
# American Indian and Alaska Native Health
## in Michigan, Minnesota, and Wisconsin 2016

Great Lakes Inter-Tribal Epidemiology Center *A division of Great Lakes Inter-Tribal Council, Inc.*

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Lac du Flambeau, Wisconsin

*Erratum:* A previous version of this report included incorrect data for BMI (Table 4.4). This error has been corrected. The Great Lakes Inter-Tribal Epidemiology Center sincerely apologizes for this mistake.

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# Contents

# Preface

Among the essential public health services that all communities' public health systems should undertake for a community's wellbeing is to *monitor health status to identify and solve community health problems.* Monitoring health statuses requires information—data that allow systems the ability to pursue the other essential public health services, and to fulfill their role in assuring a healthy population.

Data are the very bedrock upon which much in public health is built. The Great Lakes Inter-Tribal Epidemiology Center (GLITEC) has been producing a community health profile report of health indicators for American Indian/Alaska Natives in Michigan, Minnesota, and Wisconsin since 2000. This report, *American Indian and Alaska Native Health in Michigan, Minnesota, and Wisconsin 2016*, contains data regarding demographics and social determinants of health; mortality; maternal and child health; health status and access to care; behavioral health; and infectious disease. The report also contains information regarding limitations of the health data available to American Indian/Alaska Native people.

For Americans in general, health is conceptualized as a physical state of being, with good health being a lack of illness. While indigenous models of health are varied, most are holistic, representing a balance between physical, mental, emotional, and spiritual wellbeing. Unfortunately, due to colonization, indigenous knowledge and worldviews are not held in the same regard as those introduced by European-Americans. As a result, population level data that appropriately convey the health and wellbeing of American Indian/Alaska Natives through an indigenous framework do not exist. The information presented in this report was obtained using Western methods and interpreted through a Western lens. The focus of this report is on physical health; it includes few other aspects of wellness, and completely lacks information relating to communities' connection to their land, language, or relationship to animals, birds, plants, water, or earth. Despite these limitations, the data presented may be useful for communities to advance self-determination.

GLITEC is proud to have the opportunity to work with American Indian communities throughout the three-state area, and hopes to contribute to improved health data and health outcomes for American Indian people.

# Executive Summary

American Indian/Alaska Natives are unique among racial and ethnic groups in the United States. As the original inhabitants of this land, the effects of colonization have had profound impacts on their health. Although the federal government is obligated to provide healthcare as part of its trust responsibility, the amount of funding for Indian Health Service (IHS) users falls well below the amount spent on other federal healthcare users. The Bemidji IHS Area received the lowest amount of funding of any IHS Area in 2010.

American Indian/Alaska Native people in Michigan, Minnesota, and Wisconsin continue to face health disparities as compared to the general, all races population. Many health outcomes are associated with demographic, social, and environmental factors. In Michigan, Minnesota, and Wisconsin a higher percent of American Indian/Alaska Native households fall below the poverty level than households in the general population. Fewer than half as many American Indian/Alaska Native individuals aged 25 or older have graduated from college. There is also a difference in the age distribution of the population. American Indian/Alaska Natives are much younger than the all-races population; 46% of American Indian/Alaska Natives in the three-state area are under age 30, while only 39% of the all-races population is in this age group.

American Indian/Alaska Natives in the aggregated three-state area have a statistically significant, 32% higher overall mortality rate than white people in Michigan, Minnesota, and Wisconsin. In addition, rates for chronic liver disease and cirrhosis, Chronic Lower Respiratory Disease (CLRD), diabetes, heart disease, homicide, influenza and pneumonia, lung cancer, cancer, kidney disease and accidents (unintentional injury) are also higher than for whites. These differences are statistically significant.

Across the three states, 40% of mothers of American Indian/Alaska Native infants smoked during their pregnancy. American Indian/Alaska Native infants are about 50% more likely to die than infants in the general population. Immunization rates for infants and young children have been decreasing in the Bemidji Area—just 58% of American Indian/Alaska Native children three to 27 months old are up to date on their vaccinations.

Self-reported mental and physical health were

worse for American Indian/Alaska Natives than for all races. More American Indian/Alaska Natives reported having fair or poor physical health than did people of all races, and a higher percent reported having poor mental health every day in the last 30 days.

A higher proportion of American Indian/Alaska Natives (67%) than all races (47%) have smoked cigarettes. More American Indian/Alaska Natives than all races people are overweight or obese.

Although these disparities are troubling, there are positive notes to highlight. While not significant, age-adjusted mortality rates indicate that American Indian/Alaska Natives are less likely to die from Alzheimer's disease. No disparities with low birth weight (an important determinant of infant survival and adult health) exist for American Indian/Alaska Native babies as compared to the general population; in fact, they have met the Healthy People 2020 goal for reducing low birthweight. The majority of American Indian/Alaska Native mothers receive prenatal care in the first trimester. A higher percent of the American Indian/Alaska Native population has received a screening for HIV—this test is recommended for everyone ages 15 to 65. Contrary to commonly-held beliefs about American Indians and alcohol use, American Indian/Alaska Natives are actually more likely than people in the general population to not drink any alcohol.

# Indian Health Service Bemidji Area

Communities Served:

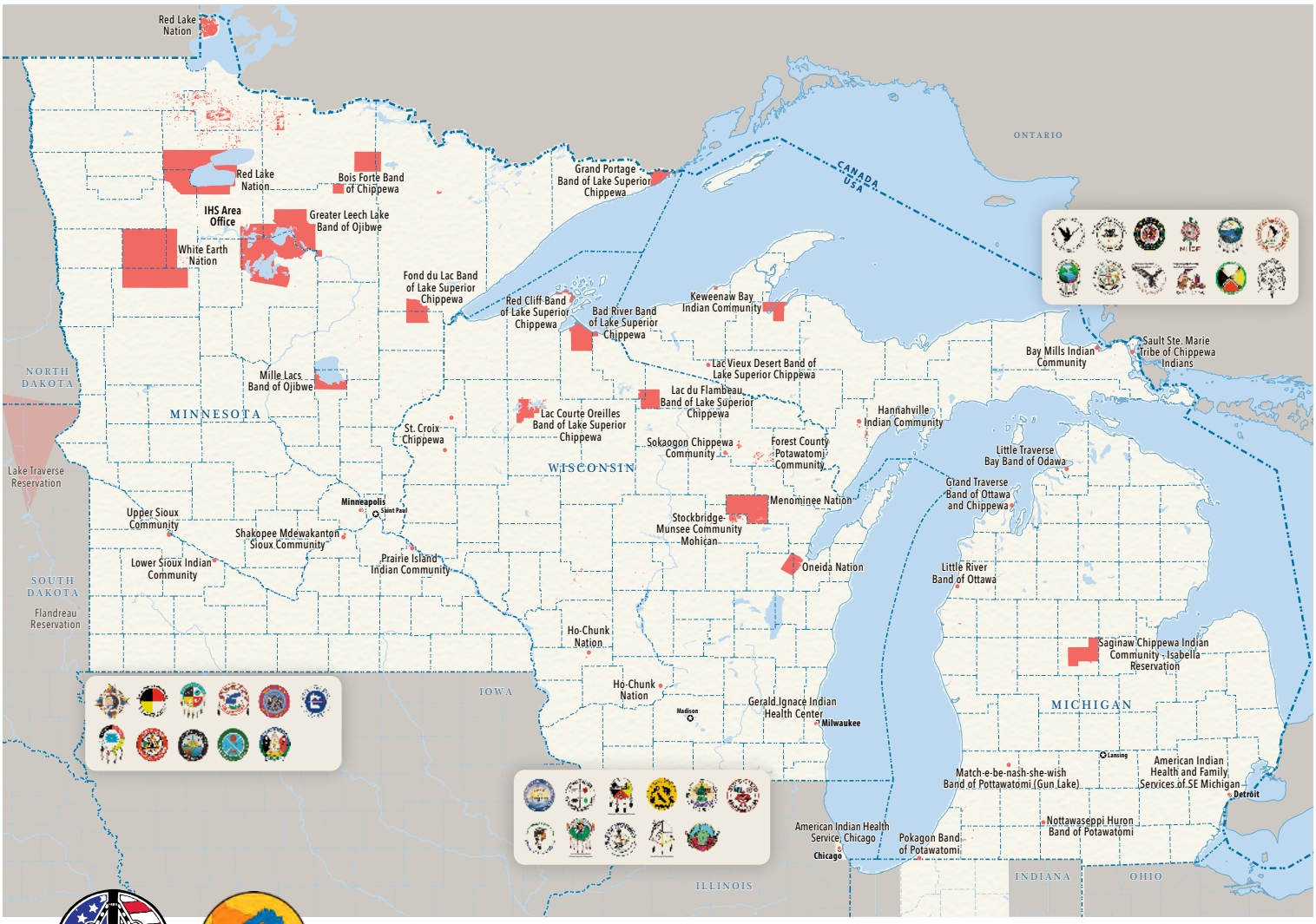
**Minnesota**
Bois Forte Band
Fond du Lac Tribe
Grand Portage Band
Greater Leech Lake Band of Ojibwe
Lower Sioux Indian Community
Mille Lacs Band
Prairie Island Sioux Tribe
Red Lake Nation
Shakopee Mdewakanton Tribe
Upper Sioux Community
White Earth Tribe

**Wisconsin**
Bad River Tribe
Forest County Potawatomi
Ho-Chunk Nation
Lac Courte Oreilles Tribe
Lac du Flambeau Tribe
Menominee Nation
Oneida Nation
Red Cliff Tribe
Sokaogon Chippewa Tribe
St Croix Tribe
Stockbridge-Munsee Tribe

**Michigan**
Bay Mills Indian Community
Grand Traverse Band of Ottawa/Chippewa
Hannahville Indian Community
Huron Potawatomi (Nottawaseppi)
Keweenaw Bay Indian Community
Lac Vieux Desert Tribe
Little River Band of Ottawa Indians
Little Traverse Bay Bands of Odawa Indians
Match-e-be-nash-she-wish Band
Pokagon Band of Potawatomi Indians
Saginaw Chippewa Indian Community
Sault Ste Marie Tribe

**Urban Indian Health Service Clinics**
American Indian Health Service, Chicago
American Indian Health & Family Services of SE MI
Gerald Ignace Health Center
Minneapolis Indian Health Board

# Great Lakes Inter-Tribal Epidemiology Center Service Area



# About This Report

*American Indian and Alaska Native Health in Michigan, Minnesota, and Wisconsin 2016* is an aggregate report of mostly cost-free, publicly-available, and accessible health information. The goal of this report is to provide population-level data on the health status of American Indian and Alaska Native people living in the three-state area. Information comes from national, state, and Indian Health Service-funded clinical data sources containing information about American Indian/Alaska Natives in Michigan, Minnesota, Wisconsin, and/or the aggregated three-state area. Some comparisons to the White and/or all races population are included.

Most data are presented in tables, although some data are also presented in figures to improve readers' understanding of relationships or trends. This report contains six chapters organized by the following topics:

- Demographics,
- Mortality,
- Maternal and child health,
- Health status and access to care,
- Behavioral health, and
- Infectious disease.

In order to protect community privacy, no community-level data are shared in this report; rather, all data are reported by state or the three-state area. However, GLITEC does provide community-specific health profiles to each of the communities within the Bemidji Area. Using a community-specific profile and the three-state profile in concert can contribute to effective community health assessment, program development, planning, evaluation, resource allocation, and support for grant applications.

When reading and using this report, keep the following issues in mind:

1. The all-races population includes American Indian/Alaska Natives;
2. Classification of people into racial groups may be faulty and inaccurate;
3. Individual states and the federal government may collect data differently from each other (see Appendix 2 for detailed information);
4. Differences in rates may be due to chance, changes in data collection, or improved screening; and
5. Aside from confidence intervals in the Mortality Chapter (Chapter 2), there are no formal statistical tests of difference done between groups or within groups from year to year.

# Background

## What is Public Health?

Public health promotes and protects the health of people and the communities where they live, learn, work and play.[1] Just as doctors and nurses care for the health of individual patients, public health professionals care for the health of entire communities and populations. Professionals with a wide variety of expertise work within the public health system, from communication experts to water quality inspectors, from policy makers to program developers, and from nurses who provide vaccinations to epidemiologists who track patterns of disease and health.

The three core functions of public health are assessment, policy development, and assurance. Nested within these core functions, there are 10 essential services all public health systems provide. The first essential service is *Monitor Health to Identify and Solve Community Health Problems.*[2] This is the bedrock upon which the other services rest.

In order to monitor health, information is key. In order to understand if there is a problem—and


what exactly that problem may be—there needs to be data. While there are many ways of understanding the world including using qualitative data like stories or personal experiences, traditionally public health relies heavily on quantitative data, or numbers. When communities or decision makers have access to data, they have a strong, objective founda-

tion on which to base decisions and take actions—and the ability to understand what has changed.

## What is Epidemiology?

Epidemiology is the study of the distribution and determinants of health (who gets sick, or stays well – and why) and the application of this study to the control of health problems. Epidemiology can be used to answer questions like:

- What are the risk factors for getting heart disease?
- How well are diabetic patients managing their blood sugar levels?
- What are the most common causes of death in a certain area?
- Is the teen birth rate increasing or decreasing?
- What protective factors make it less likely that a person will begin to smoke?
- Do some communities have a higher prevalence of cancer?

## What is the Great Lakes Inter-Tribal Epidemiology Center?

The Great Lakes Inter-Tribal Epidemiology Center (GLITEC), a program of the Great Lakes Inter-Tribal Council, Inc., is one of 12 Tribal Epidemiology Centers (TECs). TECs were initially authorized by the Indian Health Care Improvement Act of 1996, and permanently reauthorized by the 2009 Affordable Health Care Act. The mission of the TECs is:

To improve the health of American Indian/Alaska Natives (AI/AN) by:

- Identifying and understanding health problems and disease risks
- Strengthening public health capacity
- Developing solutions for disease prevention and control[3]

GLITEC's mission is to support Tribal communities in their efforts to improve health by assisting with data needs through partnership development, community-based research, education, and technical assistance.

GLITEC serves the 34 Tribes, four urban programs, and three service units of the Bemidji Indian Health Service Area, which includes the states of Michigan, Minnesota, Wisconsin, and the city of Chicago. GLITEC respects Tribes' status as sovereign nations and always defers to Tribal decisions. Rather than issuing mandates, GLITEC provides guidance and suggestions, and works according to the following values:

- Confidentiality;
- Capacity building;
- Collaboration;
- Community-based participatory methods;
- Cultural sensitivity and awareness.

GLITEC strives to be responsive to the health information and epidemiological needs of the Tribes by providing training and technical assistance. Though projects vary depending on the needs and requests of the Tribes, some activities are ongoing. GLITEC is available to assist with:

- Community health assessments;
- Program planning;
- Evaluation;
- Survey design;
- Health data collection;
- Data management, analysis, and interpretation.

## What Data Challenges do American Indian/Alaska Native Communities Face?

Health data for American Indian/Alaska Native communities have numerous challenges related to access and quality. As described in the report *Best Practices in American Indian & Alaska Native Public Health*,[4] these include:

1. **Data access**
   Not all data are publicly available, and some states charge a fee for data access. Additionally, some datasets require specialized skill sets or software programs in order to conduct analyses, limiting the amount of information available to non-specialists.

2. **Framework and measures used to record race and ethnicity**
   Not all datasets routinely and consistently collect race and ethnicity data. Often, race/ethnicity categories only include White, Black, Hispanic, and Other categories. Even when additional race groups are included, the smaller populations may be collapsed into an "Other" category. In those datasets that allow for more than one race selection, those individuals who identify as one or more races are often placed in a general "Multiracial" category. In addition, although there are over 566 federally-recognized Tribes, members of different Tribes are nearly always combined into a single American Indian/Alaska Native population. This type of aggregation obscures differences that may exist between groups.

   Additionally, strategies for collecting data may not be as effective for American Indian/Alaska Natives as for the general population.

3. **Racial misclassification**
   American Indian/Alaska Natives are more likely to have their race misidentified than people of other races. There are multiple reasons racial misclassification may occur. This undercounting can lead to stark consequences for the results of analyses.

4. **Small population size**
   Because the American Indian/Alaska Native population makes up just one to two percent of the overall United States population, they contribute little to national or state-wide samples unless an effort is deliberately made to oversample them. In order to achieve sufficient sizes for analysis, multiple geographic regions and/or years often must be combined. This aggregation prevents trends or geographic differences from being apparent.

5. **Other data quality considerations**
   Other issues that could affect the quality of data analysis include the use of an appropriate denominator and varying definitions for the American Indian/Alaska Native race category. Furthermore, the cultural appropriateness of data collection instruments; mistrust by American Indian/Alaska Native individuals and communities of federal and state governments; survey/research fatigue due to over surveying; and past research abuses affect data quality.

# Chapter One Demographics

Demographics relate to measures that describe populations, such as race and ethnicity, age, educational attainment, and income. Many health conditions and statuses are associated with certain demographic groups. For example, older people are more likely to get Type 2 diabetes.[5] In this report, demographics of American Indian/Alaska Native people in each of the three states of Michigan, Minnesota, and Wisconsin, and the three states combined, are reported. It is important to note that these numbers are estimates, based on self-identification, and do not reflect Tribal enrollment.

## Race

Two types of race data are presented: *single race* (which includes the category "two or more races") and *race alone or in combination*. Those who identified more than one single race are placed in the category *two or more races*; we do not know which individual races they identified (Tables 1.1-1.4). For *race alone or in combination* (Tables 1.5-1.8), information is displayed for counts of people who identified as a single race alone or as a combination of races. Some individuals will be counted twice. For instance, if an individual self-identified as African American and American Indian, he or she will be counted under both "African American Alone or in Combination" and "American Indian/Alaska Native Alone or in Combination."

The American Indian/Alaska Native population size increases substantially when American Indians who identify as belonging to two or more races are included with those who identify as American Indian/Alaska Native alone. For the three states combined, the population size more than doubles. In Michigan, it nearly triples. Among the three states, Minnesota had the largest American Indian/Alaska Native population by percent of population when considering both *single race* and *race alone or in combination*.

Table 1.1. Single Race, Michigan, 2014[1]

| | Number | Percent |
|---|---|---|
| White | 7,816,586 | 78.88 |
| Black or African American | 1,375,194 | 13.88 |
| ***American Indian/Alaska Native*** | ***55,729*** | ***0.56*** |
| Asian | 281,404 | 2.84 |
| Native Hawaiian and Other Pacific Islander | 2,260 | 0.02 |
| Some other race | 121,859 | 1.23 |
| Two or more races | 256,845 | 2.59 |
| Total | 9,909,877 | 100.00 |

[1] American Community Survey Table DP05

Table 1.2. Single Race, Minnesota, 2014[1]

| | Number | Percent |
|---|---|---|
| White | 4,606,959 | 84.42 |
| Black or African American | 312,432 | 5.73 |
| ***American Indian/Alaska Native*** | ***56,934*** | ***1.04*** |
| Asian | 250,352 | 4.59 |
| Native Hawaiian and Other Pacific Islander | 2,392 | 0.04 |
| Some other race | 85,069 | 1.56 |
| Two or more races | 143,035 | 2.62 |
| Total | 5,457,173 | 100.00 |

[1] American Community Survey Table DP05

Table 1.3. Single Race, Wisconsin, 2014[1]

| | Number | Percent[2] |
|---|---|---|
| White | 4,966,282 | 86.26 |
| Black or African American | 363,916 | 6.32 |
| ***American Indian/Alaska Native*** | ***50,703*** | ***0.88*** |
| Asian | 150,258 | 2.61 |
| Native Hawaiian and Other Pacific Islander | 1,384 | 0.02 |
| Some other race | 105,647 | 1.83 |
| Two or more races | 119,374 | 2.07 |
| Total | 5,757,564 | 100.00 |

[1] American Community Survey Table DP05 [2] Column does not total 100% due to rounding

### Table 1.4. Single Race, Michigan, Minnesota, and Wisconsin, 2014[1]

| | Number | Percent |
|---|---|---|
| White | 17,389,827 | 82.32 |
| Black or African American | 2,051,542 | 9.71 |
| ***American Indian/Alaska Native*** | ***163,366*** | ***0.77*** |
| Asian | 682,014 | 3.23 |
| Native Hawaiian and Other Pacific Islander | 6,036 | 0.03 |
| Some other race | 312,575 | 1.48 |
| Two or more races | 519,254 | 2.46 |
| Total | 21,124,614 | 100.00 |

[1] American Community Survey Table DP05

### Table 1.5. Race Alone or In Combination, Michigan, 2014[1]

| | Number | Percent[2] |
|---|---|---|
| White Alone or in Combination | 8,045,636 | 81.19 |
| Black or African American Alone or in Combination | 1,506,987 | 15.21 |
| ***American Indian/Alaska Natives Alone or in Combination*** | ***146,002*** | ***1.47*** |
| Asian Alone or in Combination | 336,731 | 3.40 |
| Native Hawaiian and Other Pacific Islander Alone or in Combination | 9,226 | 0.09 |
| Some Other Race Alone or in Combination | 146,017 | 1.47 |
| Total Number of Individuals | 9,909,877 | — |

[1] American Community Survey Table DP05
[2] Because individual people may be included in more than one race group, column total does not equal 100%

### Table 1.6. Race Alone or In Combination, Minnesota, 2014[1]

| | Number | Percent[2] |
|---|---|---|
| White Alone or in Combination | 4,739,703 | 86.85 |
| Black or African American Alone or in Combination | 373,589 | 6.85 |
| ***American Indian/Alaska Natives Alone or in Combination*** | ***102,323*** | ***1.88*** |
| Asian Alone or in Combination | 292,515 | 5.36 |
| Native Hawaiian and Other Pacific Islander Alone or in Combination | 6,595 | 0.12 |
| Some Other Race Alone or in Combination | 97,544 | 1.79 |
| Total Number of Individuals | 5,457,173 | — |

