St. Louis Urban Indian Health Program

Community Health Profile and Individual Site Report

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

Acknowledgments

Funding for this report was primarily provided by the Indian Health Service Division of Epidemiology and Disease Prevention. The report contents are solely the responsibility of the authors and do not necessarily represent the official views of the Indian Health Service.

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.

This report was prepared by Crisandra Wilkie, MPH, and Kate Lewandowski, MPH, and designed by Ibrahim Osman, AA, under the direction of the Chief Data Officer, Adrian Dominguez, MS, with the support of Urban Indian Health Institute staff including Rachael Bokota, MPH, Kaeli Flannery, MPH, and Scott Erickson, MPH.

Terminology

The authors use the terms “Native”, “Indian”, “Indigenous” and “American Indian and Alaska Native” interchangeably throughout this report. The demographic terminology included in source material is referenced when appropriate.

Recommended Citation

Urban Indian Health Institute, Seattle Indian Health Board (2021). *St. Louis Urban Indian Health Program: Community Health Profile & Individual Site Report*. Seattle, WA: Urban Indian Health Institute.

CONTENTS

EXECUTIVE SUMMARY

Urban Indian Health Institute (UIHI) analyzed data from the American Community Survey (ACS), the National Vital Statistics System (NVSS), National Notifiable Disease Surveillance System (NNDSS), and Behavioral Risk Factor Surveillance System (BRFSS) to describe health outcomes among urban American Indians and Alaska Natives across more than 30 health indicators.

This Community Health Profile aggregates data on the sociodemographics, maternal and child health, infectious disease, and mortality of American Indians and Alaska Natives (AI/ANs) in the St. Louis UIH service area. The data in this report are five-year estimates from 2013 to 2017.

Key findings show that urban American Indians and Alaska Natives (AI/AN) frequently experience higher proportions of poverty and inequities in disabled status and household income when compared to their non-Hispanic White (NHW) counterparts. We acknowledge the role colonization has had on Indigenous communities and the health indicators listed in this report.

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

Over a sixth of AI/AN children aged 17 and under (17.2%) lived in households with an income below the federal poverty level.

The proportion of SNAP participation amongst AI/AN households in these areas was 3.9 times that of NHW households (19.5% vs 5.0%)

Approximately 11.7% of AI/AN children reported having a disability, compared to 4.3% of NHW children.

The highest proportion of AI/AN births were to mothers who had attended some college or received an Associate degree (44.0%).

Pregnant AI/AN women were no more likely than pregnant NHW women to give birth to an infant preterm (12.5% vs 10.3%).

Pregnant AI/AN women were no more likely than pregnant NHW women to give birth to an infant at a low birthweight (9.2% vs 6.9%).

AI/AN newborns were no more likely than NHW newborns to be admitted to the NICU (7.6% vs 6.5%).

The age-adjusted all-cause mortality rate for the AI/AN population was approximately 58.9% lower compared to the mortality rate of the NHW population (292.1 deaths per 100,000 vs 710.5 deaths per 100,000).

The AI/AN population had a vascular disease cause-specific mortality rate that was 60.8% less than that of the NHW population (85.2 deaths per 100,000 vs 217.5 deaths per 100,000).

INTRODUCTION

Across the United States, an examination of the health outcomes of urban Native people shows a disproportionately high incidence of disease, co-morbidity, and mortality, particularly among mothers. This is significant because, of the 5.2 million Americans who identify as American Indian and/or Alaska Native, 71% live in urban areas.[1] To meet their health needs, numerous health and social service programs provide culturally attuned and holistic care. Many offer services that are grounded in Indigenous knowledge and bring traditional and Western medicine together.

As Urban Indian Health Programs and other Urban Indian Organizations strive to provide the highest-quality care to urban Native people, relevant data are needed. Since 2000, Urban Indian Health Institute (UIHI) has created an aggregate Community Health Profile (CHP), along with individual CHPs for each of the UIH sites serving the urban Indigenous population in their area.

Who are urban Indians?

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

How to use this report

Improving community health through effective planning and decision making requires reliable information.[2] This CHP provides an overview of the health status of American Indian and Alaska Native populations who reside in the UIH service areas (Appendix A: Service Areas). While limited in scope and restricted to available data, this report provides valuable information for service providers serving an urban Indian population with unique needs and health priorities. The report is intended for use as a supplement to other local data available and can be used for program planning, applying for funding, identifying gaps in data, and conducting research.

METHODS AND DATA

THIS REPORT INCLUDES INFORMATION FROM RESIDENTS OF THE ST. LOUIS UIH SERVICE AREA, INCLUDING ST. LOUIS CITY AND ST. LOUIS COUNTY, USING THE FOLLOWING DATA SOURCES:

- **American Community Survey, 2013–2017**
- **2010 U.S. Census, 2013–2017**
- **National Vital Statistics System; Death Certificates, 2013–2017**
- **National Vital Statistics System; Birth Certificates, 2013–2017**
- **National Notifiable Disease Surveillance System, 2013–2017**
- **Behavioral Risk Factor Surveillance System, 2013–2017**

There are limitations to this data, particularly due to variations in how race is defined and collected.

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. Starting in 2000, the U.S. Census allowed individuals to self-report belonging to more than one racial group. Prior to the 2000 U.S. Census individuals could only select 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 available, they report being AI/AN in combination with other races.

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

American Community Survey

The American Community Survey (ACS) is a nationwide 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 one-, three-, and five-year aggregate estimates.

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 proportions 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) is generated from death certificates. 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 racial groups.

Birth certificate data from NVSS data files include all documented births occurring within the U.S. as filed in each state. These data include demographic information about parents, the mother's risk factors, information on the infant, and information on the birth.

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. The bridged-race population estimates are the result of bridging the 31 race categories in the Census 2000 and Census 2010 to four race categories due to the shifting use of 1977 Office of Management and Budget (OMB) standards to 1997 OMB standards. As a result, estimates in this report may not match local and county estimates because of differing projection methods.

For more information about Vital Statistics, visit: http://www.cdc.gov/nchs/nvss.htm
For more information about bridged-race, visit: https://www.cdc.gov/nchs/nvss/bridged_race.htm

National Notifiable Disease Surveillance System

Sexually transmitted infections (STIs) are a component of the National Notifiable Disease Surveillance System (NNDSS). Incident cases are submitted to the Centers for Disease Control and Prevention (CDC) from state health departments and other local reporting jurisdictions. The majority of cases are reported in non-STI clinic settings such as private physician offices. It is mandatory that reportable disease cases be reported to state health departments when identified by a health provider, hospital, or laboratory. However, it is voluntary that notifiable disease cases be reported to the CDC by the state for national surveillance. Estimates of rates are based on the states for the UIH service areas.

For more information about NNDSS, visit: https://www.cdc.gov/nndss/

Behavioral Risk Factor Surveillance System

Behavioral Risk Factor Surveillance System (BRFSS) is a nationwide health-related telephone survey that collects state data about U.S. residents. Random Digit Dialing (RDD) is used to conduct the surveys on landlines and cellphones. Each state uses a standardized core questionnaire, optional modules, and state-added questions. A vast amount of data on health-related risk behaviors and events, chronic health conditions, and use of preventive services are collected by this survey.

For more information about BRFSS, visit: https://www.cdc.gov/brfss/index.html

Data Limitations

Frequently, data are only available for AI/AN alone and not inclusive of AI/AN who also identify with another race or ethnicity. Therefore, the outcomes may be an underestimation of the true value of an outcome or risk factor for any indicator analyzed.

Racial misclassification impacts the accuracy of rates of disease, risk factors, or outcomes, which leads to underestimations. Racial misclassification occurs when the race of an individual is captured inaccurately, whether it be from the subjective use of personal observation by the data collector or using a surname to determine race/ethnicity. AI/AN people are more likely to experience incorrect classification on death certificates. Therefore, true morbidity and mortality rates among AI/AN people are assumed to be higher than presented in this report.[3,4]

Analysis

A list of indicators for the community health profile was selected after investigating available data sources. For each indicator, prevalence or incidence is calculated for the AI/AN population and compared to the NHW population. NHWs are included as the comparison group to assess disparities in health indicators in recognition of the effects of structural racism on health. The AI/AN population was defined as AI/AN only and AI/AN 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 are calculated using aggregated data over a five-year period.

In some instances, confidence intervals—an interval of numbers used to assess the accuracy of a point estimate and measure the variability in data—are 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 also account for the difference between a sample from a population and the population itself. For analyses included in this report, confidence intervals are calculated at a p-value of <0.05, a 95% confidence level. This means that 95 times out of 100 the confidence interval captures the true value for the population. Where confidence intervals of the study group (AI/AN) do not overlap with the comparison group (NHW), this may be an indication of a true difference in outcomes.

Standard data suppression was used to protect the privacy of individuals within all groups, including suppression of any estimates or rates based on counts of less than 10. As a result, certain indicators that are included in the aggregate CHP are not available for individual sites due to small numbers.

SOCIODEMOGRAPHICS

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.[5,6] 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 AI/AN and NHW populations.[5] This section presents data on measures of demographics and social determinants of health to illustrate the disparities between AI/AN and NHW populations.

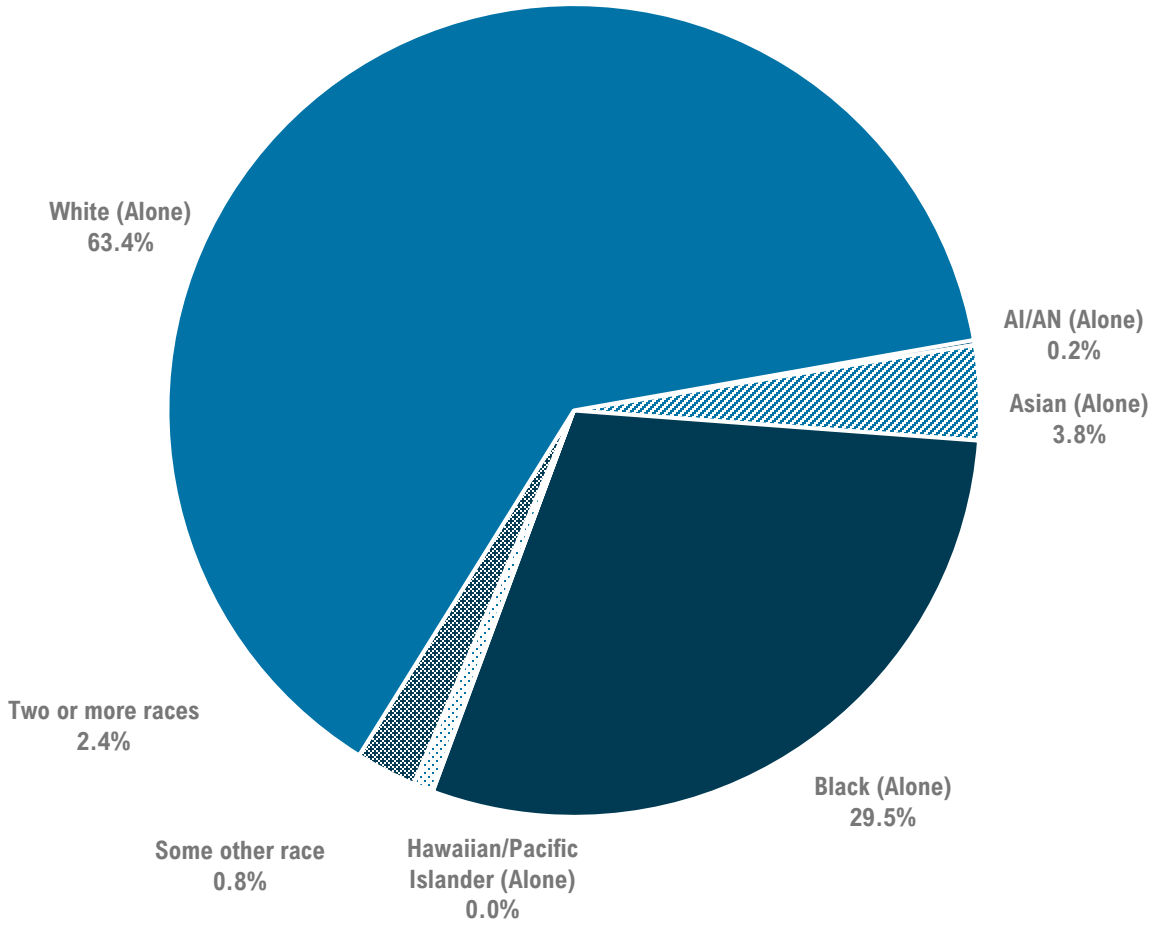
Race

Race, ethnicity, and socioeconomic status directly impact the distribution of disease.[7] Lacking access to education, employment, and other opportunities is often distributed along racial lines, thus we see stark health disparities between racial groups. Therefore, it is important to not only understand the rates of disease within a given area but also the racial distribution.

An estimated 11,132 (0.8%) individuals identified as AI/AN alone or in combination with one or more races in the St. Louis service area, with 2,584 (0.2%) individuals identifying as AI/AN alone (Figure 1). Those who identified as White alone comprised the largest proportion (nearly two-thirds) of the total population (63.4%) in the St. Louis UIH service area.

How race is defined in data matters. All sociodemographic estimates in this report represent those that identify as AI/AN alone—this is due to a limitation in the data. AI/AN are among the fastest growing multiracial group in the U.S.[1]

Figure 1. Population by Race, St. Louis, 2013-2017



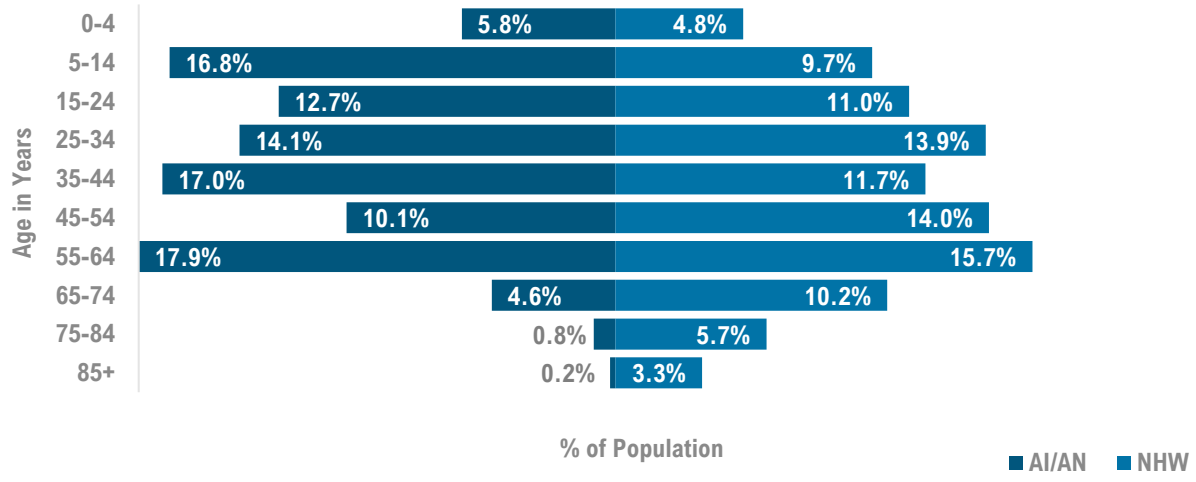
Source: American Community Survey, 2013-2017

Age and Sex

Rates of disease and risk factors can often vary widely between age groups as well as between sexes. For example, life expectancy differs by both race and sex. Therefore, we stratify by both age and sex to examine these differences more closely.

Relative to the NHW population, the AI/AN population in the St. Louis UIH Service area was younger (Figure 2). Of the AI/AN population, 35.3% were under the age of 25 years, compared to 25.5% of the NHW population. In contrast, 5.6% of the AI/AN population was over the age of 65 years, compared to 19.2% of the NHW population.

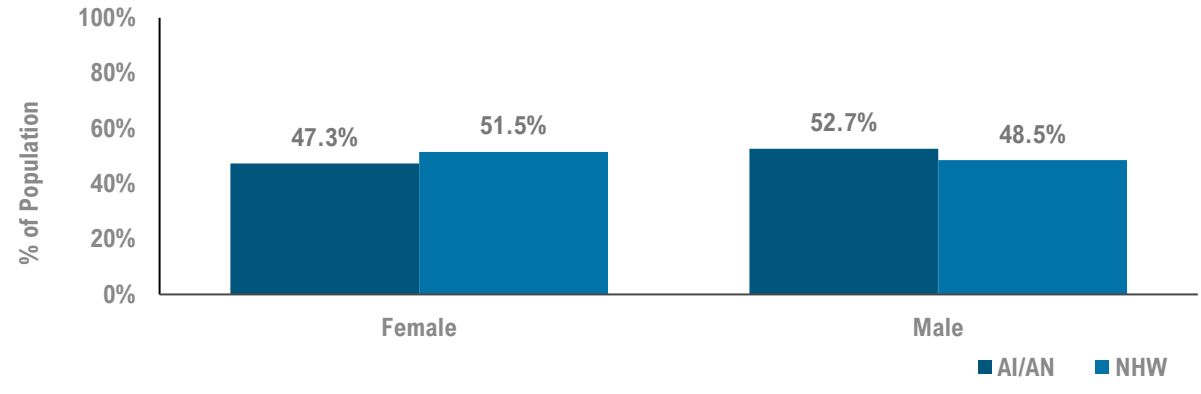
Figure 2. Population by Age and Race/Ethnicity, St. Louis, 2013-2017



Source: American Community Survey, 2013-2017

Among the AI/AN population in the St. Louis UIH Service Area, there were more males (52.7%) than females (47.3%), in contrast to the NHW population in the area (Figure 3).

