, White LL, Peter DG. "Diabetes mellitus among Navajo Indians: findings from the Navajo Health and Nutrition Survey." *J Nutr*;127(10 Suppl):2106S-2113S, 1997.

[3]Centers for Disease Control and Prevention, "Health status of American Indians compared with other racial/ethnic minority populations--selected states, 2001-2002." *MMWR Morb Mortal Wkly Rep*;52(47):1148-52, 2003.

[4]Centers for Disease Control and Prevention, *Summary Health Statistics for US Adults: National Health Interview Survey 2004*. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Health Statistics, Series 10, Number 228.

[5]Centers for Disease Control and Prevention. *National diabetes fact sheet: general information and national estimates on diabetes in the United States, 2003*. Rev ed. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 2004. http://www.cdc.gov/diabetes/pubs/factsheet.htm

[6]Center for Disease Control and Prevention, *HIV/AIDS among American Indians and Alaska Natives Fact SheetI*. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 2007. http://www.cdc.gov/hiv/resources/factsheets/aian.htm

Page 22 (**Risk Behavior, Income Analysis**)

[1]Bergen AW, Caporaso N. "Cigarette Smoking." *Journal of the National Cancer Institute*, Vol. 91, No. 16, 1999.

Page 23 (**Weight and Nutrition, Income Analysis**)

[1]U.S. Department of Health and Human Services. *The Surgeon General's call to action to prevent and decrease overweight and obesity*. Rockville, MD: U.S. Department of Health and Human Services, Public Health Service, Office of the Surgeon General, 2001.

[2]Gordon-Larsen P, Adair LS, Popkin BM. "The Relationship of Ethnicity, Socioeconomic Factors, and Overweight in U.S. Adolescents." *Obesity Research.* 11:121-129, 2003.

Page 25 (**Disease-specific indicators, Income Analysis**)

[1]Guo Y, Traurig M, Ma L, Kobes S, Harper I, Inante AM, Bogardus C, Baier LJ, Prochazka M. "*CHRM3* Gene Variation Is Associated With Decreased Acute Insulin Secretion and Increased Risk for Early-Onset Type 2 Diabetes in Pima Indians" *Diabetes*, Vol. 55, December 2006.

[2]Zhang C, Qi L, Hunter DJ, Meigs JB, Manson JE, van Dam RM, Hu RB. "Variant of Transcription Factor 7-Like 2 (*TCF7L2*) Gene and the Risk of Type 2 Diabetes in Large Cohorts of U.S. Women and Men." *Diabetes*, Vol 55, September 2006.

[3]Sladek R, Rocheleaui G, Rung J, Dina C, Shen L, Serre D, Boutin P, Vincent D, Belisle A, Hadjadj S, Balkau B, Heude B, Charpentier G, Hudson TJ, Montpetit A, Pshezhetsky AV, Prentki M, Posner BI, Balding DJ, Meyre D, Polychronakos C, Froguel P. "A genome-wide association study identifies novel risk loci for type 2 diabetes." *Nature*, Vol 445, February 22 2007.

[4]Center for Disease Control and Prevention, *Summary Health Statistics for US Adults: National Health Interview Survey 2005*. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Health Statistics, Series 10.