[1] American Community Survey Table DP05
[2] Because individual people may be included in more than one race group, column total does not equal 100%

Table 1.7. Race Alone or In Combination, Wisconsin, 2014[1]

| | Number | Percent[2] |
|---|---|---|
| White Alone or in Combination | 5,075,794 | 88.16 |
| Black or African American Alone or in Combination | 415,480 | 7.22 |
| ***American Indian/Alaska Natives Alone or in Combination*** | ***93,779*** | ***1.63*** |
| Asian Alone or in Combination | 174,987 | 3.04 |
| Native Hawaiian and Other Pacific Islander Alone or in Combination | 4,384 | 0.08 |
| Some Other Race Alone or in Combination | 120,392 | 2.09 |
| Total Number of Individuals | 5,757,564 | — |

[1] American Community Survey Table DP05
[2] Because individual people may be included in more than one race group, column total does not equal 100%

Table 1.8. Race Alone or In Combination, Michigan, Minnesota, and Wisconsin, 2014[1]

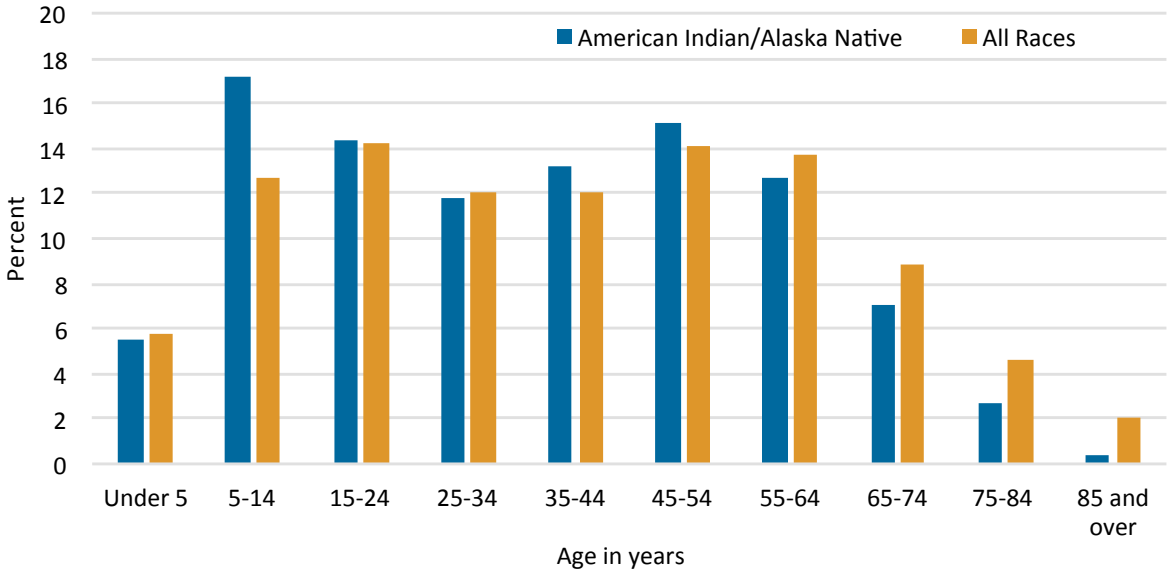
| | Number | Percent[2] |
|---|---|---|
| White Alone or in Combination | 17,861,133 | 84.55 |
| Black or African American Alone or in Combination | 2,296,056 | 10.87 |
| ***American Indian/Alaska Natives Alone or in Combination*** | ***342,104*** | ***1.62*** |
| Asian Alone or in Combination | 804,233 | 3.81 |
| Native Hawaiian and Other Pacific Islander Alone or in Combination | 20,205 | 0.10 |
| Some Other Race Alone or in Combination | 363,953 | 1.72 |
| Total Number of Individuals | 21,124,614 | — |

[1] American Community Survey Table DP05
[2] Because individual people may be included in more than one race group, column total does not equal 100%

## Age and Sex

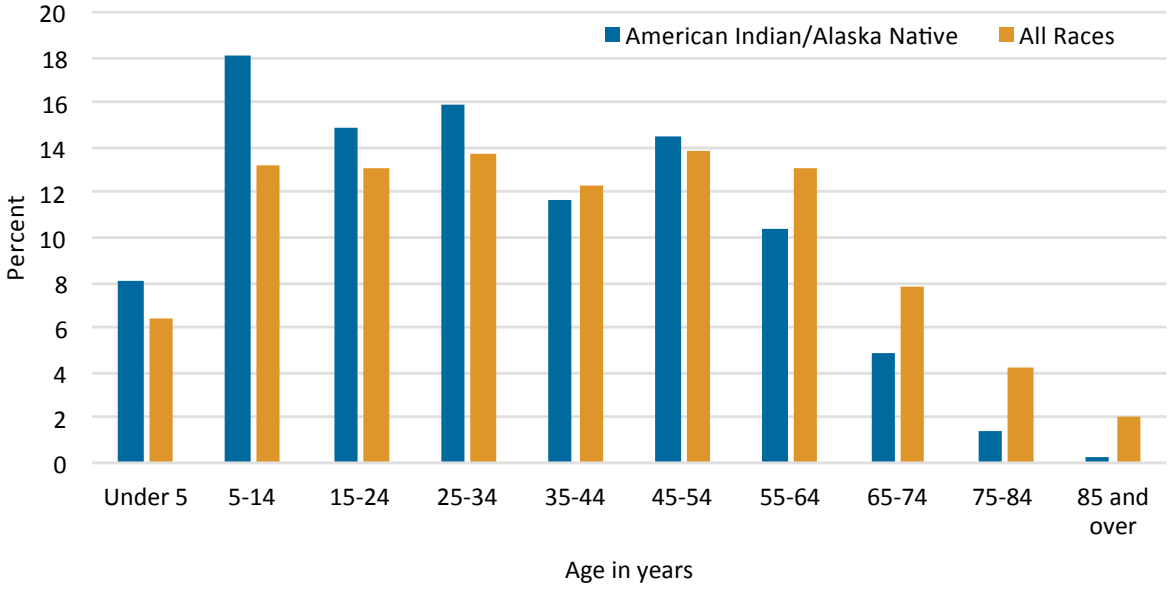
Understanding the age and sex distribution of a population is useful for program planning (Figures 1.1-1.4, Tables 1.9-1.16). Knowing the age distribution may assist in planning targeted preventive health activities that are age specific, such as increasing physical activity opportunities for youth, or reducing falls and unintentional injuries in elders. In addition, at some ages a larger or smaller proportion of the population may be male or female and these groups may have different needs. For all three states, the American Indian/Alaska Native population was younger than the all races population. A greater percent of both the American Indian/Alaska Native and all races populations were female in Michigan. In Minnesota and Wisconsin, however, a larger percent of the American Indian/Alaska Native population was male, while the all races populations in all three states had larger proportions of females.

Figure 1.1. Age Distribution for American Indian/Alaska Natives and All Races in Michigan, 2014[1]



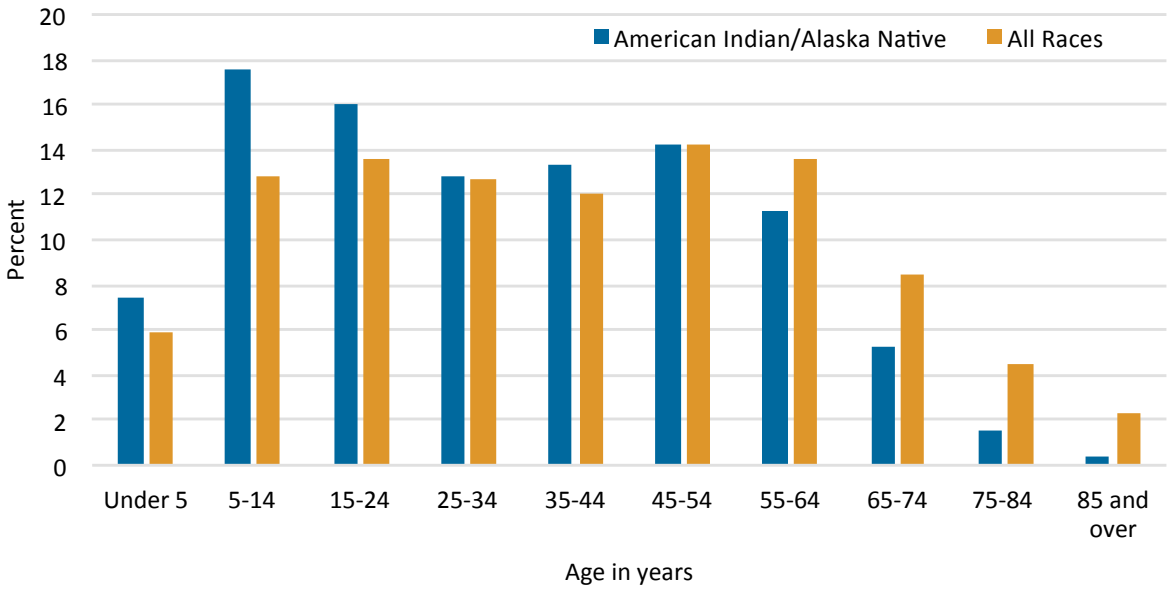

[1] American Community Survey Tables B01001C and B01001C

Figure 1.2. Age Distribution for American Indian/Alaska Natives and All Races in Minnesota, 2014[1]



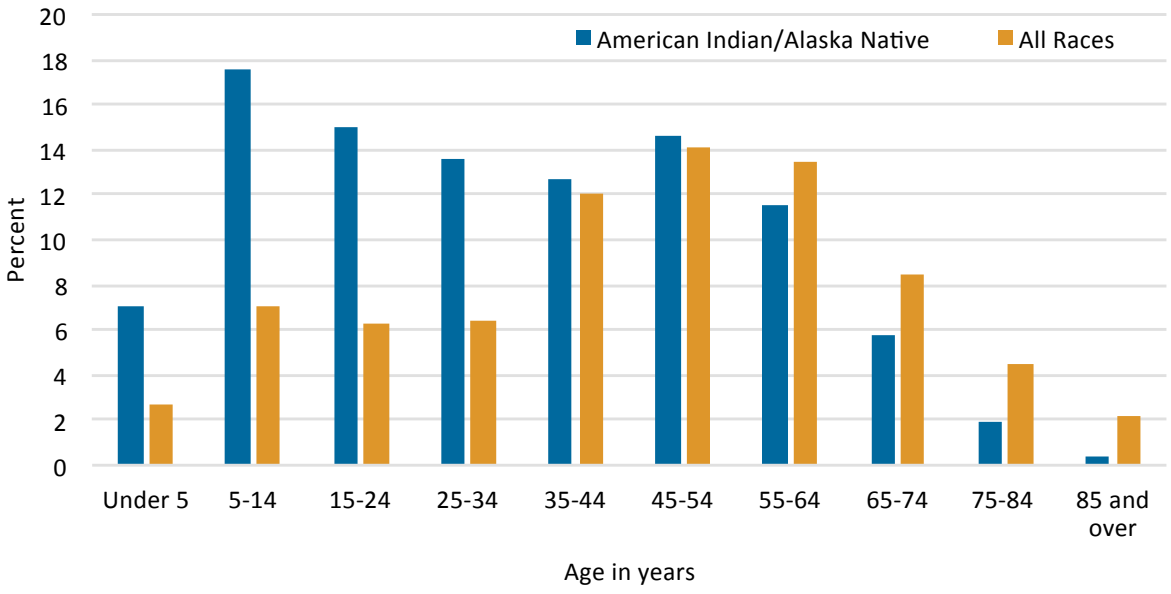

[1] American Community Survey Tables B01001C and B01001C

Figure 1.3. Age Distribution for American Indian/Alaska Natives and All Races in Wisconsin, 2014[1]




[1] American Community Survey Tables B01001C and B01001C

Figure 1.4. Age Distribution for American Indian/Alaska Natives and All Races in Michigan, Minnesota, and Wisconsin, 2014[1]




[1] American Community Survey Tables B01001C and B01001C

## Table 1.9. Age Distribution for American Indian/Alaska Natives and All Races in Michigan, 2014

| | ***American Indian/Alaska Natives***[1] | | All Races[2] | |
|---|---|---|---|---|
| | Number | Percent[3] | Number | Percent[3] |
| Under 5 years | 3,058 | 5.49 | 568,904 | 5.74 |
| 5 to 9 years | 4,986 | 8.95 | 608,772 | 6.14 |
| 10 to 14 years | 4,599 | 8.25 | 643,047 | 6.49 |
| 15 to 17 years | 2,479 | 4.45 | 402,913 | 4.07 |
| 18 and 19 years | 1,768 | 3.17 | 276,243 | 2.79 |
| 20 to 24 years | 3,725 | 6.68 | 729,473 | 7.36 |
| 25 to 29 years | 2,141 | 3.84 | 604,088 | 6.10 |
| 30 to 34 years | 4,427 | 7.94 | 592,224 | 5.98 |
| 35 to 44 years | 7,380 | 13.24 | 1,189,934 | 12.01 |
| 45 to 54 years | 8,422 | 15.11 | 1,399,671 | 14.12 |
| 55 to 64 years | 7,105 | 12.75 | 1,363,541 | 13.76 |
| 65 to 74 years | 3,907 | 7.01 | 873,559 | 8.82 |
| 75 to 84 years | 1,512 | 2.71 | 453,778 | 4.58 |
| 85 years and over | 220 | 0.39 | 203,730 | 2.06 |
| Total | 55,729 | 100.00 | 9,909,877 | 100.00 |

[1] American Community Survey Table B01001C [2] American Community Survey Table B01001 [3]Column does not total 100% due to rounding.

## Table 1.10. Age Distribution for American Indian/Alaska Natives and All Races in Minnesota, 2014

| | ***American Indian/Alaska Natives***[1] | | All Races[2] | |
|---|---|---|---|---|
| | Number | Percent | Number | Percent[3] |
| Under 5 years | 4,599 | 8.08 | 347,403 | 6.37 |
| 5 to 9 years | 5,633 | 9.89 | 363,215 | 6.66 |
| 10 to 14 years | 4,633 | 8.14 | 359,621 | 6.59 |
| 15 to 17 years | 2,855 | 5.01 | 212,869 | 3.90 |
| 18 and 19 years | 1,371 | 2.41 | 141,854 | 2.60 |
| 20 to 24 years | 4,221 | 7.41 | 359,628 | 6.59 |
| 25 to 29 years | 4,507 | 7.92 | 366,848 | 6.72 |
| 30 to 34 years | 4,560 | 8.01 | 384,125 | 7.04 |
| 35 to 44 years | 6,636 | 11.66 | 672,081 | 12.32 |
| 45 to 54 years | 8,214 | 14.43 | 758,907 | 13.91 |
| 55 to 64 years | 5,940 | 10.43 | 712,789 | 13.06 |
| 65 to 74 years | 2,787 | 4.90 | 430,175 | 7.88 |
| 75 to 84 years | 811 | 1.42 | 233,327 | 4.28 |
| 85 years and over | 167 | 0.29 | 114,331 | 2.10 |
| Total | 56,934 | 100.00 | 5,457,173 | 100.00 |

[1] American Community Survey Table B01001C [2] American Community Survey Table B01001 [3]Column does not total 100% due to rounding.

## Table 1.11. Age Distribution for American Indian/Alaska Natives and All Races in Wisconsin, 2014

| | *American Indian/Alaska Natives*[1] | | All Races[2] | |
|---|---|---|---|---|
| | Number | Percent | Number | Percent |
| Under 5 years | 3,766 | 7.43 | 339,088 | 5.89 |
| 5 to 9 years | 3,970 | 7.83 | 363,195 | 6.31 |
| 10 to 14 years | 4,953 | 9.77 | 372,881 | 6.48 |
| 15 to 17 years | 2,924 | 5.77 | 224,338 | 3.90 |
| 18 and 19 years | 1,634 | 3.22 | 157,402 | 2.73 |
| 20 to 24 years | 3,591 | 7.08 | 402,498 | 6.99 |
| 25 to 29 years | 3,202 | 6.32 | 355,286 | 6.17 |
| 30 to 34 years | 3,282 | 6.47 | 376,807 | 6.54 |
| 35 to 44 years | 6,790 | 13.39 | 693,410 | 12.04 |
| 45 to 54 years | 7,242 | 14.28 | 817,343 | 14.20 |
| 55 to 64 years | 5,718 | 11.28 | 779,596 | 13.54 |
| 65 to 74 years | 2,648 | 5.22 | 484,160 | 8.41 |
| 75 to 84 years | 755 | 1.49 | 262,243 | 4.55 |
| 85 years and over | 228 | 0.45 | 129,317 | 2.25 |
| Total | 50,703 | 100.00 | 5,757,564 | 100.00 |

[1] American Community Survey Table B01001C [2] American Community Survey Table B01001

## Table 1.12. Age Distribution for American Indian/Alaska Natives and All Races in Michigan, Minnesota, and Wisconsin, 2014

| | *American Indian/Alaska Natives*[1] | | All Races[2] | |
|---|---|---|---|---|
| | Number | Percent | Number | Percent |
| Under 5 years | 11,423 | 6.99 | 1,255,395 | 5.94 |
| 5 to 9 years | 14,589 | 8.93 | 1,335,182 | 6.32 |
| 10 to 14 years | 14,185 | 8.68 | 1,375,549 | 6.51 |
| 15 to 17 years | 8,258 | 5.05 | 840,120 | 3.98 |
| 18 and 19 years | 4,773 | 2.92 | 575,499 | 2.72 |
| 20 to 24 years | 11,537 | 7.06 | 1,491,599 | 7.06 |
| 25 to 29 years | 9,850 | 6.03 | 1,326,222 | 6.28 |
| 30 to 34 years | 12,269 | 7.51 | 1,353,156 | 6.41 |
| 35 to 44 years | 20,806 | 12.74 | 2,555,425 | 12.10 |
| 45 to 54 years | 23,878 | 14.62 | 2,975,921 | 14.09 |
| 55 to 64 years | 18,763 | 11.49 | 2,855,926 | 13.52 |
| 65 to 74 years | 9,342 | 5.72 | 1,787,894 | 8.46 |
| 75 to 84 years | 3,078 | 1.88 | 949,348 | 4.49 |
| 85 years and over | 615 | 0.38 | 447,378 | 2.12 |
| Total | 163,366 | 100.00 | 21,124,614 | 100.00 |

[1] American Community Survey Table B01001C [2] American Community Survey Table B01001

## Table 1.13. Age and Sex Distribution for American Indian/Alaska Natives and All Races in Michigan, 2014

| Age (years) | ***American Indian/Alaska Natives***[1] | | | | All Races[2] | | | |
|---|---|---|---|---|---|---|---|---|
| | Males | | Females | | Males | | Females | |
| | Number | Percent | Number | Percent | Number | Percent | Number | Percent |
| Under 5 | 1,532 | 2.75 | 1,526 | 2.74 | 292,656 | 2.95 | 276,248 | 2.79 |
| 5 to 9 | 2,298 | 4.12 | 2,688 | 4.82 | 311,932 | 3.15 | 296,840 | 3.00 |
| 10 to 14 | 2,438 | 4.37 | 2,161 | 3.88 | 326,907 | 3.30 | 316,140 | 3.19 |
| 15 to 17 | 1,682 | 3.02 | 797 | 1.43 | 206,153 | 2.08 | 196,760 | 1.99 |
| 18 to 19 | 574 | 1.03 | 1,194 | 2.14 | 139,674 | 1.41 | 136,569 | 1.38 |
| 20 to 24 | 2,592 | 4.65 | 1,133 | 2.03 | 372,201 | 3.76 | 357,272 | 3.61 |
| 25 to 29 | 1,321 | 2.37 | 820 | 1.47 | 306,200 | 3.09 | 297,888 | 3.01 |
| 30 to 34 | 2,064 | 3.70 | 2,363 | 4.24 | 295,021 | 2.98 | 297,203 | 3.00 |
| 35 to 44 | 3,776 | 6.78 | 3,604 | 6.47 | 588,760 | 5.94 | 601,174 | 6.07 |
| 45 to 54 | 3,352 | 6.01 | 5,070 | 9.10 | 690,148 | 6.96 | 709,523 | 7.16 |
| 55 to 64 | 3,466 | 6.22 | 3,639 | 6.53 | 661,802 | 6.68 | 701,739 | 7.08 |
| 65 to 74 | 1,533 | 2.75 | 2,374 | 4.26 | 411,661 | 4.15 | 461,898 | 4.66 |
| 75 to 84 | 655 | 1.18 | 857 | 1.54 | 193,443 | 1.95 | 260,335 | 2.63 |
| 85 and over | 117 | 0.21 | 103 | 0.18 | 68,699 | 0.69 | 135,031 | 1.36 |
| Total | 27,400 | 49.17 | 28,329 | 50.83 | 4,865,257 | 49.10 | 5,044,620 | 50.90 |

[1] American Community Survey Table B01001C [2] American Community Survey Table B01001

