NOVEMBER 2018

COMMUNITY HEALTH PROFILE

Individual Site Report | Billings Service Area

Urban Indian Health Institute
A Division of the Seattle Indian Health Board

Acknowledgments
Funding for this report was provided by the Building Public Health Infrastructure in Tribal Communities to Accelerate Disease Prevention and Health Promotion in Indian Country funded by the Centers for Disease Control and Prevention National Center for Chronic Disease Prevention and Health Promotion.

The report contents are solely the responsibility of the authors and do not necessarily represent the official views of the Centers for Disease Control and Prevention.

This report was prepared by: Crisandra Wilkie, MPH; with the support of Alyssa Yang, MPH; Francesca Murnan, MPA; Gunnar Colleen, BA; Lyle Chrzaszcz, MPH; and under the direction of Adrian Dominguez, MS, Scientific Director.

Recommended Citation
Urban Indian Health Institute, Seattle Indian Health Board. (2018). Community Health Profile: Individual Site Report: Billings Urban Indian Health Program Service Area.

The Urban Indian Health Institute would like to thank the staff at the urban Indian health and social service organizations nationwide for the excellent work they do daily on behalf of their communities.

Urban Indian Health Institute
A Division of the Seattle Indian Health Board

The mission of UIHI is to decolonize data, for indigenous people, by indigenous people.

TABLE OF CONTENTS

EXECUTIVE SUMMARY

Urban Indian Health Institute (UIHI) analyzes data from the American Community Survey and the National Vital Statistics System to estimate proportions for 33 health indicators. With this data, UIHI creates Community Health Profiles for service areas throughout the United States.

This Community Health Profile contains sociodemographic, mortality, and maternal and child health data on American Indians and Alaska Natives (AI/ANs) that has been aggregated over a five-year period from the Billings service area, which includes Big Horn and Yellowstone counties. The sociodemographic data as well as the mortality data are from 2010-2014, and the maternal and child health data are from 2008-2012.

The county data shows that urban Indians living in the Billings service area frequently experience higher proportions of poverty and disparities in employment, education, food security, mortality, and maternal and child health when compared to their Non-Hispanic White (NHW) counterparts. As this profile may show, there is still work to be done from local, state, and federal entities to collect quality, accurate data. Urban Indian Health Programs should work closely with their local and state health jurisdictions to access the most current data and, where possible, urge better tracking of demographics to inform care.

KEY FINDINGS:

Compared to NHW, urban AI/AN in these counties are:

- **More than six and a half times as likely to experience unemployment,**
- **More than twice as likely to have no high school diploma or equivalent degree,**
- **More than four and a half times more likely to participate in food assistance programs,**
- **Likely to have a mortality rate two times higher, and**
- **Nearly five times as likely to receive prenatal care in the third trimester or not at all**

BILLINGS SERVICE AREA

INTRODUCTION

The health needs of America's urban Indian population present unique challenges. Across the U.S., an examination of the health outcomes of urban Indians show disproportionately high incidence of disease, co-morbidity, and mortality, particularly for urban Indian mothers. This is significant because, of the 5.2 million Americans who identify as American Indian/Alaska Native (AI/AN), 71% live in urban areas. To meet their health needs, numerous health and social service programs are providing culturally appropriate and holistic care. Many offer services that are grounded in indigenous knowledge and bring Western and traditional medicine together.

As Urban Indian Health Programs and Native health organizations strive to provide the highest-quality care to urban Indians, relevant data are needed. Since 2000, UIHI has created Community Health Profiles for 35 cities where urban Indian people reside, and, in 2018, nine cities were added. This individual Community Health Profile details the data for the Billings service area, which includes Big Horn and Yellowstone counties.

What is an urban Indian?

Urban Indians are tribal members who are currently living outside of federally-defined tribal lands in U.S. cities.[1] For many AI/AN communities, systemic issues such as racism, poverty, and poor education have given rise to health disparities.[2, 3] For urban Indians in particular, government policies that forced relocation in the 1950s and termination policies that forced assimilation into non-Native culture, have had long-term health effects.[2] Today, AI/ANs come to the city for educational, employment or housing opportunities, and health-care needs, resulting in an indigenous urban population that is diverse and inter-tribal.

71% of American Indians and Alaska Natives live in urban areas

SERVING THE HEALTH NEEDS OF URBAN INDIANS

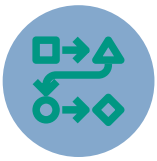
Programs across the United States are providing holistic health care to urban Indians, including private, non-profit corporations receiving partial funding from the Indian Health Service as well as social- and faith-based organizations. UIHI defines the service areas of these programs as Urban Indian Health service areas and are illustrated below in Map 1.

Map 1. Urban Indian Health Service Areas

HOW TO USE THIS REPORT

Improving community health through effective planning and decision making requires good information about the factors that influence the health status of community members.[2] While limited in scope and restricted to available and usable data, this report provides valuable information for service providers serving an urban Indian population with unique needs and greater risk factors. The information provided here is intended to supplement other local data available to your organization.

Program Planning



Data in this report can be used by urban Indian organizations to identify health priorities, allocate resources, and guide the development of innovative programs.

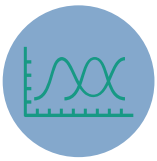
Funding

Data and figures help tell the story of existing health disparities in the AI/AN population compared to NHWs. This report may be useful to include as information for grant applications and other funding opportunities. It can also be cited as a reference.

Identifying Gaps in Data

This report may reveal the need to close current gaps in nationally-collected data. Providers may want to consider pushing their jurisdictions to link other relevant data to help correctly classify AI/ANs in state death records.[4, 5] Another way to improve data collection is by oversampling AI/ANs in national surveys, which provides sufficient statistical power to allow for more stable estimates.

Research



Data in this report can be used to generate additional hypotheses for future studies, evaluations, or assessments.

METHODS AND DATA

This report includes information from residents of Big Horn and Yellowstone counties as well as data from the 2010 U.S. Census, American Community Survey, and National Vital Statistics System. There are limitations to this data particularly due to variations in how race is defined and collected. UIHI found potential racial misclassification in demographic information for mortality data.

Analysis

A list of indicators for the community health profile were selected after an analysis of the available data sources. For each indicator, prevalence or incidence was calculated for the AI/AN population and compared with the NHW population. Since NHWs are the racial/ethnic majority, this population was chosen as the comparison group. The AI/AN population was defined as AI/AN only, and in combination with other races, unless otherwise indicated. The NHW population was defined as White only and excluded the Hispanic population unless otherwise indicated. Results were calculated using aggregated data over a five-year period which added stability to estimates and protected individual privacy.

In some instances, confidence intervals—ranges of numbers used to assess the accuracy of a point estimate and measure the variability in data—were calculated and used to show differences in outcomes for specific indicators. The point estimate may be a rate, such as a death rate, or a frequency, such as a percent of individuals living in poverty. Confidence intervals account for the uncertainty that arises from the natural variation inherent in the world around us.

Confidence intervals also account for the difference between a sample from a population and the population itself. For analyses included in this report, confidence intervals were calculated at a p-value of <0.05, which is a 95 percent confidence level. This means that 95 times out of 100 the confidence interval captures the true value for the population. Differences in outcomes were called statistically significant if confidence intervals of the study group (AI/AN) did not overlap with the comparison group (NHW). Data analysis for indicators were analyzed using the statistical software SAS version 9.4.

Data Limitations

Although data analysis and assessment of results were conducted for 33 indicators, data limitations were found. In some instances, the number of cases or sample size was limited, data collection excluded AI/AN in combination, or there was possible racial misclassification of AI/AN. These limitations impact the analysis and prevent or limit the reporting of results.

Frequently, data were only available for AI/ANs alone and was not inclusive of AI/ANs who also identify with another race or ethnicity. Therefore, the estimates provided in this report may be an underestimation of the true value of the outcome or risk factor for any indicator analyzed.

Racial misclassification, particularly for mortality data, can greatly underestimate the true rate of disease, risk factor, or outcome. AI/ANs are especially likely to experience problems of incorrect classification on death certificates. Therefore, true mortality rates among AI/ANs are assumed to be higher than reported.[5, 6]

DATA SOURCES

2010 U.S. Census

The U.S. Census takes place every 10 years and provides official population counts for individuals living in the United States. It also presents information on age, race, Hispanic origin, and sex. In 2010, the U.S. Census allowed individuals to self-report belonging to more than one racial group.

When determining a population count, this report considers people to be AI/AN if they report AI/AN as their only race or if they report being AI/AN in combination with other races. Some Census statistics are not easily accessible when including individuals who report multiple races, so, for these indicators, only individuals who report AI/AN alone are included.

For more information about the U.S. Census, visit: www.census.gov.

American Community Survey

The American Community Survey (ACS) is a nationwide, continuous survey that collects demographic, housing, social, and economic data every year. To provide reliable estimates for small counties, neighborhoods, and population groups, the ACS provides 1-, 3-, and 5-year aggregate estimates. Estimates for this report are from aggregated data from 2010-2014.

Race is self-reported in ACS, with similar race categories as the U.S. Census. However, some ACS data are not easily accessible for multiple racial groups. Therefore, ACS data are reported for AI/AN alone in this report. ACS estimates in this profile are not adjusted for age. Observed differences in estimates may be due to a true difference in rates or due to differences in age distribution in the population.

For more information about the ACS, visit: www.census.gov/acs.

National Vital Statistics System

Mortality data from the National Vital Statistics System (NVSS) are generated from death certificates. The five most recent years for which complete mortality data were available was from 2010-2014. The five most recent years for which complete infant mortality data were available was from 2008-2012. All mortality data are age-adjusted to the U.S. population for the year 2000. Age-adjusted death rates are useful when comparing different populations because they remove the potential bias that can occur when comparing populations with different age distributions. For example, AI/ANs historically are a younger population than other race groups.

Birth certificate data from NVSS data files include all documented births occurring within the United States as filed in each state. These data include demographic information about parents, information on the infant, the mother's risk factors, and information on the birth. The five most recent years for which complete natality data were available was from 2008-2012.

Since not all states allow individuals to identify as more than one race, National Center for Health Statistics (NCHS) releases bridged-race population estimates for calculation of rates. As a result, estimates in this report may not match local and county estimates because of differing projection methods.

For more information about NVSS, visit: http://www.cdc.gov/nchs/nvss.htm

SOCIODEMOGRAPHICS

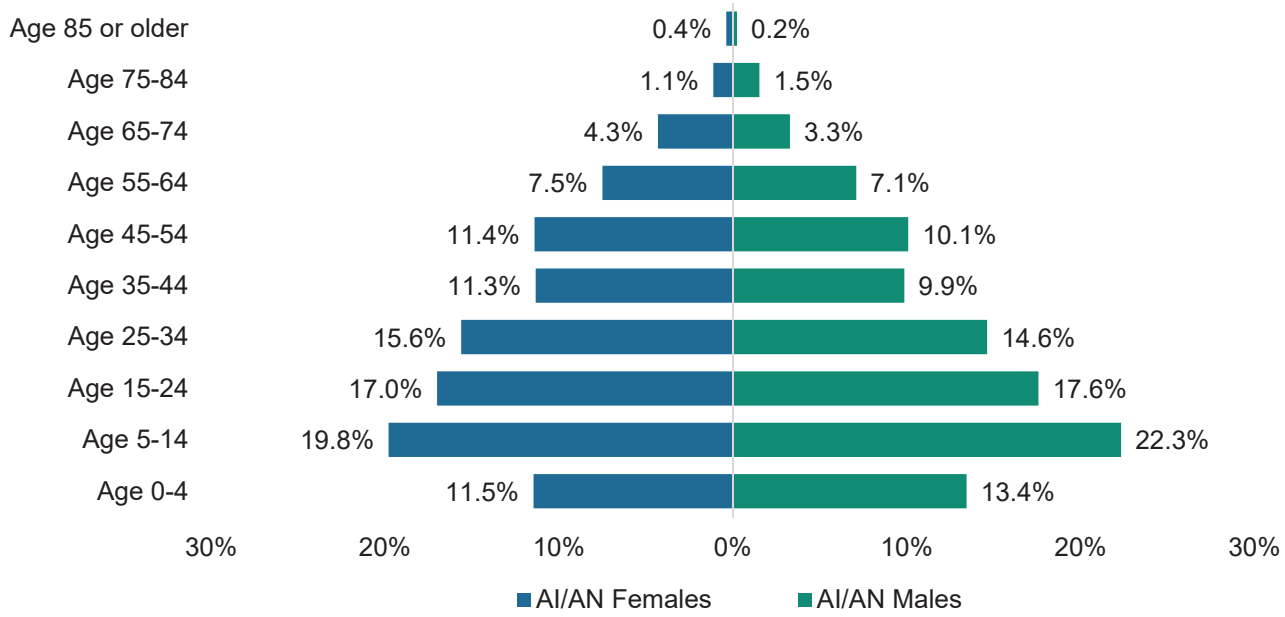
Introduction

The health of an individual or a population is largely determined by where they live, work, play, and learn. Race and economic status also play key roles.[7, 8] Decades of research show a relationship between greater social disadvantage and poorer health. Race, lack of access to education, unemployment, poverty, and housing all create inequities between urban Indian and Non-Hispanic White populations.[7] This section presents data on measures of demographics and social determinants of health to illustrate the disparities between AI/ANs and NHWs.