Figure 3. Population by Sex and Race/Ethnicity, St. Louis, 2013-2017



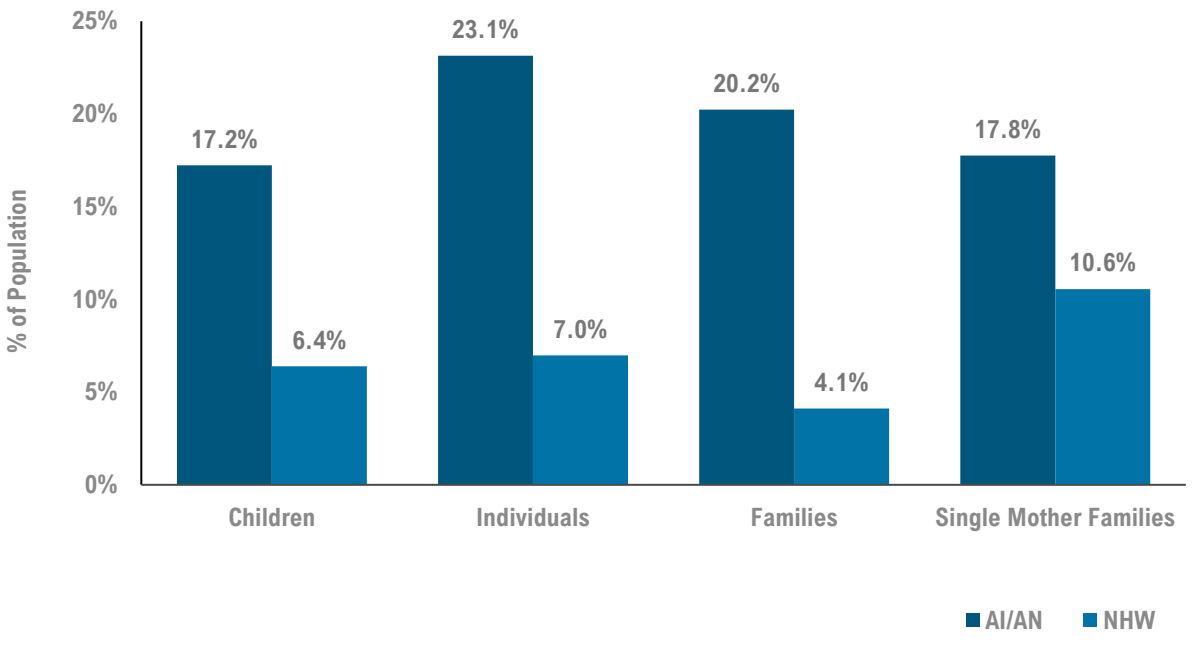
Source: American Community Survey, 2013-2017

Poverty

Poverty limits access to healthy foods, quality housing, economic opportunities, and adequate health care.[8,9] These foundational social and economic factors are inextricably connected to health outcomes. Also, the impacts of poverty on the health and well-being of a child can be detrimental and may have negative effects on early childhood and secondary academic achievement.[10,11]

In the St. Louis UIH service area, AI/AN children experienced more poverty than NHW children (Figure 4). Over a sixth of AI/AN children aged 17 and under (17.2%) lived in households with an income below the federal poverty level. This proportion is 2.7 times that of NHW children (6.4%). A fifth of AI/AN families in the St. Louis UIH service area (20.2%) lived in households with an income below the federal poverty level, almost 4.9 times that of their NHW counterparts (4.1%). In addition, 17.8% of AI/AN single mother households experienced poverty, 1.6 times that of the proportion of NHW single mother households (10.6%). Finally, over a fifth of AI/AN individuals lived in poverty (23.1%), compared to 7.0% of NHW individuals.

Figure 4. Poverty by Race/Ethnicity, St. Louis, 2013-2017



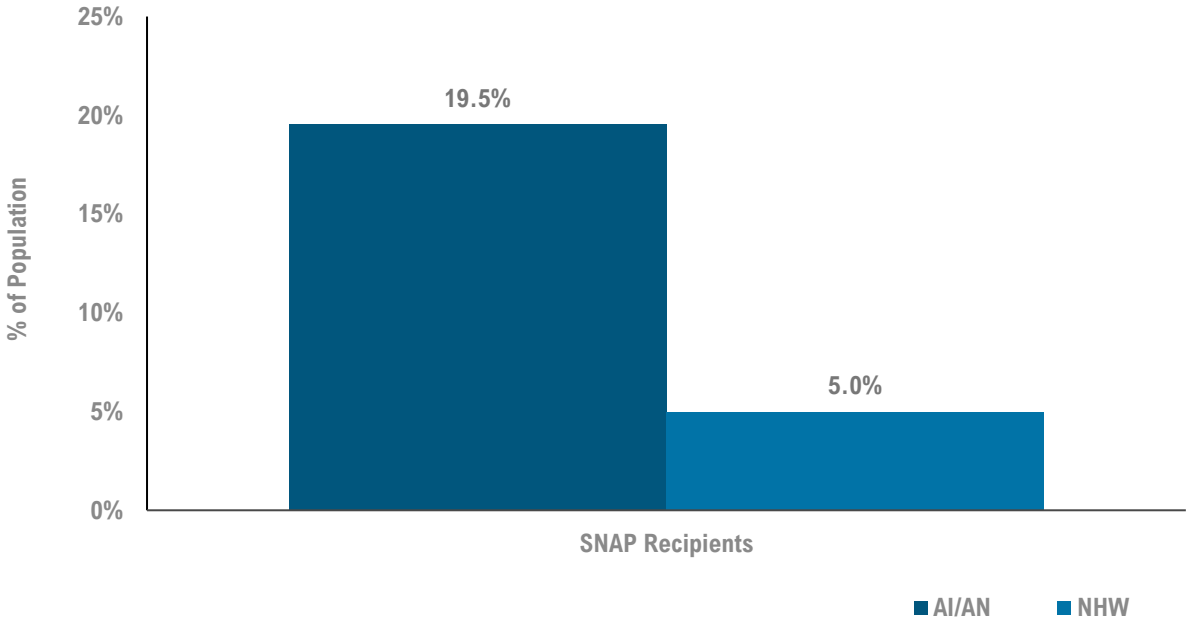
Source: American Community Survey, 2013-2017

Supplemental Nutrition Assistance Program

Households experiencing poverty are more likely to be food insecure.[12] Food insecurity can have a negative effect on the overall health of an individual, which increases the susceptibility to negative health outcomes.[13] As the largest food assistance program in the United States, the Supplemental Nutrition Assistance Program (SNAP), formerly known as the Food Stamp program, is a crucial part of the social safety net.[14] SNAP reduces the prevalence of food insecurity and, in turn, can reduce the prevalence of negative health outcomes.[13] In most states, many households with an income below 130% of the federal poverty level are eligible to receive SNAP benefits.

In the St. Louis UIH service area, nearly a fifth of AI/AN households received SNAP benefits in the past year (19.5%; Figure 5). The proportion of SNAP participation amongst AI/AN households in these areas was 3.9 times that of NHW households (5.0%).

Figure 5. SNAP Recipients by Race/Ethnicity, St. Louis, 2013-2017



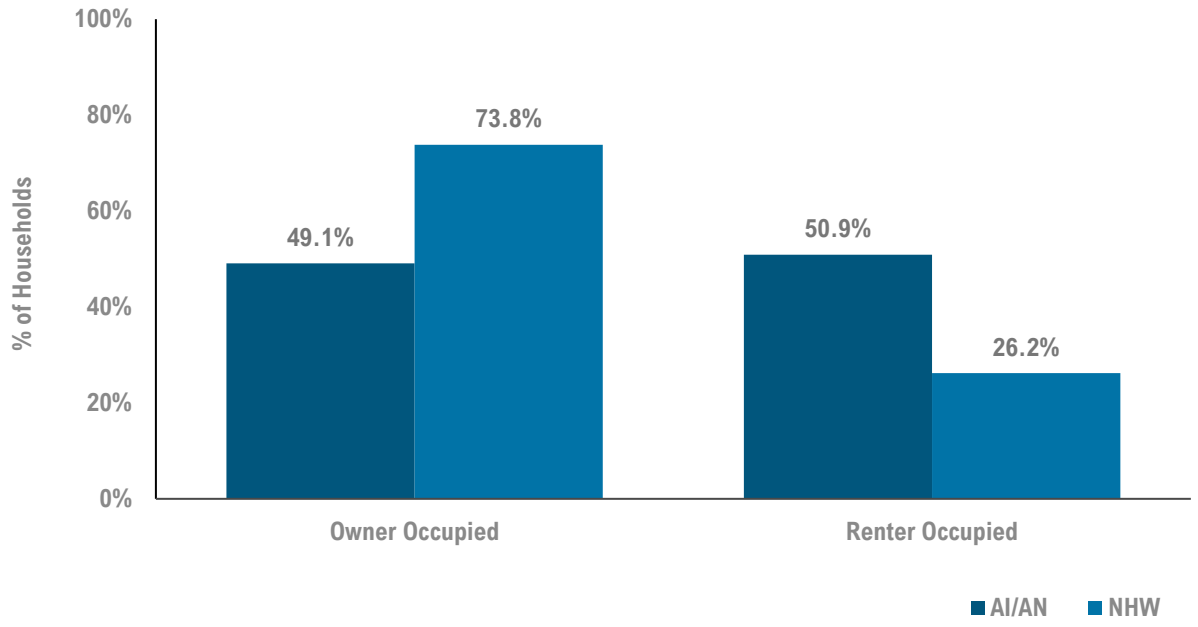
Source: American Community Survey, 2013-2017

Housing

Several studies have found that home ownership is associated with many health benefits.[15,16] 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.[17]

In the St. Louis UIH service area, half of the AI/AN population (50.9%) rented their homes compared to over a quarter of the NHW population (26.2%; Figure 6). The proportion of the AI/AN population who rented their homes was 1.9 times that of the NHW population. In contrast, in the St. Louis UIH service area, home ownership amongst the AI/AN population was 66.5% that of the NHW population (49.1% vs 73.8%, respectively).

Figure 6. Housing Tenure by Race/Ethnicity, St. Louis, 2013-2017



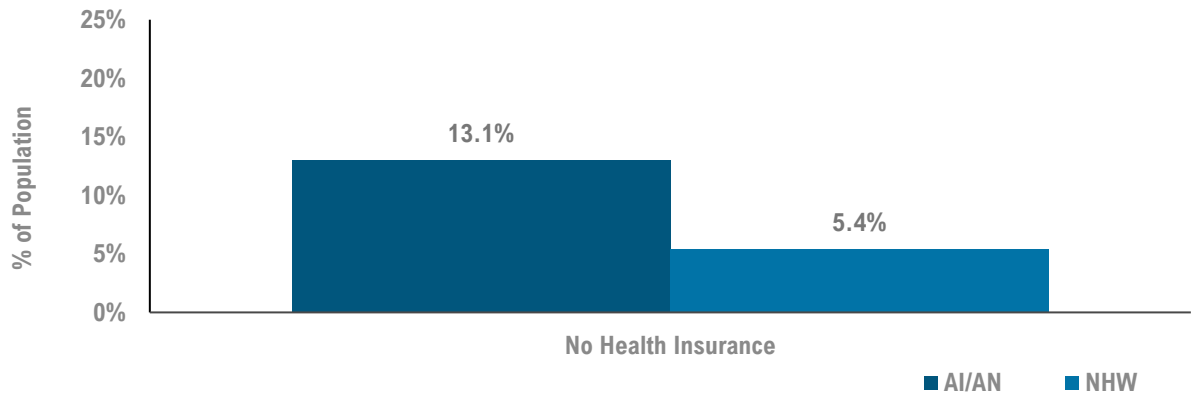
Source: American Community Survey, 2013-2017

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 often take longer to recover after an unintentional injury or the onset of a chronic disease than those with health insurance.[19]

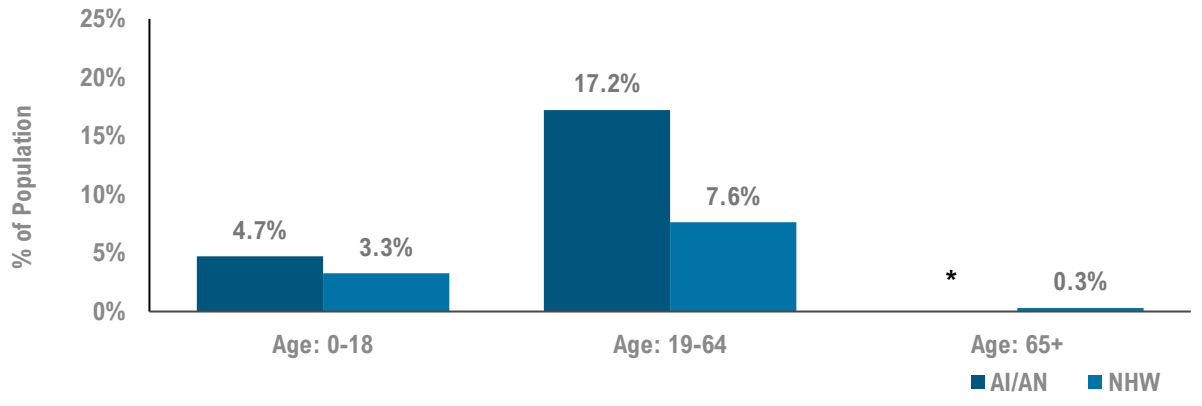
In the St. Louis UIH service area, over a tenth of the AI/AN population (13.1%) reported having no health insurance, compared to 5.4% of the NHW population (Figure 7). Over a fifth of AI/AN individuals under the age of 65 (21.9%) reported having no health insurance, a proportion twice that of NHW individuals (10.9%; Figure 8). The proportion of uninsured AI/AN children under the age of 19 (4.7%) in the St. Louis UIH service area was 1.4 times that of their NHW counterparts (3.3%).

Figure 7. No Health Insurance by Race/Ethnicity, St. Louis, 2013-2017



Source: American Community Survey, 2013-2017

Figure 8. No Health Insurance by Age and Race/Ethnicity, St. Louis, 2013-2017



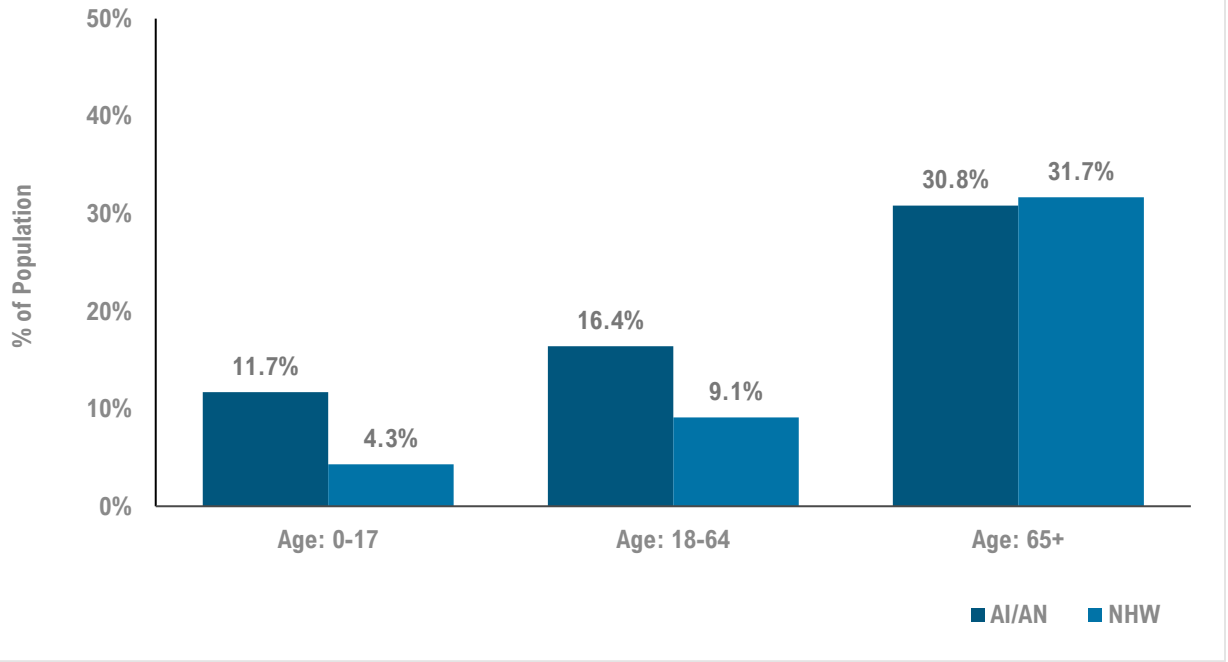
Source: American Community Survey, 2013-201
*Suppressed data < 10

Disability Status

A disabling condition can be present at birth, occur early in life, can be acquired through injury or a chronic condition, or can develop later in life.[20] In general, across a range of health indicators and social determinants of health, people with disabilities tend to fare worse than their nondisabled counterparts.[20] It is important to include prevalence of disability as a foundation to monitor health status and existing disparities to inform program planning and to potentially obtain funding for programs for people with disabilities. However, it is important to note that the understanding of disability varies across Indigenous cultures—current ways of understanding disability are largely a result of colonization.[21]

In the St. Louis UIH service area, for those under 18, 11.7% of AI/AN children reported having a disability, compared to 4.3% of NHW children (Figure 9). For those aged 18-64, the proportion of AI/AN individuals who reported having a disability was 1.8 times that of NHW individuals in the same age range who reported having a disability (16.4% vs 9.1%, respectively). Additionally, 30.8% of AI/AN individuals over the age of 65 reported having a disability compared to 31.7% of NHW individuals over the age of 65.