## Table 1.14. Age and Sex Distribution for American Indian/Alaska Natives and All Races in Minnesota, 2014

| Age (years) | ***American Indian/Alaska Natives***[1] | | | | All Races[2] | | | |
|---|---|---|---|---|---|---|---|---|
| | Males | | Females | | Males | | Females | |
| | Number | Percent | Number | Percent | Number | Percent | Number | Percent |
| Under 5 | 2,152 | 3.78 | 2,447 | 4.30 | 176,988 | 3.24 | 170,415 | 3.12 |
| 5 to 9 | 3,125 | 5.49 | 2,508 | 4.41 | 186,894 | 3.42 | 176,321 | 3.23 |
| 10 to 14 | 2,942 | 5.17 | 1,691 | 2.97 | 182,479 | 3.34 | 177,142 | 3.25 |
| 15 to 17 | 1,713 | 3.01 | 1,142 | 2.01 | 110,659 | 2.03 | 102,210 | 1.87 |
| 18 to 19 | 810 | 1.42 | 561 | 0.99 | 72,216 | 1.32 | 69,638 | 1.28 |
| 20 to 24 | 1,891 | 3.32 | 2,330 | 4.09 | 182,528 | 3.34 | 177,100 | 3.25 |
| 25 to 29 | 2,646 | 4.65 | 1,861 | 3.27 | 186,734 | 3.42 | 180,114 | 3.30 |
| 30 to 34 | 2,268 | 3.98 | 2,292 | 4.03 | 195,367 | 3.58 | 188,758 | 3.46 |
| 35 to 44 | 3,314 | 5.82 | 3,322 | 5.83 | 338,549 | 6.20 | 333,532 | 6.11 |
| 45 to 54 | 4,193 | 7.36 | 4,021 | 7.06 | 379,926 | 6.96 | 378,981 | 6.94 |
| 55 to 64 | 3,121 | 5.48 | 2,819 | 4.95 | 354,023 | 6.49 | 358,766 | 6.57 |
| 65 to 74 | 1,190 | 2.09 | 1,597 | 2.81 | 206,213 | 3.78 | 223,962 | 4.10 |
| 75 to 84 | 362 | 0.64 | 449 | 0.79 | 100,944 | 1.85 | 132,383 | 2.43 |
| 85 and over | 24 | 0.04 | 143 | 0.25 | 39,303 | 0.72 | 75,028 | 1.37 |
| Total | 29,751 | 52.26 | 27,183 | 47.74 | 2,712,823 | 49.71 | 2,744,350 | 50.29 |

[1] American Community Survey Table B01001C [2] American Community Survey Table B01001

## Table 1.15. Age and Sex Distribution for American Indian/Alaska Natives and All Races in Wisconsin, 2014

| Age (years) | *American Indian/Alaska Natives*[1] | | | | All Races[2] | | | |
|---|---|---|---|---|---|---|---|---|
| | Males | | Females | | Males | | Females | |
| | Number | Percent | Number | Percent | Number | Percent | Number | Percent |
| Under 5 | 2,058 | 4.06 | 1,708 | 3.37 | 173,403 | 3.01 | 165,685 | 2.88 |
| 5 to 9 | 2,003 | 3.95 | 1,967 | 3.88 | 183,965 | 3.20 | 179,230 | 3.11 |
| 10 to 14 | 2,529 | 4.99 | 2,424 | 4.78 | 192,793 | 3.35 | 180,088 | 3.13 |
| 15 to 17 | 1,797 | 3.54 | 1,127 | 2.22 | 113,806 | 1.98 | 110,532 | 1.92 |
| 18 to 19 | 693 | 1.37 | 941 | 1.86 | 80,600 | 1.40 | 76,802 | 1.33 |
| 20 to 24 | 1,851 | 3.65 | 1,740 | 3.43 | 204,194 | 3.55 | 198,304 | 3.44 |
| 25 to 29 | 1,877 | 3.70 | 1,325 | 2.61 | 181,603 | 3.15 | 173,683 | 3.02 |
| 30 to 34 | 1,695 | 3.34 | 1,587 | 3.13 | 191,682 | 3.33 | 185,125 | 3.22 |
| 35 to 44 | 3,256 | 6.42 | 3,534 | 6.97 | 350,786 | 6.09 | 342,624 | 5.95 |
| 45 to 54 | 3,597 | 7.09 | 3,645 | 7.19 | 407,227 | 7.07 | 410,116 | 7.12 |
| 55 to 64 | 2,802 | 5.53 | 2,916 | 5.75 | 387,030 | 6.72 | 392,566 | 6.82 |
| 65 to 74 | 890 | 1.76 | 1,758 | 3.47 | 232,915 | 4.05 | 251,245 | 4.36 |
| 75 to 84 | 298 | 0.59 | 457 | 0.90 | 114,916 | 2.00 | 147,327 | 2.56 |
| 85 and over | 138 | 0.27 | 90 | 0.18 | 43,062 | 0.75 | 86,255 | 1.50 |
| Total | 25,484 | 50.26 | 25,219 | 49.74 | 2,857,982 | 49.64 | 2,899,582 | 50.36 |

[1] American Community Survey Table B01001C [2] American Community Survey Table B01001

## Table 1.16. Age and Sex Distribution for American Indian/Alaska Natives and All Races in Michigan, Minnesota, and Wisconsin, 2014

| Age (years) | *American Indian/Alaska Natives*[1] | | | | All Races[2] | | | |
|---|---|---|---|---|---|---|---|---|
| | Males | | Females | | Males | | Females | |
| | Number | Percent | Number | Percent | Number | Percent | Number | Percent |
| Under 5 | 5,742 | 3.51 | 5,681 | 3.48 | 643,047 | 3.04 | 612,348 | 2.90 |
| 5 to 9 | 7,426 | 4.55 | 7,163 | 4.38 | 682,791 | 3.23 | 652,391 | 3.09 |
| 10 to 14 | 7,909 | 4.84 | 6,276 | 3.84 | 702,179 | 3.32 | 673,370 | 3.19 |
| 15 to 17 | 5,192 | 3.18 | 3,066 | 1.88 | 430,618 | 2.04 | 409,502 | 1.94 |
| 18 to 19 | 2,077 | 1.27 | 2,696 | 1.65 | 292,490 | 1.38 | 283,009 | 1.34 |
| 20 to 24 | 6,334 | 3.88 | 5,203 | 3.18 | 758,923 | 3.59 | 732,676 | 3.47 |
| 25 to 29 | 5,844 | 3.58 | 4,006 | 2.45 | 674,537 | 3.19 | 651,685 | 3.08 |
| 30 to 34 | 6,027 | 3.69 | 6,242 | 3.82 | 682,070 | 3.23 | 671,086 | 3.18 |
| 35 to 44 | 10,346 | 6.33 | 10,460 | 6.40 | 1,278,095 | 6.05 | 1,277,330 | 6.05 |
| 45 to 54 | 11,142 | 6.82 | 12,736 | 7.80 | 1,477,301 | 6.99 | 1,498,620 | 7.09 |
| 55 to 64 | 9,389 | 5.75 | 9,374 | 5.74 | 1,402,855 | 6.64 | 1,453,071 | 6.88 |
| 65 to 74 | 3,613 | 2.21 | 5,729 | 3.51 | 850,789 | 4.03 | 937,105 | 4.44 |
| 75 to 84 | 1,315 | 0.80 | 1,763 | 1.08 | 409,303 | 1.94 | 540,045 | 2.56 |
| 85 and over | 279 | 0.17 | 336 | 0.21 | 151,064 | 0.72 | 296,314 | 1.40 |
| Total | 82,635 | 50.58 | 80,731 | 49.42 | 10,436,062 | 49.40 | 10,688,552 | 50.60 |

[1] American Community Survey Table B01001C [2] American Community Survey Table B01001

## Education

Education is an important predictor of health status on a population level. Persons with higher educational attainment tend to have lower mortality rates, have less chronic disease, and practice different health-related behaviors; for example, people with more education are less likely to smoke.[6]

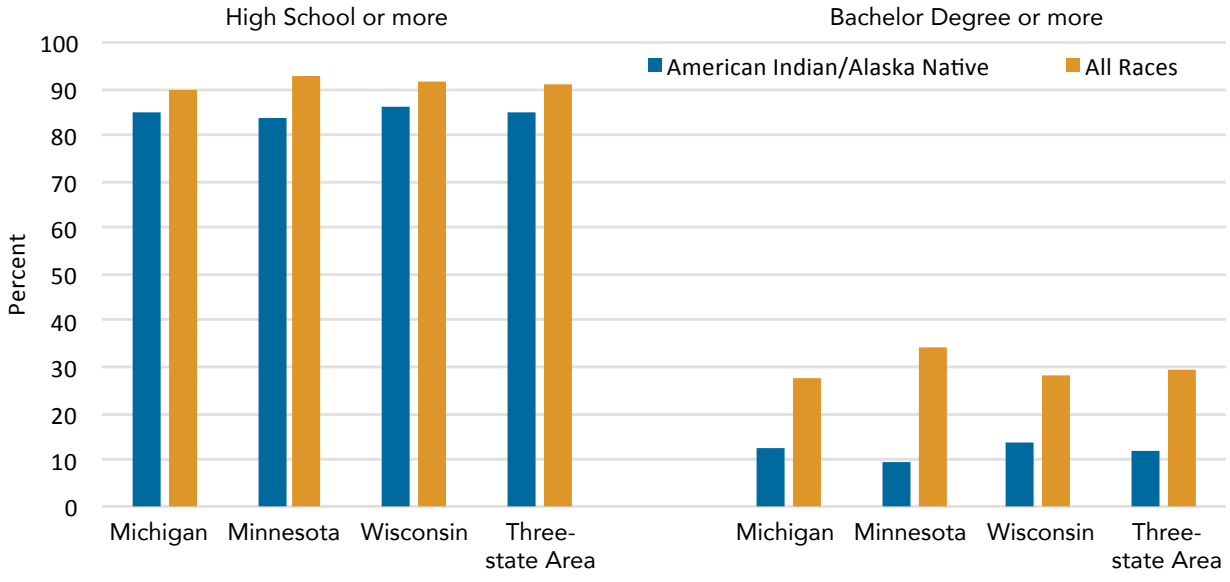
Across the three-state area, a smaller percent of American Indian/Alaska Natives have completed a high school or more education, as compared to the all races population (Table 1.17). Fewer than half as many American Indians/Alaska Natives have received a bachelor's degree or more.

Table 1.17. Highest Level of Educational Attainment (by Percent) of at Least High School and at Least Bachelor Degree, American Indian/Alaska Native and All Race Adults Aged 25 Years and Older in Michigan, Minnesota, Wisconsin, and Three-State Area, 2014

| | High School or more | | Bachelor degree or more | |
|---|---|---|---|---|
| | ***American Indian/ Alaska Natives***[1] | All Races[2] | ***American Indian/ Alaska Natives***[1] | All Races[2] |
| Michigan | 85.14 | 89.86 | 12.52 | 27.35 |
| Minnesota | 83.62 | 92.58 | 9.52 | 34.27 |
| Wisconsin | 86.17 | 91.36 | 13.80 | 28.43 |
| Three-State | 84.94 | 90.97 | 11.88 | 29.43 |

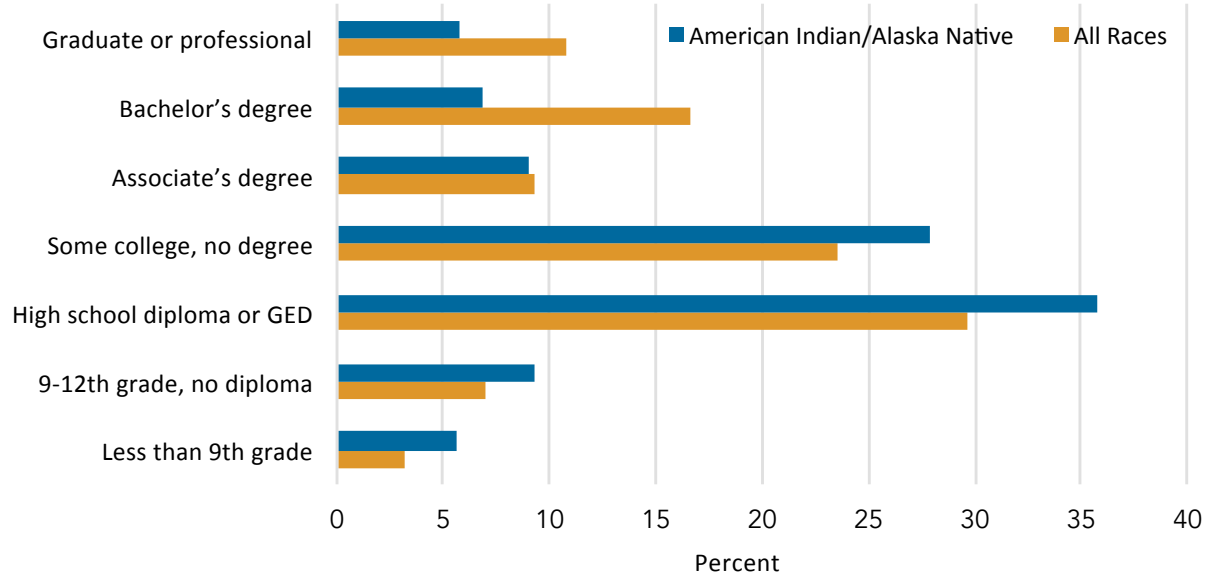
[1] American Community Survey Table B15002C [2] American Community Survey Table B15002

Figure 1.5. Highest Level of Educational Attainment (by Percent) of at Least High School and at Least Bachelor Degree, American Indian/Alaska Native and All Race Adults Aged 25 Years and Older in Michigan, Minnesota, Wisconsin, and Three-State Area, 2014[1]



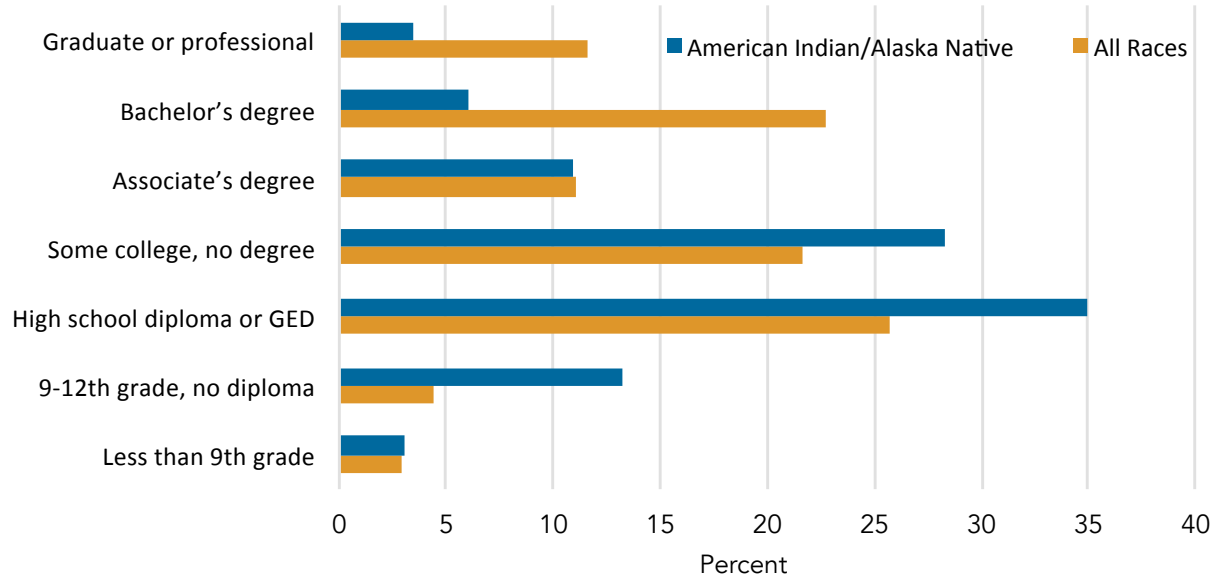

[1] American Community Survey Tables B15002C and B15002

## Figure 1.6. Highest Level of Educational Attainment (by Percent) of American Indian/Alaska Native and All Race Adults Aged 25 Years and Older in Michigan, 2014[1]



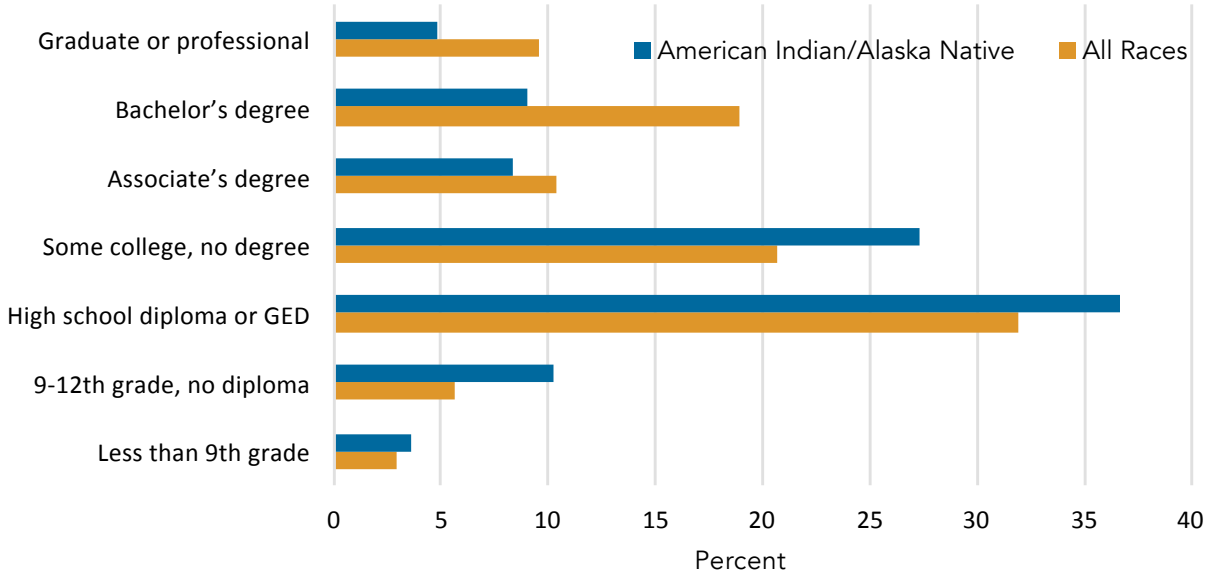

[1] American Community Survey Tables B15002C and B15002

## Figure 1.7. Highest Level of Educational Attainment (by Percent) of American Indian/Alaska Native and All Race Adults Aged 25 Years and Older in Minnesota, 2014[1]



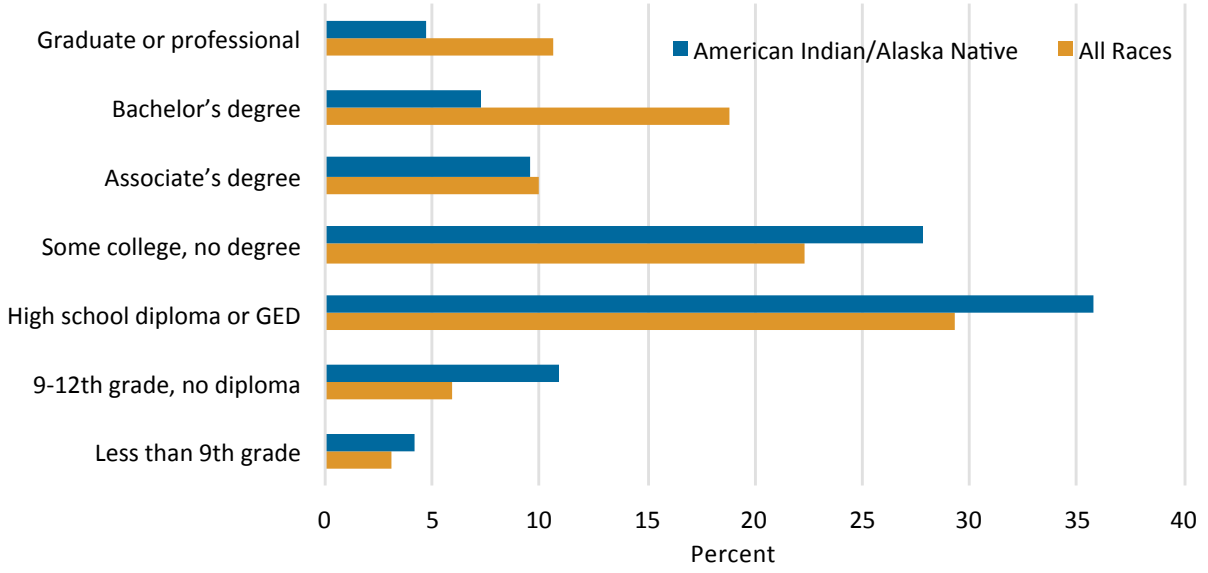

[1] American Community Survey Tables B15002C and B15002

## Figure 1.8. Highest Level of Educational Attainment (by Percent) of American Indian/Alaska Native and All Race Adults Aged 25 Years and Older in Wisconsin, 2014[1]




[1] American Community Survey Tables B15002C and B15002

## Figure 1.9. Highest Level of Educational Attainment (by Percent) of American Indian/Alaska Native and All Race Adults Aged 25 Years and Older in Michigan, Minnesota, and Wisconsin, 2014[1]




[1] American Community Survey Tables B15002C and B15002

## Table 1.18. Highest Level of Educational Attainment (by Percent) of American Indian/Alaska Native and All Race Adults Aged 25 Years and Older in Michigan, 2014

| | ***American Indian/Alaska Natives***[1] | | All Races[2] | |
|---|---|---|---|---|
| | Number | Percent | Number | Percent[3] |
| Less than 9th grade | 1,968 | 5.60 | 214,925 | 3.22 |
| 9-12th grade, no diploma | 3,251 | 9.26 | 462,665 | 6.93 |
| High school diploma or GED | 12,534 | 35.70 | 1,980,847 | 29.65 |
| Some college, no degree | 9,805 | 27.92 | 1,576,003 | 23.59 |
| Associate's degree | 3,160 | 9.00 | 618,746 | 9.26 |
| Bachelor's degree | 2,383 | 6.79 | 1,105,362 | 16.55 |
| Graduate or professional | 2,013 | 5.73 | 721,977 | 10.81 |
| Total | 35,114 | 100.00 | 6,680,525 | 100.00 |

[1] American Community Survey Table B15002C [2] American Community Survey Table B15002
[3] Column does not total 100% due to rounding