Age and Gender

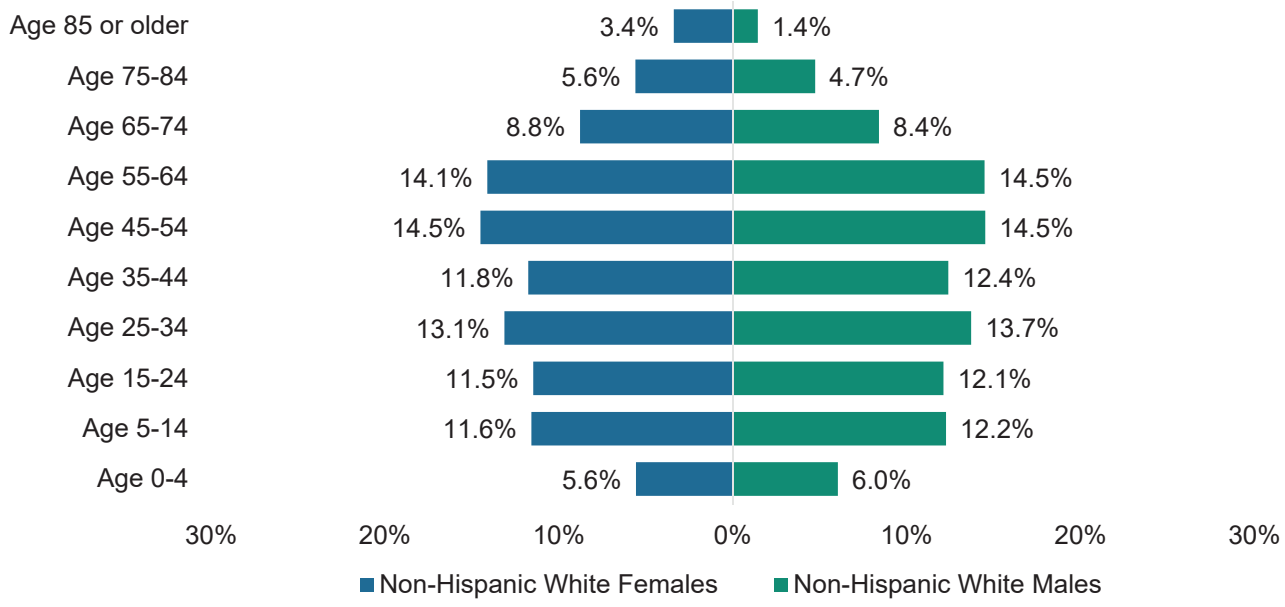
Relative to the NHW population, the AI/AN population in the Billings service area was younger (Figure 1; Figure 2). Approximately, 50.8% of AI/ANs were under the age of 25 years, compared with 29.5% of NHWs. In contrast, 5.4% of AI/ANs were over the age of 65 years, compared with 16.2% of NHWs.

Figure 1. AI/AN Population by Age and Gender, Billings Service Area, 2010-2014



Source: American Community Survey, 2010-2014

Figure 2. NHW Population by Age and Gender, Billings Service Area, 2010-2014

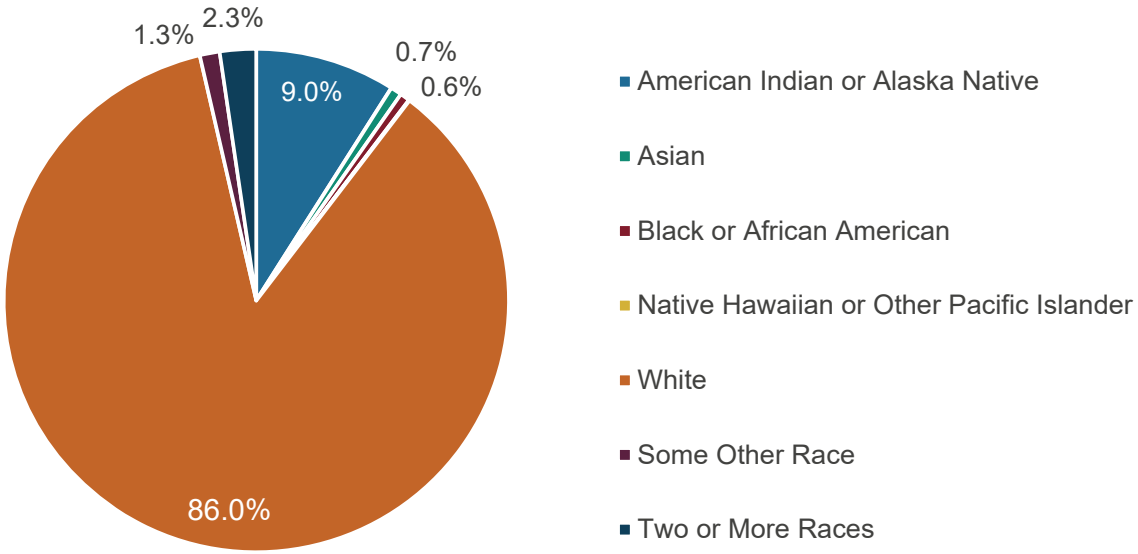


Source: American Community Survey, 2010-2014

Race

As shown in Figure 3, an estimated 14,820 (9.0%) individuals identified as AI/AN alone in the Billings service area, and an estimated 17,154 (10.4%) individuals identified as AI/AN alone or in combination with one or more races (data not shown). Those who identified as White alone comprised the largest proportion (86.0%) of the total population (165,044) in the Billings service area. In addition, those who identified as "two or more races" were the second largest population in the Billings service area, making up 2.3% of the total population.

Figure 3. Population by Race, Billings Service Area, 2010-2014

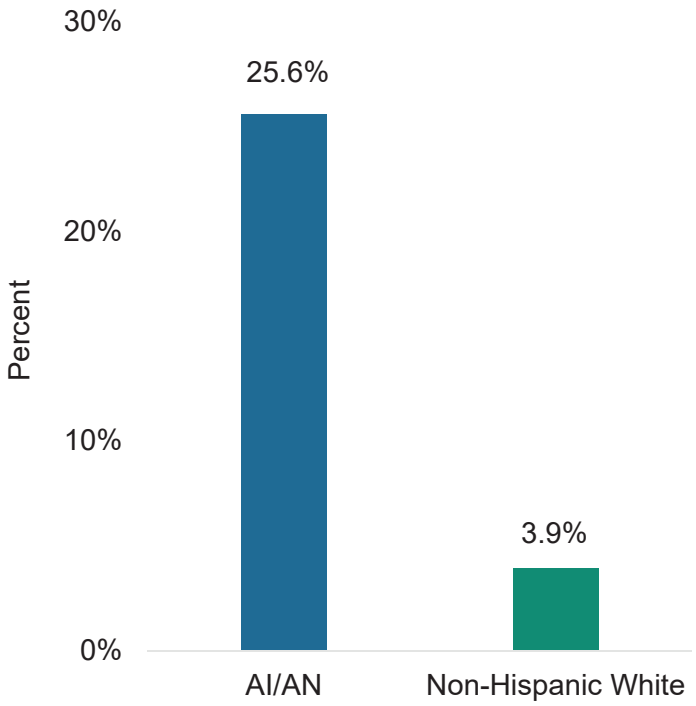


Source: American Community Survey, 2010-2014

Unemployment

Extensive evidence has shown that unemployment has a negative effect on health.[9] Unemployed individuals may experience financial insecurity and are more likely to lack health insurance coverage.[10] In the Billings service area, the percent of unemployed AI/ANs over 16 years of age was 6.6 times higher than NHWs (25.6% vs 3.9%; Figure 4).

Figure 4. Civilian Labor Force, Billings Service Area, 2010-2014



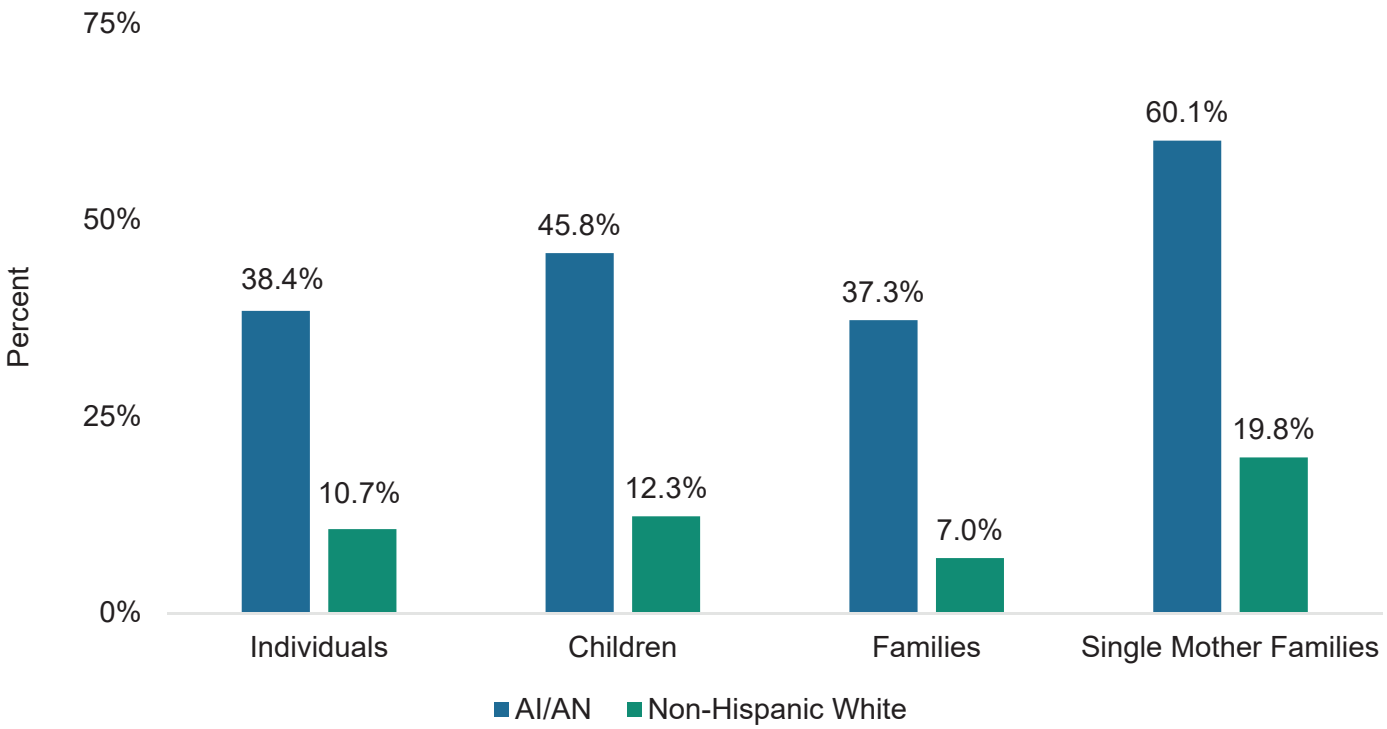
Source: American Community Survey, 2010-2014

Poverty

Poverty limits access to healthy foods, quality housing, economic opportunities, and adequate health care.[11, 12] These foundational social and economic factors are inextricably connected to health outcomes. The impacts of poverty on a child's health and well-being can be detrimental, including negative effects on early childhood and secondary academic achievement.[13, 14] In this report, poverty is defined as an annual income less than 100% of the federal poverty level. For example, in 2017, 100% of the federal poverty level for a family of four was no more than $24,600.[15]

In the Billings service area, more than one-third of AI/AN individuals lived in poverty (38.4%), compared to just one-tenth of NHWs (10.7%; Figure 5). The percentage of AI/AN children experiencing poverty was higher than NHW children. Approximately 45.8% of AI/AN children aged 17 and under lived in households with an income below the federal poverty level. This proportion is 3.7 times that of their NHW counterparts (12.3%). In addition, more than one in three AI/AN families in the Billings service area (37.3%) lived in households with an income below the federal poverty level. This is 5.3 times higher than the proportion of NHW families (7.0%). Finally, among those families in households headed by single mothers, 60.1% of AI/ANs lived in poverty, 3.0 times higher than the proportion of NHW families headed by single mothers (19.8%).