Appendix A: UIHO Service Areas

Program Name	City	State	Service Area Counties
Native American Community Health Cntr	Phoenix	AZ	Maricopa
Tucson Indian Center	Tucson	AZ	Pima
Native Americans for Community Action	Flagstaff	AZ	Coconino
United American Indian Involvement, Inc.	Los Angeles	CA	Los Angeles
San Diego American Indian Health Center	San Diego	CA	San Diego
Am. Indian Health & Services Corporation	Santa Barbara	CA	San Luis Obispo, Santa Barbara, Ventura
American Indian Health Project Bakersfield	Bakersfield	CA	Kern
Fresno Native American Health Center	Fresno	CA	Fresno, Tulare
Native American Health Center	Oakland	CA	Alameda, Contra Costa, Marin, San Francisco, San Mateo
Indian Health Ctr. of Santa Clara Valley, Inc	San Jose	CA	Santa Clara
Sacramento Urban Ind. Health Project, Inc.	Sacramento	CA	Sacramento
Denver Indian Health and Family Services	Denver	CO	Adams, Arapahoe, Boulder, Denver, Douglas, Jefferson, Broomfield
Am. Indian Health Services of Chicago, Inc.	Chicago	IL	Cook
Hunter Health Clinic	Wichita	KS	Butler, Reno, Sedgwick, Sumner
N. American Indian Center of Boston, Inc.	Jamaica Plains	MA	Suffolk, Middlesex, Norfolk, Plymouth
American Indian Health and Family Services of Southeast Michigan	Dearborn	MI	Genesee, Ingham, Kent, Wayne
Indian Health Board of Minneapolis	Minneapolis	MN	Hennepin, Ramsey
Indian Health Board of Billings	Billings	MT	Big Horn, Yellowstone
Indian Family Health Center	Great Falls	MT	Cascade
Helena Indian Alliance	Helena	MT	Jefferson, Lewis & Clark
North American Indian Alliance	Butte	MT	Silver Bow
Missoula Indian Center	Missoula	MT	Missoula
Nebraska Urban Indian Health Coalition	Lincoln	NE	Douglas, Lancaster, Sarpy, Washington, Woodbury (IA)
First Nations Community Health Source	Albuquerque	NM	Bernalillo
Nevada Urban Indian, Inc.	Reno	NV	Churchill, Douglas, Washoe, Carson City
American Indian Community House, Inc.	New York	NY	Bronx, Kings, Nassau, New York, Queens, Richmond, Westchester
Native Am. Rehabilitation Association of the NW	Portland	OR	Clackamas, Multnomah, Washington, Clark (WA)
South Dakota Urban Indian Health, Inc.	Pierre	SD	Brown, Hughes, Minnehaha, Stanley
Urban Inter-Tribal Center of Texas	Dallas	TX	Collin, Dallas, Denton, Tarrant
Indian Walk-In Center	Salt Lake City	UT	Davis, Salt Lake, Tooele, Utah, Weber
Seattle Indian Health Board	Seattle	WA	King
N.A.T.I.V.E Project	Spokane	WA	Spokane
Gerald L. Ignace Indian Health Center, Inc.	Milwaukee	WI	Milwaukee, Waukesha
United Amerindian Health Center, Inc.	Green Bay	WI	Brown

Appendix B: BRFSS Health Indicators and Associated Questions

	Questions
Access Issues	
Could not see a doctor because of the cost	Was there a time in the past 12 months when you needed to see a doctor but could not because of cost? 2001: Was there a time in the past 12 months when you needed medical care, but could not get it? What is the main reason you did not get medical care?
Has a personal care provider	Do you have one person you think of as your personal doctor or health care provider?
No health insurance (Age<65 years)	Do you have any kind of health care coverage, including health insurance, prepaid plans such as HMOs, or government plans such as Medicare?
General Health	
Self-reported health status	Would you say that your health was: Excellent, very good, good, fair, or poor
One or more day of poor physical health in last 30 days	Now thinking about your physical health, which includes physical illness and injury, for how many days during the past 30 days was your physical health not good?
One or more day of poor mental health in last 30 days	Now thinking about your mental health, which includes stress, depression, and problems with emotions, for how many days during the past 30 days was your mental health not good?
Risk Behavior	
Any alcohol in last 30 days	During the past 30 days, have you had at least one drink of any alcohol beverage?
Binge drinking among those who drink alcohol	Considering all types of alcoholic beverages, how many times during the past 30 days did you have 5 or more drinks on an occasion?
Heavy drinking	*Calculated indicator based on number of reported days drinking and average number of drinks per drink occasion.*
Currently smokes cigarettes	Have you smoked at least 100 cigarettes in your entire life? AND Do you now smoke cigarettes every day, some days, or not at all? *Defined by BRFSS as those who reported smoking at least 100 cigarettes in life and who smoke every day or some days*
No leisure-time physical exercise in last 30 days	During the past month, other than your regular job, did you participate in any physical activities or exercises such as running, calisthenics, golf, gardening, or walking for exercise?
Weight and Nutrition	
Overweight or obese	*Based on reported height and weight: Definition: BMI=>25*
Obese	*Based on reported height and weight. Definition: BMI=>30*
Eat five or more fruits/ vegetables a day	*Multiple questions about intake of fruits and vegetables, calculated*
Oral Health	
Visit to dentist for any reason in last year	How long has it been since you last visited a dentist or a dental clinic for any reason? Include visits to dental specialists, such as orthodontists.
Dental cleaning in last year	How long has it been since you had your teeth cleaned by a dentist or dental hygienist?
Has dental insurance	Do you have any kind of insurance coverage that pays for some or all of your routine dental care, including dental insurance, prepaid plans such as HMOs, or government plans such as Medicaid?
Disease-specific Issues	
Ever told by doctor that you have diabetes (excludes pregnancy)	Have you ever been told by a doctor that you have diabetes? AND Was this only when you were pregnant?
Ever told by doctor that you have high blood pressure (excludes pregnancy)	Have you ever been told by a doctor, nurse, or other health professional that you have high blood pressure? AND Was this only when you were pregnant?
Ever tested for HIV (excludes blood donation)	Have you ever been tested for HIV? Do not count tests you may have had as part of a blood donation. Include testing fluid from your mouth.