Figure 9. Disability by Age and Race/Ethnicity, St. Louis, 2013-2017



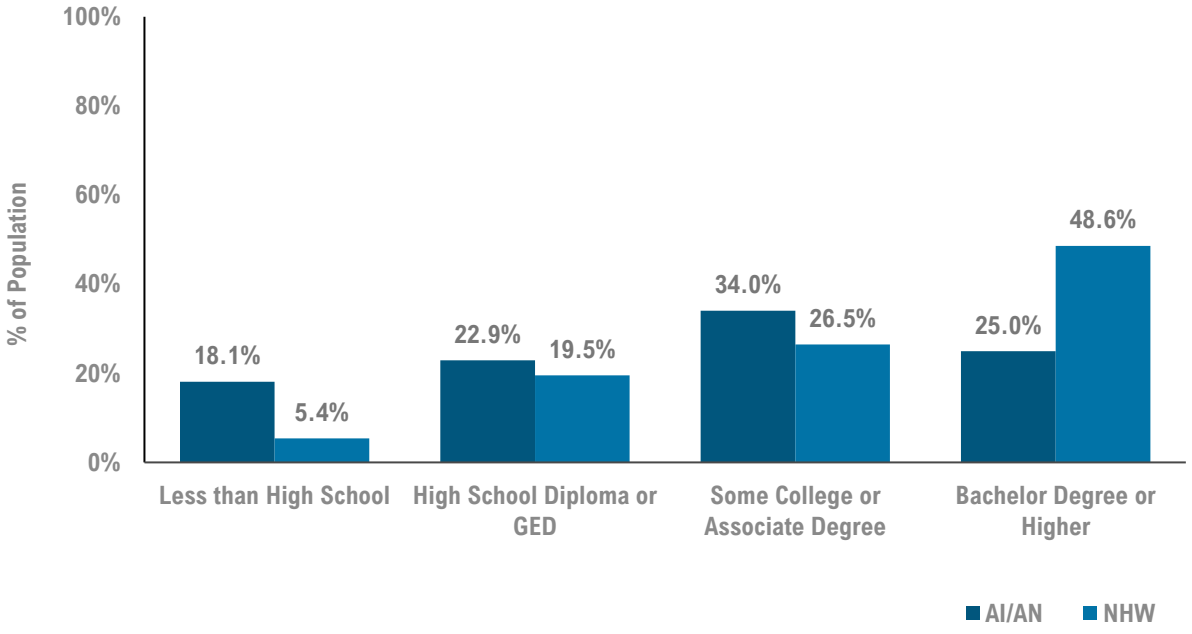
Source: American Community Survey, 2013-2017

Education

The relationship between education and health is well documented.[22,23] Those with more education are generally more likely to be employed and have access to health resources through insurance. They are also more likely to have a higher income, allowing them to afford resources when needed. Thus, disparities in life expectancy by level of education are found among all demographic groups and are increasing over time.[23]

In the St. Louis UIH service area, a higher percentage of the AI/AN population aged 25 and older had neither completed high school nor passed the General Education Development (GED) exam (18.1%) compared to the NHW population (5.4%; Figure 10). A lower percentage of the AI/AN population (25.0%) reported an undergraduate or graduate degree as their highest level of education compared to the NHW population (48.6%). However, a higher percentage of the AI/AN population reported attending some college, receiving an Associate's degree, or a Bachelor's degree or higher than reported receiving a high school diploma/equivalent or no diploma (59.0% vs 41.0%, respectively).

Figure 10. Education by Race/Ethnicity, St. Louis, 2013-2017



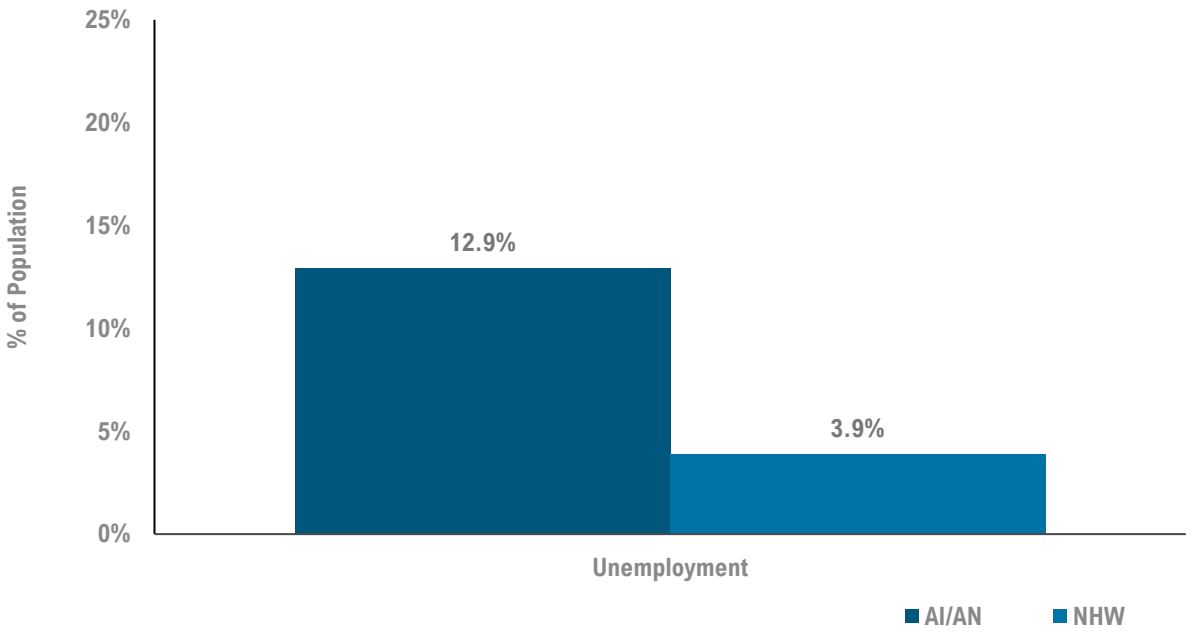
Source: American Community Survey, 2013-2017

Unemployment

Extensive evidence has shown that unemployment has a negative effect on health.[24] Individuals experiencing unemployment may experience financial insecurity and are more likely to lack health insurance coverage.[25] Beyond that, unemployment can be identified as a major stressor, causing lasting damage to the physical and emotional health of an individual.[26]

In the St. Louis UIH service area, the percent of unemployed AI/AN individuals over 16 years of age was 3.3 times that of NHW individuals (12.9% vs 3.9%; Figure 11).

Figure 11. Unemployment by Race/Ethnicity, St. Louis, 2013-2017



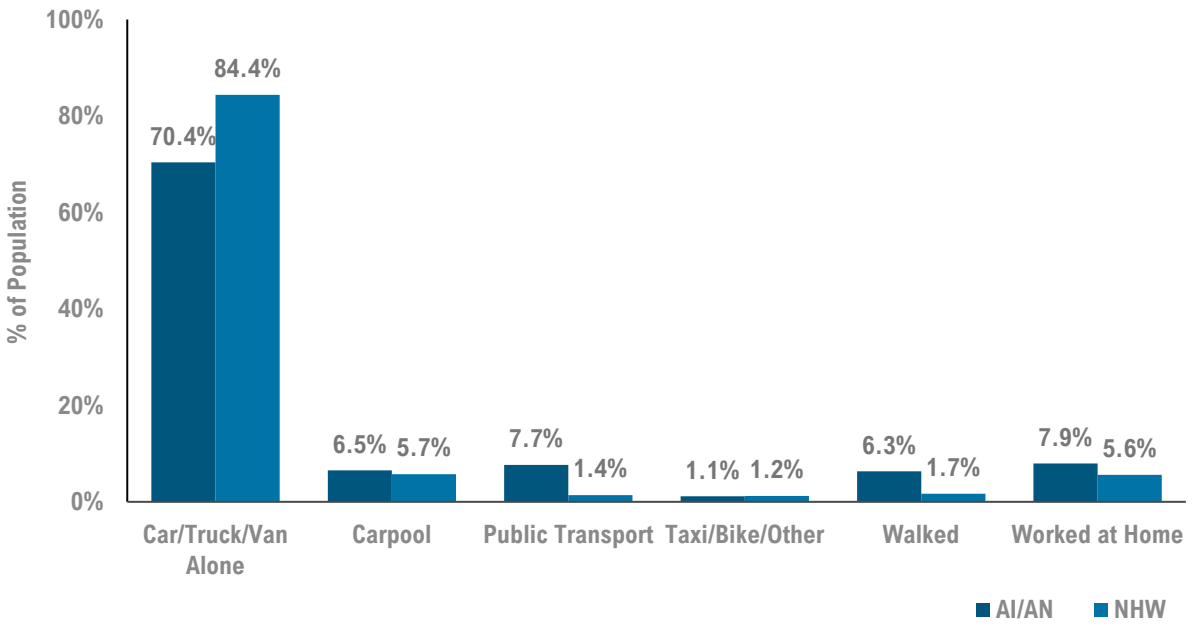
Source: American Community Survey, 2013-2017

Means of Transportation to Work

How individuals travel to work impacts their health.[27] Researchers are still studying the effects long commutes may have on health.[28] Time spent commuting is most often reallocated from physical activity, food preparation, time eating with family, and sleeping.[29] Over time, these changed behavioral patterns can contribute to poor health outcomes. This indicator offers a starting step to understanding how the health of urban AI/AN people may be impacted by their commute.

For the St. Louis UIH service area, AI/AN and NHW workers had similar means of transportation to work. However, there were differences in some of the categories (Figure 12). The proportion of AI/AN workers who traveled to work in a car, truck or van was 83.4% that of NHW workers (70.4% vs 84.4%, respectively). In contrast, the proportion of AI/AN workers who took public transport to work was 5.5 times that of NHW workers (7.7% vs 1.4%, respectively).

Figure 12. Commute and Race/Ethnicity, St. Louis, 2013-2017



Source: American Community Survey, 2013-2017

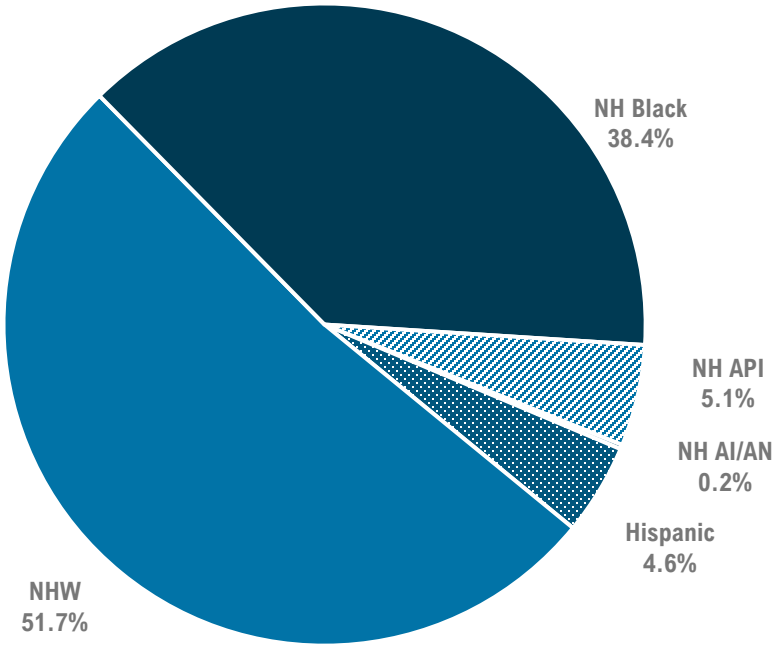
MATERNAL AND CHILD HEALTH

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 preterm births can help urban Indian health organizations make the best decisions regarding programs for pregnant mothers and infants. For the purposes of this report, language around birth and maternal health data includes traditionally female terminology, but it is understood that not every person who gives birth identifies as such.

Births by Race/Ethnicity

From 2013 to 2017 there were a total of 80,425 births across the St. Louis UIH service area. Among those births, about 0.2% (184 births) were identified as non-Hispanic American Indian or Alaska Native (AI/AN) alone (Figure 13). The largest proportions of births among the racial/ethnic groups were from non-Hispanic White (NHW) women (51.7%) and non-Hispanic Black women (38.4%). Non-Hispanic Asian and Pacific Islander women accounted for 5.1% of all births, while Hispanic women accounted for 4.6% of all births.

Figure 13. Births by Race/Ethnicity, St. Louis, 2013-2017



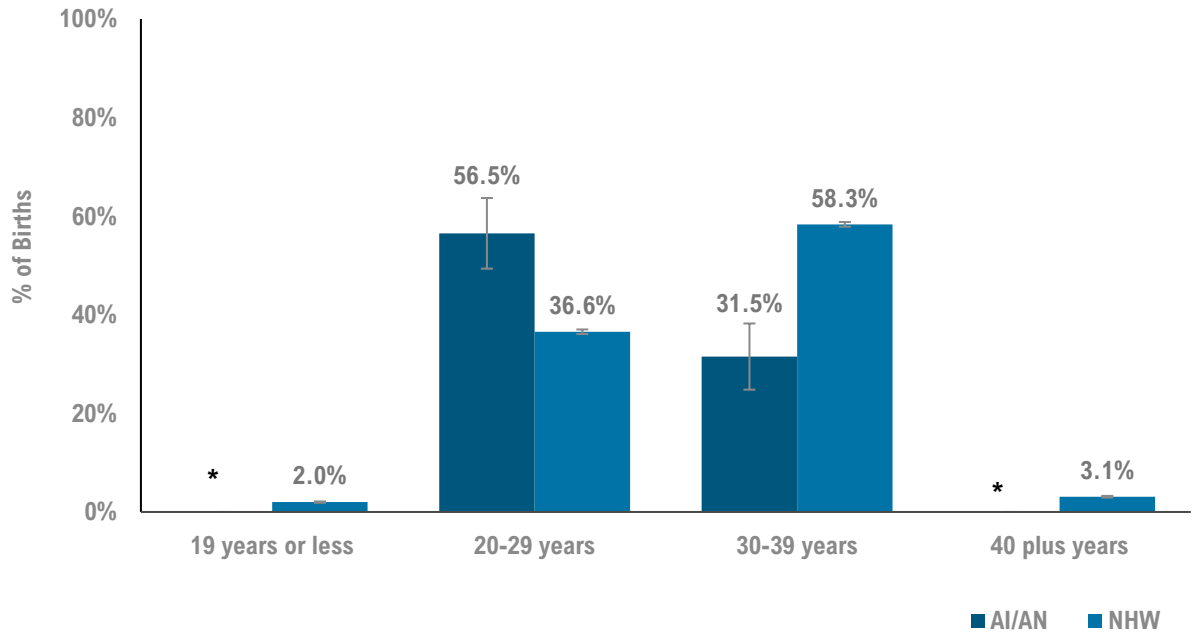
Source: National Vital Statistics, Birth Certificates, 2013-2017

Births by Maternal Age Group

Birth by maternal age group is a valuable indicator to estimate access to family planning resources and services.[30] For example, pregnant adolescents have an increased risk of preterm labor and birth, preeclampsia, and demonstrated greater odds of other health complications for both the mother and infant.[30] In addition, pregnant women over the age of 35 also demonstrated increased odds of preterm delivery, hypertension, and other complications.[30]

In general, AI/AN women tended to give birth at younger ages than their NHW counterparts (Figure 14). Approximately, 56.5% of all births among AI/AN women were to women in their 20s; this was higher than the 36.6% among NHW women. Conversely, NHW women had more children in their 30s compared to AI/AN women (58.3% vs. 31.5%).