Figure 5. Income Below the Federal Poverty Level in Past Year, Billings Service Area, 2010-2014

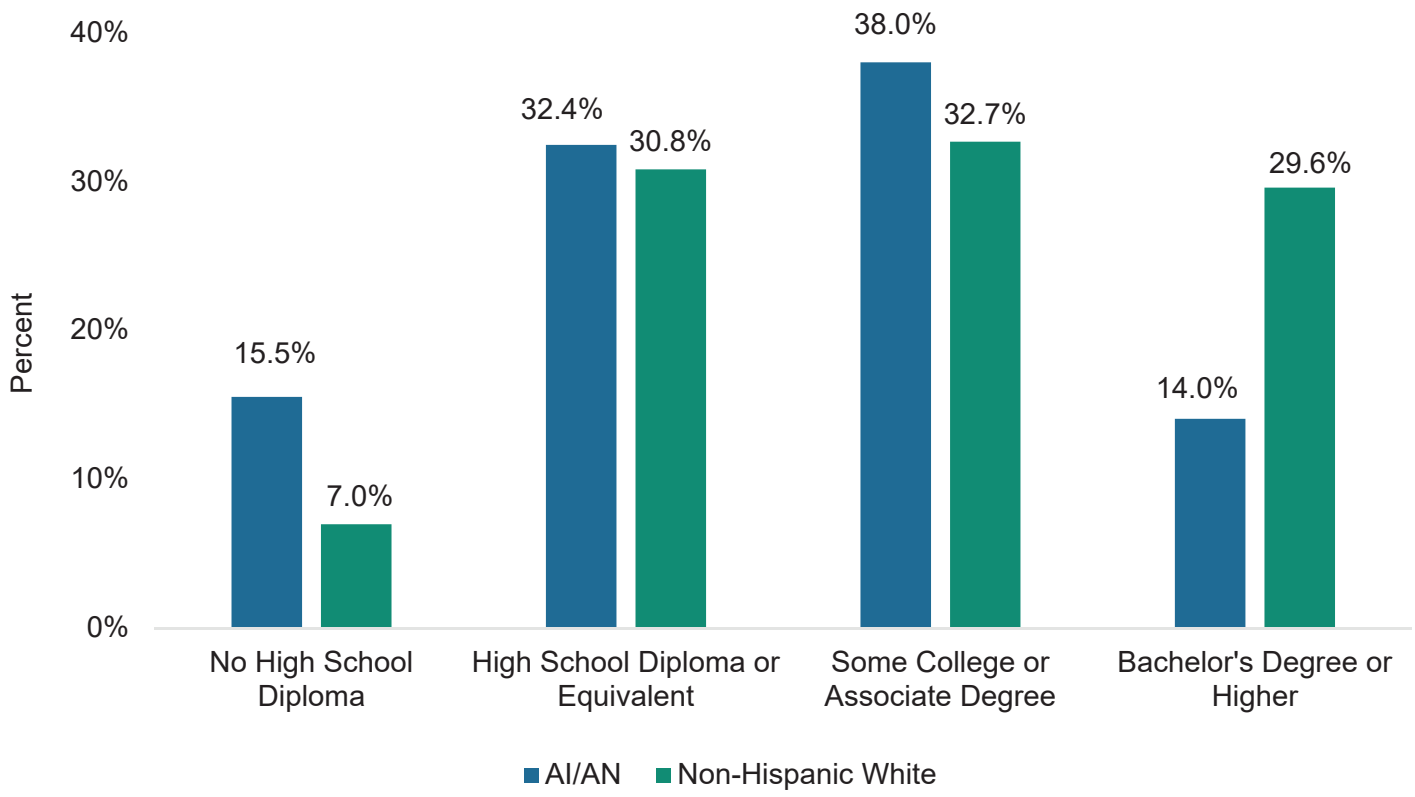


Source: American Community Survey, 2010-2014

Educational Attainment

The relationship between education and health is well documented.[16, 17] Disparities in life expectancy by level of education are found among all demographic groups and are arguably increasing over time.[17] In the Billings service area, a higher proportion of AI/ANs aged 25 and older had not completed high school or passed the General Educational Development (GED) exam (15.5%) compared with the NHW population (7.0%; Figure 6). A lower proportion of AI/ANs (14.0%) reported a bachelor's degree or higher as their highest level of education compared with the NHW population (29.6%). The proportion of AI/ANs that reported a bachelor's degree or higher in the Billings service area was 52.7% lower than NHWs.

Figure 6. Educational Attainment for the Population 25 and Older, Billings Service Area, 2010-2014



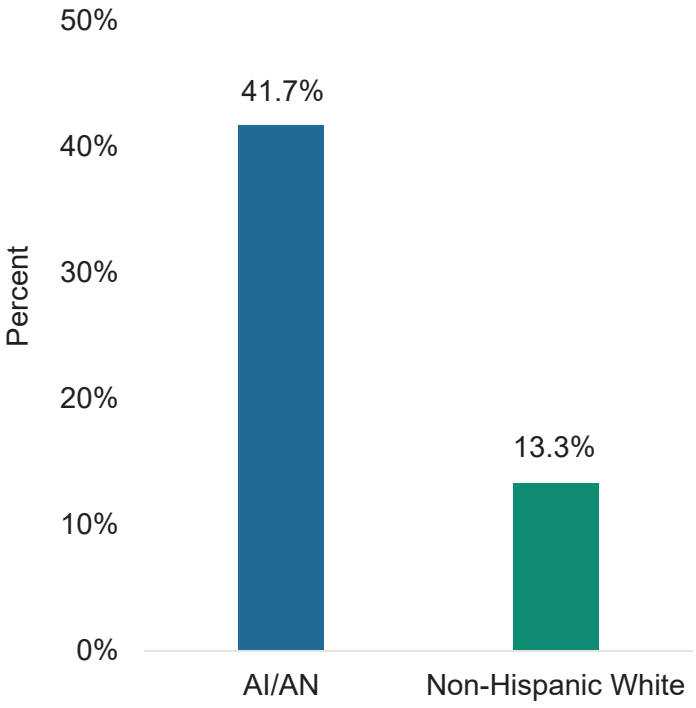
Source: American Community Survey, 2010-2014

Health Insurance Coverage

Those without health insurance coverage have higher mortality rates than those with coverage.[18] Individuals without health insurance are also less likely to receive care and take longer to return to health after an unintentional injury or the onset of a chronic disease than those with health insurance.[19]

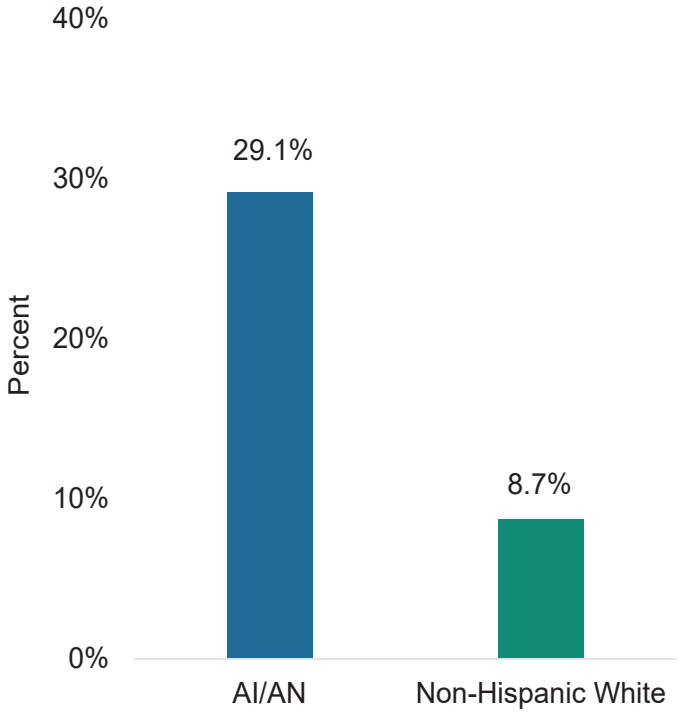
In the Billings service area, 41.7% of AI/ANs under age 65 reported having no health insurance, a proportion 3.1 times higher than that of NHWs (13.3%; Figure 7). The proportion of uninsured AI/AN children under the age of 18 (29.1%) in the Billings service area was 3.3 times higher than their NHW counterparts (8.7%; Figure 8).

Figure 7. Population Under 65 with No Health Insurance Coverage, Billings Service Area, 2010-2014



Source: American Community Survey, 2010-2014

Figure 8. Population Under 18 with No Health Insurance Coverage, Billings Service Area, 2010-2014



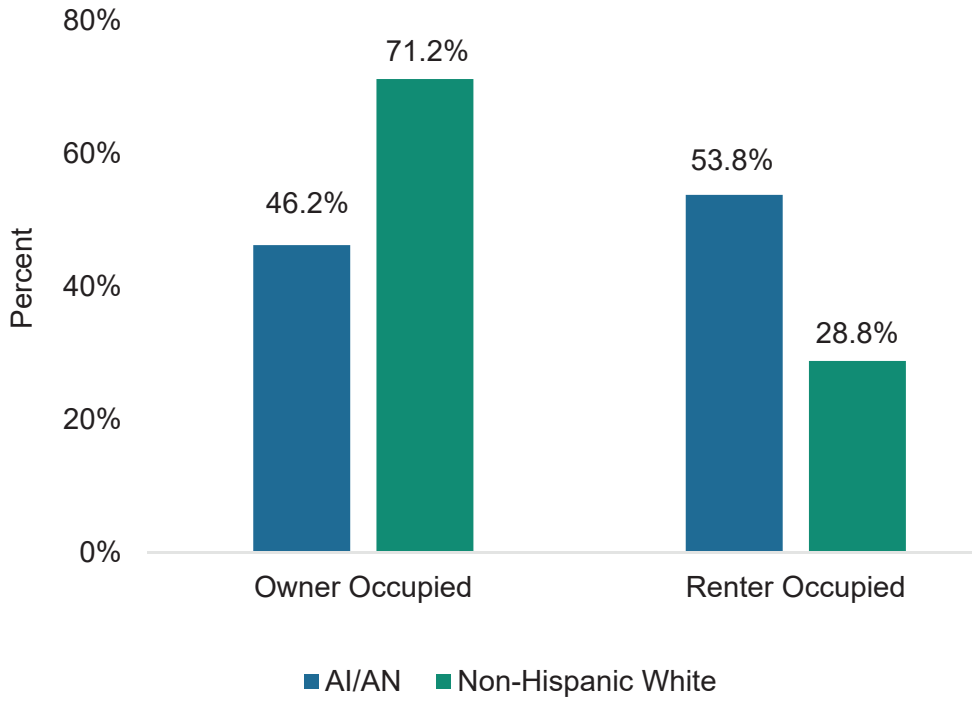
Source: American Community Survey, 2010-2014

Housing

Several studies have found that home ownership is associated with many health benefits.[20, 21] These benefits may be explained by the fact that homeowners likely experience higher socioeconomic status, fewer problems of overcrowding, and lower exposure to neighborhood violence. In contrast, renters are more likely to experience poorer self-reported health, higher proportions of coronary heart disease, and more risk factors, such as smoking.[22]

In the Billings service area, 46.2% of all homes of AI/ANs were owner occupied compared with nearly three-quarters of NHW households (Figure 9). The proportion of home ownership among AI/ANs was 35.1% lower than NHWs. In contrast, more than half of all AI/AN households were renter occupied compared with 28.8% of NHW households. The proportion of renter occupation among AI/ANs was 1.9 times higher than NHWs.

Figure 9. Housing Tenure, Billings Service Area, 2010-2014



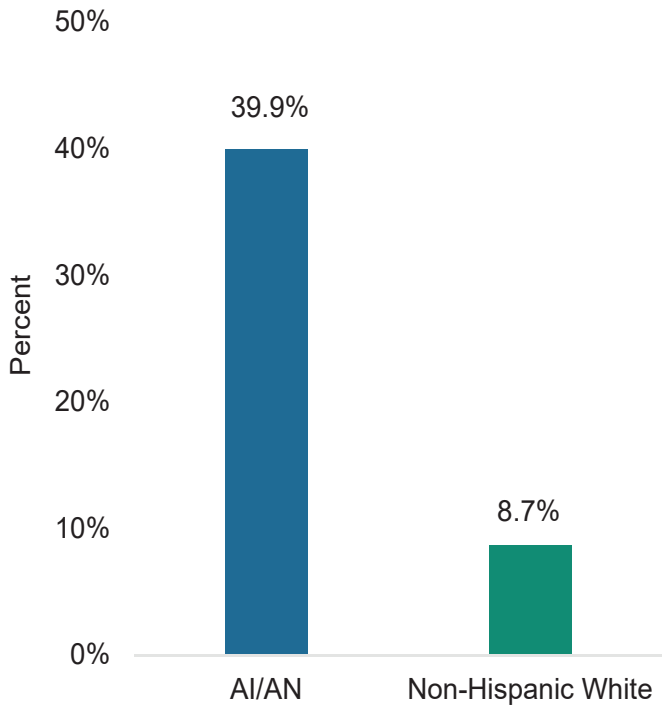
Source: American Community Survey, 2010-2014

Food Stamps

Households experiencing poverty are more likely to be food insecure.[23] As the largest food assistance program in the United States, the Supplemental Nutrition Assistance Program (SNAP), formerly known as the federal Food Stamp program, is a crucial part of the social safety net.[24] In most states, many households with an income below 130% of the federal poverty level are eligible to receive SNAP benefits.