Appendix C: Represented States by Year

	2001	2002	2003	2004	2005
Access Issues					
Could not see a doctor because of the cost	IL, NE, OR, WA	NONE	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI
Has personal care provider	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI
No health insurance (age <65 years)	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI
General Health					
Self-reported health status	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI
One or more day of poor physical health in last 30 days	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI	CA, IL, KS, MN, NE, NM, NY, OR, TX, UT, WA	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI
One or more day of poor mental health in last 30 days	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI	CA, IL, KS, MN, NE, NM, NY, OR, TX, UT, WA	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI
Risk Behavior					
Any alcohol in last 30 days AND Binge drinking among those who drink AND Heavy drinking	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI
Currently smokes cigarettes	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI
No leisure-time physical activity in last month	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI

Appendix C: Represented States by Year, cont.

	2001	2002	2003	2004	2005
Weight and Nutrition					
Overweight or obese	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI
Obese	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI
Eat five or more fruits/ vegetables a day	AZ, IL, MT, WI	AR, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI	AR, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI	NONE	AR, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI
Oral Health					
Visit to dentist for any reason in last year	AZ, NE, OR, WA, WI	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI	NE, NV, NY	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI	NV
Dental cleaning in last year	AZ, NE, OR, WA, WI	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI	NE, NV, NY	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI	NV
Has dental insurance	AZ, NE, OR, WA, WI	NONE	NONE	NONE	NONE
Disease-Specific Issues					
Ever told by doctor you have diabetes (excludes pregnancy)	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI
Ever told by doctor that you have high blood pressure (excludes pregnancy)	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI	CO, IL, NE, OR, SD	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI	MN, NE	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI
Ever tested for HIV (excludes blood donation)	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI	AZ, CA, CO, IL, KS, MA, MI, MN, MT, NE, NM, NV, NY, OR, SD, TX, UT, WA, WI

Appendix D: Rates and Confidence Intervals - Initial Comparison

	AI/AN % (95% Confidence Interval)	Non-AIAN % (95% Confidence Interval)	P*
Access Issues			
Could not see doctor because of the cost	20.7 (17.0, 24.9) N=1924	12.6 (12.3, 13.1) N=123645	<.001
Has a personal health care provider	65.0 (61.1, 68.7) N=2825	76.4 (76.0, 76.9) N=177844	<.001
No health insurance (Age<65 years)	29.0 (25.5, 32.9) N=2565	17.8 (17.4, 18.3) N= 144453	<.001
General Health			
Self-Reported health: Poor	6.8 (5.2, 8.9)	3.5 (3.4, 3.7)	<.001
Self-Reported health: Fair	20.2 (17.1, 23.7)	11.5 (11.1, 11.8)	
Self-Reported health: Good	30.3 (26.9, 34.0)	29.3 (28.9, 29.7)	
Self-Reported health: Very Good	25.7 (22.5, 29.2)	33.0 (32.5, 33.4)	
Self-Reported health: Excellent	16.9 (14.4, 19.7) N=2840	22.7 (22.4, 23.1) N=179015	
One or more day of poor physical health in last 30 days	43.3 (38.3, 45.7) N=2527	36.0 (35.5, 36.4) N=160740	<.001
One or more day of poor mental health in last 30 days	44.2 (39.6, 47.1) N=2531	37.2 (36.8, 37.7) N=160800	<.001
Risk Behavior			
Any alcohol in last 30 days	51.7 (47.8, 55.6) N=2833	59.1 (58.7, 59.6) N=178576	<.001
Binge drinking among those who drink alcohol	41.2 (36.0, 46.5) N=1327	26.9 (26.3, 27.4) N=105532	<.001
Heavy drinking	6.7 (4.8, 9.4) N=2806	5.4 (5.2, 5.6) N=177352	.018
Currently smokes cigarettes	25.2 (22.0, 28.7) N=2839	18.5 (18.2, 18.9) N=178864	<.001
No physical leisure-time activity in last 30 days	27.6 (23.8, 30.3) N=2843	23.2 (22.8, 23.6) N=179224	.009
Weight and Nutrition			
Overweight/obese	67.6 (63.8, 71.2) N=2746	56.7 (56.2, 57.1) N=171625	<.001
Obese	31.1 (27.6, 34.9) N=2746	20.2 (19.9, 20.6) N=171625	<.001
Eat five or more fruits/vegetables a day	26.2 (22.3, 30.5) N=1855	25.6 (25.1, 26.1) N=114135	.764
Oral Health			
Dental cleaning in last year	64.3 (58.3, 69.8) N=1235	75.7 (75.1, 76.3) N=78789	<.001
Visit to dentist for any reason in last year	58.7 (52.8, 64.4) N=1299	71.3 (70.7, 71.9) N=82085	<.001
Has dental insurance	56.3 (42.1, 69.4) N=98	67.1 (65.4, 68.7) N=6046	.114
Disease-Specific			
Ever told by doctor that you have diabetes (excludes pregnancy)	9.6 (7.5, 12.2) N=2845	6.5 (6.2, 6.7) N=179266	.002
Ever told by a doctor you have high blood pressure (excludes pregnancy)	18.9 (15.8, 22.5) N=1814	23.3 (22.8, 23.8) N=115435	.018
Ever tested for HIV (excludes blood donation)	55.1 (50.9, 59.2) N=2407	46.9 (46.4, 47.4) N=136510	<.001