Figure 14. Births by Maternal Age and Race/Ethnicity, St. Louis, 2013-2017



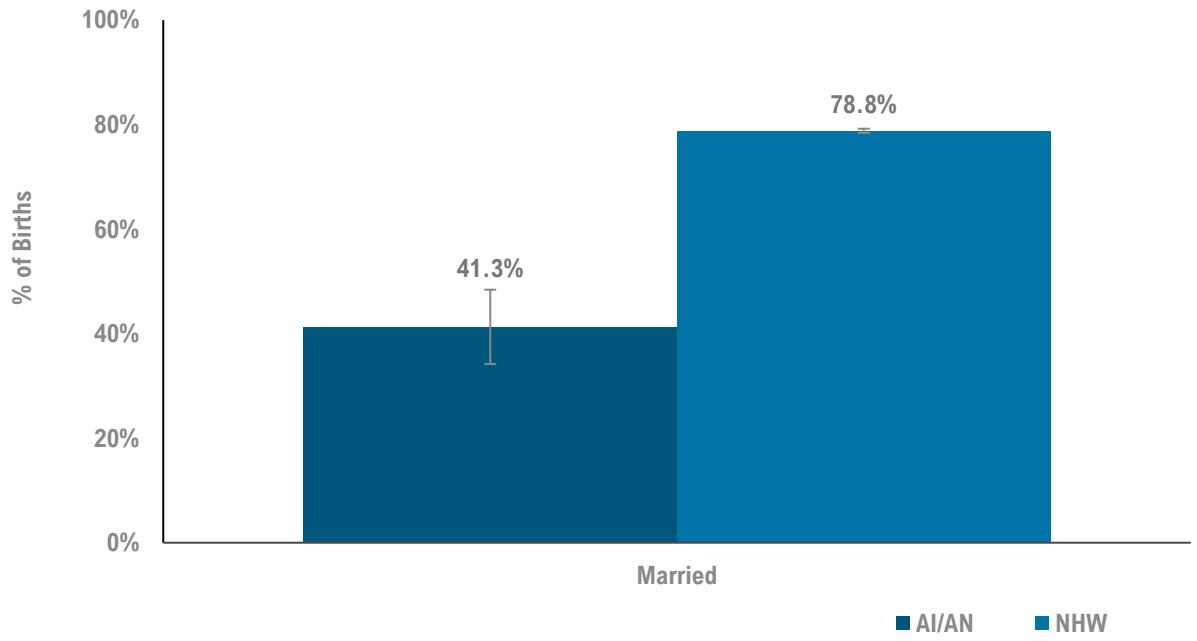
Source: National Vital Statistics, Birth Certificates, 2013-2017
*Suppressed data < 10

Births by Marital Status

Studies have shown positive associations between marriage and health outcomes.[31] Married couples tend to have more than one income source providing for their family, allowing them to afford nutritious food and access to other health resources.[31] Marital status during first birth has been found to be associated with health outcomes later on in their lives for white and black women.[32,33]

Across the St. Louis UIH service area, 41.3% of all births to AI/AN mothers were to women who were married (Figure 15). This was statistically significantly different compared to NHW mothers, among whom 78.8% of births were to women who were married. The proportion of births to unmarried AI/AN women was 2.8 times that of their NHW counterparts.

Figure 15. Births by Marital Status and Race/Ethnicity, St. Louis, 2013-2017



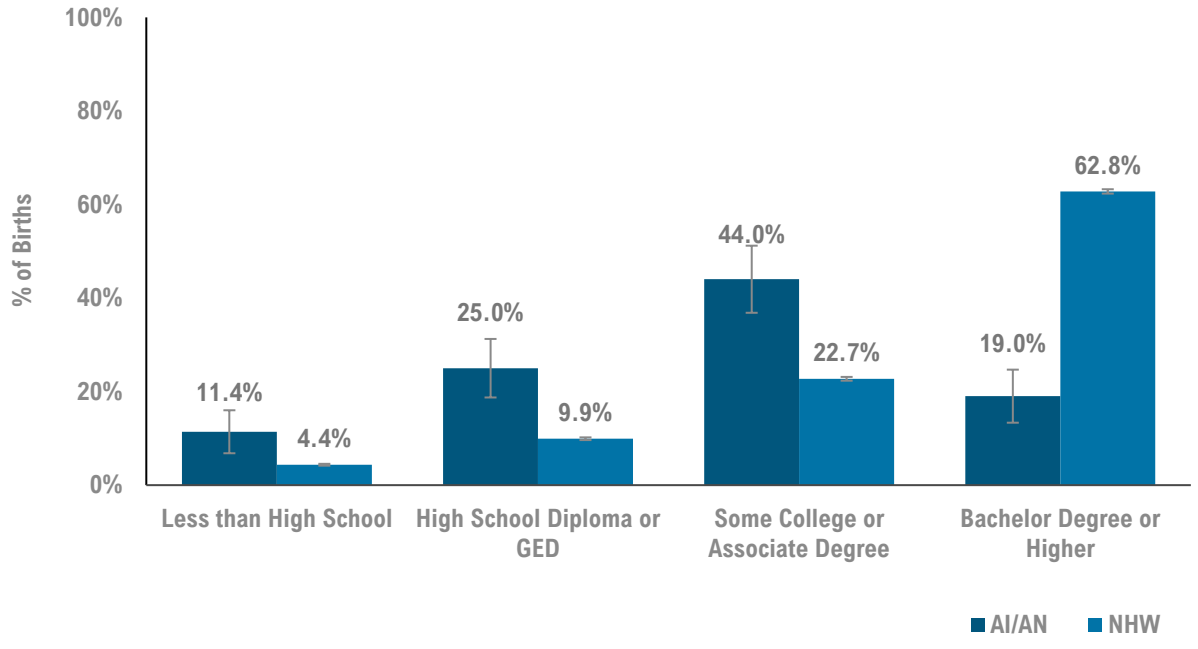
Source: National Vital Statistics, Birth Certificates, 2013-2017

Maternal Education

Numerous studies have looked at the causal link between maternal education and maternal and child health outcomes.[34] A mother's primary school completion was found to be associated with positive infant health outcomes, indicated by birth weight.[35]

Over a tenth of AI/AN births in the St. Louis UIH service area were to AI/AN women who did not complete high school (11.4%) and 25.0% were to AI/AN women whose highest level of education was a high school diploma or equivalent degree (Figure 16). These percentages were both higher than the percentages of births to NHW women who did not complete high school (4.4%) or received a high school diploma or equivalent degree (9.9%). The highest proportion of AI/AN births were to mothers who had attended some college or received an Associate degree (44.0%). The percentage of births to AI/AN women with some college or a higher degree was statistically significantly different from that of NHW women (19.0% vs 62.8%, respectively).

Figure 16. Maternal Education by Race/Ethnicity, St. Louis, 2013-2017



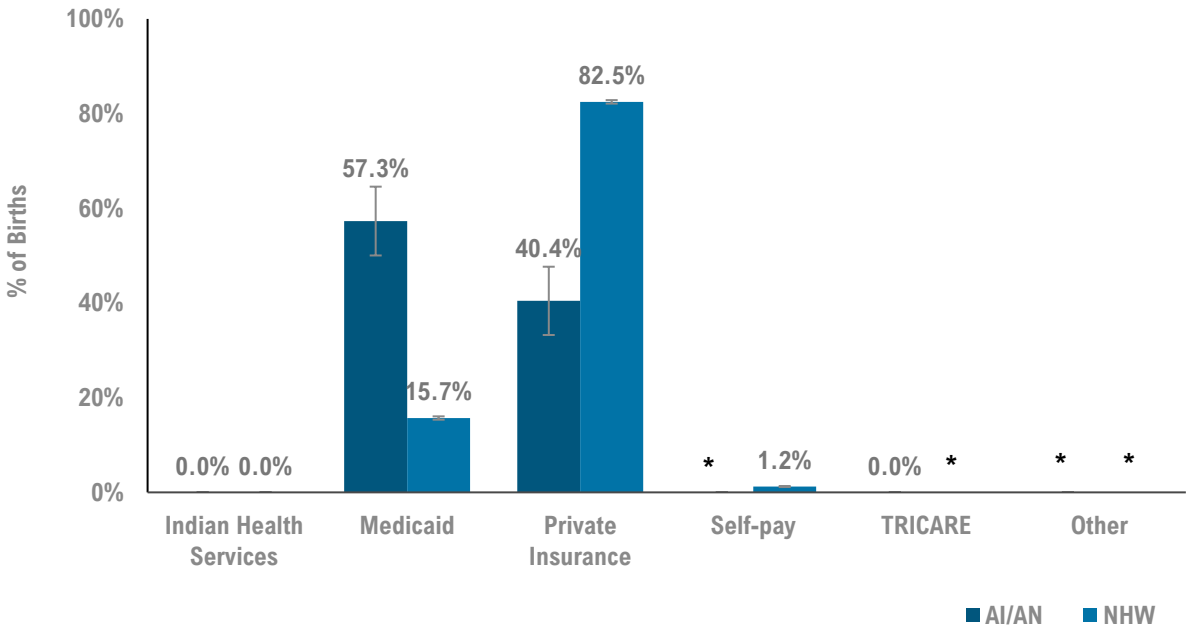
Source: National Vital Statistics, Birth Certificates, 2013-2017

Insurance Status

Maternity health coverage became mandatory in 2014 under the Affordable Care Act. A study prior to 2014 found differences in health insurance coverage could affect the type of care received during childbirth.[36] For example, compared to those covered by private health insurance, those with Medicaid coverage or those who were uninsured were less likely to receive intervention during childbirth (cesarean delivery, labor induction, and episiotomy).[36] Health insurance coverage has also been found to be associated with an increase in use of prenatal care, which can reduce the likelihood of adverse birth outcomes.[37]

Across the St. Louis UIH service area, the proportions of payment for birth through Medicaid and private insurance were statistically significantly different between AI/AN and NHW women (Figure 17). Approximately 57.3% AI/AN births were paid by Medicaid, whereas 15.7% of NHW births were paid by Medicaid. In contrast, 40.4% of NHW births were covered by private health insurance compared to 82.5% of AI/AN births.

Figure 17. Primary Payment Source and Race/Ethnicity, St. Louis, 2013-2017



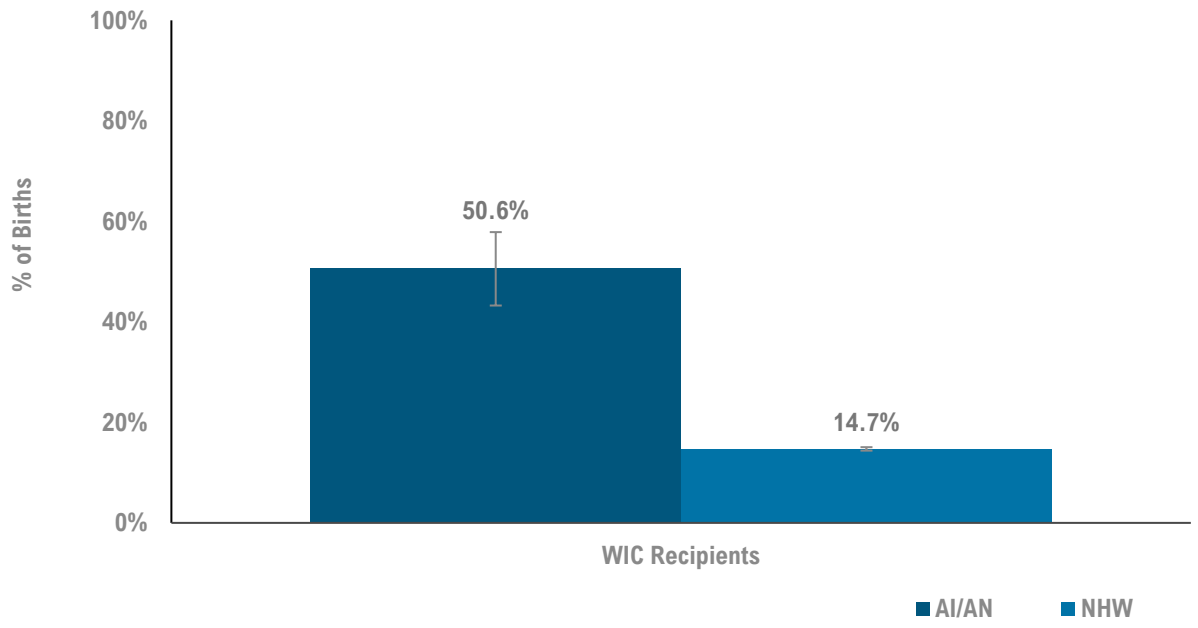
Source: National Vital Statistics, Birth Certificates, 2013-2017
*Suppressed data < 10

Women, Infants, and Children Status

Women, Infants, and Children (WIC) is a federal program that provides supplemental food to low-income pregnant, post-partum, and breastfeeding women. AI/AN people often experience food insecurity, high rates of hunger, and malnutrition, which increases likelihood of participating in WIC services.[38,39] Food insecurity has been found to have numerous effects on health outcomes, such as birth defects, anemia, and cognitive problems.[13] For that reason, participation in WIC services can be a protective factor for these adverse health outcomes.

Across the St. Louis UIH service area, 50.6% of pregnant AI/AN women reported receiving WIC services prior to birth, compared to 14.7% of NHW women (Figure 18). AI/AN mothers were 3.4 times as likely as NHW mothers to have accessed these vital services.

Figure 18. WIC Recipients by Race/Ethnicity, St. Louis, 2013-2017



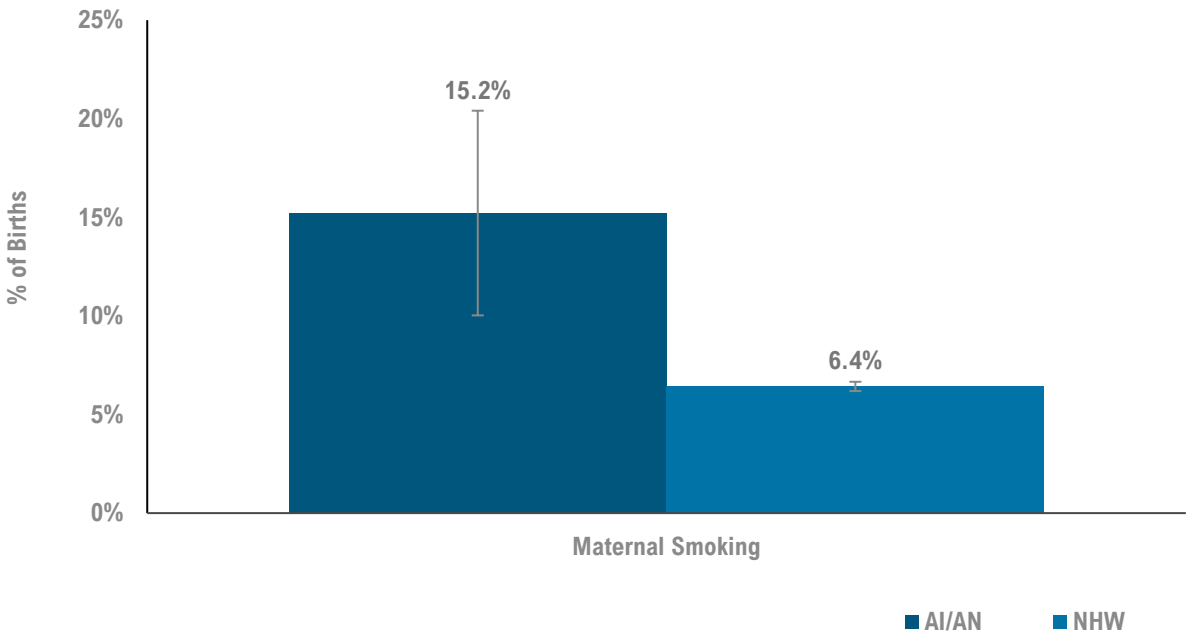
Source: National Vital Statistics, Birth Certificates, 2013-2017

Maternal Smoking

There are many negative infant and child outcomes linked to maternal tobacco use during pregnancy.[40] These negative outcomes include low birthweight, preterm birth, and various birth defects.[40,41] Of racial and ethnic groups, AI/AN women had the highest prevalence of smoking during pregnancy.[40] This disparity can be attributed to a difference in access to resources and tobacco advertising that target these communities.[42]

Across the St. Louis UIH service area, 15.2% of AI/AN women smoked while pregnant, compared to 6.4% of NHW women (Figure 19). AI/AN women were 2.4 times as likely as NHW women to smoke while pregnant.