In the Billings service area, nearly 40% of AI/AN households received SNAP benefits in the past year (Figure 10). The proportion of SNAP participation among AI/ANs in this area was 4.6 times higher than NHWs (8.7%).

Figure 10. SNAP Use, Billings Service Area, 2010-2014



Source: American Community Survey, 2010-2014

MORTALITY

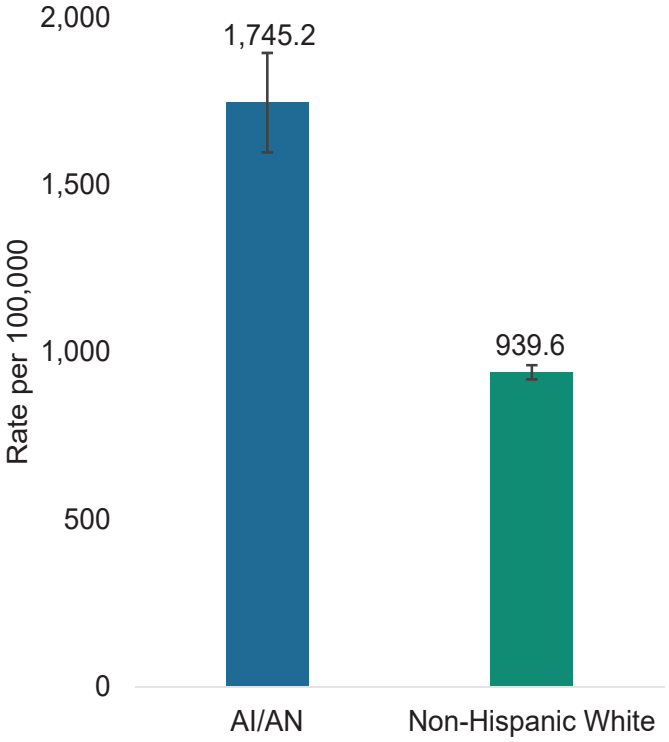
Introduction

Mortality data provide an indication of a community's or population's health and socioeconomic development status. Mortality data are also a key component to understanding population size, future growth, and change. Examining mortality data is one way to measure the burden of disease in a community or population. Tracking death rates may identify groups that are at an increased risk of premature death and may identify specific underlying causes of death that are more prevalent in certain populations. In addition, high mortality rates may indicate an issue with environmental, risk, and/or socioeconomic factors as well as communicable diseases. Relevant and accurate data are needed on the health of urban indians. UIHI recommends local, state, and national organizations work to improve the quality and availability of data to serve this diverse and unique population.

All-Cause Mortality Rate

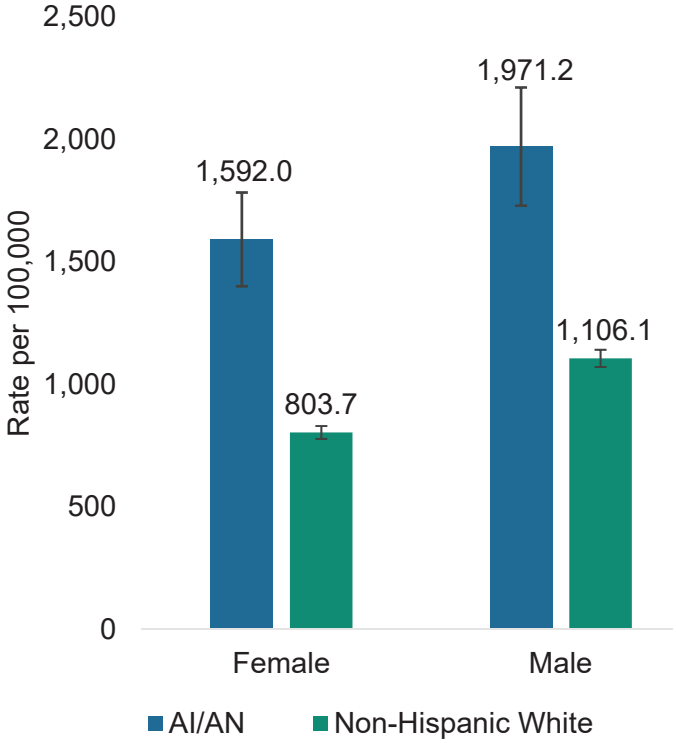
In the Billings service area, the all-cause mortality rate was 1.9 times higher for the AI/AN population than for the NHW population, a statistically significant difference (Figure 11). The mortality rate for males was 1.8 times higher among AI/ANs compared to their NHW counterparts and twice as high for AI/AN females compared to NHW females (Figure 12).

Figure 11. All-Cause Mortality, Billings Service Area, 2010-2014



Source: National Vital Statistics, Death Certificates, 2010-2014

Figure 12. Mortality Rate by Gender, Billings Service Area, 2010-2014



Source: National Vital Statistics, Death Certificates, 2010-2014

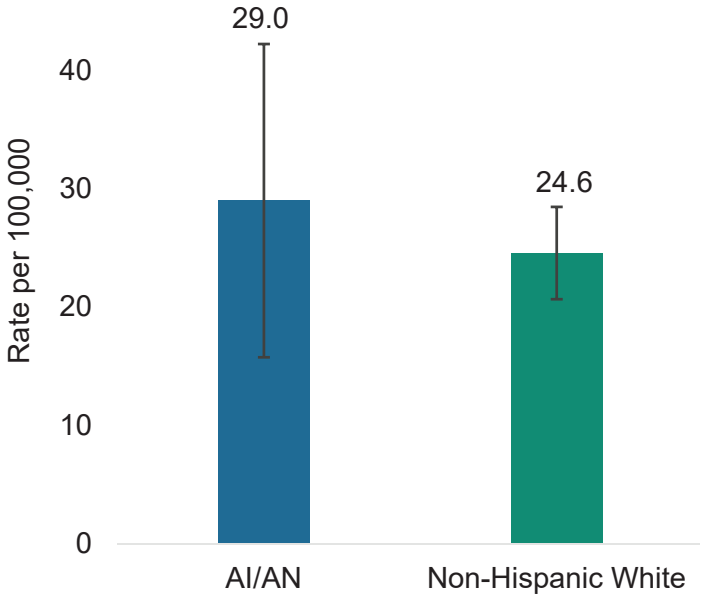
Suicide

In the Billings service area, the suicide rate was similar for AI/AN (29.0 per 100,000) compared to NHW (24.6 per 100,000; Figure 13).

Unintentional Mortality

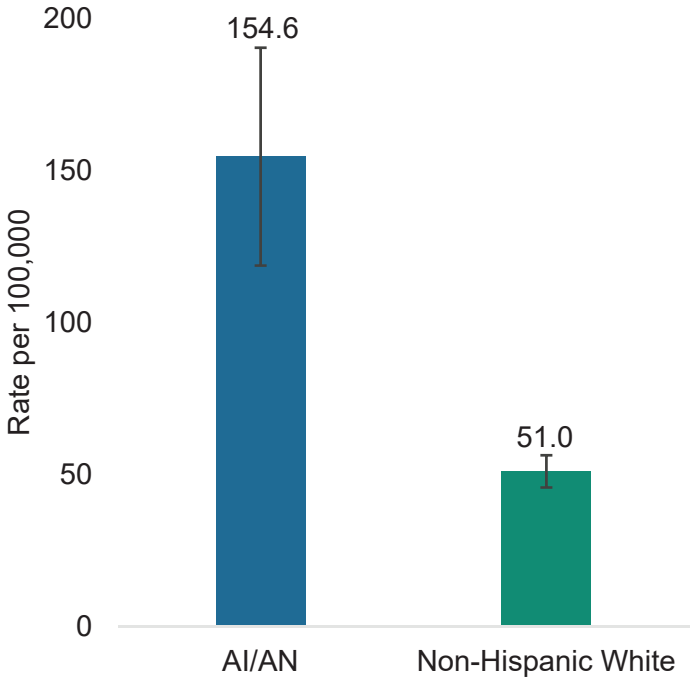
Unintentional mortality refers to deaths that can be attributed to an accident, such as a fall, or motor vehicle accident. In the Billings service area, the unintentional mortality rate was higher for AI/AN (154.6 per 100,000) compared to NHW (51.0 per 100,000; Figure 14). The proportion of unintentional mortality rates among AI/ANs in this area was 3.0 times higher than NHWs. The unintentional mortality rate for males was 2.6 times higher among AI/ANs compared to their NHW counterparts and 4.0 times higher for AI/AN females when compared to NHW females (Figure 15).

Figure 13. Overall Suicide Rate, Billings Service Area, 2010-2014



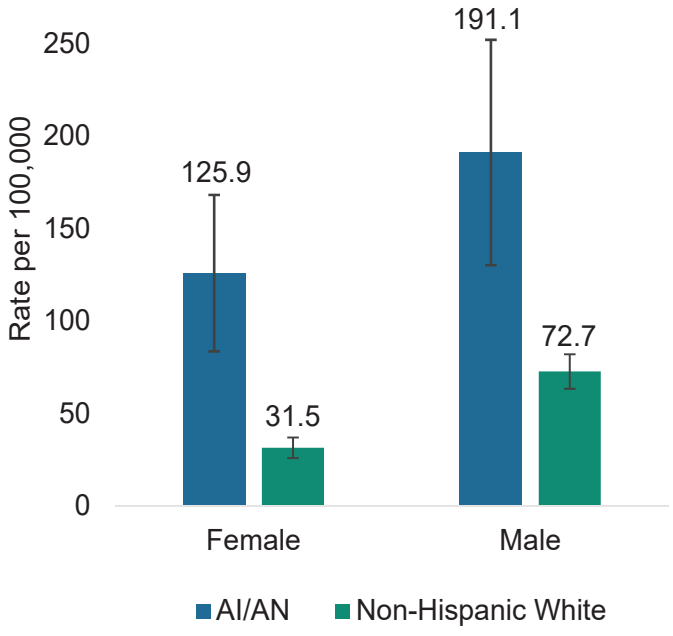
Source: National Vital Statistics, Death Certificates, 2010-2014

Figure 14. Overall Unintentional Mortality Rate, Billings Service Area, 2010-2014



Source: National Vital Statistics, Death Certificates, 2010-2014

Figure 15. Unintentional Mortality Rate by Gender, Billings Service Area, 2010-2014



Source: National Vital Statistics, Death Certificates, 2010-2014

Top Causes of Mortality

Table 1. Top Causes of Mortality, Billings Service Area, 2010-2014

AI/AN			NHW		
RANK	CAUSE	RATE (PER 100,000)	RANK	CAUSE	RATE (PER 100,000)
1	Vascular disease	826.5	1	Vascular disease	533.7
2	All cancers	469.6	2	All cancers	414.0
3	Chronic liver disease	243.6	3	Chronic lower respiratory disease	141.3
4	Diabetes mellitus	224.6	4	Alzheimer's disease	68.7
5	Nephritis, nephrotic syndrome and nephrosis	137.8	5	Intentional self harm	49.7

Source: US Center for Health Statistics, Death Certificates, 2010-2014

Table 1 summarizes the top causes of mortality for both AI/AN and NHW.

Table 2. Top Causes of Male Mortality, Billings Service Area, 2010-2014

AI/AN Male			NHW Male		
RANK	CAUSE	RATE (PER 100,000)	RANK	CAUSE	RATE (PER 100,000)
1	Vascular disease	441.9	1	Vascular disease	326.9
2	All cancers	297.2	2	All cancers	231.7
3	Chronic liver disease	136.7	3	Chronic lower respiratory disease	78.7
4	Diabetes mellitus	118.5	4	Intentional self-harm	37.4
5	Motor vehicle accidents	91.7	5	Alzheimer's disease	32.1

Source: US Center for Health Statistics, Death Certificates, 2010-2014

Table 2 summarizes the top causes of mortality for both AI/AN and NHW men.