## Table 1.19. Highest Level of Educational Attainment (by Percent) of American Indian/Alaska Native and All Race Adults Aged 25 Years and Older in Minnesota, 2014

| | ***American Indian/Alaska Natives***[1] | | All Races[2] | |
|---|---|---|---|---|
| | Number | Percent[3] | Number | Percent[3] |
| Less than 9th grade | 1,041 | 3.10 | 108,766 | 2.96 |
| 9-12th grade, no diploma | 4,465 | 13.28 | 163,742 | 4.46 |
| High school diploma or GED | 11,740 | 34.92 | 943,377 | 25.69 |
| Some college, no degree | 9,491 | 28.23 | 793,963 | 21.62 |
| Associate's degree | 3,685 | 10.96 | 404,201 | 11.01 |
| Bachelor's degree | 2,026 | 6.03 | 834,094 | 22.71 |
| Graduate or professional | 1,174 | 3.49 | 424,440 | 11.56 |
| Total | 33,622 | 100.00 | 3,672,583 | 100.00 |

[1] American Community Survey Table B15002C [2] American Community Survey Table B15002
[3] Column does not total 100% due to rounding

Table 1.20. Highest Level of Educational Attainment (by Percent) of American Indian/Alaska Native and All Race Adults Aged 25 Years and Older in Wisconsin, 2014

| | ***American Indian/Alaska Natives***[1] | | All Races[2] | |
|---|---|---|---|---|
| | Number | Percent[3] | Number | Percent[3] |
| Less than 9th grade | 1,064 | 3.56 | 115,028 | 2.95 |
| 9-12th grade, no diploma | 3,065 | 10.26 | 221,608 | 5.68 |
| High school diploma or GED | 10,951 | 36.67 | 1,244,668 | 31.93 |
| Some college, no degree | 8,159 | 27.32 | 805,935 | 20.67 |
| Associate's degree | 2,504 | 8.38 | 402,829 | 10.33 |
| Bachelor's degree | 2,703 | 9.05 | 736,544 | 18.89 |
| Graduate or professional | 1,419 | 4.75 | 371,550 | 9.53 |
| Total | 29,865 | 100.00 | 3,898,162 | 100.00 |

[1] American Community Survey Table B15002C [2] American Community Survey Table B15002
[3] Column does not total 100% due to rounding

Table 1.21. Highest Level of Educational Attainment (by Percent) of American Indian/Alaska Native and All Race Adults Aged 25 Years and Older in Michigan, Minnesota, and Wisconsin, 2014

| | ***American Indian/Alaska Natives***[1] | | All Races[2] | |
|---|---|---|---|---|
| | Number | Percent[3] | Number | Percent |
| Less than 9th grade | 4,073 | 4.13 | 438,719 | 3.08 |
| 9-12th grade, no diploma | 10,781 | 10.93 | 848,015 | 5.95 |
| High school diploma or GED | 35,225 | 35.72 | 4,168,892 | 29.25 |
| Some college, no degree | 27,455 | 27.84 | 3,175,901 | 22.29 |
| Associate's degree | 9,349 | 9.48 | 1,425,776 | 10.00 |
| Bachelor's degree | 7,112 | 7.21 | 2,676,000 | 18.78 |
| Graduate or professional | 4,606 | 4.67 | 1,517,967 | 10.65 |
| Total | 98,601 | 100.00 | 14,251,270 | 100.00 |

[1] American Community Survey Table B15002C [2] American Community Survey Table B15002
[3] Column does not total 100% due to rounding

## Employment

Steady employment has a beneficial effect on health. A job that pays well allows a person easier access to things that have a profound effect on health, such as healthier neighborhoods, the ability to access education, and the purchasing power to buy healthier foods. Many people receive health insurance through their jobs. Higher earning is also associated with a longer life expectancy.[7]

In the three-state area in 2014, a smaller percent of American Indian/Alaska Natives were employed than people of all races (Table 1.22).

Table 1.22. Percent of American Indian/Alaska Natives and All Races Age 16 and Over Employed in Civilian Labor Force, Michigan, Minnesota, Wisconsin, and Three-State Area 2014

| | ***American Indian/Alaska Natives***[1] | | All Races[2] | |
|---|---|---|---|---|
| | Number | Percent[3] | Number | Percent |
| | Number | Percent | Number | Percent |
| Michigan | 20,318 | 83.10 | 4,250,766 | 91.56 |
| Minnesota | 19,477 | 86.60 | 2,733,381 | 95.22 |
| Wisconsin | 20,027 | 89.18 | 2,777,085 | 94.58 |
| Three-State | 59,822 | 86.20 | 9,761,232 | 93.41 |

[1] American Community Survey Table B23002C [2] American Community Survey Table B23001

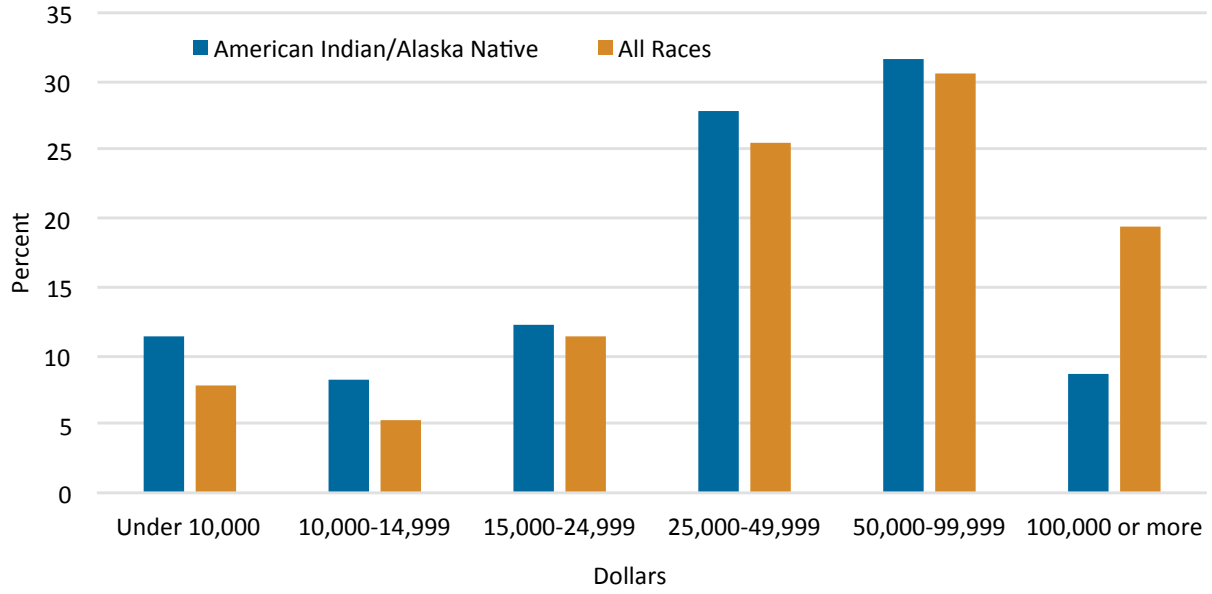
## Income and Poverty

Along with education level and employment status, income and poverty status are other important factors contributing to overall socioeconomic status and health.

For the three states combined, about twice as many American Indian/Alaska Native households fell into the lowest income category (a household income of less than $10,000 per year) as households for all races (Figures 1.10-1.13 and Tables 1.23-1.26). For the highest income category (over $100,000 per year), the reverse was true—about twice as many households in the all races population earned over $100,000 per year as compared to American Indian/Alaska Native households.

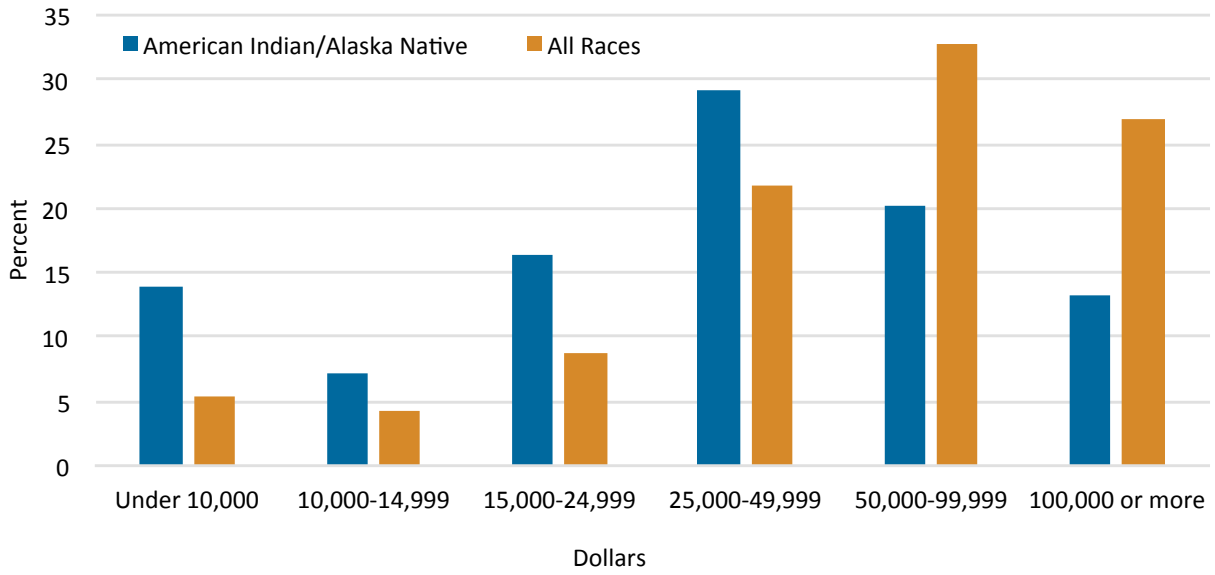
Poverty does not have a single definition, and a variety of measures can be used to describe it. Poverty definitions often are based on household income in combination with family composition. In the three-state area, almost three times as many American Indian/Alaska Native households had incomes that placed them below the federal poverty level (Figures 1.14-1.17 and Tables 1.27-1.30).

Figure 1.10. Annual Income for American Indian/Alaska Natives and All Races Households in Michigan, 2014[1]



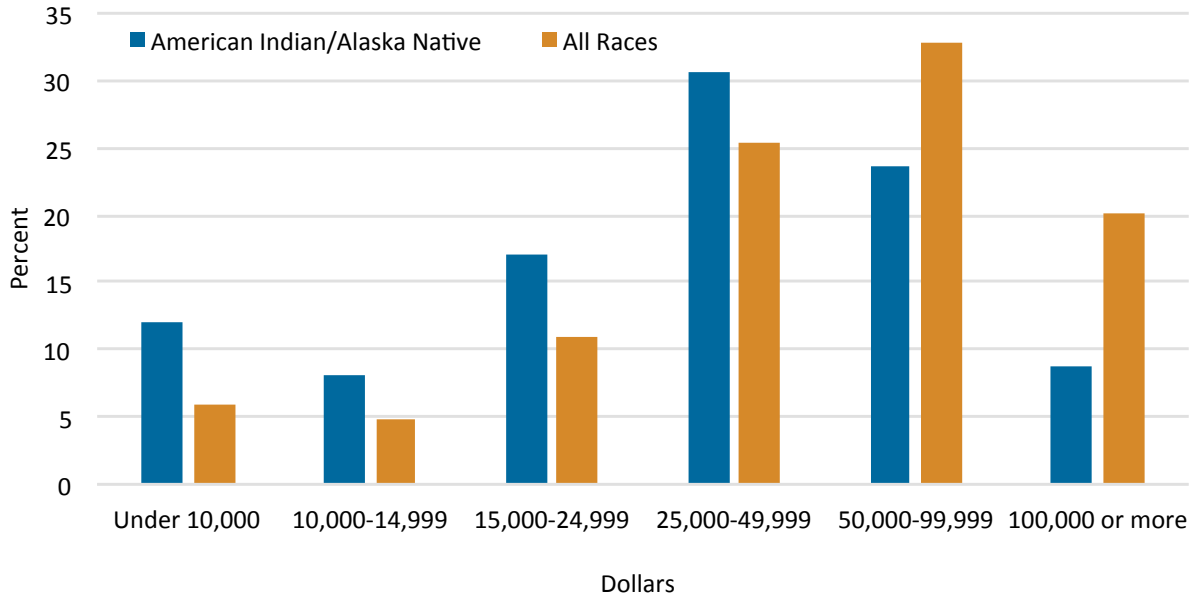

[1] American Community Survey Tables B19001C and B19001

## Figure 1.11. Annual Income for American Indian/Alaska Natives and All Races Households in Minnesota, 2014[1]



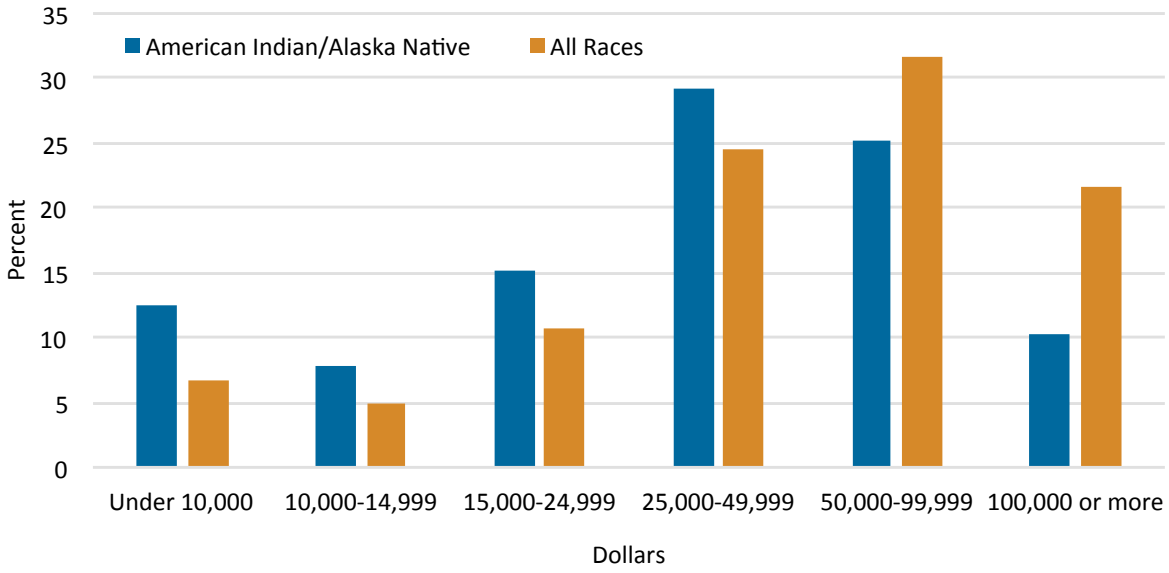

[1] American Community Survey Tables B19001C and B19001

## Figure 1.12. Annual Income for American Indian/Alaska Natives and All Races Households in Wisconsin, 2014[1]




[1] American Community Survey Tables B19001C and B19001

## Figure 1.13. Annual Income for American Indian/Alaska Natives and All Races Households in Michigan, Minnesota, and Wisconsin, 2014[1]




[1] American Community Survey Tables B19001C and B19001

## Table 1.23. Annual Income for American Indian/Alaska Natives and All Races Households in Michigan, 2014

| | ***American Indian/Alaska Natives***[1] | | All Races[2] | |
|---|---|---|---|---|
| | Number | Percent | Number | Percent |
| Less than $10,000 | 2,160 | 11.42 | 298,108 | 7.77 |
| $10,000-$14,999 | 1,556 | 8.22 | 205,512 | 5.36 |
| $15,000-$24,999 | 2,314 | 12.23 | 438,427 | 11.43 |
| $25,000-$49,999 | 5,263 | 27.82 | 980,037 | 25.56 |
| $50,000-$99,999 | 5,995 | 31.69 | 1,168,758 | 30.48 |
| $100,000 or more | 1,631 | 8.62 | 743,732 | 19.40 |
| Total | 18,919 | 100.00 | 3,834,574 | 100.00 |

[1] American Community Survey Table B19001C [2]American Community Survey Table B19001

## Table 1.24. Annual Income for American Indian/Alaska Natives and All Races Households in Minnesota, 2014

| | ***American Indian/Alaska Natives***[1] | | All Races[2] | |
|---|---|---|---|---|
| | Number | Percent | Number | Percent[3] |
| Less than $10,000 | 2,529 | 13.84 | 113,972 | 5.35 |
| $10,000-$14,999 | 1,300 | 7.11 | 92,798 | 4.36 |
| $15,000-$24,999 | 2,989 | 16.36 | 187,769 | 8.82 |
| $25,000-$49,999 | 5,333 | 29.19 | 463,417 | 21.76 |
| $50,000-$99,999 | 3,692 | 20.21 | 698,652 | 32.81 |
| $100,000 or more | 2,429 | 13.29 | 572,587 | 26.89 |
| Total | 18,272 | 100.00 | 2,129,195 | 100.00 |

[1] American Community Survey Table B19001C [2] American Community Survey Table B19001
[3] Column does not total 100% due to rounding

## Table 1.25. Annual Income for American Indian/Alaska Natives and All Races Households in Wisconsin, 2014

| | ***American Indian/Alaska Natives***[1] | | All Races[2] | |
|---|---|---|---|---|
| | Number | Percent[3] | Number | Percent |
| Less than $10,000 | 2,057 | 11.95 | 134,683 | 5.84 |
| $10,000-$14,999 | 1,387 | 8.06 | 113,764 | 4.93 |
| $15,000-$24,999 | 2,921 | 16.97 | 252,054 | 10.92 |
| $25,000-$49,999 | 5,265 | 30.59 | 587,323 | 25.45 |
| $50,000-$99,999 | 4,069 | 23.64 | 755,556 | 32.74 |
| $100,000 or more | 1,511 | 8.78 | 464,305 | 20.12 |
| Total | 17,210 | 100.00 | 2,307,685 | 100.00 |

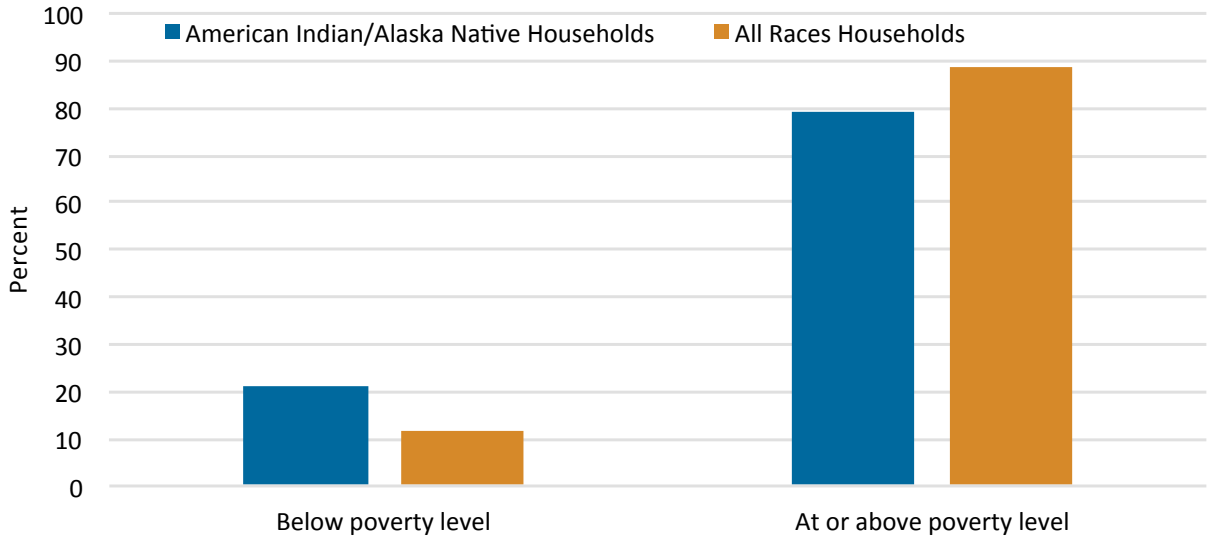
[1] American Community Survey Table B19001C [2] American Community Survey Table B19001
[3] Column does not total 100% due to rounding

## Table 1.26. Annual Income for American Indian/Alaska Natives and All Races Households in Michigan, Minnesota, and Wisconsin, 2014

| | ***American Indian/Alaska Natives***[1] | | All Races[2] | |
|---|---|---|---|---|
| | Number | Percent[3] | Number | Percent |
| Less than $10,000 | 6,746 | 12.40 | 546,763 | 6.61 |
| $10,000-$14,999 | 4,243 | 7.80 | 412,074 | 4.98 |
| $15,000-$24,999 | 8,224 | 15.12 | 878,250 | 10.62 |
| $25,000-$49,999 | 15,861 | 29.16 | 2,030,777 | 24.55 |
| $50,000-$99,999 | 13,756 | 25.29 | 2,622,966 | 31.71 |
| $100,000 or more | 5,571 | 10.24 | 1,780,624 | 21.53 |
| Total | 54,401 | 100.00 | 8,271,454 | 100.00 |