Figure 19. Maternal Smoking by Race/Ethnicity, St. Louis, 2013-2017



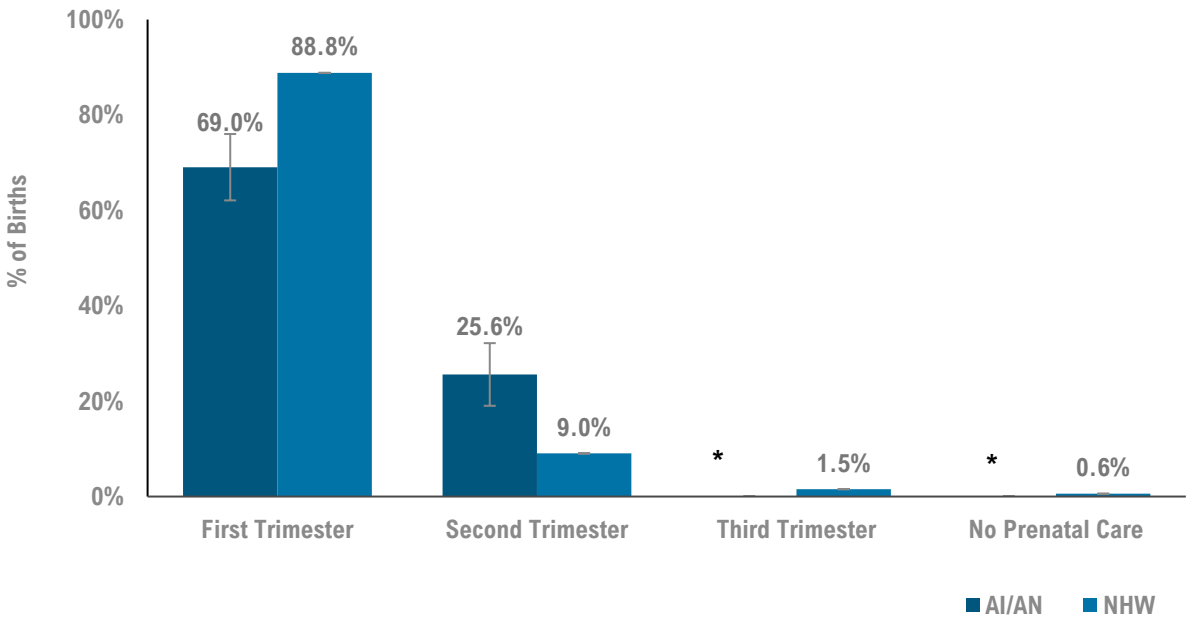
Source: National Vital Statistics, Birth Certificates, 2013-2017

Prenatal Care

Prenatal care refers to the medical attention received by women before or during their pregnancy. Early prenatal care is a significant component in ensuring a healthy pregnancy.[46] 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 birthweight, preterm birth, and morbidity, and mortality.[46] In addition, a lack of access, knowledge of resources and other social and structural barriers can also prevent utilization of prenatal care.[47,48] Disparities in prenatal care for AI/AN women varies by region and state.[49]

Among pregnant women within the St. Louis UIH service area, 69.0% of AI/AN women began prenatal care in the first trimester compared to 88.8% of NHW women, a statistically significant difference (Figure 20). The proportion of women beginning prenatal care in their third trimester or receiving no prenatal care among AI/AN women was 2.6 times that of NHW women.

Figure 20. Prenatal Care by Race/Ethnicity, St. Louis, 2013-2017



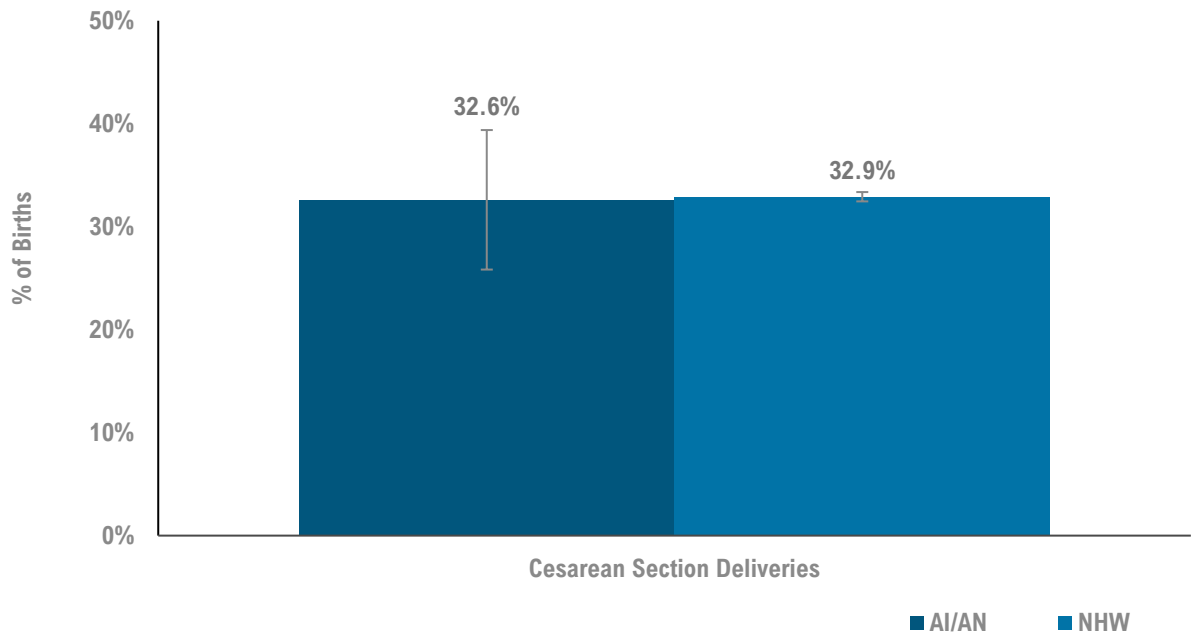
Source: National Vital Statistics, Birth Certificates, 2013-2017
*Suppressed data < 10

Cesarean Section

Cesarean sections can often be a life-saving intervention when necessary. This procedure can also lead to longer hospital stays and higher costs.[50] While cesarean sections can prevent maternal and infant mortality and morbidity, there is little to no advantage for women who have the procedure electively.[51,52] Cesarean sections are associated with both short- and long-term risks that come along with a major surgery such as infection, blood loss, and damage to organs.[53-55] The incidence of severe complications from cesarean sections increases significantly in those over the age of 35.[56] Moreover, the rate of cesarean sections has only increased among the general population, therefore we need to understand the disparities between the women receiving this procedure.[50]

Across the St. Louis UIH service area, an estimated 32.6% of births were delivered by cesarean section among AI/AN females (Figure 21). This was not statistically significantly different from the proportion of deliveries by cesarean section among NHW births at 32.9%.

Figure 21. Cesarean Section Delivery by Race/Ethnicity, St. Louis, 2013-2017



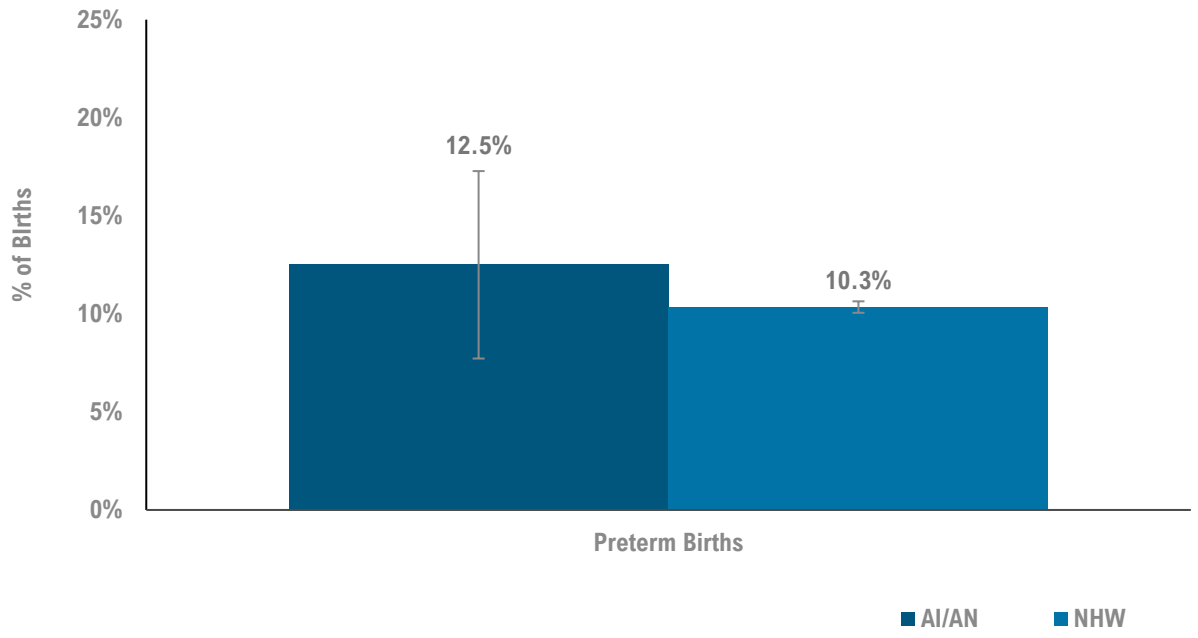
Source: National Vital Statistics, Birth Certificates, 2013-2017

Preterm Births

A preterm birth is defined as a birth that occurs before 37 completed weeks of pregnancy.[57] Preterm birth disproportionately affects AI/AN women.[58] Tobacco use, low socioeconomic status, low maternal age, and single marital status put women at higher risk for having a preterm delivery.[58] A factor associated with preterm birth is age—teens and women over 35 have an increased likelihood of preterm birth.[59]

Across the St. Louis UIH service area, 12.5% of all infants born to AI/AN women were born preterm, which was not statistically significantly different from the proportion of their NHW counterparts born preterm at 10.3% (Figure 22). Pregnant AI/AN women were as likely as pregnant NHW women to give birth to an infant preterm.

Figure 22. Preterm Birth by Race/Ethnicity, St. Louis, 2013-2017



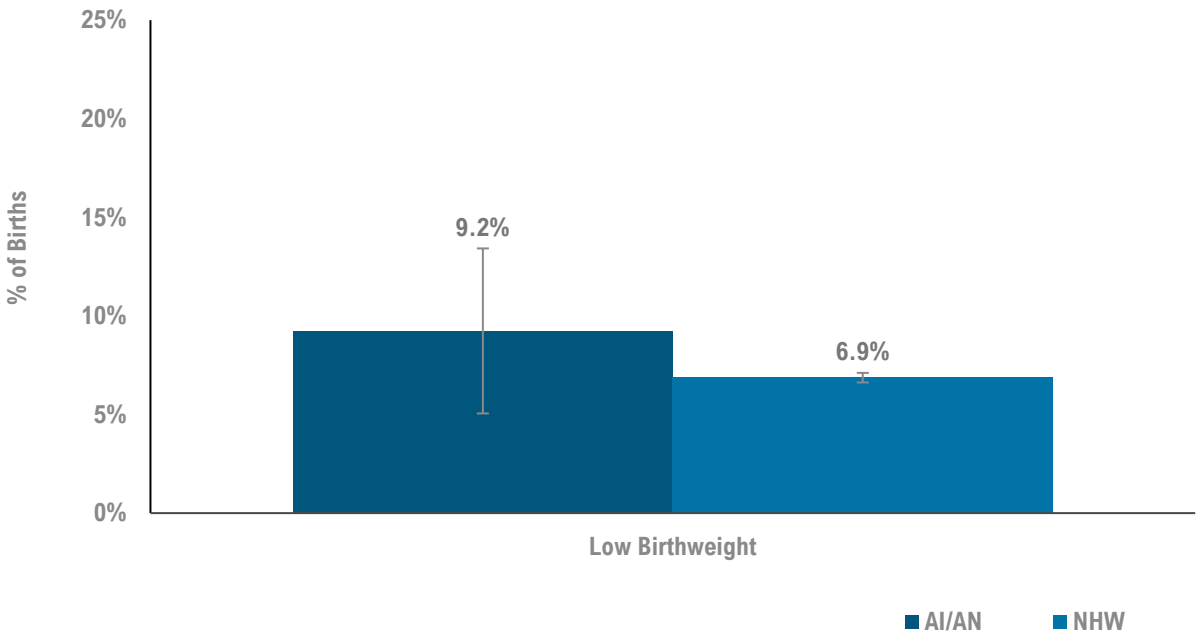
Source: National Vital Statistics, Birth Certificates, 2013-2017

Low Birthweight

Low birthweight is classified when a baby is born less than 2,500 grams, or 5 pounds 8 ounces.[60] Preterm birth can result in low birthweight. Smoking during pregnancy is also associated with an increased likelihood of low birthweight.[61] Additionally, it has been strongly suggested that exposure to cumulative stress such as historical trauma is associated with adverse birth outcomes.[61,62]

Across the St. Louis UIH service area, 9.2% of all infants born to AI/AN women were born at a low birthweight, which was not statistically significantly different from the proportion of their NHW counterparts born at a low birthweight at 6.9% (Figure 23). Pregnant AI/AN women were as likely as pregnant NHW women to give birth to an infant at a low birthweight.

Figure 23. Low Birthweight by Race/Ethnicity, St. Louis, 2013-2017



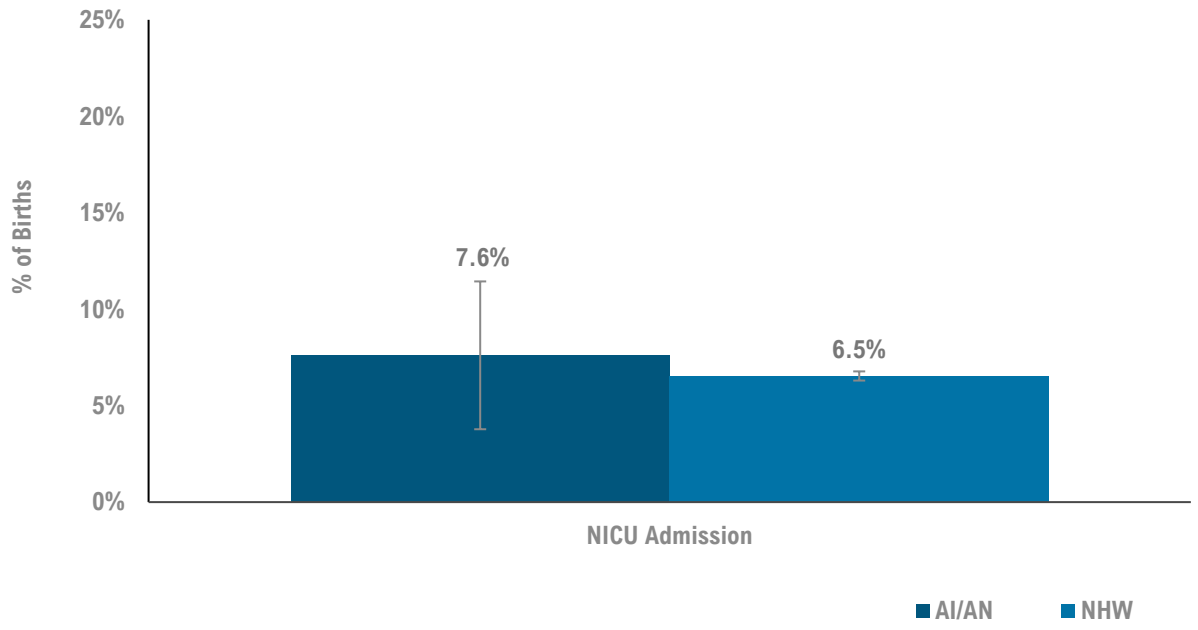
Source: National Vital Statistics, Birth Certificates, 2013-2017

Neonatal Intensive Care Unit Admission

The Neonatal Intensive Care Unit (NICU) is where newborn babies go when they need intensive medical care. Newborns in the NICU can be preterm, have low birthweight, or have a birth defect.[63] Maternal age is a factor associated with admittance to NICU.[63] There is increased risk for an infant to be admitted to NICU if the mother is younger than age 16 or older than age 40.[63]

Admission to the NICU for newborns across the St. Louis UIH service area was not statistically significantly different between AI/AN and NHW newborns (Figure 24). An estimated 7.6% of AI/AN newborns were admitted to the NICU compared to 6.5% NHW newborns. AI/AN newborns were as likely as NHW newborns to be admitted to the NICU.