Table 3. Top Causes of Female Mortality, Billings Service Area, 2010-2014

AI/AN Female			NHW Female		
RANK	CAUSE	RATE (PER 100,000)	RANK	CAUSE	RATE (PER 100,000)
1	Vascular disease	384.7	1	Vascular disease	206.8
2	All cancers	172.4	2	All cancers	182.4
3	Chronic liver disease	106.9	3	Chronic lower respiratory disease	62.6
4	Diabetes mellitus	106.1	4	Alzheimer's disease	36.6
5	Nephritis, nephrotic syndrome, and nephrosis	87.8	5	Diabetes mellitus	19.1

Source: US Center for Health Statistics, Death Certificates, 2010-2014

Table 3 summarizes the top causes of mortality for both AI/AN and NHW women.

Table 4. Overall Top Cause of Cancer Mortality, Billings Service Area, 2010-2014

AI/AN			NHW		
RANK	CAUSE	RATE (PER 100,000)	RANK	CAUSE	RATE (PER 100,000)
1	Trachea, bronchus, and lung	76.8	1	Trachea, bronchus, and lung	107.3

Source: US Center for Health Statistics, Death Certificates, 2010-2014

Table 4 summarizes the top cancer cause of mortality for both AI/AN and NHW.

Table 5. Overall Top Male Cause of Cancer Mortality, Billings Service Area, 2010-2014

AI/AN Male			NHW Male		
RANK	CAUSE	RATE (PER 100,000)	RANK	CAUSE	RATE (PER 100,000)
1	Trachea, bronchus, and lung	56.5	1	Trachea, bronchus, and lung	57.8

Source: US Center for Health Statistics, Death Certificates, 2010-2014

Table 5 summarizes the top cancer cause of mortality for both AI/AN and NHW men.

MATERNAL AND CHILD HEALTH

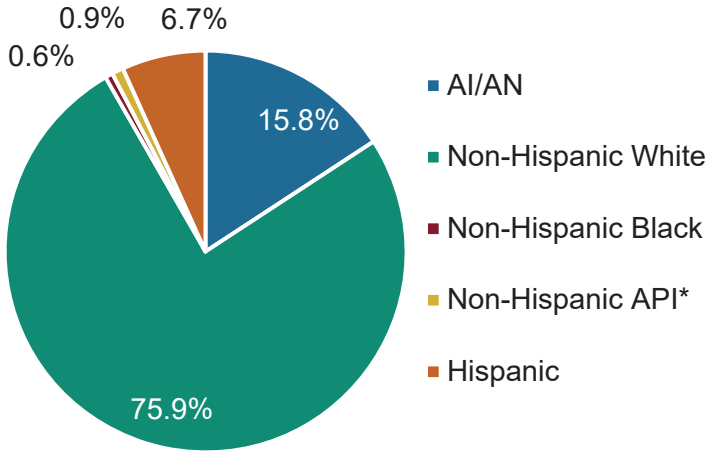
Introduction

Understanding the state of maternal and child health (MCH) for urban Indians is key to creating the foundation for healthy children, mothers, and future generations. Tracking maternal smoking, gestational diabetes, prenatal care, and premature births can help urban Indian health organizations make the best decisions regarding programs for pregnant mothers and infants. As UIHI found in the Billings service area, disparities exist in some key indicators for MCH. The data in this section can be used to further examine why these health disparities exist and to consider programs to eliminate them.

Total Births

From 2008 to 2012, there were a total of 14,104 births in the Billings service area. Among those births, 15.8% were identified as Non-Hispanic AI/AN alone (Figure 16). The largest proportions of births among the racial/ethnic groups were from NHW women (75.9%) and Non-Hispanic AI/AN women. Hispanics were 6.7% of all births while Non-Hispanic Blacks were approximately 0.6% and Non-Hispanic Asians and Pacific Islanders were 0.9% of all births.

Figure 16. Births by Race/Ethnicity, Billings Service Area, 2008-2012

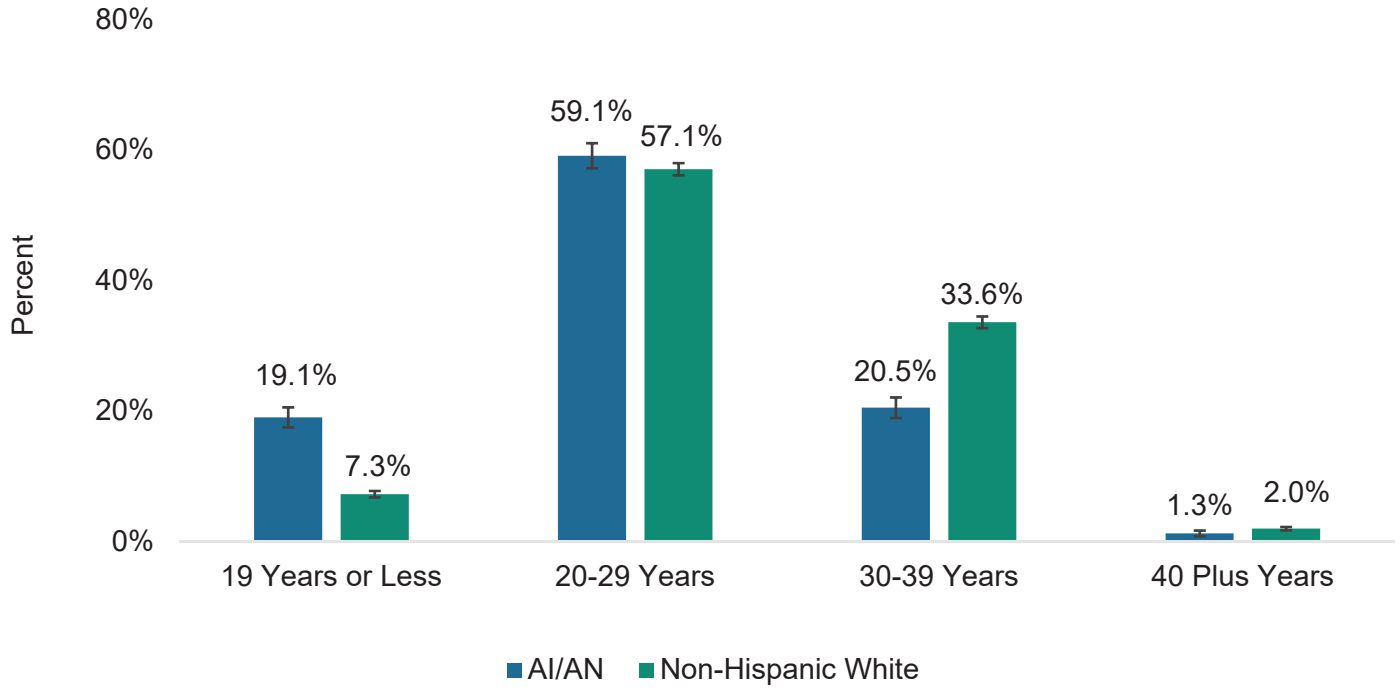


* API: Asian Pacific Islander
Source: National Vital Statistics, Birth Certificates, 2008-2012

Age

In general, AI/AN women tend to give birth at younger ages than their NHW counterparts (Figure 17). In the Billings service area, 19.1% of all births among AI/AN women were to teenage women (less than 19 years of age) compared to 7.3% of NHW births. The proportion of births to teenage women were 2.6 times higher in AI/ANs compared to NHWs. In addition, 59.1% of all births among AI/AN women were to women in their 20s, compared to 57.1% among NHWs. Conversely, NHW women had more children in their 30s compared to AI/AN women (33.6% vs. 20.5%).

Figure 17. Births by Maternal Age Group, Billings Service Area, 2008-2012

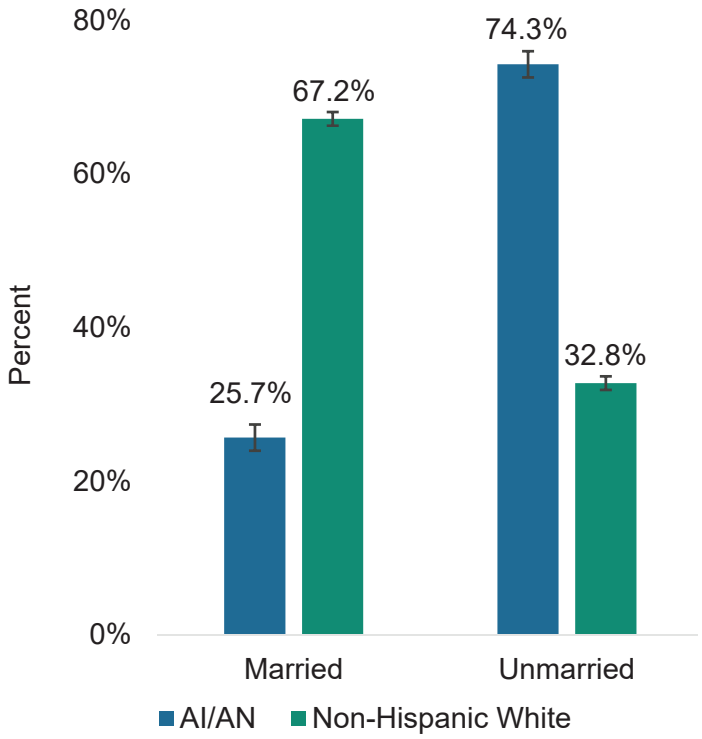


Source: National Vital Statistics, Birth Certificates, 2008-2012

Marital Status

In the Billings service area, 25.7% of all births to AI/ANs were to women who were married and 74.3% were to women who were not married (Figure 18). This was significantly different compared to NHWs in which 67.2% of births were to married mothers and 32.8% of births were to unmarried mothers. The proportion of births to unmarried women was 2.3 times higher in AI/ANs compared to NHWs.

Figure 18. Births by Marital Status, Billings Service Area, 2008-2012



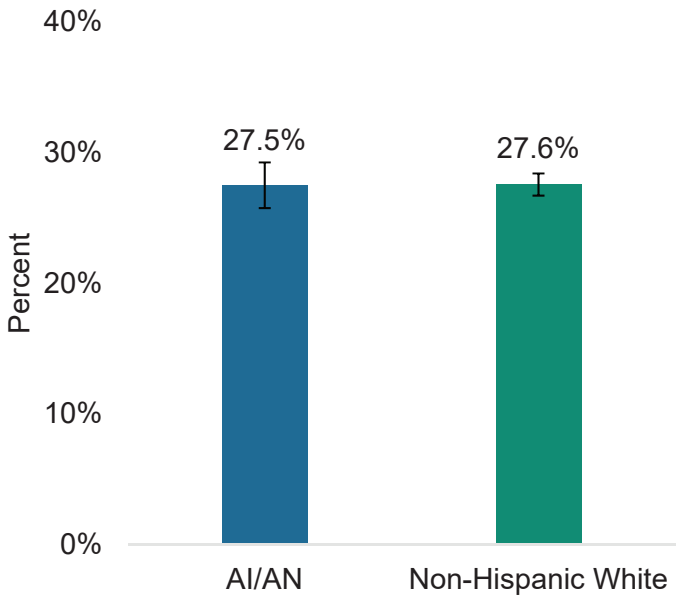
Source: National Vital Statistics, Birth Certificates, 2008-2012

Cesarean Section

While cesarean sections can prevent maternal and infant mortality and morbidity, there is no advantage for women who have the procedure electively.[25, 26] Possible complications of cesarean sections include infection, hemorrhage or increased blood loss, injury to organs, and extended hospital stay.[27, 28] In a study exploring the effect of maternal age on cesarean section rates, rates of cesarean section were shown to increase with maternal age.[29] Pre-existing conditions that are more prevalent in older women, such as high blood pressure and diabetes, are risk factors for cesarean delivery.[30]

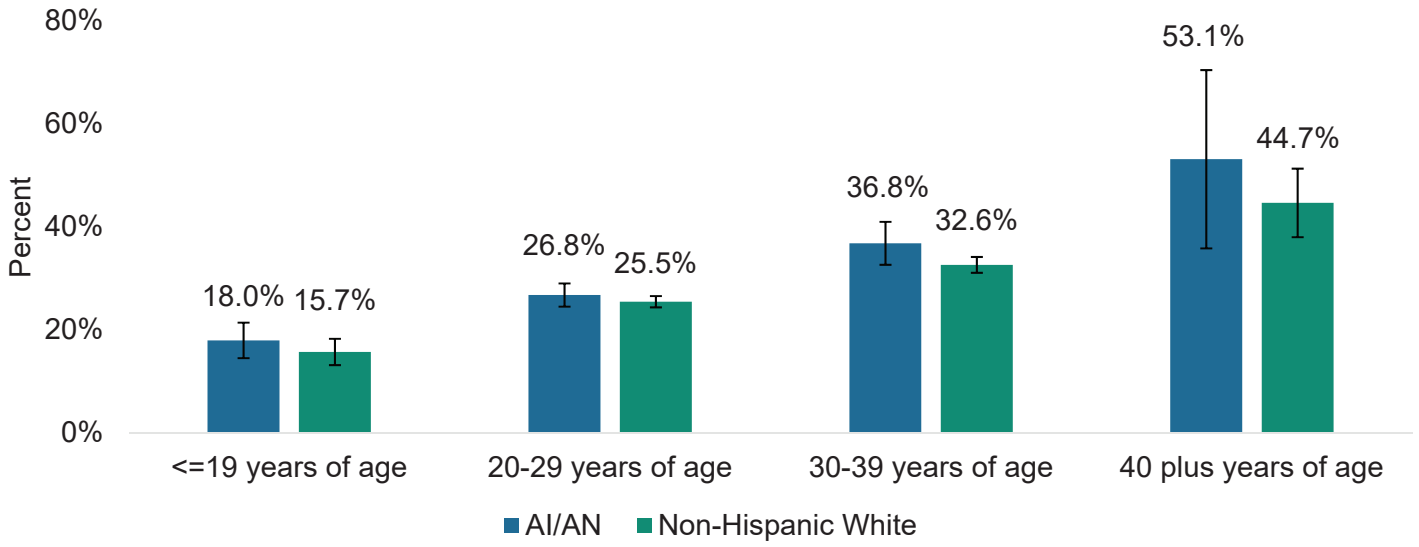
In the Billings service area, more than one-fourth of births were delivered by cesarean section among both AI/AN and NHW females (Figure 19). The proportion of cesarean deliveries increased as maternal age increased across teenage women, women in their 20s, and women in their 30s for AI/AN and increased as maternal age increased for NHW women (Figure 20). Additionally, among AI/ANs, the proportion of deliveries by cesarean section was 1.4 times higher among women in their 30s compared to women in their 20s. Within maternal age groups, there was no significant difference between AI/ANs and NHWs.