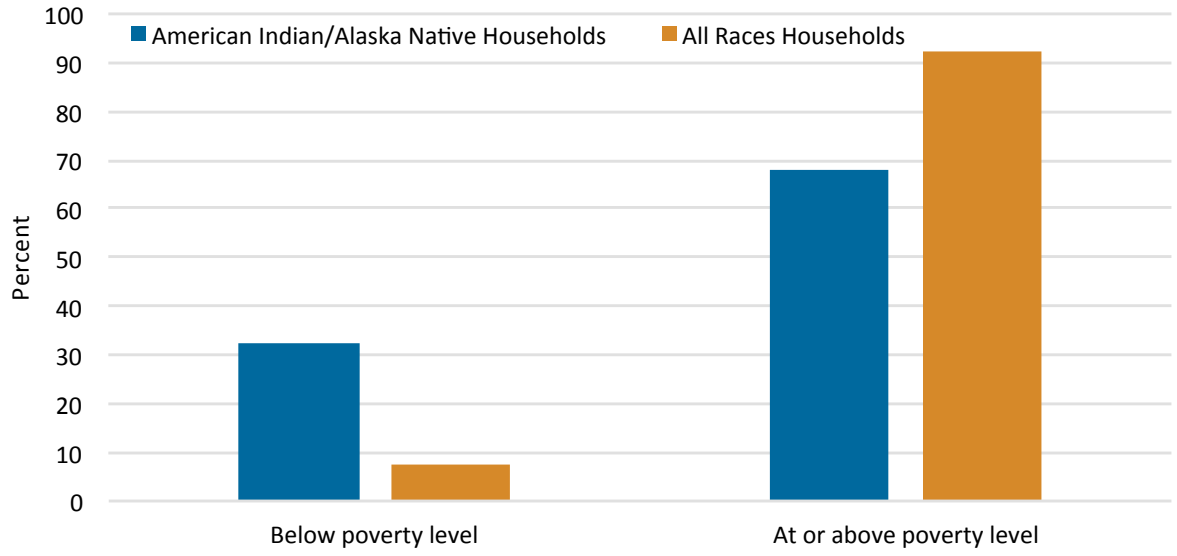
[1] American Community Survey Table B19001C [2] American Community Survey Table B19001
[3] Column does not total 100% due to rounding

Figure 1.14. Household Poverty for American Indian/Alaska Natives and All Races in Michigan, 2014[1]



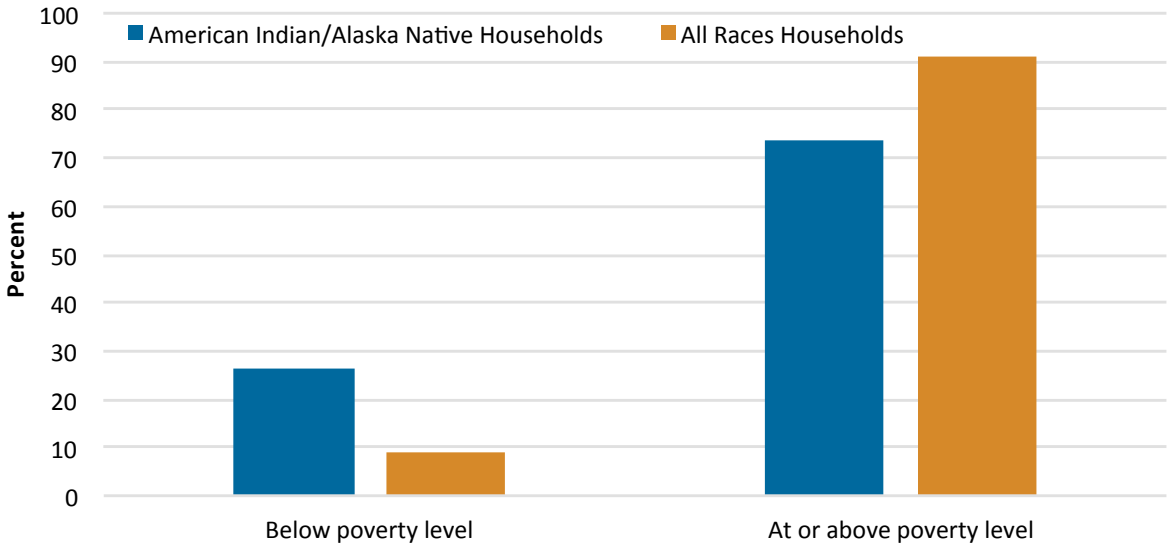

[1] American Community Survey Tables B17010C and B17010

Figure 1.15. Household Poverty for American Indian/Alaska Natives and All Races in Minnesota, 2014[1]



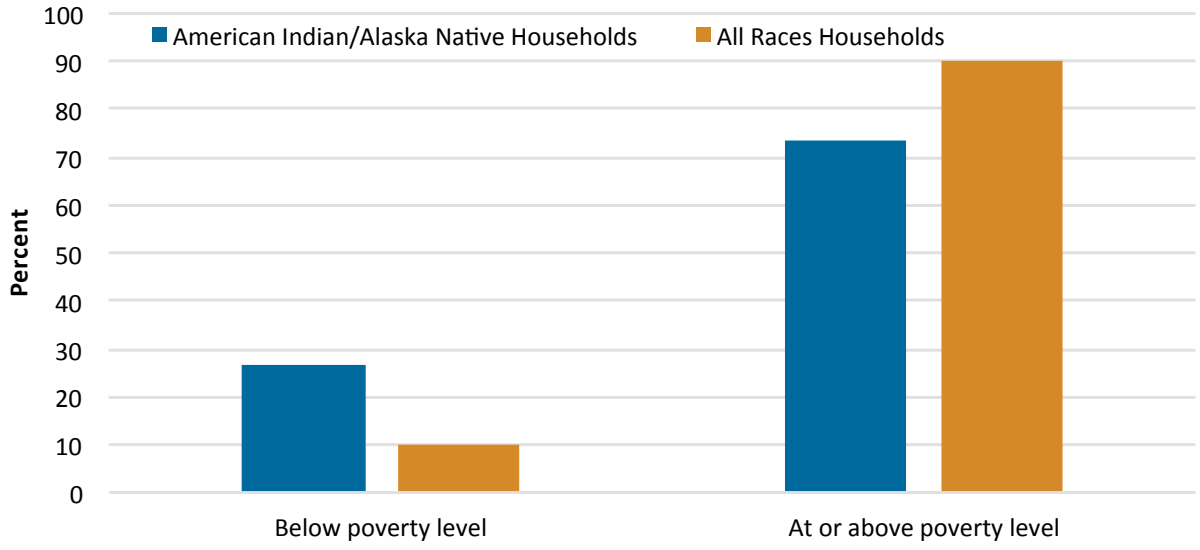

[1] American Community Survey Tables B17010C and B17010

## Figure 1.16. Household Poverty for American Indian/Alaska Natives and All Races in Wisconsin, 2014[1]




[1] American Community Survey Tables B17010C and B17010

## Figure 1.17. Household Poverty for American Indian/Alaska Natives and All Races in Michigan, Minnesota, and Wisconsin, 2014[1]




1 American Community Survey Tables B17010C and B17010

Table 1.27. Household Poverty for American Indian/Alaska Natives and All Races in Michigan, 2014

| | *American Indian/Alaska Native Households*[1] | | All Races Households[2] | |
|---|---|---|---|---|
| | Number | Percent | Number | Percent |
| Percent below poverty level | 2,694 | 21.01 | 284,381 | 11.44 |
| Percent at or above poverty level | 10,131 | 78.99 | 2,200,778 | 88.56 |
| Total | 12,825 | 100.00 | 2,485,159 | 100.00 |

[1] American Community Survey Table B17010C [2]American Community Survey Table B17010

Table 1.28. Household Poverty for American Indian/Alaska Natives and All Races in Minnesota, 2014

| | *American Indian/Alaska Native Households*[1] | | All Races Households[2] | |
|---|---|---|---|---|
| | Number | Percent | Number | Percent |
| Percent below poverty level | 3,771 | 32.27 | 102,173 | 7.46 |
| Percent at or above poverty level | 7,915 | 67.73 | 1,267,421 | 92.54 |
| Total | 11,686 | 100.00 | 1,369,594 | 100.00 |

[1] American Community Survey Table B17010C [2]American Community Survey Table B17010

Table 1.29. Household Poverty for American Indian/Alaska Natives and All Races in Wisconsin, 2014

| | *American Indian/Alaska Native Households*[1] | | All Races Households[2] | |
|---|---|---|---|---|
| | Number | Percent | Number | Percent |
| Percent below poverty level | 3,103 | 26.64 | 133,444 | 8.98 |
| Percent at or above poverty level | 8,544 | 73.36 | 1,352,433 | 91.02 |
| Total | 11,647 | 100.00 | 1,485,877 | 100.00 |

[1] American Community Survey Table B17010C [2]American Community Survey Table B17010

Table 1.30. Household Poverty for American Indian/Alaska Natives and All Races in Michigan, Minnesota, and Wisconsin, 2014

| | *American Indian/Alaska Native Households*[1] | | All Races Households[2] | |
|---|---|---|---|---|
| | Number | Percent | Number | Percent |
| Percent below poverty level | 9,568 | 26.46 | 519,998 | 9.74 |
| Percent at or above poverty level | 26,590 | 73.54 | 4,820,632 | 90.26 |
| Total | 36,158 | 100.00 | 5,340,630 | 100.00 |

[1] American Community Survey Table B17010C [2]American Community Survey Table B17010

# Chapter Two
# Mortality

Mortality data are important for several reasons. They are one of the only sources of data that are comparable across many different geographies and racial groups, and that are available for long periods of time.[8] Understanding mortality rates and related factors allows governments and communities to monitor and understand what is affecting the health of the population, make plans, and interpret the results of programs intended to reduce mortality.[9,10]

Racial misclassification is a serious issue that limits the quality of mortality data for American Indian/Alaska Natives. Racial misclassification on death certificates occur when a medical professional does not correctly identify the race of the deceased. Studies of this issue have found varying rates of misclassification. For example, a study by the National Center for Health Statistics found that mortality rates for American Indian/Alaska Natives were underreported by about 21%.[11] Other estimates for underreporting of mortality was lower; for example, one 2014 study placed misclassification prevalence at 14%.[12] One study reported 16.1% misclassification for the Bemidji Area (Michigan, Minnesota, and Wisconsin).[13]

Tables 2.3-2.15 display the age-adjusted mortality rates and confidence intervals for the American Indian/Alaska Native, white, and all races populations for the individual states of Michigan, Minnesota, and Wisconsin; the three-state area combined; and the United States. The disparity ratios between American Indian/Alaska Natives and whites for specific causes of death are included. Figures 2.1-2.4 illustrate disparity ratios for each state and the three states combined, for causes of death where American Indian/Alaska Natives are statistically more likely to die than whites.

A disparity ratio is the ratio of the rates of two different population groups and indicates the degree of disparity between the two groups. The reference group's rate is placed in the denominator, so that a ratio of less than one indicates that the population

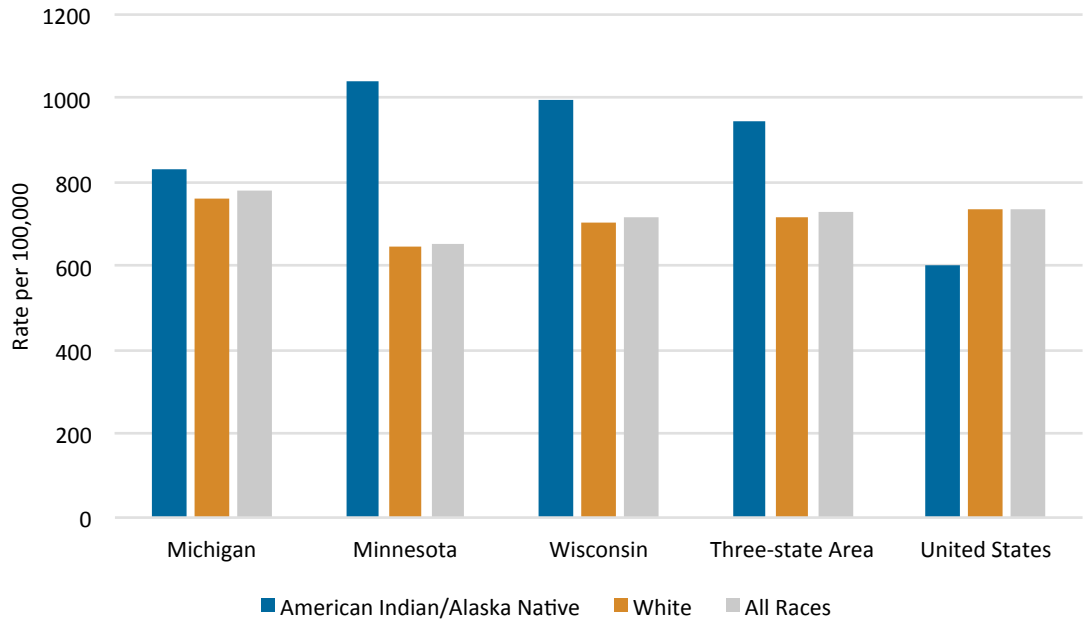
of interest has a lower mortality rate than the reference population, while a ratio of greater than one shows that the population of interest has a higher mortality rate than the reference population. In the disparity ratios here, the white population is always the reference population. In addition, when the ratio is subtracted from one and multiplied by 100%, the degree to which the disparity exists can be identified.

For example, as presented in Table 2.12, American Indian/Alaska Natives in Michigan had a 0.98 disparity ratio for malignant neoplasm (cancer) compared to whites in Michigan. Because the ratio was less than one, American Indians were less likely to die from cancer than whites— specifically, they are 2% less likely to die from cancer than whites. Meanwhile, Minnesota had a disparity ratio of 1.39 for cancer mortality, which means that American Indian/Alaska Natives had a 39% greater cancer mortality rate than whites. Among those mortality measures reported here, the greatest disparity seen was for homicide in Minnesota, where a 6.83 disparity ratio indicates that American Indian/Alaska Natives in Minnesota were nearly seven times more likely to die from homicide than whites in Minnesota (Table 2.9).

## Age-Adjusted Mortality Rates from All Causes

As seen in Table 2.1, in general American Indian/Alaska Natives in the three states had higher age-adjusted all-cause mortality rates than the white population in their area in 2010-2014. For the three states combined, the mortality rate was a third higher for Indians than whites. This is in contrast to the United States as a whole, where American Indian/Alaska Natives had a lower all-cause mortality rate than whites.

Figure 2.1. All-Cause Age Adjusted Mortality Rates (per 100,000) and Disparity Ratios in Michican, Minnesota, Wisconsin, Three-state Area and United States 2010-2014[1]




[1]Source: CDC WONDER

Table 2.1. All-Cause Age Adjusted Mortality Rates (per 100,000) and Disparity Ratios in Michican, Minnesota, Wisconsin, Three-state Area and United States 2010-2014

| | | Age-Adjusted Mortality Rate[1] | 95% Confidence Interval[1] | American Indian/ Alaska Native–White Disparity Ratio |
|---|---|---|---|---|
| Michigan* | ***AI/AN*** | ***828.2*** | ***(792.8 - 863.6)*** | 1.09 |
| | White | 759.0 | (758.0 - 762.9) | |
| | All Races | 782.0 | (779.8 - 784.4) | — |
| Minnesota* | ***AI/AN*** | ***1,041.7*** | ***(993.6 - 1,089.8)*** | 1.61 |
| | White | 647.2 | (644.3 - 650.2) | |
| | All Races | 654.5 | (650.5 - 656.3) | — |
| Wisconsin* | ***AI/AN*** | ***998.2*** | ***(949.4 - 1,046.0)*** | 1.42 |
| | White | 702.5 | (699.6 – 705.5) | |
| | All Races | 715.8 | (713.0 – 718.7) | — |
| Three-State Area* | ***AI/AN*** | ***942.7*** | ***(918.0 – 967.4)*** | 1.32 |
| | White | 714.5 | (712.9 – 716.1) | |
| | All Races | 731.8 | (730.3 – 733.4) | — |
| United States | ***AI/AN*** | ***600.8*** | ***(596.3 – 605.3)*** | 0.82 |
| | White | 733.4 | (732.9 – 733.8) | |
| | All Races | 735.2 | (734.8 – 735.6) | — |

*Areas in which American Indian/Alaska Native mortality rates were statistically significantly higher than the white rate
[1]Source: CDC WONDER

## Age-Adjusted Mortality Rates for Select Causes

The top three causes of death and their rates for American Indian/Alaska Natives are presented in Table 2.2. In 2010-2013, in the three states combined, heart disease was the leading cause of death for American Indian/Alaska Natives. Of the three states, only Minnesota had a different leading cause of death: cancer.

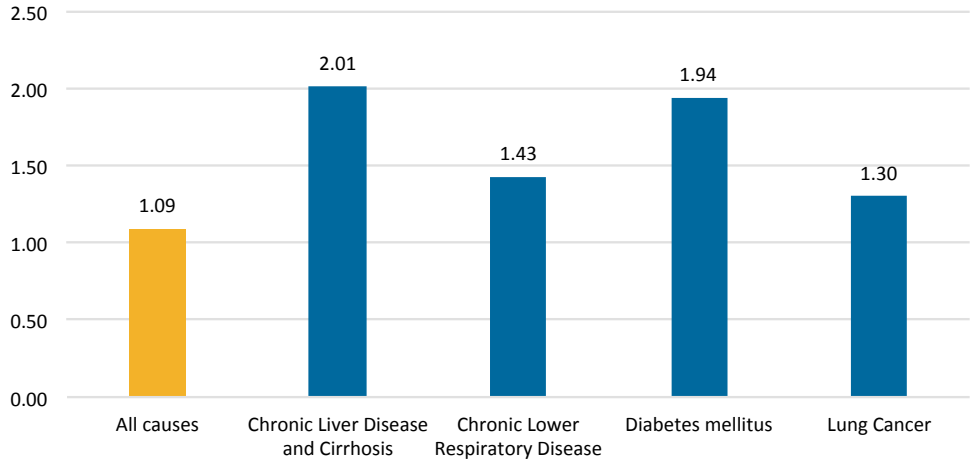
Table 2.2. Top Three Causes of Death for American Indian/Alaska Natives and Age-Adjusted Rates (per 100,000) in Michican, Minnesota, Wisconsin, Three-state Area and United States 2010-2014

| | Michigan | Minnesota | Wisconsin | Three-State Area | United States |
|---|---|---|---|---|---|
| Leading cause of death (rate) [1] | Diseases of the Heart (197.9) | Malignant Neoplasm (219.9) | Diseases of the Heart (210.8) | Diseases of the Heart (200.6) | Diseases of the Heart (122.1) |
| Second-highest cause of death (rate) [1] | Malignant Neoplasm (168.8) | Diseases of the Heart (190.7) | Malignant Neoplasm (197.4) | Malignant Neoplasm (191.1)) | Malignant Neoplasm (111.7) |
| Third-highest cause of death (rate) [1] | Chronic Lower Respiratory Disease (67.3) | Accidents (97.9) | Accidents (69.5) | Accidents (69.2) | Accidents (48.3) |

[1]CDC WONDER

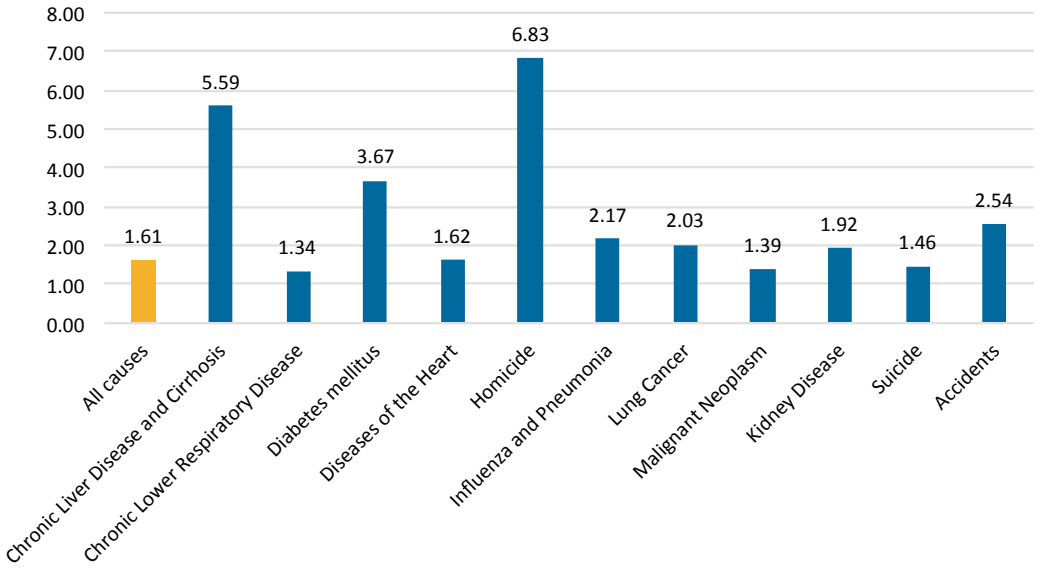
Tables 2.3-2.15 give the age-adjusted mortality rates for select causes of death for the American Indian/Alaska Native, white, and all races populations in the three states individually, the three states combined, and the United States. For many of the specific causes of death examined, American Indian/Alaska Native people in the three states were statistically more likely to die from those causes than their white counterparts. In all three of the states, Chronic Liver Disease and Cirrhosis, Chronic Lower Respiratory Disease (CLRD), Diabetes, and Lung Cancer age-adjusted mortality rates were higher for American Indian/Alaska Natives. Figures 2.2-2.5 illustrate the disparity ratios for each individual state and the three states combined for causes of death where American Indian/Alaska Natives had statistically significant higher mortality rates as compared to whites.