Figure 24. NICU Admission by Race/Ethnicity, St. Louis, 2013-2017



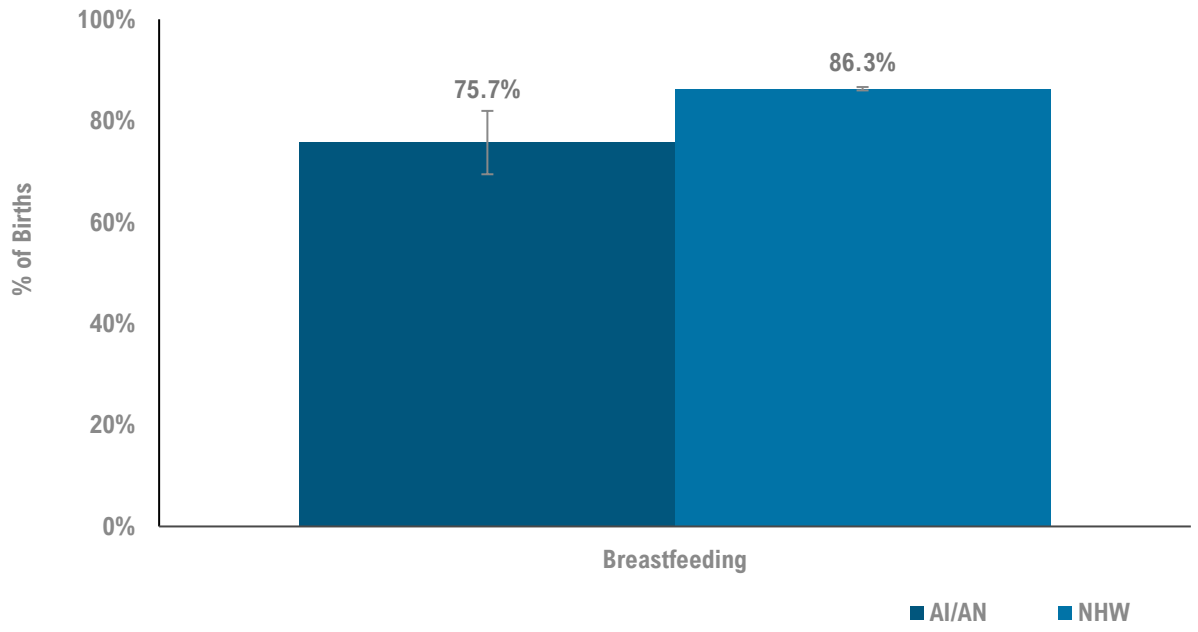
Source: National Vital Statistics, Birth Certificates, 2013-2017

Breastfeeding

Breastfeeding has been viewed as a way to nourish a baby's mind, body, and spirit.[64] Breastfeeding is an important way for infants to get nutrition in the first six months of their life and is tailored to the needs of the infant.[65] Benefits of breastfeeding for the infant include a lower risk of asthma, obesity, ear and respiratory infection, sudden infant death syndrome (SIDS), and gastrointestinal infections.[65]

Across the St. Louis UIH service area, 75.7% of infants born to AI/AN women were breastfeeding at the time of discharge from the hospital, compared to 86.3% of infants born to NHW women (Figure 25). This was a statistically significant difference.

Figure 26. Breastfeeding by Race/Ethnicity, St. Louis, 2013-2017



Source: National Vital Statistics, Birth Certificates, 2013-2017

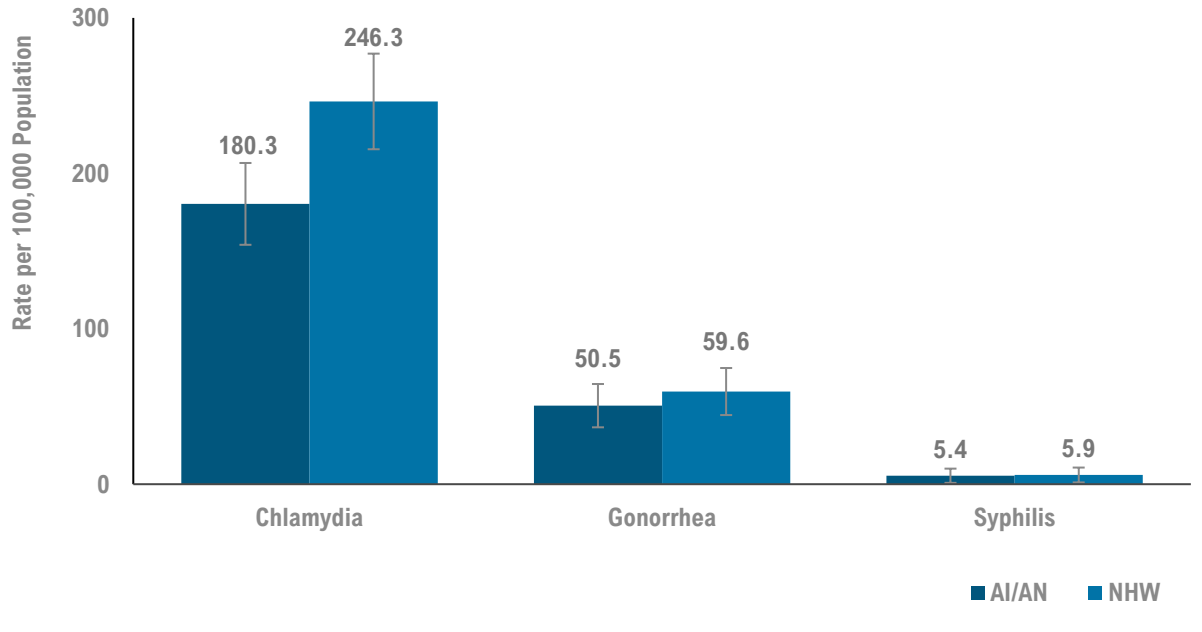
SEXUALLY TRANSMITTED INFECTIONS

With an estimated 20 million new infections occurring each year, STIs represent a significant public health challenge across all communities in the United States.[68] AI/ANs experience disproportionately high rates of STIs, with rates of STIs in AI/AN communities 2–6 times greater than among NHWs. Left untreated, many STIs can lead to significant health impacts including blindness, stroke, heart disease, ectopic pregnancies, miscarriage, stillbirth, and early infant death.[69-71]

Due to a limitation of the data, STI estimates represent the state where UIH service areas are located, as estimates were not available at the county level.

Within the state of Missouri in 2013-2017, the rates of STIs were not statistically significantly different between the AI/AN and NHW populations, with the exception of the rates of chlamydia (Figure 27). The rate of chlamydia among the AI/AN population (180.3 cases per 100,000) was 26.8% less than that of the NHW population (246.3 cases per 100,000). The rate of gonorrhea among the AI/AN population (50.5 cases per 100,000) was slightly lower than that of the NHW population, though this was not statistically significant (59.6 cases per 100,000). The rate of syphilis among the AI/AN population (5.4 cases per 100,000) was slightly lower than that of the NHW population, though this was not statistically significant (5.9 cases per 100,000).

Figure 27. Sexually-Transmitted Infections (STIs) by Race/Ethnicity, Missouri, 2013-2017



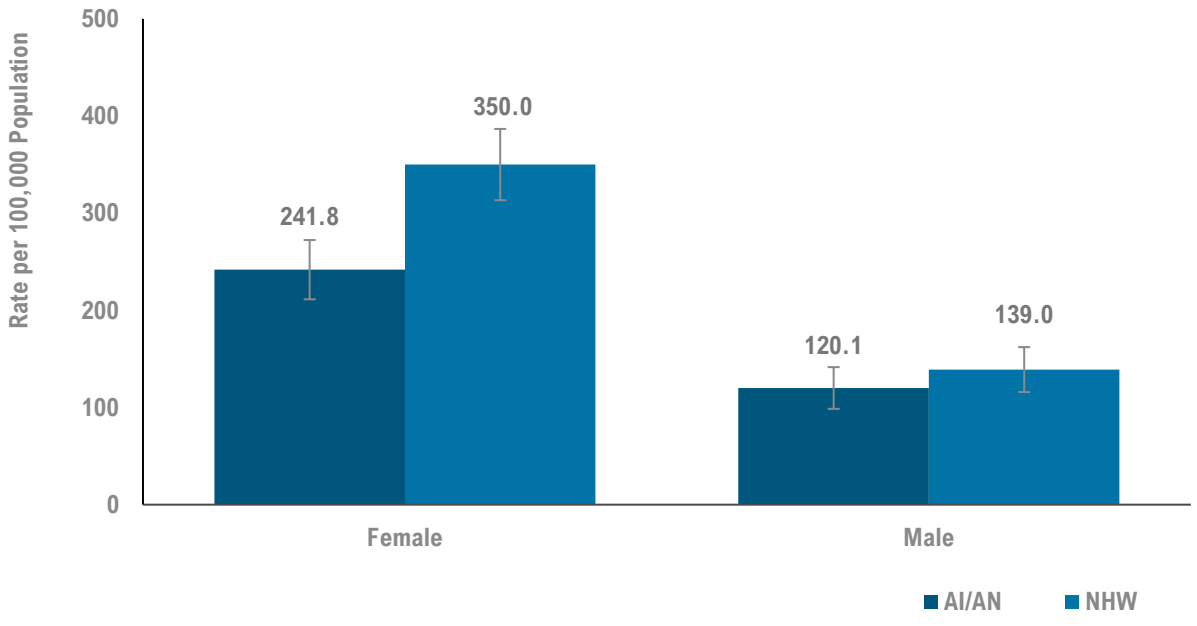
Source: National Notifiable Disease Surveillance System, 2013-2017

Chlamydia

Chlamydia is the most common STI in the United States. It is a bacterial STI that is often asymptomatic and underreported.[68] Disparities in chlamydia infections between AI/AN and NHW individuals is likely due to the many structural and social factors afflicting Native communities, including historical and ongoing trauma, lack of access to healthcare and screening services, poverty, and geographic isolation.[68,72] Due to the asymptomatic nature of chlamydia, both screening and treatment are essential to preventing and controlling its spread.[73] Untreated chlamydia can further spread the infection in a community, lead to permanent damage of an individual's reproductive organs, and cause pregnancy complications.[73] Serious, untreated cases can even result in infertility.

The rate of chlamydia infection among AI/AN females in Missouri (241.8 cases per 100,000) was statistically significantly different from that of NHW females (350.0 cases per 100,000) and was 2 times that of AI/AN males (120.1 cases per 100,000; Figure 28). NHW females had a rate of chlamydia infection that was 2.5 times that of NHW males (139.0 cases per 100,000 population). The rate of chlamydia infection among AI/AN males was 13.6% less than that of NHW males, though this was not a statistically significant difference.

Figure 28. Chlamydia Infections by Sex and Race/Ethnicity, Missouri, 2013-2017



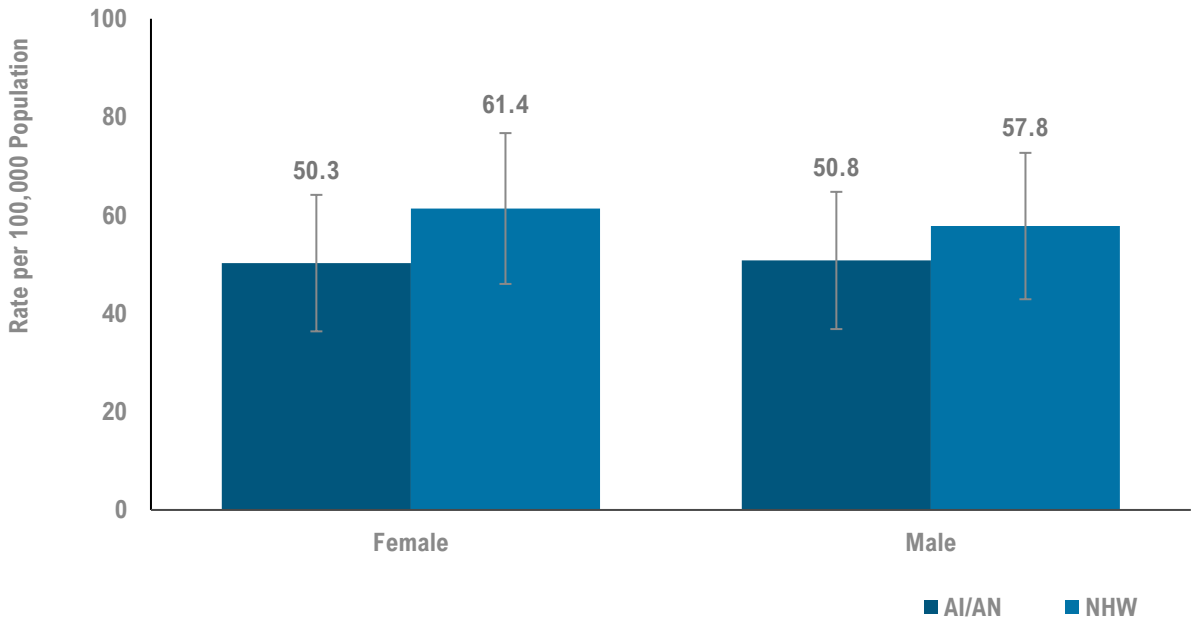
Source: National Notifiable Disease Surveillance System, 2013-2017

Gonorrhea

In the U.S., cases of gonorrhea increased by 67% between 2013 and 2017.[69] Gonorrhea is a bacterial STI that is often asymptomatic. When left untreated, it can cause serious complications such as pelvic pain, ectopic pregnancy, and infertility.[70] Untreated gonorrhea can also increase the risk of HIV transmission.[70] Although it is currently treatable with antibiotics, gonorrhea has become progressively more resistant to multiple antibiotics over the past three decades. Consequently, there is a need for robust public health monitoring and response to prevent the spread of these emerging resistant strains.[70]

The rate of gonorrhea infection among AI/AN females in Missouri (50.3 cases per 100,000) was not statistically significantly different from that of NHW females (61.4 cases per 100,000) and approximately the same as that of AI/AN males (50.8 cases per 100,000; Figure 29). NHW females had a rate of gonorrhea infection that was similar to that of NHW males (57.8 cases per 100,000 population). The rate of gonorrhea infection among AI/AN males was not statistically significantly different from that of NHW males.

Figure 29. Gonorrhea Infections by Sex and Race/Ethnicity, Missouri, 2013-2017



Source: National Notifiable Disease Surveillance System, 2013-2017

Syphilis

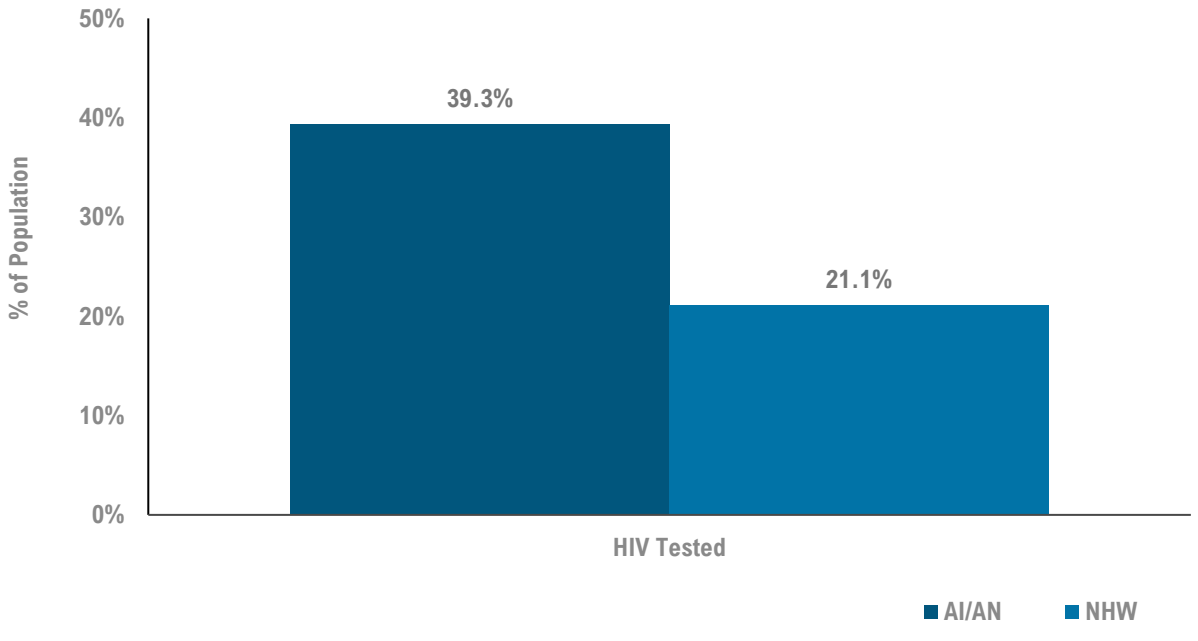
Syphilis is a serious STI caused by a bacterial infection.[71] Syphilis is divided into stages: primary stage, secondary stage, latent stage, and tertiary stage. Early symptoms are often minor but, if left untreated, can cause severe medical problems such as paralysis, dementia, and death.[71] Due to the underreporting of syphilis, the numbers recorded are likely an undercount of the true number of cases, even as the U.S. has reported for 2017 its highest rate of syphilis since 1993.[74] Incidence of syphilis in the U.S. varies by racial and ethnic groups, which is likely a reflection of the social determinants of health that contribute to syphilis presence in a community.[75]

HIV Screening

Human Immunodeficiency virus (HIV) remains a pressing public health threat throughout marginalized communities. It is estimated that 3,000 AI/AN people are living with HIV.[74] Both structural and environmental factors contribute to increased risk of HIV infection, including environmental resources, access to care, stigma, and economic status.[75] Among the general U.S. population, about 1 in 7 individuals with HIV do not know they are positive.[76] It is important for individuals to get tested and to start treatment as soon as possible, if necessary.

Within the state of Missouri, 39.3% of AI/AN individuals reported ever having been screened for HIV (Figure 30). This response was 1.9 times that of NHW individuals surveyed (21.1%).