Figure 19. Births by Cesarean Section, Billings Service Area, 2008-2012



Source: National Vital Statistics, Birth Certificates, 2008-2012

Figure 20. Cesarean Sections by Maternal Age Group, Billings Service Area, 2008-2012



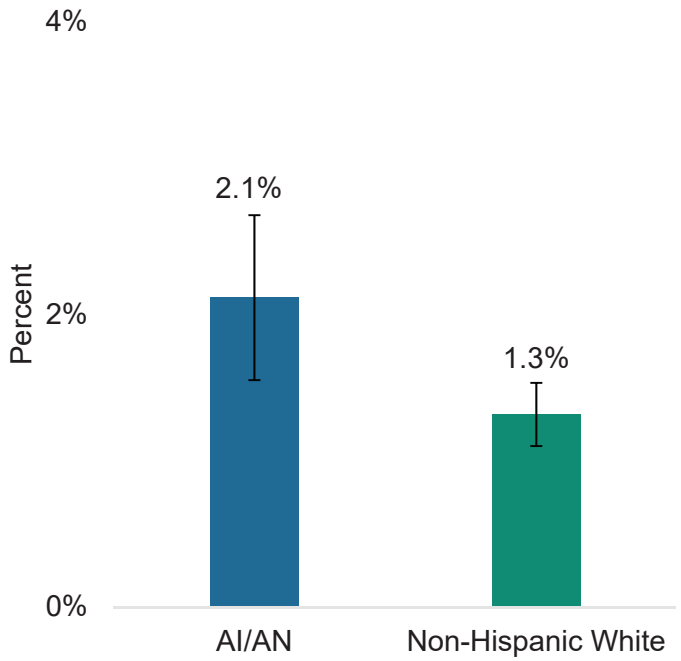
Source: National Vital Statistics, Birth Certificates, 2008-2012

Gestational Diabetes

A woman with gestational diabetes may have a larger than average baby.[31] Diabetes during a pregnancy leads to the unborn child having a higher-than-normal blood sugar level, which causes an overproduction of insulin in the unborn child. That overproduction produces extra calories that are stored as fat, making the baby larger than average. Due to the size of the child, there may be delivery complications for both the mother and the baby.

In the Billings service area, 2.1% of AI/AN births were to women who were diagnosed with gestational diabetes during their pregnancy (Figure 21). This proportion was significantly higher than NHW women, where 1.3% of women giving birth were diagnosed with gestational diabetes. The proportion of AI/AN women with gestational diabetes was 1.6 times higher than their NHW counterparts.

Figure 21. Gestational Diabetes, Billings Service Area, 2008-2012



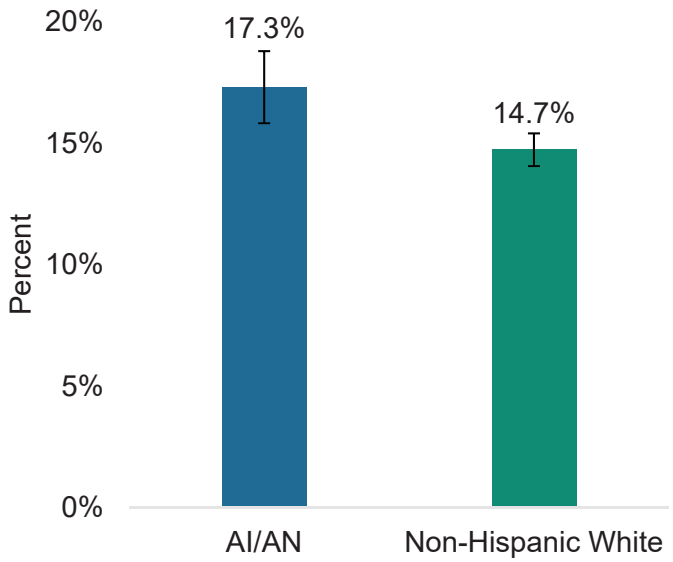
Source: National Vital Statistics, Birth Certificates, 2008-2012

Maternal Smoking

Smoking before and during pregnancy is the single most preventable cause of illness and death among mothers and infants.[32] Maternal smoking can result in complications during delivery for both mother and newborn and may result in adverse outcomes for the infant. Complications include low birth weight, preterm birth, ectopic pregnancy, miscarriage, stillbirths, slow fetal growth, placenta previa and abruption, severe vaginal bleeding, intrauterine growth restriction, sudden infant death syndrome (SIDS), and birth defects.

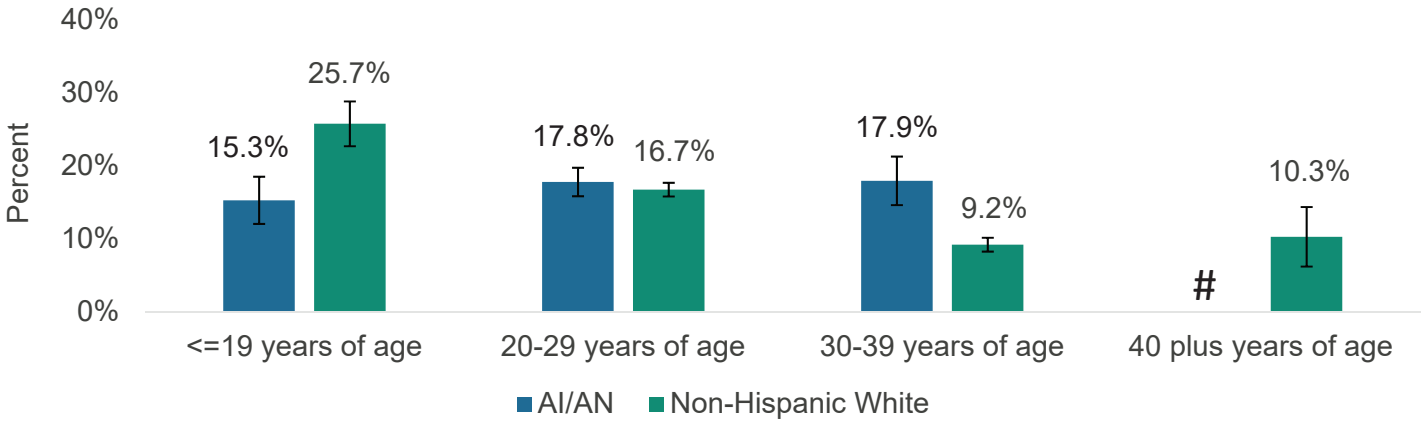
In the Billings service area, 17.3% of AI/AN women smoked while pregnant compared to 14.7% of NHW women, a statistically significant difference (Figure 22). The proportion of AI/AN women who smoked while pregnant was 1.2 times higher than for NHW women who smoked while pregnant. Maternal smoking decreased as maternal age increased for teenage women, women in their 20s, and women in their 30s among NHW women; however, no significant difference could be seen among AI/AN women as maternal age increased (Figure 23). In addition, the proportion of women in their 30s who smoked while pregnant was 1.9 times higher among AI/AN women compared to NHW women. Nevertheless, for teenage women, the proportion of maternal smoking was 40.5% lower among AI/ANs compared to NHWs.

Figure 22. Maternal Smoking, Billings Service Area, 2008-2012



Source: National Vital Statistics, Birth Certificates, 2008-2012

Figure 23. Maternal Smoking by Age Group, Billings Service Area, 2008-2012



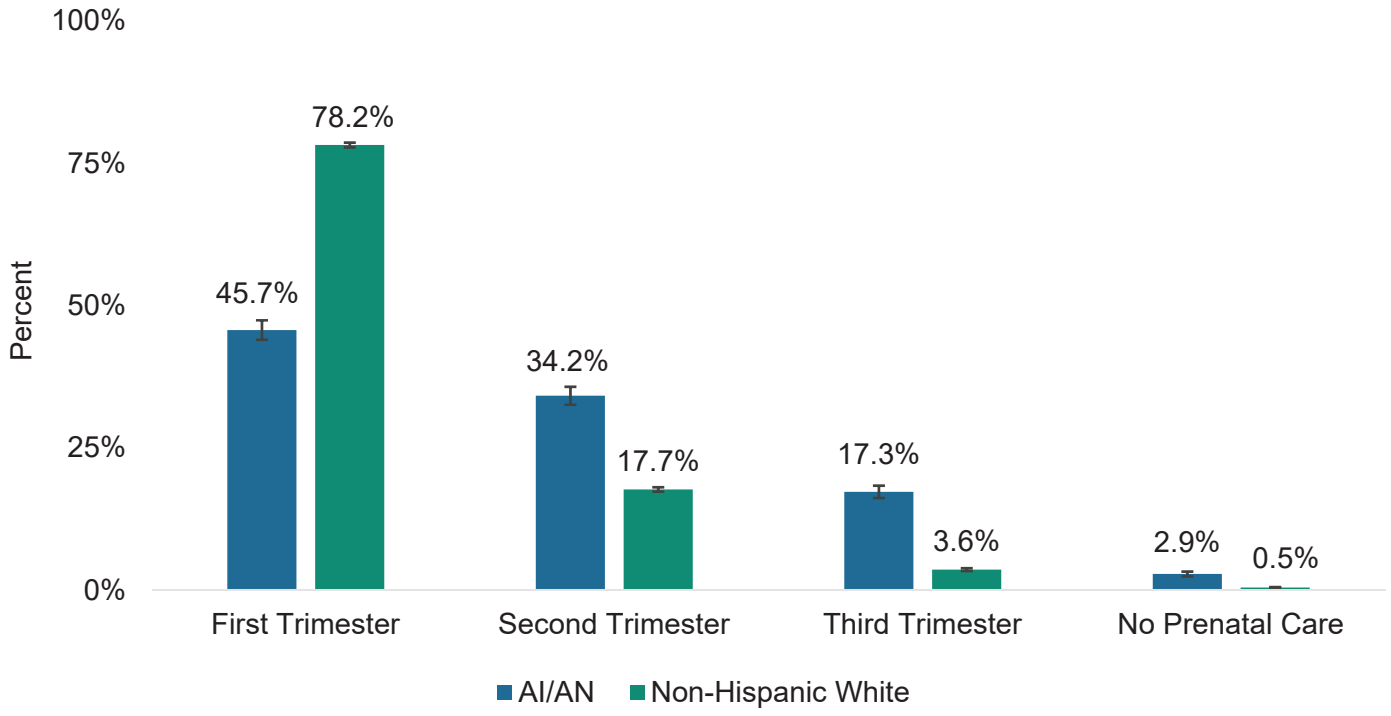
#: Data Suppressed
Source: National Vital Statistics, Birth Certificates, 2008-2012

Prenatal Care

Prenatal care refers to the medical attention received by women before or during their pregnancy. The goal of prenatal care is to detect potential problems early in the pregnancy and to prevent potential complications. Early prenatal care is a significant component in ensuring a good pregnancy outcome and it is recommended for women to begin prenatal care during the first trimester.[33] Women who receive late or no prenatal care are at risk for having undetected complications during their pregnancy that can result in severe maternal morbidity and mortality, and serious consequences to the unborn infant including low birth weight, premature birth, morbidity, and mortality.