*Chi-squared test for difference

Appendix E: Rates and Confidence Intervals - Income Analysis

	AI/AN % (95% Confidence Interval)	Non-AIAN % (95% Confidence Interval)	P*
Access Issues			
Could not see a doctor because of the cost: *Below 200% FPL*	25.2 (19.7, 31.7) N=934	23.3 (22.4, 24.3) N=29916	.530
Could not see a doctor because of the cost: *Above 200% FPL*	12.9 (8.8, 18.7) N=813	6.8 (6.5, 7.1) N=79255	.001
No health insurance (Age<65 years): *Below 200% FPL*	37.1 (31.6, 43.0) N=1223	35.9 (34.9, 36.9) N=32853	.665
No health insurance (Age<65 years): *Above 200% FPL*	17.2 (13.4, 21.8) N=1127	7.8 (7.4, 8.1) N=97847	<.001
Has a personal health care provider: *Below 200% FPL*	62.3 (56.6, 67.6) N=1357	63.9 (63.0, 64.9) N=41778	.554
Has a personal health care provider: *Above 200% FPL*	72.0 (66.4, 77.1) N=1198	82.9 (82.5, 83.4) N=115224	<.001
General Health			
Self-Reported Health: Poor *Below 200% FPL*	9.0 (6.5, 12.2)	6.5 (6.1, 7.0)	.119
Self-Reported Health: Fair *Below 200% FPL*	23.1 (18.7, 28.1)	19.9 (19.1, 20.7)	
Self-Reported Health: Good *Below 200% FPL*	34.6 (29.5, 40.1)	35.2 (34.3, 36.2)	
Self-Reported Health: Very Good *Below 200% FPL*	21.8 (17.4, 27.0)	23.9 (23.0, 24.7)	
Self-Reported Health: Excellent *Below 200% FPL*	11.5 (8.9, 14.8) N=1360	14.5 (13.9, 15.2) N=42053	
Self-Reported Health: Poor *Above 200% FPL*	2.3 (1.1, 4.6)	1.7 (1.6, 1.8)	<.001
Self-Reported Health: Fair *Above 200% FPL*	14.8 (10.6, 20.3)	6.6 (6.3, 6.8)	
Self-Reported Health: Good *Above 200% FPL*	26.0 (21.5, 31.0)	25.9 (25.4, 26.3)	
Self-Reported Health: Very Good *Above 200% FPL*	31.7 (26.9, 36.8)	38.3 (37.8, 38.8)	
Self-Reported Health: Excellent *Above 200% FPL*	25.3 (20.6, 30.7) N=1210	27.6 (27.1, 28.0) N=115936	
One or more day of poor physical health in last 30 days: *Below 200% FPL*	45.7 (40.0, 51.4) N=1197	40.6 (39.6, 41.6) N=37660	.084
One or more day of poor physical health in last 30 days: *Above 200% FPL*	38.1 (32.6, 44.0) N=1090	33.8 (33.3, 34.4) N=104642	.134
One or more day of poor mental health in last 30 days: *Below 200% FPL*	45.8 (40.1, 51.6) N=1193	41.6 (40.6, 42.5) N=37761	.148
One or more day of poor mental health in last 30 days: *Above 200% FPL*	42.1 (36.4, 48.0) N=1096	36.1 (35.5, 36.6) N=104596	.039

*Chi-squared test for difference

Appendix E: Rates and Confidence Intervals, - Income Analysis, cont.