Figure 2.2. Disparity Ratios for Causes of Death Where American Indian/Alaska Natives Had Statistically Significant Higher Mortality Rates than Whites, Michigan 2010-2014[1]



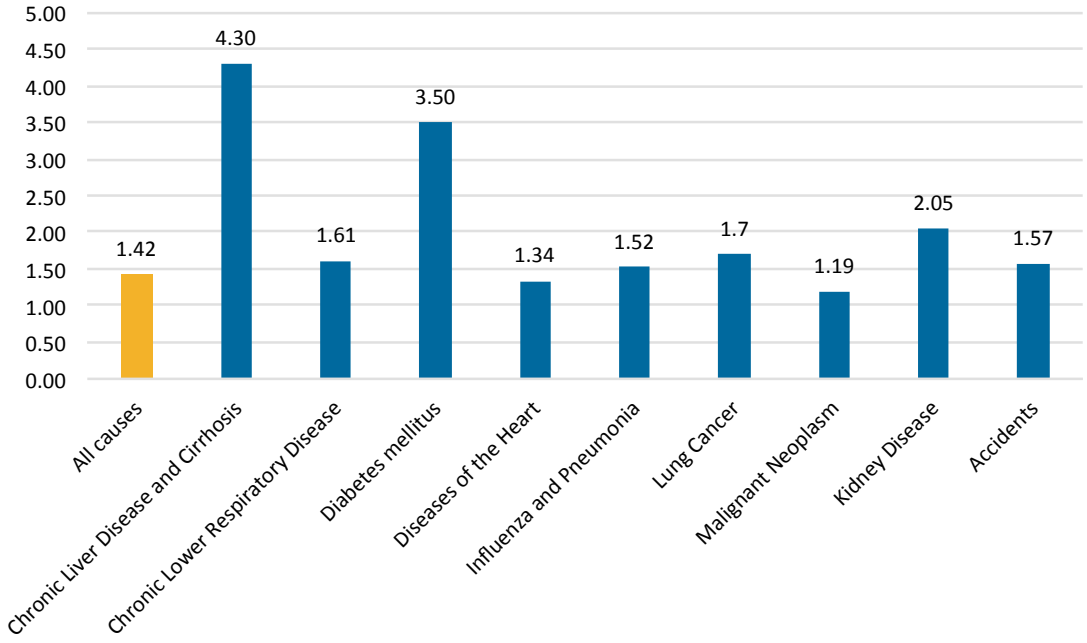

[1]CDC WONDER

Figure 2.3. Disparity Ratios for Causes of Death Where American Indian/Alaska Natives Had Statistically Significant Higher Mortality Rates than Whites, Minnesota 2010-2014[1]



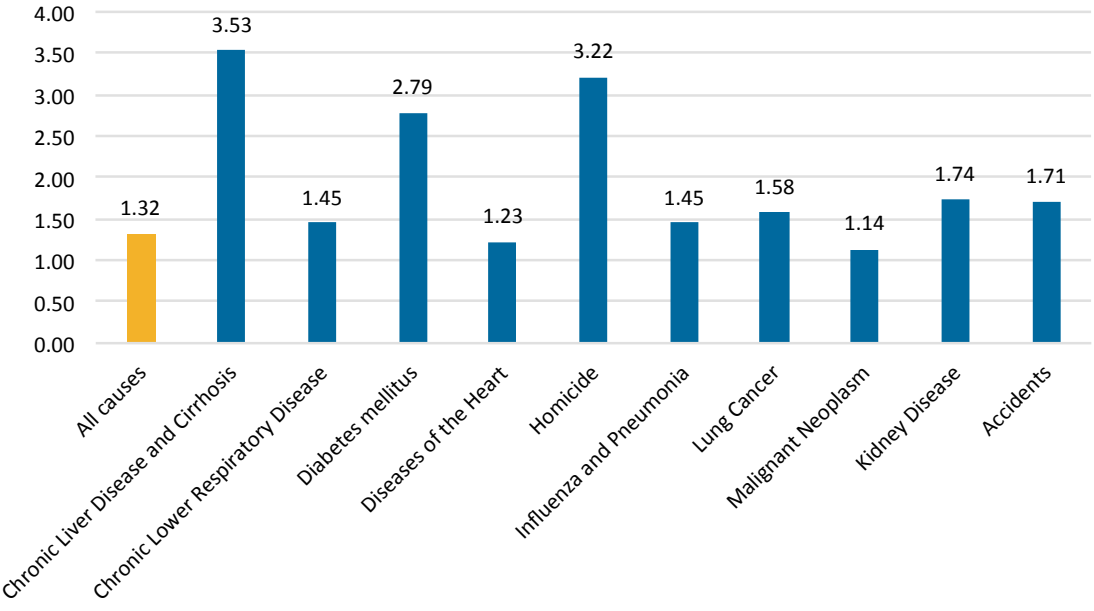

[1]CDC WONDER

Figure 2.4. Disparity Ratios for Causes of Death Where American Indian/Alaska Natives Had Statistically Significant Higher Mortality Rates than Whites, Wisconsin 2010-2014[1]




[1]CDC WONDER

Figure 2.5. Disparity Ratios for Causes of Death Where American Indian/Alaska Natives Had Statistically Significant Higher Mortality Rates than Whites, Michigan, Minnesota, and Wisconsin 2010-2014[1]




[1]CDC WONDER

## Table 2.3. Alzheimer's Disease Age Adjusted Mortality Rates (per 100,000) and Disparity Ratios, 2010-2014

| | | Age-Adjusted Mortality Rate[1] | 95% Confidence Interval[1] | American Indian/ Alaska Native-White Disparity Ratio |
|---|---|---|---|---|
| Michigan | ***AI/AN*** | ***26.6*** | ***(19.9 - 34.9)*** | 1.01 |
| | White | 26.4 | (26.0 - 26.8) | |
| | All Races | 25.5 | (25.1 - 25.9) | — |
| Minnesota | ***AI/AN*** | — | — | — |
| | White | 23.1 | (22.6 - 23.6) | |
| | All Races | 22.8 | (22.3 – 23.3) | — |
| Wisconsin | ***AI/AN*** | ***25.5*** | ***(16.9 – 36.8)*** | 1.05 |
| | White | 24.4 | (23.9 - 24.9) | |
| | All Races | 24.2 | (23.7 - 24.7) | — |
| Three-State Area | ***AI/AN*** | ***21.6*** | ***(17.4 - 26.6)*** | 0.86 |
| | White | 25.0 | (24.7 – 25.2) | |
| | All Races | 24.5 | (24.2 - 24.8) | — |
| United States | ***AI/AN*** | ***14.1*** | ***(13.3 - 14.9)*** | 0.56 |
| | White | 25.4 | (25.4 - 25.5) | |
| | All Races | 24.5 | (24.4 - 24.6) | — |

[1] CDC WONDER
*Areas in which American Indian/Alaska Native mortality rates were statistically significantly higher than the white rate

## Table 2.4. Cerebrovascular Disease (Stroke) Age Adjusted Mortality Rates (per 100,000) and Disparity Ratios, 2010-2014

| | | Age-Adjusted Mortality Rate[1] | 95% Confidence Interval[1] | American Indian/ Alaska Native-White Disparity Ratio |
|---|---|---|---|---|
| Michigan | ***AI/AN*** | ***27.0*** | ***(20.8 - 34.6)*** | 0.74 |
| | White | 36.3 | (35.8 – 36.9) | |
| | All Races | 37.9 | (37.4 - 38.4) | — |
| Minnesota | ***AI/AN*** | ***34.1*** | ***(25.7 - 44.2)*** | 1.02 |
| | White | 33.4 | (32.7 - 34.0) | |
| | All Races | 34.0 | (33.3 - 34.6) | — |
| Wisconsin | ***AI/AN*** | ***44.1*** | ***(33.8 – 56.5)*** | 1.24 |
| | White | 35.5 | (34.8 - 36.1) | |
| | All Races | 36.5 | (35.8 - 37.1) | — |
| Three-State Area | ***AI/AN*** | ***34.1*** | ***(29.1 - 39.1)*** | 0.97 |
| | White | 35.3 | (35.0 – 35.7) | |
| | All Races | 36.6 | (36.2 – 36.9) | — |
| United States | ***AI/AN*** | ***26.0*** | ***(25.0 - 27.0)*** | 0.72 |
| | White | 36.0 | (35.9 - 36.1) | |
| | All Races | 37.3 | (37.2 – 37.4) | — |

[1] CDC WONDER
*Areas in which American Indian/Alaska Native mortality rates were statistically significantly higher than the white rate

## Table 2.5. Chronic Liver Disease and Cirrhosis Age Adjusted Mortality Rates (per 100,000) and Disparity Ratios, 2010-2014

| | | Age-Adjusted Mortality Rate[1] | 95% Confidence Interval[1] | American Indian/ Alaska Native-White Disparity Ratio |
|---|---|---|---|---|
| Michigan* | ***AI/AN*** | ***20.3*** | ***(15.9 - 25.5)*** | 2.01 |
| | White | 10.1 | (9.9 - 10.4) | |
| | All Races | 10.0 | (9.7 - 10.2) | — |
| Minnesota* | ***AI/AN*** | ***41.9*** | ***(34.3 – 49.4)*** | 5.59 |
| | White | 7.5 | (7.2 - 7.9) | |
| | All Races | 7.7 | (7.4 – 8.0) | — |
| Wisconsin* | ***AI/AN*** | ***35.3*** | ***(28.3 - 43.5)*** | 4.30 |
| | White | 8.2 | (7.9 - 8.6) | |
| | All Races | 8.5 | (8.2 - 8.8) | — |
| Three-State Area* | ***AI/AN*** | ***31.4*** | ***(27.7 - 35.0)*** | 3.53 |
| | White | 8.9 | (8.7 - 9.1) | |
| | All Races | 9.0 | (8.8 - 9.2) | — |
| United States* | ***AI/AN*** | ***24.1*** | ***(23.3 – 24.8)*** | 2.30 |
| | White | 10.5 | (10.5 - 10.6) | |
| | All Races | 9.9 | (9.9 – 10.0) | — |

[1] CDC WONDER
*Areas in which American Indian/Alaska Native mortality rates were statistically significantly higher than the white rate

## Table 2.6. Chronic Lower Respiratory Disease (CLRD) Age Adjusted Mortality Rates (per 100,000) and Disparity Ratios, 2010-2014

| | | Age-Adjusted Mortality Rate[1] | 95% Confidence Interval[1] | American Indian/ Alaska Native-White Disparity Ratio |
|---|---|---|---|---|
| Michigan* | ***AI/AN*** | ***67.3*** | ***(56.9 – 77.7)*** | 1.43 |
| | White | 47.1 | (46.5 - 47.7) | |
| | All Races | 45.4 | (44.9 - 46.0) | — |
| Minnesota* | ***AI/AN*** | ***48.5*** | ***(38.4 - 60.5)*** | 1.34 |
| | White | 36.2 | (35.5 - 36.9) | |
| | All Races | 36.1 | (35.5 - 36.8) | — |
| Wisconsin* | ***AI/AN*** | ***62.6*** | ***(49.7 – 75.6)*** | 1.61 |
| | White | 38.9 | (38.2 - 39.6) | |
| | All Races | 38.8 | (38.2 - 39.5) | — |
| Three-State Area* | ***AI/AN*** | ***60.8*** | ***(54.3 - 67.4)*** | 1.45 |
| | White | 42.0 | (41.6 - 42.4) | |
| | All Races | 41.3 | (40.0 - 41.7) | — |
| United States | ***AI/AN*** | ***30.5*** | ***(29.5 - 31.6)*** | 0.69 |
| | White | 44.3 | (44.2 - 44.4) | |
| | All Races | 41.7 | (41.6 – 41.8) | — |

[1] CDC WONDER
*Areas in which American Indian/Alaska Native mortality rates were statistically significantly higher than the white rate

Table 2.7. Diabetes Mellitus Age Adjusted Mortality Rates (per 100,000) and Disparity Ratios, 2010-2014

| | | Age-Adjusted Mortality Rate[1] | 95% Confidence Interval[1] | American Indian/ Alaska Native-White Disparity Ratio |
|---|---|---|---|---|
| Michigan* | ***AI/AN*** | ***42.9*** | ***(34.8 - 51.0)*** | 1.94 |
| | White | 22.1 | (21.7 - 22.6) | |
| | All Races | 23.8 | (23.4 - 24.2) | — |
| Minnesota* | ***AI/AN*** | ***66.5*** | ***(53.9 – 79.1)*** | 3.67 |
| | White | 18.1 | (17.6 - 18.6) | |
| | All Races | 18.9 | (18.4 - 19.4) | — |
| Wisconsin* | ***AI/AN*** | ***60.9*** | ***(49.0 – 72.8)*** | 3.50 |
| | White | 17.4 | (16.9 - 17.8) | |
| | All Races | 18.4 | (18.0 - 18.9) | — |
| Three-State Area* | ***AI/AN*** | ***54.9*** | ***(48.8 – 60.9)*** | 2.79 |
| | White | 19.7 | (19.5 - 20.0) | |
| | All Races | 21.1 | (20.8 - 21.4) | — |
| United States* | ***AI/AN*** | ***34.9*** | ***(33.8 - 36.0)*** | 1.80 |
| | White | 19.4 | (19.3 - 19.4) | |
| | All Races | 21.2 | (21.1 - 21.2) | — |

[1] CDC WONDER
*Areas in which American Indian/Alaska Native mortality rates were statistically significantly higher than the white rate

Table 2.8. Diseases of the Heart Age Adjusted Mortality Rates (per 100,000) and Disparity Ratios, 2010-2014

| | | Age-Adjusted Mortality Rate[1] | 95% Confidence Interval[1] | American Indian/ Alaska Native-White Disparity Ratio |
|---|---|---|---|---|
| Michigan | ***AI/AN*** | ***197.9*** | ***(180.0 – 215.8)*** | 1.03 |
| | White | 191.6 | (190.4 – 192.9) | |
| | All Races | 200.6 | (199.4 – 201.7) | — |
| Minnesota* | ***AI/AN*** | ***190.7*** | ***(169.3 – 212.2)*** | 1.62 |
| | White | 117.9 | (116.7 – 119.2) | |
| | All Races | 118.3 | (117.1 – 119.5) | — |
| Wisconsin* | ***AI/AN*** | ***210.8*** | ***(187.6 – 233.9)*** | 1.34 |
| | White | 157.8 | (156.5 – 159.2) | |
| | All Races | 160.7 | (159.3 - 162.0) | — |
| Three-State Area* | ***AI/AN*** | ***200.6*** | ***(188.7 – 212.4)*** | 1.23 |
| | White | 162.8 | (162.1 - 163.6) | |
| | All Races | 169.1 | (168.4 – 169.8) | — |
| United States | ***AI/AN*** | ***122.1*** | ***(120.0 – 124.2)*** | 0.72 |
| | White | 170.3 | (170.1 - 170.5) | |
| | All Races | 171.9 | (171.7 – 172.1) | — |

[1] CDC WONDER
*Areas in which American Indian/Alaska Native mortality rates were statistically significantly higher than the white rate

## Table 2.9. Homicide Age Adjusted Mortality Rates (per 100,000) and Disparity Ratios, 2010-2014

| | | Age-Adjusted Mortality Rate[1] | 95% Confidence Interval[1] | American Indian/ Alaska Native-White Disparity Ratio |
|---|---|---|---|---|
| Michigan | ***AI/AN*** | — | — | — |
| | White | 2.3 | (2.1 - 2.4) | |
| | All Races | — | (6.7 - 7.2) | — |
| Minnesota* | ***AI/AN*** | ***8.2*** | ***(5.7 – 11.4)*** | 6.83 |
| | White | 1.2 | (1.1 - 1.4) | |
| | All Races | 2.1 | (1.9 - 2.3) | — |
| Wisconsin | ***AI/AN*** | — | — | — |
| | White | 1.5 | (1.3 - 1.6) | |
| | All Races | 3.0 | (2.8 - 3.2) | — |
| Three-State Area* | ***AI/AN*** | ***5.8*** | ***(4.5 - 7.3)*** | 3.06 |
| | White | 1.8 | (1.7 - 1.8) | |
| | All Races | 4.6 | (4.4 - 4.7) | — |
| United States* | ***AI/AN*** | ***5.7*** | ***(5.4 - 6.0)*** | 1.84 |
| | White | 3.1 | (3.1 - 3.2) | |
| | All Races | 5.2 | (5.2 - 5.3) | — |

[1] CDC WONDER
*Areas in which American Indian/Alaska Native mortality rates were statistically significantly higher than the white rate

## Table 2.10. Influenza and Pneumonia Age Adjusted Mortality Rates (per 100,000) and Disparity Ratios, 2010-2014

| | | Age-Adjusted Mortality Rate[1] | 95% Confidence Interval[1] | American Indian/ Alaska Native-White Disparity Ratio |
|---|---|---|---|---|
| Michigan | ***AI/AN*** | ***15.8*** | ***(11.3 – 21.5)*** | 1.10 |
| | White | 14.3 | (14.0 - 14.6) | |
| | All Races | 14.7 | (14.4 – 15.0) | — |
| Minnesota* | ***AI/AN*** | ***22.6*** | ***(15.7 – 31.4)*** | 2.17 |
| | White | 10.4 | (10.0 - 10.7) | |
| | All Races | 10.5 | (10.1 – 10.8) | — |
| Wisconsin* | ***AI/AN*** | ***21.5*** | ***(14.6 - 30.5)*** | 1.52 |
| | White | 14.1 | (13.7 - 14.5) | |
| | All Races | 14.2 | (13.8 - 14.6) | — |
| Three State Area* | ***AI/AN*** | ***19.2*** | ***(15.6 - 22.9)*** | 1.45 |
| | White | 13.2 | (13.0 - 13.5) | |
| | All Races | 13.5 | (13.3 - 13.7) | — |
| United States | ***AI/AN*** | ***14.9*** | ***(14.1 – 15.6)*** | 0.99 |
| | White | 15.1 | (15.1 - 15.2) | |
| | All Races | 15.2 | (15.2 - 15.3) | — |

[1] CDC WONDER
*Areas in which American Indian/Alaska Native mortality rates were statistically significantly higher than the white rate

## Table 2.11. Lung Cancer (Trachea, Bronchus, and Lung) Age Adjusted Mortality Rates (per 100,000) and Disparity Ratios, 2010-2014

| | | Age-Adjusted Mortality Rate[1] | 95% Confidence Interval[1] | American Indian/ Alaska Native-White Disparity Ratio |
|---|---|---|---|---|
| Michigan* | ***AI/AN*** | ***64.4*** | ***(54.8 - 73.9)*** | 1.30 |
| | White | 49.4 | (48.8 - 50.0) | |
| | All Races | 49.8 | (49.2 – 50.4) | — |
| Minnesota* | ***AI/AN*** | ***80.6*** | ***(66.6 – 94.6)*** | 2.03 |
| | White | 39.8 | (39.0 – 40.5) | |
| | All Races | 39.7 | (39.0 – 40.4) | — |
| Wisconsin* | ***AI/AN*** | ***73.8*** | ***(60.8 – 86.8)*** | 1.70 |
| | White | 43.3 | (42.6 - 44.1) | |
| | All Races | 44.3 | (43.6 - 45.0) | — |
| Three-State Area* | ***AI/AN*** | ***71.3*** | ***(64.6 - 78.1)*** | 1.58 |
| | White | 45.2 | (44.8 – 45.6) | |
| | All Races | 45.8 | (45.4 – 46.2) | — |
| United States | ***AI/AN*** | ***29.6*** | ***(28.6 – 30.6)*** | 0.65 |
| | White | 45.5 | (45.3 – 45.6) | |
| | All Races | 44.7 | (44.6 – 44.8) | — |

[1] CDC WONDER
*Areas in which American Indian/Alaska Native mortality rates were statistically significantly higher than the white rate

## Table 2.12. Malignant Neoplasm (All Cancer) Age Adjusted Mortality Rates (per 100,000) and Disparity Ratios, 2010-2014

| | | Age-Adjusted Mortality Rate[1] | 95% Confidence Interval[1] | American Indian/ Alaska Native-White Disparity Ratio |
|---|---|---|---|---|
| Michigan | ***AI/AN*** | ***168.8*** | ***(153.3 - 188.2)*** | 0.98 |
| | White | 173.0 | (171.8 - 174.1) | |
| | All Races | 175.9 | (174.8 – 177.0) | — |
| Minnesota* | ***AI/AN*** | ***219.9*** | ***(197.4 - 242.4)*** | 1.39 |
| | White | 157.8 | (156.3 – 159.3) | |
| | All Races | 158.1 | (156.7 - 159.6) | — |
| Wisconsin* | ***AI/AN*** | ***197.4*** | ***(176.3 – 218.6)*** | 1.19 |
| | White | 166.1 | (164.7 – 167.5) | |
| | All Races | 168.4 | (167.0 – 169.8) | — |
| Three-State Area* | ***AI/AN*** | ***191.1*** | ***(180.2 – 202.1)*** | 1.14 |
| | White | 167.1 | (166.3 - 167.9) | |
| | All Races | 169.5 | (168.7 – 170.2) | — |
| United States | ***AI/AN*** | ***111.7*** | ***(109.7 - 113.6)*** | 0.67 |
| | White | 166.6 | (166.3 - 166.8) | |
| | All Races | 166.4 | (166.2 – 166.6) | — |

[1] CDC WONDER
*Areas in which American Indian/Alaska Native mortality rates were statistically significantly higher than the white rate

Table 2.13. Nephritis, Nephrotic Syndrome, and Nephrosis (Kidney Disease) Age Adjusted Mortality Rates (per 100,000) and Disparity Ratios, 2010-2014

| | | Age-Adjusted Mortality Rate[1] | 95% Confidence Interval[1] | American Indian/ Alaska Native-White Disparity Ratio |
|---|---|---|---|---|
| Michigan | ***AI/AN*** | ***18.7*** | ***(13.4 - 25.4)*** | 1.42 |
| | White | 13.2 | (12.9 - 13.6) | |
| | All Races | 14.4 | (14.1 - 14.7) | — |
| Minnesota* | ***AI/AN*** | ***21.1*** | ***(14.5 – 29.7)*** | 1.92 |
| | White | 11.0 | (10.7 – 11.4) | |
| | All Races | 11.5 | (11.1 – 11.9) | — |
| Wisconsin* | ***AI/AN*** | ***28.7*** | ***(20.8 – 38.5)*** | 2.05 |
| | White | 14.0 | (13.6 - 14.4) | |
| | All Races | 14.8 | (14.4 - 15.2) | — |
| Three-State Area* | ***AI/AN*** | ***22.4*** | ***(18.4 - 26.4)*** | 1.74 |
| | White | 12.9 | (12.7 - 13.1) | |
| | All Races | 13.8 | (13.6 - 14.0) | — |
| United States | ***AI/AN*** | ***12.9*** | ***(12.2 – 13.6)*** | 1.03 |
| | White | 12.5 | (12.4 - 12.5) | |
| | All Races | 13.6 | (13.6 – 13.7) | — |