Figure 30. HIV Testing by Race/Ethnicity, Missouri, 2013-2017



Source: Behavioral Risk Factor Surveillance System, 2013-2017

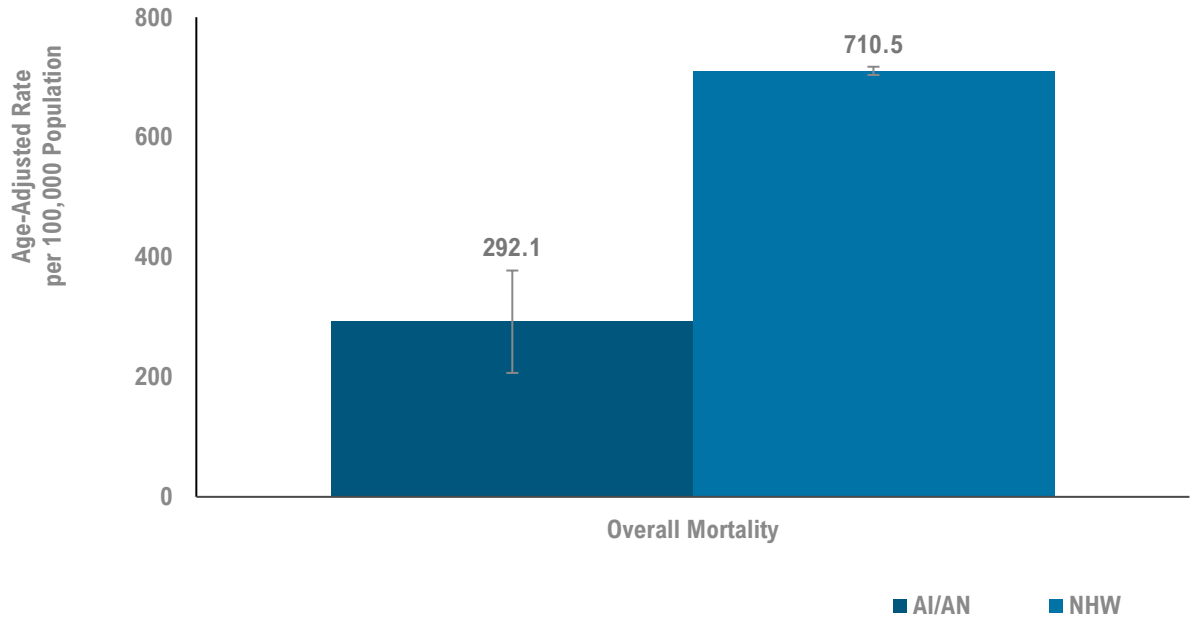
MORTALITY

Mortality data provide an indication of a community's or population's health and socioeconomic development status.[77,78] Mortality data are also a key component to understanding population size and future growth. Examining mortality data is one way to measure the burden of disease in a community or population.[78] 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.

All-cause Mortality

From 2013-2017, there were a total of 51 deaths among the AI/AN population in the St. Louis UIH service area compared to 44,505 deaths among the NHW population of the same area. The age-adjusted all-cause mortality rate for the AI/AN population was approximately 58.9% lower compared to the mortality rate of the NHW population (292.1 deaths per 100,000 vs 710.5 deaths per 100,000, respectively), a statistically significant difference (Figure 31).

Figure 31. Overall Mortality Rate by Race/Ethnicity, St. Louis, 2013-2017

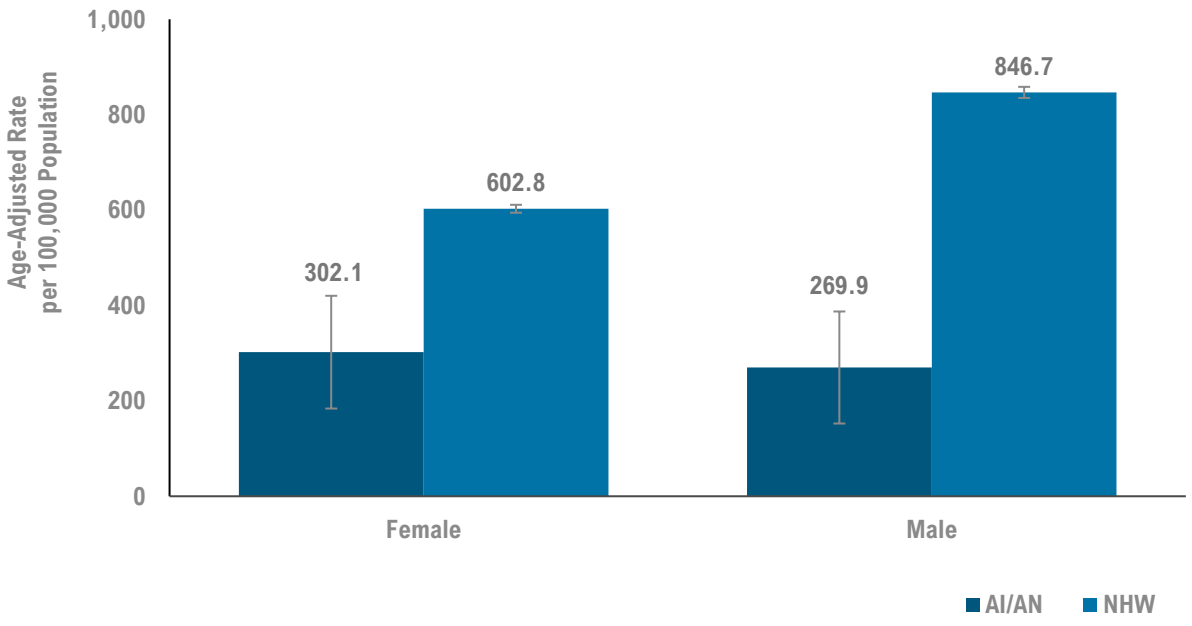


Source: National Vital Statistics, Death Certificates, 2013-2017

All-cause Mortality by Sex

The mortality rates for both males and females were statistically significantly lower among the AI/AN population compared to their NHW counterparts in the St. Louis UIH service area (Figure 32). The mortality rate for AI/AN males was 68.1% lower than that of NHW males (269.9 deaths per 100,000 vs 846.7 deaths per 100,000, respectively). AI/AN females (302.1 deaths per 100,000) had a 49.9% lower mortality rate than NHW females (602.8 deaths per 100,000). Additionally, the mortality rate for AI/AN females was 10.7% higher than that of AI/AN males, though this was not statistically significant.

Figure 32. Overall Mortality Rate by Sex and Race/Ethnicity, St. Louis, 2013-2017



Source: National Vital Statistics, Death Certificates, 2013-2017

Top Causes of Mortality

Mortality rates often reflect the influence of environments, risk factors, socioeconomic status, and communicable diseases.[83] Understanding the top underlying causes of mortality can inform disease prevention goals, priorities, and strategies.[83]

The AI/AN and NHW populations of the St. Louis UIH service area had the same top two leading causes of mortality, the first being vascular disease and the second being cancer (Table 1). Though the two populations had the same top two causes of mortality, the cause-specific mortality rates differed between the populations. The AI/AN population had a vascular disease cause-specific mortality rate that was 60.8% less than that of the NHW population (85.2 deaths per 100,000 vs 217.5 deaths per 100,000, respectively). Similarly, the cause-specific mortality rate of cancer in the AI/AN population (60.3 deaths per 100,000) was 60.6% less than that of the NHW population (153 deaths per 100,000).

Table 1. Top Causes of Mortality, St. Louis, 2013-2017

AI/AN			NHW		
Rank	**Cause**	**Rate (per 100k)**	**Rank**	**Cause**	**Rate (per 100k)**
1	**Vascular Disease**	**85.2**	**1**	**Vascular Disease**	**217.5**
2	**Cancer**	**60.3**	**2**	**Cancer**	**153.0**
3	*	*			
4	*	*			
5	*	*			

* Suppressed data < 10.
Source: National Vital Statistics, Death Certificates, 2013-2017

REFERENCES

1. Norris T, Vines P, Hoeffel E. *The American Indian and Alaska Native Population: 2010*. U.S. Census Bureau; 2012.
2. Fisher PA, Ball TJ. The Indian Family Wellness Project: An Application of the Tribal Participatory Research Model. *Prev Sci*. 2002;3(3):235-240. doi:10.1023/A:1019950818048
3. Arias E SW. The Validity of Race and Hispanic Origin Reporting on Death Certificates in the United States. *Vital Health Stat 2*. 2008;2(148).
4. 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. *Am J Public Health*. 2014;104 Suppl 3(Suppl 3):S295-302. doi:10.2105/AJPH.2014.301933
5. Thornton RLJ, Glover CM, Cené CW, Glik DC, Henderson JA, Williams DR. Evaluating Strategies For Reducing Health Disparities By Addressing The Social Determinants Of Health. *Health Aff Proj Hope*. 2016;35(8):1416-1423. doi:10.1377/hlthaff.2015.1357
6. Marmot M. Social determinants of health inequalities. *Lancet Lond Engl*. 2005;365(9464):1099-1104. doi:10.1016/S0140-6736(05)71146-6
7. Williams DR, Mohammed SA, Leavell J, Collins C. Race, socioeconomic status, and health: complexities, ongoing challenges, and research opportunities. *Ann N Y Acad Sci*. 2010;1186:69-101. doi:10.1111/j.1749-6632.2009.05339.x
8. Fuller-Rowell TE, Evans GW, Ong AD. Poverty and health: the mediating role of perceived discrimination. *Psychol Sci*. 2012;23(7):734-739. doi:10.1177/0956797612439720
9. Woolf SH. How Are Income and Wealth Linked to Health and Longevity? :22
10. Lacour M, Tissington LD. The effects of poverty on academic achievement. :6.
11. 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. doi:10.1001/jama.2009.754
12. Bell J, Mora G, Hagan E, Rubin V, Karpyn A. *Access to Healthy Food and Why It Matters: A Review of the Research*.; 2013:40. Accessed February 2, 2021. https://www.policylink.org/sites/default/files/GROCERYGAP_FINAL_NOV2013.pdf
13. Gundersen C, Ziliak JP. Food Insecurity And Health Outcomes. *Health Aff Proj Hope*. 2015;34(11):1830-1839. doi:10.1377/hlthaff.2015.0645
14. 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. *J Am Stat Assoc*. 2012;107(499):958-975. doi:10.1080/01621459.2012.682828
15. Rossi PH, Weber E. The social benefits of homeownership: Empirical evidence from national surveys. *Hous Policy Debate*. 1996;7(1):1-35. doi:10.1080/10511482.1996.9521212
16. Lam JA. Type of Structure, Satisfaction and Propensity To Move. *Hous Soc*. 1985;12(1):32-44. doi:10.1080/08882746.1985.11429958
17. Baker E, Bentley R, Mason K. The Mental Health Effects of Housing Tenure: Causal or Compositional? *Urban Stud*. 2013;50(2):426-442.
18. Sommers BD, Gawande AA, Baicker K. Health Insurance Coverage and Health - What the Recent Evidence Tells Us. *N Engl J Med*. 2017;377(6):586-593. doi:10.1056/NEJMsb1706645
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. doi:10.1001/jama.297.10.1073
20. Krahn GL, Walker DK, Correa-De-Araujo R. Persons with disabilities as an unrecognized health disparity population. *Am J Public Health*. 2015;105 Suppl 2:S198-206. doi:10.2105/AJPH.2014.302182
21. Adams C. Nurturing Belonging:(Re) centering Indigenous Perspectives on Disability. 2018;(237). https://cyc-net.org/cyc-online/nov2018.pdf#page=12
22. Kimbro RT, Bzostek S, Goldman N, Rodríguez G. Race, ethnicity, and the education gradient in health. *Health Aff Proj Hope*. 2008;27(2):361-372. doi:10.1377/hlthaff.27.2.361

23. Conti G, Heckman J, Urzua S. THE EDUCATION-HEALTH GRADIENT. *Am Econ Rev*. 2010;100(2):234-238. doi:10.1257/aer.100.2.234

24. 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*. 2014;14:1310. doi:10.1186/1471-2458-14-1310

25. Cawley J, Moriya AS, Simon K. The Impact of the Macroeconomy on Health Insurance Coverage: Evidence from the Great Recession. *Health Econ*. 2015;24(2):206-223. doi:10.1002/hec.3011

26. Diette TM, Goldsmith AH, Hamilton D, Darity Jr. W. Causality in the Relationship between Mental Health and Unemployment. In: Appelbaum LD, ed. *Reconnecting to Work: Policies to Mitigate Long-Term Unemployment and Its Consequences*. W.E. Upjohn Institute; 2012:63-94. doi:10.17848/9780880994095.ch4

27. Mueller N, Rojas-Rueda D, Cole-Hunter T, et al. Health impact assessment of active transportation: A systematic review. *Prev Med*. 2015;76:103-114. doi:10.1016/j.ypmed.2015.04.010

28. Bureau UC. Why We Ask About… Commuting. Accessed February 2, 2021. https://www.census.gov/acs/www/about/why-we-ask-each-question/commuting/

29. Christian TJ. Trade-Offs Between Commuting Time and Health-Related Activities. *J Urban Health Bull N Y Acad Med*. 2012;89(5):746-757. doi:10.1007/s11524-012-9678-6

30. Cavazos-Rehg PA, Krauss MJ, Spitznagel EL, et al. Maternal age and risk of labor and delivery complications. *Matern Child Health J*. 2015;19(6):1202-1211. doi:10.1007/s10995-014-1624-7

31. Koball HL, Moiduddin E, Henderson J, Goesling B, Besculides M. What Do We Know About the Link Between Marriage and Health? *J Fam Issues*. 2010;31(8):1019-1040. doi:10.1177/0192513X10365834

32. Williams K, Sassler S, Frech A, Addo F, Cooksey E. Nonmarital Childbearing, Union History, and Women's Health at Midlife. *Am Sociol Rev*. 2011;76(3):465-486. doi:10.1177/0003122411409705

33. Berkman LF, Zheng Y, Glymour MM, Avendano M, Börsch-Supan A, Sabbath EL. Mothering alone: cross-national comparisons of later-life disability and health among women who were single mothers. *J Epidemiol Community Health*. 2015;69(9):865-872. doi:10.1136/jech-2014-205149

34. Mensch BS, Chuang EK, Melnikas AJ, Psaki SR. Evidence for causal links between education and maternal and child health: systematic review. *Trop Med Int Health TM IH*. 2019;24(5):504-522. doi:10.1111/tmi.13218

35. Güneş PM. The role of maternal education in child health: Evidence from a compulsory schooling law. *Econ Educ Rev*. 2015;47(C):1-16.

36. Kozhimannil KB, Shippee TP, Adegoke O, Virnig BA. Trends in Hospital-Based Childbirth Care: The Role of Health Insurance. *Am J Manag Care*. 2013;19(4):e125-e132.

37. Daw JR, Sommers BD. Association of the Affordable Care Act Dependent Coverage Provision With Prenatal Care Use and Birth Outcomes. *JAMA*. 2018;319(6):579-587. doi:10.1001/jama.2018.0030

38. Jernigan VBB, Huyser KR, Valdes J, Simonds VW. Food Insecurity among American Indians and Alaska Natives: A National Profile using the Current Population Survey-Food Security Supplement. *J Hunger Environ Nutr*. 2017;12(1):1-10. doi:10.1080/19320248.2016.1227750

39. Tomayko EJ, Mosso KL, Cronin KA, et al. Household food insecurity and dietary patterns in rural and urban American Indian families with young children. *BMC Public Health*. 2017;17(1):611. doi:10.1186/s12889-017-4498-y

40. Drake P, Driscoll AK, Mathews TJ. Cigarette Smoking During Pregnancy: United States, 2016. *NCHS Data Brief*. 2018;(305):1-8.