	AI/AN % (95% CI)	Non-AIAN % (95% CI)	P
Risk Behavior			
Binge drinking among those who drink alcohol: *Below 200% FPL*	35.7 (28.1, 44.2) N=562	33.6 (32.2, 35.1) N=18731	.608
Binge drinking among those who drink alcohol: *Above 200% FPL*	46.6 (39.5, 53.8) N=667	25.3 (24.7, 25.9) N=76731	<.001
Currently smokes cigarettes: *Below 200% FPL*	25.9 (21.4, 31.0) N=1360	22.8 (22.1, 23.6) N=42066	.201
Currently smokes cigarettes: *Above 200% FPL*	23.7 (19.1, 29.1) N=1206	17.0 (16.6, 17.4) N=115815	.003
No physical leisure-time activity in last 30 days: *Below 200% FPL*	35.3 (30.2, 40.7) N=1361	34.3 (33.4, 35.3) N=42125	.728
No physical leisure-time activity in last 30 days: *Above 200% FPL*	17.6 (13.6 22.6) N=1211	16.4 (16.0, 16.9) N=116013	.600
Weight and Nutrition			
Overweight/obese: *Below 200% FPL*	67.3 (61.6, 72.4) N=1322	60.6 (59.6, 61.6) N=40037	.023
Overweight/obese: *Above 200% FPL*	71.1 (66.0, 75.8) N=1182	55.9 (55.4, 56.4) N=112931	<.001
Obese: *Below 200% FPL*	32.4 (27.4, 37.9) N=1322	24.8 (24.0, 25.7) N=40037	.002
Obese: *Above 200% FPL*	32.0 (26.6, 37.8) N=1182	18.6 (18.2, 19.0) N=112931	<.001
Eat five or more fruits/vegetables a day: *Below 200% FPL*	25.2 (19.7, 31.6) N=894	24.5 (23.5, 25.6) N=27081	.830
Eat five or more fruits/vegetables a day: *Above 200% FPL*	29.0 (23.0, 35.8) N=785	25.7 (25.1, 26.3) N=73764	.299
Oral Health			
Visit to dentist for any reason in last year: *Below 200% FPL*	51.2 (43.1, 59.3) N=647	59.4 (57.9, 60.7) N=19666	.053
Visit to dentist for any reason in last year: *Above 200% FPL*	67.4 (58.7, 74.9) N=539	77.9 (77.3, 78.6) N=52947	.004
Dental cleaning in last year: *Below 200% FPL*	58.0 (49.3, 66.2) N=605	66.4 (65.0, 67.7) N=18105	.048
Dental cleaning in last year: *Above 200% FPL*	70.9 (62.4, 78.1) N=527	80.5 (79.8, 81.1) N=51747	.007
Disease-Specific			
Ever told by doctor that you have diabetes: *Below 200% FPL*	10.0 (7.3, 13.6) N=1360	8.4 (7.9, 9.0) N=42132	.296
Ever told by doctor that you have diabetes: *Above 200% FPL*	10.3 (6.7, 15.5) N=1210	5.1 (4.9, 5.4) N=116031	.002
Ever been told by doctor that you have high blood pressure: *Below 200% FPL*	18.4 (14.2, 23.5) N=835	24.8 (23.8, 25.9) N=26393	.016
Ever been told by doctor that you have high blood pressure: *Above 200% FPL*	19.0 (14.4, 24.8) N=796	22.1 (21.6, 22.7) N=75390	.275
Ever tested for HIV: *Below 200% FPL*	57.9 (51.9, 63.7) N=1145	49.3 (48.3, 50.4) N=30986	.006
Ever tested for HIV: *Above 200% FPL*	53.0 (46.8, 59.0) N=1066	46.9 (46.3, 47.5) N=93150	.054

Urban Indian Health Institute. *Reported Health and Health-influencing Behaviors Among Urban American Indians and Alaska Natives: An Analysis of Data Collected by the Behavioral Risk Factor Surveillance System.* Seattle: Urban Indian Health Institute, 2008. *Updated July 2008.*

UIHI
Urban Indian Health Institute