[1] CDC WONDER
*Areas in which American Indian/Alaska Native mortality rates were statistically significantly higher than the white rate

Table 2.14. Suicide Age Adjusted Mortality Rates (per 100,000) and Disparity Ratios, 2010-2014

| | | Age-Adjusted Mortality Rate[1] | 95% Confidence Interval[1] | American Indian/ Alaska Native-White Disparity Ratio |
|---|---|---|---|---|
| Michigan | ***AI/AN*** | ***15.2*** | ***(11.6 - 19.5)*** | 1.10 |
| | White | 13.8 | (13.5 - 14.2) | |
| | All Races | 12.7 | (12.4 – 13.0) | — |
| Minnesota* | ***AI/AN*** | ***18.0*** | ***(14.1 - 22.8)*** | 1.46 |
| | White | 12.3 | (11.8 - 12.7) | |
| | All Races | 12.0 | (11.6 - 12.4) | — |
| Wisconsin | ***AI/AN*** | ***13.0*** | ***(9.4 – 17.4)*** | 0.94 |
| | White | 13.8 | (13.4 - 14.3) | |
| | All Races | 13.2 | (12.8 - 13.6) | — |
| Three-State Area | ***AI/AN*** | ***15.6*** | ***(13.3 - 17.9)*** | 1.16 |
| | White | 13.4 | (13.2 - 13.7) | |
| | All Races | 12.6 | (12.4 - 12.9) | — |
| United States | ***AI/AN*** | ***11.0*** | ***(10.5 - 11.4)*** | 0.78 |
| | White | 14.1 | (14.1 – 14.2) | |
| | All Races | 12.5 | (12.4 - 12.6) | — |

[1] CDC WONDER
*Areas in which American Indian/Alaska Native mortality rates were statistically significantly higher than the white rate

Table 2.15. Unintentional Injury (Accidents) Age Adjusted Mortality Rates (per 100,000) and Disparity Ratios, 2010-2014

| | | Age-Adjusted Mortality Rate[1] | 95% Confidence Interval[1] | American Indian/ Alaska Native-White Disparity Ratio |
|---|---|---|---|---|
| Michigan | ***AI/AN*** | ***46.6*** | ***(39.7 – 53.5)*** | 1.19 |
| | White | 39.1 | (38.5 – 39.7) | |
| | All Races | 38.5 | (38.0 – 39.1) | — |
| Minnesota* | ***AI/AN*** | ***97.9*** | ***(85.9 - 109.8)*** | 2.54 |
| | White | 38.6 | (37.8 – 39.3) | |
| | All Races | 39.1 | (38.3 - 39.8) | — |
| Wisconsin* | ***AI/AN*** | ***69.5*** | ***(58.9 – 80.0)*** | 1.57 |
| | White | 44.4 | (43.7 – 45.2) | |
| | All Races | 44.4 | (43.7 – 45.2) | — |
| Three-State Area* | ***AI/AN*** | ***69.2*** | ***(63.8 – 74.7)*** | 1.71 |
| | White | 40.5 | (40.1 – 40.9) | |
| | All Races | 40.2 | (39.9 – 40.6) | — |
| United States* | ***AI/AN*** | ***48.3*** | ***(47.2 - 49.3)*** | 1.16 |
| | White | 41.7 | (41.6 - 41.8) | |
| | All Races | 39.2 | (39.1 – 39.3) | — |

[1] CDC WONDER

*Areas in which American Indian/Alaska Native mortality rates were statistically significantly higher than the white rate

# Chapter Three
# Maternal and Child Health

Maternal and Child Health (MCH) often focuses on the health of pregnant women, infants, and children, although entire families and communities as a whole are also important MCH populations. The MCH field often uses a life course approach, which helps explain why inequities form and persist over time by recognizing that social and environmental factors interact with biology. These interactions are especially important during certain critical periods of development. The life course approach recognizes that things that happen to a person when they are young, or when they are still a developing fetus, can have lifelong implications. These include both protective factors like being breastfed, or risk factors like being exposed to commercial tobacco smoke in utero.[14]

In this chapter, information regarding pregnancy and birth; infant, child, and adolescent health; infant mortality; and child and adolescent mortality are presented.

## Births

When reading this section, it is important to pay attention to how exactly race is being identified. In the three-state area, Indian communities generally consider any child born to an American Indian/Alaska Native parent to be a community member. In most health departments, statistics are calculated using the National Center for Health Statistics methodology, where an infant's race is assigned using only its mother's race. In this section, if the mother and/or father of an infant was identified as American Indian/Alaska Native on the birth certificate, the infant was considered to be American Indian/Alaska Native. This better reflects the community reality and norms, and also reduces the effect of small numbers. However, the data in this report cannot be compared to data presented by most health departments. For teen pregnancy, only the mother's race is used.

*Birthweight*

An important indicator of infant health is birthweight. How much a baby weighs at birth has repercussions long after he or she has grown into an adult. Infants who were born at a low birthweight (under 2,500 grams, or five pounds and half an ounce) are at increased risk of dying within their first year of life. Long term effects include higher risks of long-term disability, cognitive problems like learning disorders or low IQ, being placed in special education classes, and dropping out of high school. Risk factors for low birthweight include maternal smoking, stress, infections, and inadequate weight gain during pregnancy.[15]

There are also risks associated with high birthweight babies (over 4,000 grams, or 8 pounds 13 ounces). Some reasons that an infant may be born at a high birthweight include if its mother had gestational diabetes or was over age 35, or the pregnancy lasted past the due date. Risks that are associated with high birthweight include problems during delivery that can affect the mother or the infant, and increased risks of childhood obesity and metabolic syndrome.[16]

In the three states of Michigan, Minnesota, and Wisconsin combined, a similar percent of American Indian/Alaska Native infants were born at a low birthweight, compared to all races infants (7.3% and 7.5% respectively) (Table 3.1 and Figure 3.1). More American Indian/Alaska Native babies were born at a high birthweight (12.2%) than were all races infants (9.6%) (Table 3.2 and Figure 3.1).

Table 3.1. Low Birthweight (by Percent), American Indian/Alaska Native and All Races Infants, Michigan, Minnesota, Wisconsin, and Nationally, 2009-2013

| | ***American Indian/Alaska Native*** | All Races |
|---|---|---|
| Michigan | 7.7 | 8.4 |
| Minnesota | 7.7 | 6.6 |
| Wisconsin | 6.4 | 7.1 |
| Three-State Area | 7.3 | 7.5 |
| IHS 2007-2009[1] | 7.1 | - |
| United States[2] | 7.5 | 8.1 |
| Healthy People 2020 Target[3] | | 7.8 |

Sources: Birth files from Michigan Department of Community Health, Minnesota Center for Health Statistics, and Wisconsin Bureau of Health Information; Wisconsin Interactive Statistics on Health

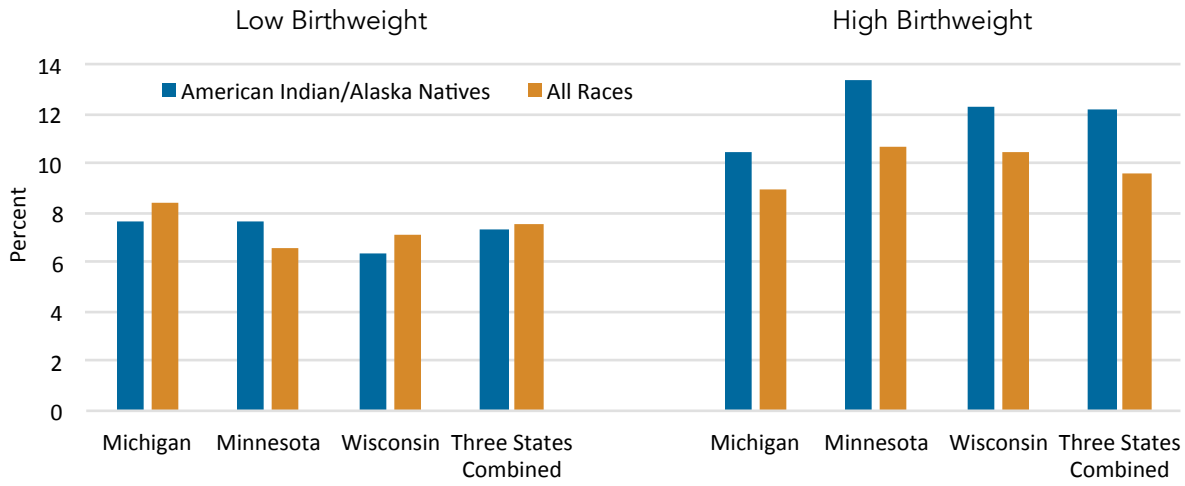
[1]https://www.ihs.gov/dps/includes/themes/newihstheme/display_objects/documents/Trends2014Book508.pdf Table 3.2
[2]CDC WONDER [3]HP2020 MICH-8.1 (Reduce low birth weight)

Table 3.2. High Birthweight (by Percent), American Indian/Alaska Native and All Races Infants, Michigan, Minnesota, Wisconsin, and Nationally, 2009-2013

| | ***American Indian/Alaska Native*** | All Races |
|---|---|---|
| Michigan | 10.5 | 8.9 |
| Minnesota | 13.4 | 10.7 |
| Wisconsin | 12.3 | 9.7 |
| Three-State Area | 12.2 | 9.6 |
| IHS 2007-2009[1] | 9.8 | — |
| United States[2] | 9.8 | 7.8 |

Sources: Birth files from Michigan Department of Community Health, Minnesota Center for Sources: Birth files from Michigan Department of Community Health, Minnesota Center for Health Statistics, and Wisconsin Bureau of Health Information; Wisconsin Interactive Statistics on Health
[1]https://www.ihs.gov/dps/includes/themes/newihstheme/display_objects/documents/Trends2014Book508.pdf Table 3.3
[2]CDC WONDER

Figure 3.1. Low and High Birthweight (by Percent), American Indian/Alaska Native and All Races Infants, Michigan, Minnesota, and Wisconsin 2009-2013




Sources: Birth files from Michigan Department of Community Health, Minnesota Center for Health Statistics, and Wisconsin Bureau of Health Information; Wisconsin Interactive Statistics on Health

*Preterm Birth*

Preterm birth occurs when an infant is born before the 37th week of pregnancy. The final few weeks of pregnancy are an especially important developmental time period for the brain, lungs, and liver. The earlier a baby is born, the greater the risks it experiences. Problems resulting from preterm birth may include breathing and eating problems, cerebral palsy, developmental delay, and vision and hearing impairment. The causes of preterm birth are complex and not well understood.[17]

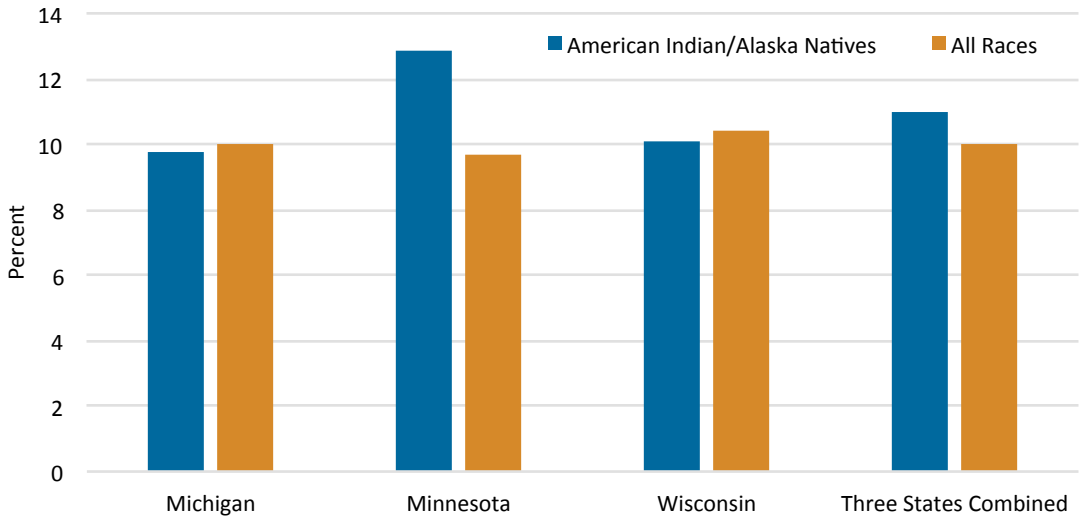
In the three states of Michigan, Minnesota, and Wisconsin combined, few differences in preterm birth existed between American Indian/Alaska Native and all races infants (Table 3.3 and Figure 3.2).

Table 3.3. Preterm Births (Born before 37 Weeks Gestation) (by Percent), American Indian/Alaska Native and All Races Infants, Michigan, Minnesota, Wisconsin, and Nationally, 2009-2013

| | ***American Indian/Alaska Native*** | All Races |
|---|---|---|
| Michigan | 9.8 | 10.0 |
| Minnesota | 12.9 | 9.7 |
| Wisconsin | 10.1 | 10.4 |
| Three-State Area | 11.0 | 10.0 |
| United States[1] | 4.7 | 4.3 |
| Healthy People 2020 Target[2] | | 11.4 |

Sources: Birth files from Michigan Department of Community Health, Minnesota Center for Health Statistics, and Wisconsin Bureau of Health Information; Wisconsin Interactive Statistics on Health
[1]CDC WONDER [2]HP2020 MICH-9.1 (Reduce total preterm births)

Figure 3.2. Preterm Birth (by Percent), American Indian/Alaska Native and All Races Infants, Michigan, Minnesota, and Wisconsin, 2009-2013




Sources: Birth files from Michigan Department of Community Health, Minnesota Center for Health Statistics, and Wisconsin Bureau of Health Information; Wisconsin Interactive Statistics on Health

*Maternal Age*

The age of a woman at the time she gives birth poses different risks for health outcomes for mother and child. Older mothers are at greater risk of maternal complications, giving birth early, and having a baby with a low birth weight; infants born to older mothers are at greater risk of fetal and infant mortality.[18] Teen mothers are less likely to graduate from high school or go to college, which has an important effect on their earnings later in life. Infants born to teen mothers are at higher risk of low birthweight and infant mortality, as well as other risks that occur later in life.[19]

The teen pregnancy rate for American Indian/Alaska Native girls in the three-state area was over three times higher than the rate for teen mothers of all races. From 2009 to 2013, out of every 1,000

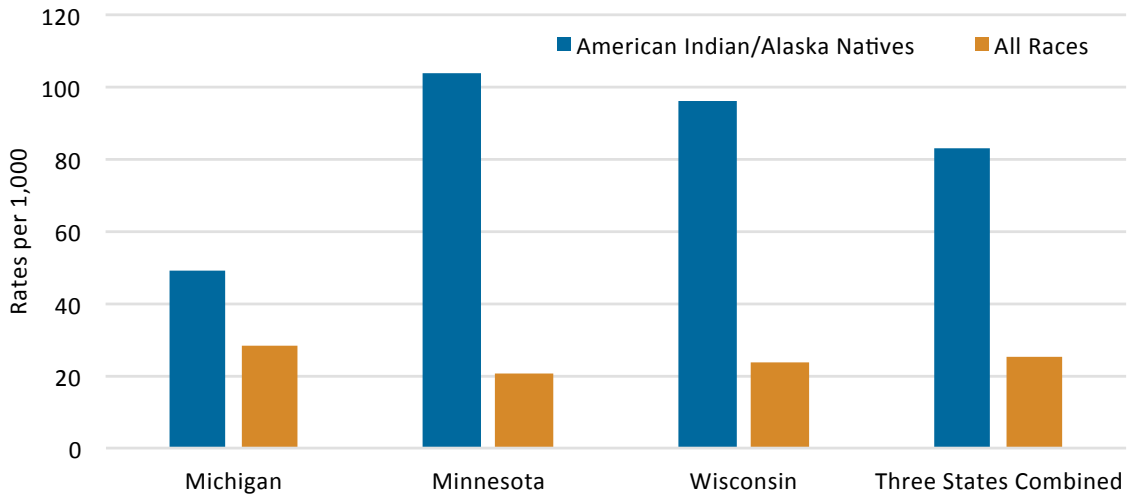
American Indian/Alaska Native girls aged 15 to 19, there were 83 births to 15 to 19 year old American Indian/Alaska Natives. Among girls of all races, there were 25 births for every 1,000 girls in this age group (Table 3.4 and Figure 3.3).

Table 3.4. Teen Pregnancy Rates (per 1,000 Females Aged 15-19), American Indian/Alaska Native and All Races, Michigan, Minnesota, Wisconsin, and Nationally, 2009-2013

| | ***American Indian/Alaska Native*** | All Races |
|---|---|---|
| Michigan | 48.9 | 28.0 |
| Minnesota | 103.6 | 20.3 |
| Wisconsin | 96.4 | 23.9 |
| Three-State Area | 83.3 | 25.0 |
| United States[1] | 37.0 | 31.9 |

Sources: Birth files from Michigan Department of Community Health, Minnesota Center for Health Statistics, and Wisconsin Bureau of Health Information; Wisconsin Interactive Statistics on Health
[1]CDC WONDER

Figure 3.3. Teen Pregnancy Rates (per 1,000 Females Aged 15-19), American Indian/Alaska Natives and All Races, Michigan, Minnesota, and Wisconsin 2009-2013




Sources: Birth files from Michigan Department of Community Health, Minnesota Center for Health Statistics, and Wisconsin Bureau of Health Information; Wisconsin Interactive Statistics on Health

### *Smoking During Pregnancy*

Smoking during pregnancy carries a number of risks. These include an increased likelihood of giving birth too early, a baby being born with a low birth weight, and certain birth defects. In addition, pregnant women who smoke are more likely to have a miscarriage. Second hand smoke is harmful as well. For babies, tobacco smoke exposure can lead to ear infections, more frequent asthma attacks, and a higher risk of death from Sudden Infant Death Syndrome (SIDS).[20]

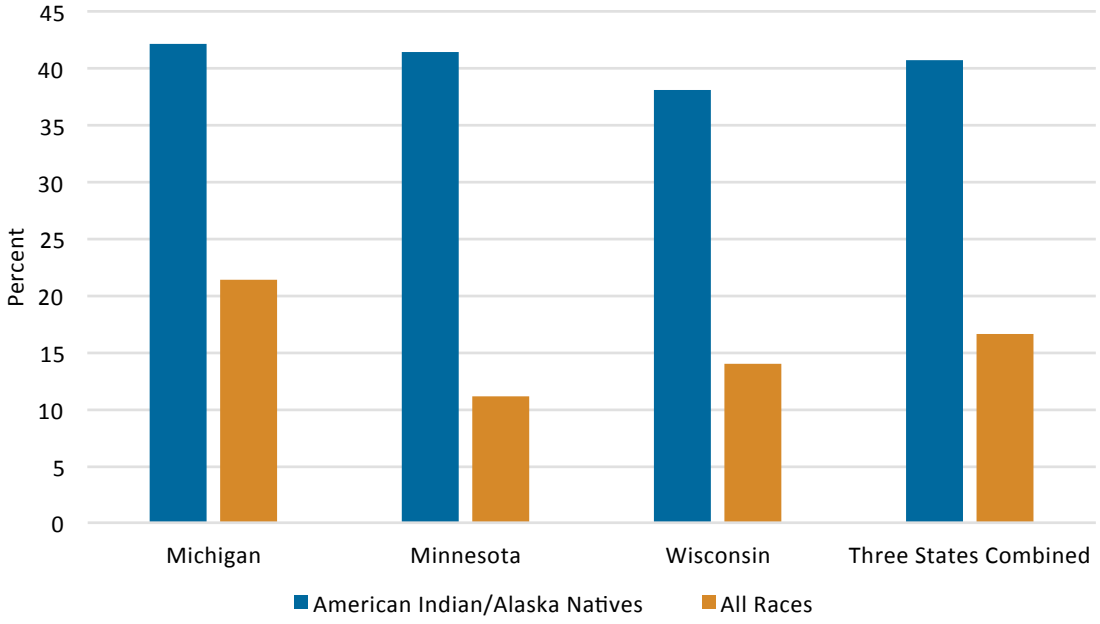
In the three-state area, mothers of American Indian/Alaska Native infants smoked during pregnancy at a much higher rate than did mothers in the general population. Forty percent of mothers of American Indian/Alaska Native infants smoked during pregnancy. This is a rate almost two and a half times higher than that of mothers in general (Table 3.5 and Figure 3.4).

Table 3.5. Smoking during Pregnancy (by Percent), Mothers of American Indian/Alaska Native and All Races Infants, Michigan, Minnesota, Wisconsin, and Nationally, 2009-2013

| | ***American Indian/Alaska Native*** | All Races |
|---|---|---|
| Michigan | 42.2 | 21.4 |
| Minnesota | 41.4 | 11.2 |
| Wisconsin | 38.2 | 13.9 |
| Three-State Area | 40.6 | 16.6 |
| IHS Total 1999-2001[1] | 19.8 | - |
| United States[2] | 17.4 | 8.9 |
| Healthy People 2020 Target[3] | | 1.4 |

Sources: Birth files from Michigan Department of Community Health, Minnesota Center for Health Statistics, and Wisconsin Bureau of Health Information; Wisconsin Interactive Statistics on Health
[1]https://www.ihs.gov/dps/includes/themes/newihstheme/display_objects/documents/RD_entirebook.pdf Table 3.6
[2]CDC WONDER [3]HP2020 MICH-11.3 (Increase abstinence from cigarette smoking among pregnant women) (objective states goal as women who *abstain*, with an objective of 98.6%)

Figure 3.4. Smoking during Pregnancy (by Percent), Mothers of American Indian/Alaska Native and All Races Infants, Michigan, Minnesota, and Wisconsin, 2009-2013



*Prenatal Care*

Early prenatal care—seeing a doctor or other health care provider soon after pregnancy begins—is important to help women give birth to healthy babies as well as to stay healthy themselves. If any problems develop with the pregnancy, the providers can identify and begin treating them early. In addition, the health care providers can provide advice to women about their pregnancy, their health after pregnancy, and about how to prepare for the arrival of their infant.[21]

In the three-state area, as seen in Table 3.6 and Figure 3.5, a majority of mothers of American Indian/Alaska Native infants received prenatal care in the first trimester, but a smaller percentage of them received prenatal care in the first trimester than did mothers of all races. A greater proportion of mothers of American Indian/Alaska Native infants than women of all races were not seen until the third trimester or did not receive any prenatal care.