Among pregnant women in the Billings service area, 45.7% of AI/AN women began prenatal care in the first trimester compared to 78.2% of NHW women, a statistically significant difference (Figure 24). The proportion of AI/AN women beginning prenatal care in their first trimester was 41.6% lower than NHW women. In addition, 20.2% of AI/AN pregnant women began prenatal care in the third trimester or did not receive any prenatal care during their pregnancy compared to 4.1% of NHW pregnant women. The proportion of women beginning prenatal care in their third trimester or receiving no prenatal care was 4.9 times higher in AI/AN women compared to NHW women.

Figure 24. Prenatal Care Initiation by Trimester, Billings Service Area, 2008-2012



Source: National Vital Statistics, Birth Certificates, 2008-2012

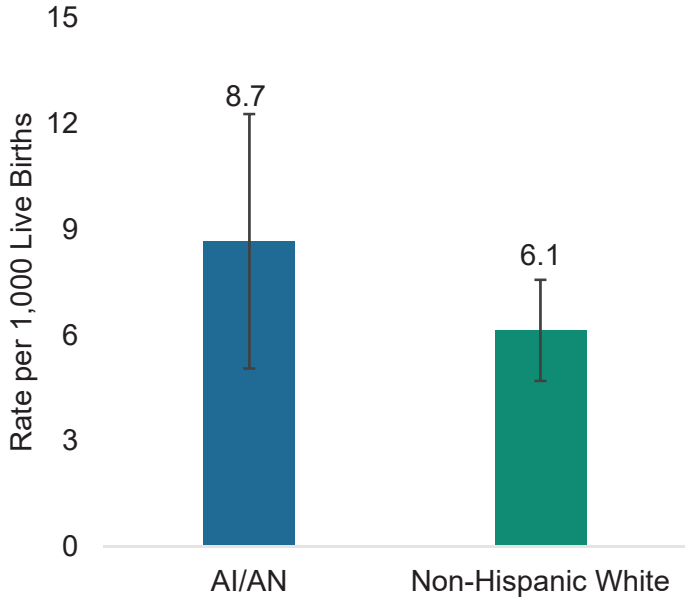
BILLINGS SERVICE AREA

Infant Mortality

Infant mortality, a useful indicator of the health in a community, is defined as the number of deaths of infants younger than one year of age per 1,000 live births for a given time period.[34] Infant mortality is related to the underlying health of the mother, public health practices, socioeconomic conditions, and the availability and use of appropriate pre- and post-natal health care.[34] Causes of infant deaths are primarily due to health problems of the infant or a difficult pregnancy.[35]

Regarding infant mortality in the Billings service area, no statistically significant difference was found between AI/ANs and NHWs (8.7 per 1,000 live births vs. 6.1 per 1,000 live births; Figure 25).

Figure 25. Infant Mortality Rate, Billings Service Area, 2008-2012



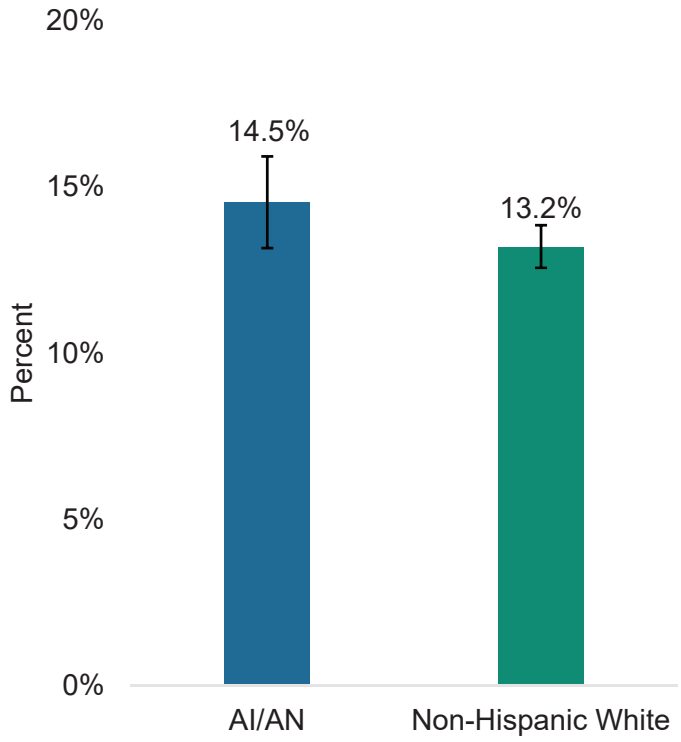
Source: National Vital Statistics, Death Certificates, 2008-2012

Premature Births

A premature birth is defined as, "childbirth occurring between 20 and 37 completed weeks of pregnancy."[36] Infants born prematurely have an increased risk of health complications, including infant mortality, and are at a greater risk of developing long-term disabilities.[37] The risk of adverse outcomes is directly related to the length of a woman's pregnancy. The shorter the pregnancy, the greater the risk of complications and disabilities in the newborn.

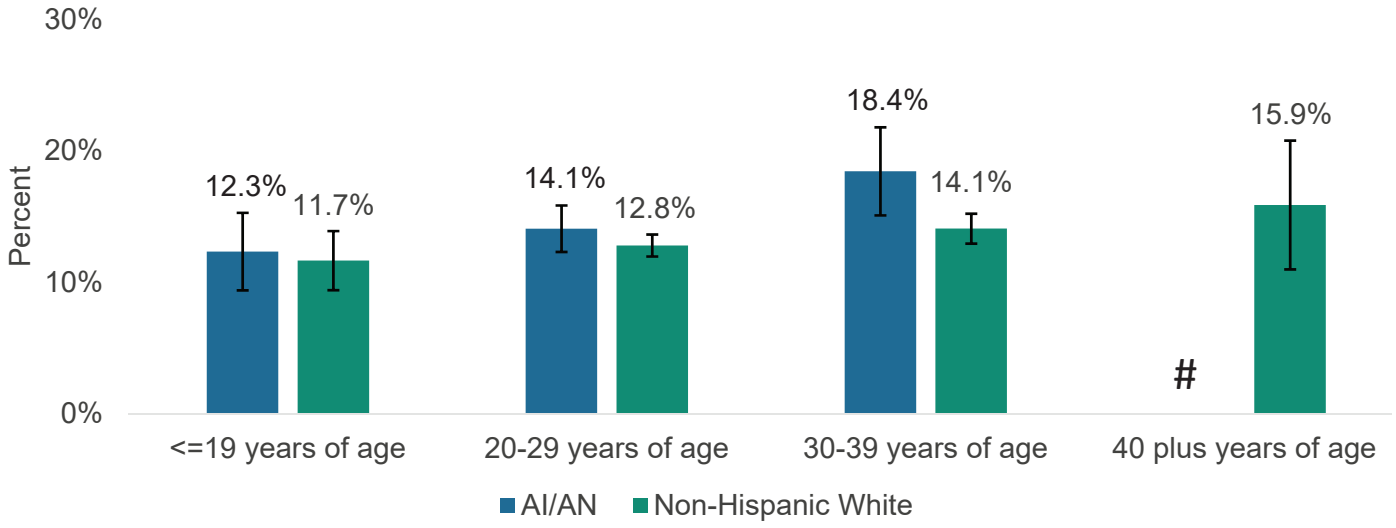
In the Billings service area, 14.5% of all infants born to AI/AN women were premature births, which was not statistically different from their NHW counterparts at 13.2% (Figure 26). The proportion of premature births was similar across age groups for both NHW and AI/AN pregnant women (Figure 27). Within age groups, there was no significant difference between AI/ANs and NHWs.

Figure 26. Premature Birth Rate, Billings Service Area, 2008-2012



Source: National Vital Statistics, Birth Certificates, 2008-2012

Figure 27. Premature Births by Maternal Age Group, Billings Service Area, 2008-2012



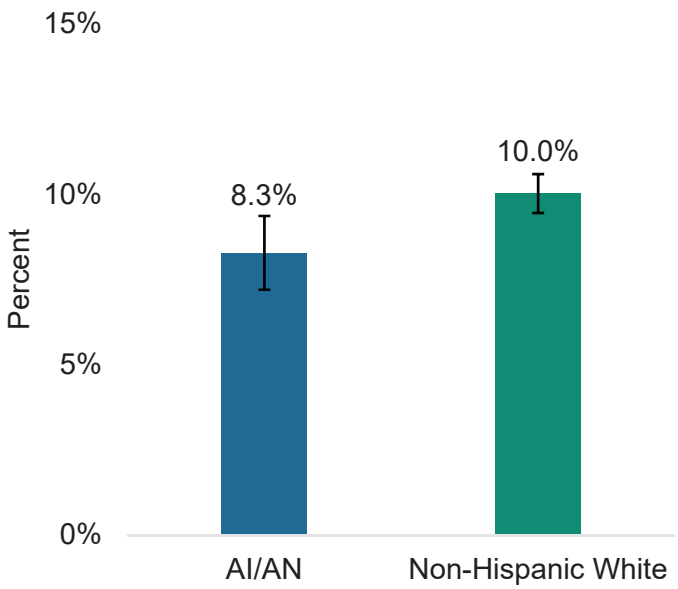
#: Data Suppressed
Source: National Vital Statistics, Birth Certificates, 2008-2012

Low Birth Weight

Low birth weight is defined as less than 2,500 grams (5.5 pounds).[38] Low birth weight infants have higher rates of subnormal growth, and adverse health conditions.[39]

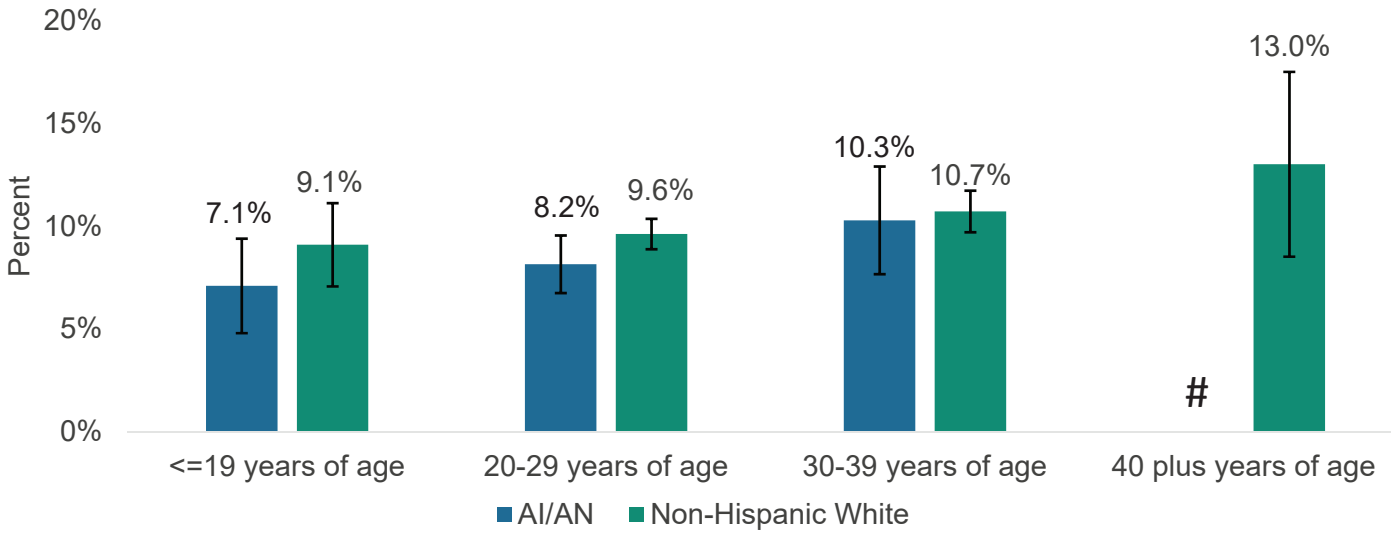
In the Billings service area, 8.3% of all infants born to AI/AN women had low birth weight, significantly lower than their NHW counterparts at 10.0% (Figure 28). The proportion of low birth weight infants born to AI/AN women was 17.0% lower than NHWs. The proportion of low birth weight infants born to AI/AN and NHW women remained similar across age groups (Figure 29). Within age groups, there was no significant difference between AI/ANs and NHWs.