41. Curtin SC. Smoking Prevalence and Cessation Before and During Pregnancy: Data From the Birth Certificate, 2014. :14.

42. Hiscock R, Bauld L, Amos A, Fidler JA, Munafò M. Socioeconomic status and smoking: a review. *Ann N Y Acad Sci*. 2012;1248:107-123. doi:10.1111/j.1749-6632.2011.06202.x

43. CDC. Gestational Diabetes. Centers for Disease Control and Prevention. Published May 30, 2019. Accessed February 2, 2021. https://www.cdc.gov/diabetes/basics/gestational.html

44. Yuen L, Wong VW, Simmons D. Ethnic Disparities in Gestational Diabetes. *Curr Diab Rep*. 2018;18(9):68. doi:10.1007/s11892-018-1040-2

45. Lao TT, Ho L-F, Chan BCP, Leung W-C. Maternal age and prevalence of gestational diabetes mellitus. *Diabetes Care*. 2006;29(4):948-949. doi:10.2337/diacare.29.04.06.dc05-2568

47. National Institute of Child Health and Human Development. What is prenatal care and why is it important? | NICHD - Eunice Kennedy Shriver National Institute of Child Health and Human Development. Accessed February 2, 2021. https://www.nichd.nih.gov/health/topics/pregnancy/conditioninfo/prenatal-care

48. Beeckman K, Louckx F, Putman K. Predisposing, enabling and pregnancy-related determinants of late initiation of prenatal care. *Matern Child Health J*. 2011;15(7):1067-1075. doi:10.1007/s10995-010-0652-1

49. Kitsantas P, Gaffney KF, Cheema J. Life Stressors and Barriers to Timely Prenatal Care for Women with High-Risk Pregnancies Residing in Rural and Nonrural Areas. *Womens Health Issues*. 2012;22(5):e455-e460. doi:10.1016/j.whi.2012.06.003

50. Johnson PJ, Call KT, Blewett LA. The importance of geographic data aggregation in assessing disparities in American Indian prenatal care. *Am J Public Health*. 2010;100(1):122-128. doi:10.2105/AJPH.2008.148908

51. Sandall J, Tribe RM, Avery L, et al. Short-term and long-term effects of caesarean section on the health of women and children. *Lancet Lond Engl*. 2018;392(10155):1349-1357. doi:10.1016/S0140-6736(18)31930-5

52. Mylonas I, Friese K. Indications for and Risks of Elective Cesarean Section. *Dtsch Ärztebl Int*. 2015;112(29-30):489-495. doi:10.3238/arztebl.2015.0489

53. Hannah ME. Planned elective cesarean section: A reasonable choice for some women? *CMAJ Can Med Assoc J*. 2004;170(5):813-814. doi:10.1503/cmaj.1032002

54. Betran AP, Torloni MR, Zhang JJ, Gülmezoglu AM. WHO Statement on Caesarean Section Rates. *BJOG Int J Obstet Gynaecol*. 2016;123(5):667-670. doi:https://doi.org/10.1111/1471-0528.13526

55. Macones GA, Peipert J, Nelson DB, et al. Maternal complications with vaginal birth after cesarean delivery: a multicenter study. *Am J Obstet Gynecol*. 2005;193(5):1656-1662. doi:10.1016/j.ajog.2005.04.002

56. Overview | Caesarean section | Guidance | NICE. Accessed February 2, 2021. https://www.nice.org.uk/guidance/cg132

57. Korb D, Goffinet F, Seco A, Chevret S, Deneux-Tharaux C, EPIMOMS Study Group. Risk of severe maternal morbidity associated with cesarean delivery and the role of maternal age: a population-based propensity score analysis. *CMAJ Can Med Assoc J J Assoc Medicale Can*. 2019;191(13):E352-E360. doi:10.1503/cmaj.181067

58. ACOG. Preterm Labor and Birth. The American College of Obstetricians and Gynecologists. Accessed February 2, 2021. https://www.acog.org/en/Womens Health/FAQs/Preterm Labor and Birth

59. Raglan GB, Lannon SM, Jones KM, Schulkin J. Racial and Ethnic Disparities in Preterm Birth Among American Indian and Alaska Native Women. *Matern Child Health J*. 2016;20(1):16-24. doi:10.1007/s10995-015-1803-1

60. Centers for Disease Control and Prevention. Preterm Birth | Maternal and Infant Health | Reproductive Health | CDC. Published 2014. https://www.cdc.gov/reproductivehealth/maternalinfanthealth/pretermbirth.htm

61. WHO. Global Nutrition Targets 2025: Low birth weight policy brief. WHO. Accessed February 2, 2021. http://www.who.int/nutrition/publications/globaltargets2025_policybrief_lbw/en/

62. Dennis JA. Birth weight and maternal age among American Indian/Alaska Native mothers: A test of the weathering hypothesis. *SSM - Popul Health*. 2018;7. doi:10.1016/j.ssmph.2018.10.004

63. Palacios JF, Portillo CJ. Understanding Native Women's Health: Historical Legacies. *J Transcult Nurs*. 2009;20(1):15-27. doi:10.1177/1043659608325844

64. Stanford. The Neonatal Intensive Care Unit (NICU). Stanford Children's Health. Accessed February 2, 2021. https://www.stanfordchildrens.org/en/topic/default?id=the-neonatal-intensive-care-unit-nicu-90-P02389

65. Reclaiming breastfeeding in Indian Country. W.K. Kellogg Foundation. Accessed February 2, 2021. https://www.wkkf.org:443/what-we-do/featured-work/bringing-breastfeeding-back-to-indian-country

66. CDC. Why It Matters. Centers for Disease Control and Prevention. Published November 29, 2020. Accessed February 2, 2021. https://www.cdc.gov/breastfeeding/about-breastfeeding/why-it-matters.html

67. CDC. Infant Mortality | Maternal and Infant Health | Reproductive Health. Centers for Disease Control and Prevention. Published September 10, 2020. Accessed February 2, 2021. https://www.cdc.gov/reproductivehealth/maternalinfanthealth/infantmortality.htm

68. NICHD. What causes infant mortality? https://www.nichd.nih.gov/. Accessed February 2,

**2021.
https://www.nichd.nih.gov/health/topics/infant-mortality/topicinfo/causes**

70. Satterwhite CL, Torrone E, Meites E, et al. Sexually transmitted infections among US women and men: prevalence and incidence estimates, 2008. *Sex Transm Dis*. 2013;40(3):187-193. doi:10.1097/OLQ.0b013e318286bb53

71. Chlamydia - CDC Fact Sheet. :2.

72. Centers for Disease Control. STD Facts - Syphilis (Detailed). Published September 23, 2019. Accessed February 2, 2021. https://www.cdc.gov/std/syphilis/stdfact-syphilis-detailed.htm

73. Centers for Disease Control. Detailed STD Facts - Gonorrhea. Published January 19, 2021. Accessed February 2, 2021. https://www.cdc.gov/std/gonorrhea/stdfact-gonorrhea-detailed.htm

74. Preventing Cancer Across a Lifetime | CDC. Published July 14, 2020. Accessed February 2, 2021. https://www.cdc.gov/cancer/dcpc/prevention/lifetime.htm

75. White MC, Espey DK, Swan J, Wiggins CL, Eheman C, Kaur JS. Disparities in cancer mortality and incidence among American Indians and Alaska Natives in the United States. *Am J Public Health*. 2014;104 Suppl 3:S377-387. doi:10.2105/AJPH.2013.301673

76. Centers for Disease Control. *HIV Surveillance Report 2017*. Centers for Disease Control; :129.

77. Pellowski JA, Kalichman SC, Matthews KA, Adler N. A pandemic of the poor: social disadvantage and the U.S. HIV epidemic. *Am Psychol*. 2013;68(4):197-209. doi:10.1037/a0032694

78. Centers for Disease Control. Testing | HIV Basics | HIV/AIDS. Published October 22, 2020. Accessed February 2, 2021. https://www.cdc.gov/hiv/basics/testing.html

79. Anderson RT, Sorlie P, Backlund E, Johnson N, Kaplan GA. Mortality effects of community socioeconomic status. *Epidemiol Camb Mass*. 1997;8(1):42-47. doi:10.1097/00001648-199701000-00007

80. Thacker SB, Stroup DF, Carande-Kulis V, Marks JS, Roy K, Gerberding JL. Measuring the public's health. *Public Health Rep Wash DC 1974*. 2006;121(1):14-22. doi:10.1177/003335490612100107

81. Herne MA, Maschino AC, Graham-Phillips AL. Homicide Among American Indians/Alaska Natives, 1999-2009: Implications for Public Health Interventions. *Public Health Rep Wash DC 1974*. 2016;131(4):597-604. doi:10.1177/0033354916662219

82. Lanier C. Structure, Culture, and Lethality: An Integrated Model Approach to American Indian Suicide and Homicide. *Homicide Stud*. 2010;14(1):72-89. doi:10.1177/1088767909352829

83. Naghavi M. Global, regional, and national burden of suicide mortality 1990 to 2016: systematic analysis for the Global Burden of Disease Study 2016. *BMJ*. 2019;364:l94. doi:10.1136/bmj.l94

84. *Recommended CSTE Indicators for Suicide among American Indians and Alaska Natives*. Council of State and Territorial Epidemiologists; 2018:72. Accessed February 2, 2021. https://cdn.ymaws.com/www.cste.org/resource/resmgr/publications/Tribal_Suicide_Draft_Resourc.pdf

85. Yoon PW, Bastian B, Anderson RN, Collins JL, Jaffe HW. Potentially Preventable Deaths from the Five Leading Causes of Death — United States, 2008–2010. *Cerebrovasc Dis*. 2014;63(17):24.

APPENDIX A

Sociodemographic Indicators among AI/AN (alone) in St. Louis Service Area vs. All Service Areas

	AI/AN (alone) in St. Louis	AI/AN in All UIO Service Areas
# Individuals	2,584	767,432
% of Population	0.2%	0.8%
Age (% of Population)		
0-4	5.8%	7.0%
5-14	16.8%	15.0%
15-24	12.7%	16.4%
25-34	14.1%	16.1%
35-44	17.0%	13.4%
45-54	10.1%	12.9%
55-64	17.9%	10.7%
65-74	4.6%	5.6%
75-84	0.8%	2.1%
85+	0.2%	0.8%
Sex (% of Population)		
Female	47.3%	51.1%
Male	52.7%	48.9%
Poverty (% of Population)		
Children	17.2%	30.5%
Individuals	23.1%	24.5%
Families	20.2%	20.3%
Single Mother Families	17.8%	31.0%
SNAP Recipients (% of Population)		
All	19.5%	23.6%
Housing Tenure (% of Households)		
Owner Occupied	49.1%	45.3%
Renter Occupied	50.9%	54.7%

* Suppressed data < 10.
Source: American Community Survey, 2013-2017

	AI/AN (alone) in St. Louis	AI/AN in All UIO Service Areas
No Health Insurance (% of Population)		
All	13.1%	19.7%
Age: 0-18	4.7%	12.6%
Age: 19-64	17.2%	25.3%
Age: 65+	*	2.5%
Disability (% of Population)		
Age: 0-17	11.7%	4.7%
Age: 18-64	16.4%	15.5%
Age: 65+	30.8%	46.0%
Education (% of Population 25 years and older)		
Less than High School	18.1%	20.5%
High School Diploma or GED	22.9%	28.2%
Some College or Associate Degree	34.0%	34.7%
Bachelor Degree or Higher	25.0%	16.6%
Unemployed (% of Population 16 years and older)		
All	12.9%	11.2%
Commute Type (% of Employed Population 16 years and older)		
Car/Truck/Van Alone	70.4%	67.9%
Carpool	6.5%	12.8%
Public Transport	7.7%	8.5%
Taxi/Bike/Other	1.1%	3.0%
Walked	6.3%	3.8%
Worked at Home	7.9%	3.9%

* Suppressed data < 10.
Source: American Community Survey, 2013-2017

APPENDIX B

Maternal and Child Health Indicators among AI/AN in St. Louis Service Area vs. All Service Areas

	AI/AN in St. Louis		AI/AN in All UIO Service Areas	
	%	(95% CI)	%	(95% CI)
# of Births	184		47,556	
% of All Births	0.2%	(0.2% - 0.3%)	0.8%	(0.8% - 0.8%)
Maternal Age (% of Births)				
19 years or less	*		9.3%	(9.0% - 9.5%)
20-29 years	56.5%	(49.4% - 63.7%)	56.9%	(56.5% - 57.4%)
30-39 years	31.5%	(24.8% - 38.2%)	31.6%	(31.2% - 32.0%)
40 plus years	*		2.2%	(2.1% - 2.3%)
Marital Status (% of Births)				
Married	41.3%	(34.2% - 48.4%)	33.9%	(33.5% - 34.3%)
Maternal Education (% of Births)				
Less than High School	11.4%	(6.8% - 16.0%)	19.1%	(18.7% - 19.4%)
High School Diploma or GED	25.0%	(18.7% - 31.3%)	29.6%	(29.2% - 30.0%)
Some College or Associate Degree	44.0%	(36.8% - 51.2%)	33.0%	(26.6% - 26.7%)
Bachelor Degree or Higher	19.0%	(13.4% - 24.7%)	11.9%	(11.6% - 12.2%)
Primary Payment Source (% of Births)				
Indian Health Services	0.0%	(0.0% - 0.0%)	6.3%	(6.0% - 6.5%)
Medicaid	57.3%	(50.0% - 64.6%)	62.5%	(62.1% - 63.0%)
Private Insurance	40.4%	(33.2% - 47.7%)	26.1%	(70.1% - 70.2%)
Self-pay	*		2.0%	(2.6% - 2.6%)
WIC Status (% of Births)				
All	50.6%	(43.3% - 57.9%)	52.4%	(52.0% - 52.9%)
Maternal Smoking (% of Births)				
All	15.2%	(10.0% - 20.4%)	9.1%	(8.9% - 9.4%)
Gestational Diabetes (% of Births)				
All	*		9.9%	(9.6% - 10.2%)
Prenatal Care (% of Births)				
First Trimester	69.0%	(62.1% - 76.0%)	64.7%	(64.3% - 65.1%)
Second Trimester	25.6%	(19.0% - 32.2%)	23.6%	(23.2% - 24.0%)
Third Trimester	*		8.4%	(8.2% - 8.7%)
No Prenatal Care	*		3.2%	(3.1% - 3.4%)

* Suppressed data < 10.

Source: National Vital Statistics, Birth and Death Certificates, 2013-2017

	AI/AN in St. Louis		AI/AN in All UIO Service Areas	
	%	(95% CI)	%	(95% CI)
Cesarean Section Delivery (% of Births)				
All	32.6%	(25.8% - 39.4%)	27.7%	(27.3% - 28.1%)
Preterm Birth (% of Births)				
All	12.5%	(7.7% - 17.3%)	13.3%	(13.0% - 13.7%)
Low Birthweight (% of Births)				
All	9.2%	(5.1% - 13.4%)	7.6%	(7.4% - 7.9%)
NICU Admission (% of Births)				
All	7.6%	(3.8% - 11.4%)	10.2%	(9.9% - 10.5%)
Breastfeeding (% of Births)				
All	75.7%	(69.4% - 81.9%)	81.9%	(81.5% - 82.3%)
	Rate per 1,000 Live Births	(95% CI)	Rate per 1,000 Live Births	(95% CI)
Infant Mortality (Rate per 1,000 Live Births)				
All	*		14.2	(13.2 - 15.1)

* Suppressed data < 10.

Source: National Vital Statistics, Birth and Death Certificates, 2013-2017

APPENDIX C

Sexually Transmitted Infection (STI) Indicators among AI/AN in Missouri vs. All Service States

	AI/AN in Missouri		AI/AN in All UIO Service States	
	Rate per 100,000	(95% CI)	Rate per 100,000	(95% CI)
Chlamydia (Rate per 100,000 Population)				
All	180.3	(154.0 - 206.7)	716.6	(664.1 - 769.0)
Female	241.8	(211.4 - 272.3)	1080.7	(1016.2 - 1145.1)
Male	120.1	(98.6 - 141.5)	341.3	(305.1 - 377.5)
Gonorrhea (Rate per 100,000 Population)				
All	50.5	(36.6 - 64.5)	208.5	(180.2 - 236.8)
Female	50.3	(36.4 - 64.1)	253.6	(222.4 - 284.8)
Male	50.8	(36.8 - 64.8)	162.0	(137.1 - 187.0)
Syphilis (Rate per 100,000 Population)				
All	5.4	(0.9 - 10.0)	13.8	(6.5 - 21.1)
	%		%	
Ever HIV Tested (% of Population)				
All	39.3%		39.4%	

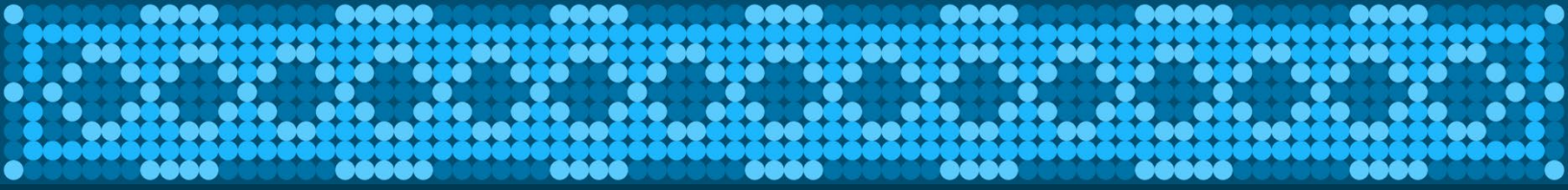
Source: National Notifiable Disease Surveillance System, 2013-2017

APPENDIX D

Mortality Indicators among AI/AN in St. Louis Service Area vs. All Service Areas

	AI/AN in St. Louis		AI/AN in All UIO Service Areas	
	Rate per 100,000	(95% CI)	Rate per 100,000	(95% CI)
# of Deaths	51		26,600	
All Cause Mortality (Age-Adjusted Rate per 100,000 Population)				
All	292.1	(206.7 - 377.5)	533.4	(526.4 - 540.4)
Female	302.1	(183.9 - 420.3)	449.9	(441.4 - 458.4)
Male	269.9	(152.5 - 387.4)	637.7	(625.7 - 649.6)
Homicide Mortality (Age-Adjusted Rate per 100,000 Population)				
All	*		5.7	(5.2 - 6.3)
Suicide Mortality (Age-Adjusted Rate per 100,000 Population)				
All	*		9.8	(9.1 - 10.6)

* Suppressed data < 10.
Source: National Vital Statistics, Death Certificates, 2013-2017



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

**Our mission is to decolonize data,
for indigenous people, by indigenous people.**
611 12th Avenue South, Seattle, WA 98144
206–812–3030 | info@uihi.org | www.uihi.org