Figure 28. Low Birth Weight, Billings Service Area, 2008-2012



Source: National Vital Statistics, Birth Certificates, 2008-2012

Figure 29. Low Birth Weight by Maternal Age Group, Billings Service Area, 2008-2012



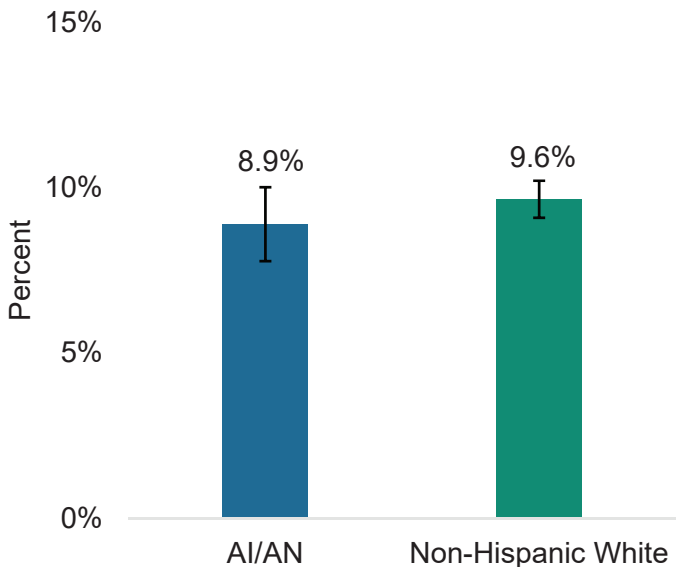
#: Data Suppressed
Source: National Vital Statistics, Birth Certificates, 2008-2012

Neonatal Intensive Care Unit Admission

Most babies admitted to the neonatal intensive care unit (NICU) are premature, have low birth weight, or have a medical condition that requires special care. Babies with medical conditions such as heart problems, infections, or birth defects are also cared for in the NICU.[40, 41]

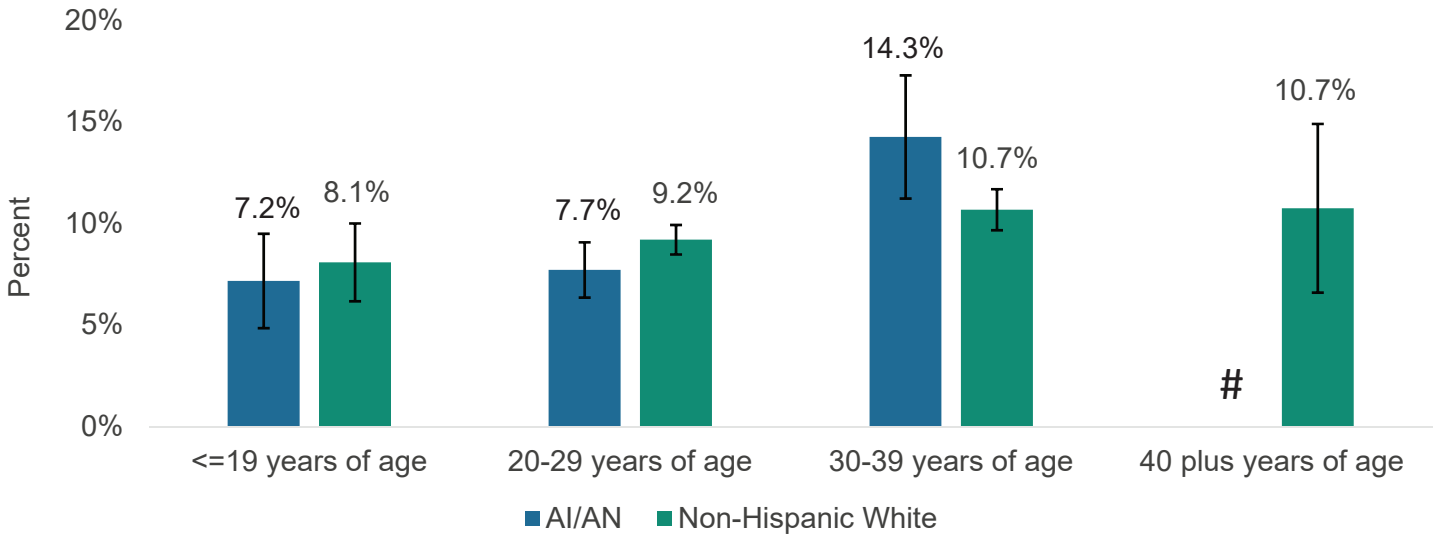
In the Billings service area, there was no statistically significant difference in admission to the NICU between AI/AN newborns and NHW newborns (8.9% vs. 9.6%, Figure 30). Among AI/ANs, the proportion of newborns admitted to the NICU was 1.9 times higher for women in their 30s compared to women in their 20s (14.3% vs. 7.7%; Figure 31). Within age groups, there was no significant difference between AI/ANs and NHWs.

Figure 30. Newborns Admitted to the NICU, Billings Service Area, 2008-2012



Source: National Vital Statistics, Birth Certificates, 2008-2012

Figure 31. Newborns Admitted to the NICU by Maternal Age Group, Billings Service Area, 2008-2012



Data Suppressed
Source: National Vital Statistics, Birth Certificates, 2008-2012

REFERENCES

1. Tina Norris PLV, Elizabeth M. Hoeffel. The American Indian and Alaska Native Population: 2010: United States Census Bureau; 2012.
2. Fisher PA, Ball TJ. The Indian Family Wellness Project: An Application of the Tribal Participatory Research Model. Prevention Science. September 01 2002;3(3):235-240.
3. Brave Heart MYH. The return to the sacred path: Healing the historical trauma and historical unresolved grief response among the lakota through a psychoeducational group intervention. Smith College Studies in Social Work. 1998/06/01 1998;68(3):287-305.
4. Megan J. Hoopes MT, Thomas M. Weiser, Rachel Brucker, Thomas M. Becker. Including Self-reported Race to Improve Cancer Surveillance Data for American Indians and Alaska Natives in Washington State. Journal of Registry Management. 2010;37:43-56.
5. Jim MA, Arias E, Seneca DS, et al. Racial Misclassification of American Indians and Alaska Natives by Indian Health Service Contract Health Service Delivery Area. American Journal of Public Health. 06/02/08/accepted 2014;104(Suppl 3):S295-S302.
6. Arias E, Schauman WS, Eschbach K, Sorlie PD, Backlund E. The validity of race and Hispanic origin reporting on death certificates in the United States. Vital and health statistics. Series 2, Data evaluation and methods research. 2008/10// 2008(148):1-23.
7. Rachel L.J. Thornton CMG, Crystal W. Cene, Deborah C. Glik, Jeffrey A. Henderson, David R. Williams. Evaluating Strategies For Reducing Health Disparities By Addressing The Social Determinants Of Health. Health Affairs. 2016;35(8):1416-1423.
8. Marmot M. Social determinants of health inequalities. The Lancet. 2005/03/19/ 2005;365(9464):1099-1104.
9. Norström F, Virtanen P, Hammarström A, Gustafsson PE, Janlert U. How does unemployment affect self-assessed health? A systematic review focusing on subgroup effects. BMC Public Health. December 22 2014;14(1):1310.
10. Cawley J, Moriya AS, Simon K. The impact of the macroeconomy on health insurance coverage: Evidence from the great recession. Health economics. 2015;24(2):206-223.
11. Fuller-Rowell TE, Evans GW, Ong AD. Poverty and Health:The Mediating Role of Perceived Discrimination. Psychological Science. 2012;23(7):734-739.
12. Woolf SH, Aron L, Dubay L, Simon SM, Zimmerman E, Lux KX. How Are Income and Wealth Linked to Health and Longevity? April 2015 2015.
13. Lacour M, Tissington LD. The effects of poverty on academic achievement. Educational Research and Reviews. 2011;6(7):522-527.
14. Shonkoff JP, Boyce WT, McEwen BS. Neuroscience, molecular biology, and the childhood roots of health disparities: building a new framework for health promotion and disease prevention. Jama. 2009;301(21):2252-2259.
15. U.S. Census Bureau. Poverty Glossary. 2016.
16. Kimbro RT, Bzostek S, Goldman N, Rodríguez G. Race, ethnicity, and the education gradient in health. Health Affairs. 2008;27(2):361-372.
17. Conti G, Heckman J, Urzua S. The education-health gradient. American Economic Review. 2010;100(2):234-238.
18. Sommers BD, Gawande AA, Baicker K. Health Insurance Coverage and Health — What the Recent Evidence Tells Us. New England Journal of Medicine. 2017;377(6):586-593.
19. Hadley J. Insurance coverage, medical care use, and short-term health changes following an unintentional injury or the onset of a chronic condition. JAMA. 2007;297(10):1073-1084.
20. Rossi PH, Weber E. The social benefits of homeownership: Empirical evidence from national surveys. Housing Policy Debate. 1996/01/01 1996;7(1):1-35.
21. Lam JA. Type of Structure, Satisfaction and Propensity To Move. Housing and Society. 1985/01/01 1985;12(1):32-44.
22. Baker E, Bentley R, Mason K. The Mental Health Effects of Housing Tenure: Causal or Compositional? Urban Studies. 2013;50(2):426-442.
23. Bell J, Mora G, Hagan E, Rubin V, Karpyn A. Access to healthy food and why it matters: A review of the research. PolicyLink and the Food Trust. 2013.
24. Kreider B, Pepper JV, Gundersen C, Jolliffe D. Identifying the effects of SNAP (food stamps) on child health outcomes when

participation is endogenous and misreported. Journal of the American Statistical Association. 2012;107(499):958-975.

25. Gülmezoglu AM, Lawrie TA, Hezelgrave N, et al. Reproductive, Maternal, Newborn, and Child Health: Disease Control Priorities, Third Edition 2016 2016;Volume 2.
26. Hannah ME. Planned elective cesarean section: A reasonable choice for some women? CMAJ : Canadian Medical Association Journal. 2004;170(5):813-814.
27. George A. Macones MD M, Jeffrey Peipert MD M, PhD DBN, et al. Maternal complications with vaginal birth after cesarean delivery: A multicenter study. 2005 2005;Volume 193(Issue 5):1656-1662.
28. (NIH) NIoHaCE. Cesarean Section (NICE Clinical Guideline 132. 2011. Available at: https://www.nice.org.uk/guidance/cg132.
29. Martel M, Wacholder S, Lippman A, Brohan J, Hamilton E. Maternal age and primary cesarean section rates: A multivariate analysis. American Journal of Obstetrics & Gynecology. 1987;156(2):305-308.
30. Donald K Hayes M, MPH, David W Feigal M, MPH, Ruben A Smith P, MS, , Loretta J Fuddy A, MPH. Maternal Asthma, Diabetes, and High Blood Pressure are Associated with Low Birth Weight and Increased Hospital Birth and Delivery Charges; Hawai'i Hospital Discharge Data 2003–2008. Hawai'i Journal of Medicine and Public Health. 2014 2014;73(2):49-57.
31. Centers for Disease Control and Prevention. Gestational Diabetes and Pregnancy. Available at: https://www.cdc.gov/pregnancy/diabetes-gestational.html. Accessed 07/02/2018.
32. U.S. Department of Health and Human Services. A Report of the Surgeon General: How Tobacco Smoke Causes Disease: What It Means to You. 2010.
33. National Institute of Child Health and Human Development. What is prenatal care and why is it important? Available at: https://www.nichd.nih.gov/health/topics/pregnancy/conditioninfo/prenatal-care. Accessed 6/27/2018, 2018.
34. Centers for Disease Control and Prevention. Infant Mortality. 2018.
35. National Institute of Child Health and Human Development. What causes infant mortality? 2018.
36. (ACOG) TACoOaG. Preterm (Premature) Labor and Birth: Resource Overview American College of Obstetricians and Gynecologists. Available at: https://www.acog.org/Womens-Health/Preterm-Premature-Labor-and-Birth, 2018.
37. Institute of Medicine (US) Committee on Understanding Premature Birth and Assuring Healthy Outcomes; Behrman RE BA, editors. Preterm Birth: Causes, Consequences, and Prevention. National Academies Press; 2007.
38. World Health Organization. Global Nutrition Targets 2025: Low birth weight policy brief 2014.
39. Goldenberg RL, Culhane JF. Low birth weight in the United States. The American Journal of Clinical Nutrition. 2007;85(2):584S-590S.
40. Health SCs. The Neonatal Intensive Care Unit (NICU). Author. 2018. Available at: http://www.stanfordchildrens.org/en/topic/default?id=the-neonatal-intensive-care-unit-nicu-90-P02389, 2018.
41. Stanford Children's Health. The Neonatal Intensive Care Unit (NICU). Available at: http://www.stanfordchildrens.org/en/topic/default?id=the-neonatal-intensive-care-unit-nicu-90-P02389. Accessed 6/27/2018.

NOTES

NOTES

Urban Indian Health Institute
A Division of the Seattle Indian Health Board

611 12th Ave South, Seattle, WA 98144
Phone: (206) 812-3030 Fax: (206) 812-3044
Email: info@uihi.org Website: www.UIHI.org