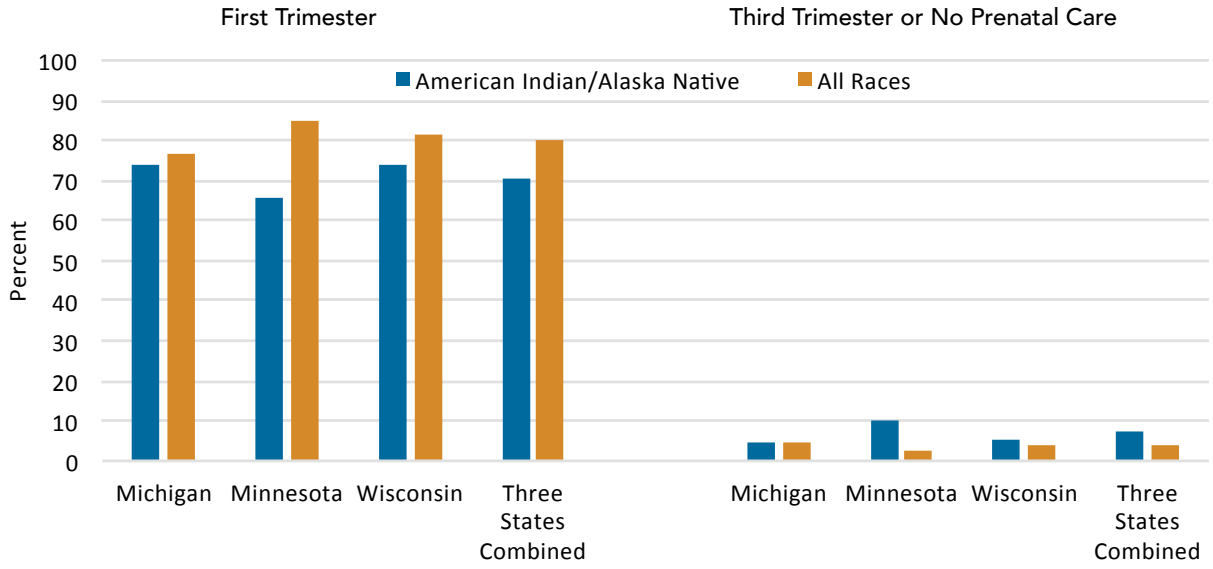
Table 3.6. Time of Prenatal Care Initiation, Mothers of American Indian/Alaska Native and All Races Infants (by Percent), Michigan, Minnesota, Wisconsin, and Nationally, 2009-2013

| | | First Trimester | Third Trimester or No Prenatal Care |
|---|---|---|---|
| Michigan | ***American Indian/Alaska Native*** | ***73.6*** | ***4.6*** |
| | All Races | 76.8 | 4.8 |
| Minnesota | ***American Indian/Alaska Native*** | ***65.4*** | ***10.3*** |
| | All Races | 84.7 | 2.7 |
| Wisconsin | ***American Indian/Alaska Native*** | ***73.8*** | ***5.3*** |
| | All Races | 81.3 | 3.7 |
| Three-State Area | ***American Indian/Alaska Native*** | ***70.5*** | ***7.0*** |
| | All Races | 80.2 | 3.9 |
| United States[1] | ***American Indian/Alaska Native*** | ***40.3*** | ***7.5*** |
| | All Races | 56.4 | 4.7 |
| Healthy People 2020 Target[2] | | 77.9 | — |

Sources: Birth files from Michigan Department of Community Health, Minnesota Center for Health Statistics, and Wisconsin Bureau of Health Information; Wisconsin Interactive Statistics on Health

[1]CDC WONDER [2]HP2020 MICH-10.1 (Increase the proportion of pregnant women who receive prenatal care beginning in the first trimester)

Figure 3.5. Time of Prenatal Care Initiation (by Percent), Mothers of American Indian/Alaska Native and All Races Infants (by Percent) Michigan, Minnesota, and Wisconsin, 2009-2013




Sources: Birth files from Michigan Department of Community Health, Minnesota Center for Health Statistics, and Wisconsin Bureau of Health Information; Wisconsin Interactive Statistics on Health

## Childhood and Adolescent Immunization

The development of vaccines is one of the most important public health and biomedical developments in history.[22] Before the development of the vaccines commonly given in childhood today, many thousands died each year from infectious diseases. Some who got sick survived with permanent disabilities, such as blindness or paralysis. The high rates of vaccination in the United States have led many of these deadly and disabling infectious diseases to become rare in the U.S. today. For example, in 1921 more than 15,000 Americans died from diphtheria. With the increased and continued administration of a diphtheria vaccine, however, there has only been one case reported in the U.S. since 2004.

With the exception of smallpox, these vaccine-preventable diseases still exist—sometimes at high rates—in other parts of the world. With the global travel that is increasingly common in today's modern world, it is important to maintain high vaccination rates in the U.S. in order to prevent these diseases from becoming common here again.[23]

When too few people in a population have been vaccinated, it is possible for outbreaks to occur.[23] Vaccines don't just protect the individual person who got the vaccine—they help protect others in the community. Because most vaccine-preventable diseases are spread person-to-person, when someone has received a vaccine they cannot contract or spread that disease to others. Some people cannot receive certain vaccines—they may have an allergy to eggs, which sometimes are used in the production of vaccines, or they may be too young to get the vaccine.[24] Because of this, they are vulnerable to infection. For example, in the 2015 measles outbreak linked to Disney World, 12 of the 125 people who contracted measles were infants too young to receive the vaccine. Although no one died in this outbreak, 17 people became sick enough to be hospitalized.[25]

Vaccines are tested and monitored heavily to ensure that they are safe and effective. It often takes 10 or more years to test and license vaccines before they become widely available. After a vaccine has been approved, it is still continually monitored to ensure that it is being manufactured according to a

high standard of quality and to determine if rare side effects may occur that are only evident when millions of people receive the vaccine.[26] Some people may experience side effects from vaccines, but these side effects are usually mild and include symptoms such as redness or soreness at the injection site.[27] Although some have been concerned that autism may be caused by vaccines**, there is NO link between vaccines and autism**.[28] There is also no association between any specific ingredient in vaccines and autism.[29]

### *Two Year Old Vaccination*

The vaccinations a child should receive before their second birthday, according to CDC recommendations, are written in a shorthand as 4:3:1:3:3.[30] It consists of four or more doses of diphtheria, tetanus, and pertussis vaccine; three or more doses of poliovirus vaccine; one or more doses of measles-antigen containing vaccine (including measles-mumps-rubella (MMR) vaccine); three or more doses of Haemophilus influenzae type b (Hib) vaccine; and three or more doses of Hepatitis B vaccine.[31]

In 2015, 63.2% of American Indian/Alaska Native two year olds seen at an Indian Health Service, Tribal, or Urban Indian facility (I/T/U) in the Bemidji Area had completed the vaccination series known as 4:3:1:3:3 (Table 3.7). As a comparison, in 2014 the percent of all races two year olds in the United States who had received the 4:3:1:3:3 series was 72.0%—higher than the Bemidji Area but lower than IHS as a whole (76.5%). In Michigan, Minnesota, and Wisconsin, the percent of two year olds of all races receiving the series were 70.1%, 74.9%, and 72.5% respectively in 2014.[32] Again, this is higher than for the Bemidji Area I/T/Us.

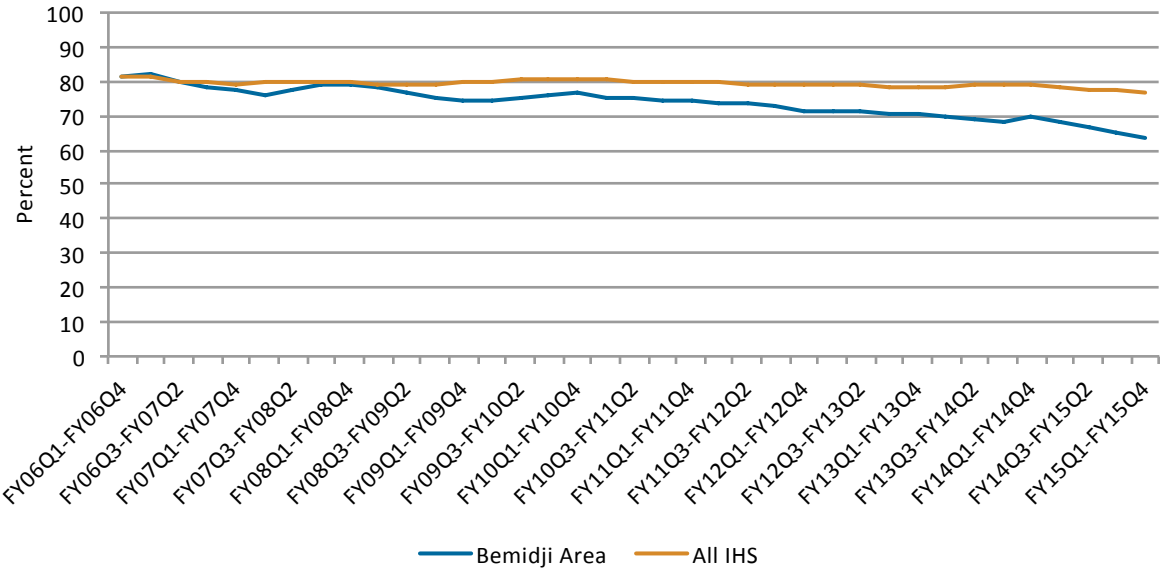
Among two year olds in the Bemidji Area, vaccination rates for the 4:3:1:3:3 series have decreased from 81% to 63.2% between 2006 and 2015. Across all of the Indian Health Service nationwide, a much smaller decrease (from 81.3% to 76.5%) was seen (Table 3.7, Figure 3.6).

Table 3.7. Percent of Bemidji Area American Indian/Alaska Native Children Two Year Olds Completing the 4:3:1:3:3 Vaccination Series, FY2006-FY2015[1]

| Fiscal Year | Bemidji Area | All Indian Health Service |
|---|---|---|
| 2015 | 63.2 | 76.5 |
| 2014 | 69.8 | 78.8 |
| 2013 | 70.3 | 78.5 |
| 2012 | 71.5 | 78.8 |
| 2011 | 74.5 | 79.8 |
| 2010 | 76.5 | 80.3 |
| 2009 | 74.8 | 79.8 |
| 2008 | 79.0 | 79.8 |
| 2007 | 77.5 | 79.3 |
| 2006 | 81.0 | 81.3 |

[1]National Indian Health Service Immunization Program Quarterly Reports

Figure 3.6. Percent of Bemidji Area American Indian/Alaska Native Children Two Year Olds Completing the 4:3:1:3:3 Vaccination Series, FY2006 Q1-FY2015 Q4 Rolling 4 Quarter Averages[1]




[1]National Indian Health Service Immunization Program Quarterly Reports

*Three to 27 Month Old Vaccination*

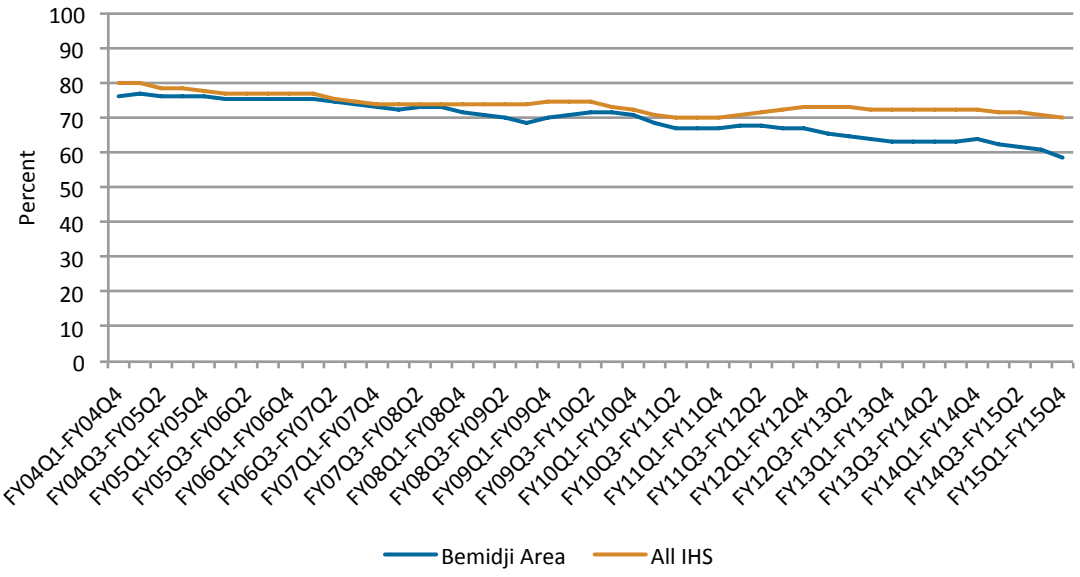
In 2015, fewer than every six out of ten (58.3%) children and infants aged three to 27 months in the Bemidji Area were up to date on their immunizations. As with two year olds, a greater percent of the IHS as a whole was up to date on vaccinations (Table 3.8, Figure 3.7). Fewer children received the recommended vaccinations in recent years than previously—in the Bemidji Area there was a decrease from 76.5% to 68.3% between fiscal years 2004 and 2015. A smaller decrease has occurred among children seen at IHS nationally (80.2% to 69.8%).

## Table 3.8. Percent of Bemidji Area American Indian/Alaska Native Children 3-27 Months Completing Age-Appropriate Vaccination Requirements[1] FY2004-FY2015[2]

| Fiscal Year | Bemidji Area | All Indian Health Service |
|---|---|---|
| 2015 | 58.3 | 69.8 |
| 2014 | 64.0 | 72.5 |
| 2013 | 63.5 | 72.5 |
| 2012 | 67.0 | 73.0 |
| 2011 | 66.8 | 70.0 |
| 2010 | 70.8 | 72.3 |
| 2009 | 69.8 | 74.5 |
| 2008 | 72.0 | 74.0 |
| 2007 | 72.9 | 74.0 |
| 2006 | 75.6 | 77.2 |
| 2005 | 76.1 | 78.0 |
| 2004 | 76.5 | 80.2 |

[1]*Excluding Hepatitis A* [2]National Indian Health Service Immunization Program Quarterly Reports

## Figure 3.7. Percent of Bemidji Area American Indian/Alaska Native Children 3-27 Months Completing Age-Appropriate Vaccination Requirements[1] FY2004 Q1-FY2015 Q4 Rolling 4 Quarter Averages[2]




[1]*Excluding Hepatitis A* [2]National Indian Health Service Immunization Program Quarterly Reports

*Human Papilloma Virus (HPV) Vaccination*

The Human Papilloma Virus (HPV) can cause cancer and/or genital warts in infected persons. In recent years, vaccines have been developed that protect against several strains of HPV. It is recommended that boys and girls receive the series of three shots before they become sexually active and potentially become exposed to the virus.[33] Although the first HPV vaccine to prevent cervical cancer was approved for use by the FDA in 2006,[34] the Indian Health Service has HPV vaccination coverage data available beginning in 2011 for females and 2013 for males.

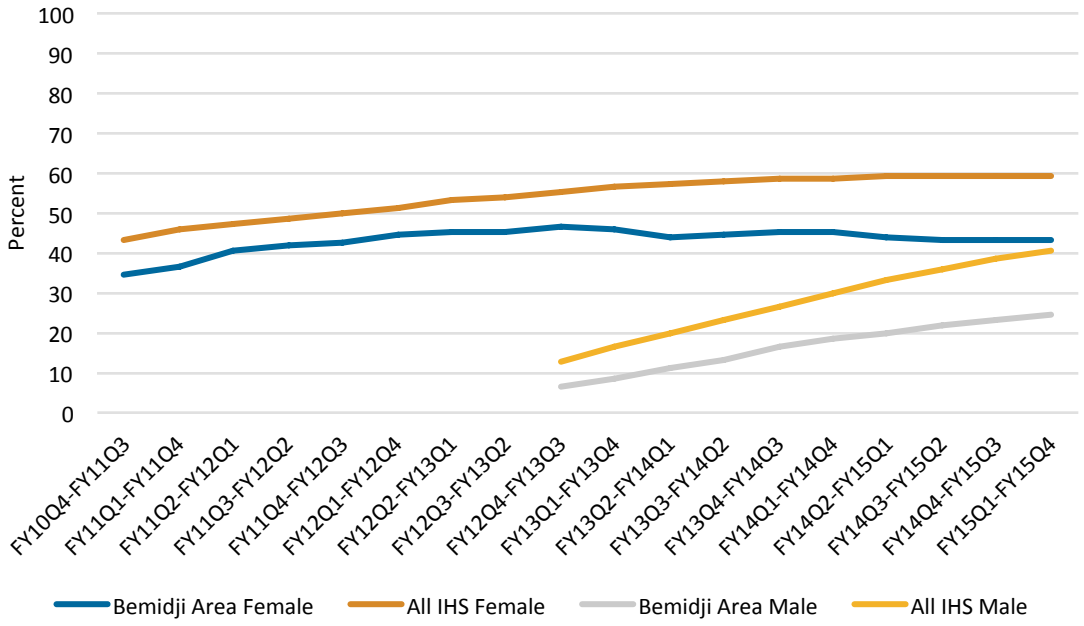
As seen in Table 3.9 and Figure 3.8, the Bemidji Area lags behind the IHS in coverage for HPV immunizations. Among 13-17 year olds in 2015, the percentage of boys in the IHS nationally who completed the series (45%) was nearly twice as high as in the Bemidji Area (24.7%). For girls, 43.2% of 13-17 year olds in the Bemidji Area completed the series, compared to 59.6% for IHS nationally. As a comparison, in 2014 across the United States, 69.3% of girls and 57.8% of boys of all races aged 13-17 had received all three HPV shots,[35] meaning that the American Indian/Alaska Natives in the Bemidji Area and nationally in the IHS had lower coverage rates than the overall, all races United States population.

Table 3.9. Completion of Three-Shot Series for the Human Papilloma Virus (HPV) Vaccine by Percent, American Indian/Alaska Native Adolescents 13-17 Years Old, Bemidji Area and all IHS, FY2011-FY2015[1]

| | Female | | Male | |
|---|---|---|---|---|
| Fiscal year | Bemidji Area | All IHS | Bemidji Area | All IHS |
| 2015 | 43.2 | 59.6 | 24.7 | 45.0 |
| 2014 | 45.0 | 58.8 | 18.5 | 30.0 |
| 2013 | 45.8 | 56.5 | 8.5 | 16.3 |
| 2012 | 44.8 | 51.3 | - | - |
| 2011 | 36.5 | 45.8 | - | - |

[1]National Indian Health Service Immunization Program Quarterly Reports

Figure 3.8. Percent of American Indian/Alaska Native 13-17 Year Olds Completing Three-Shot Series for the Human Papilloma Virus (HPV) Vaccine, FY2010 Q4-FY2015 Q4 Rolling 4 Quarter Averages[1]




[1]National Indian Health Service Immunization Program Quarterly Reports

## Childhood Overweight and Obesity

Childhood obesity is an issue of concern for many. Obese children are more likely to have high blood pressure, high cholesterol, and respiratory issues such as asthma. Additionally, people who were obese as children are also more likely to be obese as adults. Adult obesity increases the risk of heart disease, diabetes, and some cancers.[36]

Obesity in children is determined based on the percentile ranking of an individual child's Body Mass Index (BMI) in comparison to the BMI of other children of the same age and sex. BMI is calculated based on the individual's height and weight. A child is considered overweight if he or she has a BMI between the 85$^{th}$ and 95$^{th}$ percentile for children of the same age and sex, meaning that to be considered overweight, a child's BMI would fall between the top 85 and 95% of the BMIs of other comparable children. A child is considered obese at a BMI at the 95$^{th}$ percentile or above.[37]

Among two year old WIC-enrolled children in the three states, American Indian/Alaska Natives had higher overweight and obesity rates than the all races children (Table 3.10).

Table 3.10. Childhood Overweight and Obesity (>85th Percentile) (by Percent) Among WIC-Enrolled Children Two Years of Age or Older, by Percent, Michigan, Minnesota, Wisconsin, and United States, 2007-2011

| | *American Indian/Alaska Native* | All Races |
|---|---|---|
| Michigan | 36.9 | 30.1 |
| Minnesota | 50.8 | 29.7 |
| Wisconsin | 45.8 | 30.2 |
| United States | 40.7 | 30.8 |

Sources: Pediatric Nutrition Surveillance System Tables 16C, 18C, 18D

## Breastfeeding

Breastfeeding delivers many benefits to mothers and babies. One basic measurement for breastfeeding considers if a woman ever breastfed her infant. If a mother ever fed her baby breastmilk, even if she only breastfed her baby one time, the infant is considered to have been ever breastfed. In Minnesota and Wisconsin, ever breastfeeding rates among American Indian/Alaska Native WIC-enrolled children was lower than for WIC-enrolled children of all races; the reverse was true in Michigan (Table 3.11).

Table 3.11. Percent of WIC-Enrolled Children Who Ever Breastfed, Michigan, Minnesota, Wisconsin, and United States, 2007-2011

| | *American Indian/Alaska Native* | All Races |
|---|---|---|
| Michigan | 55.8 | 54.4 |
| Minnesota[1] | 50.0 | 73.0 |
| Wisconsin | 60.7 | 66.7 |
| United States | 65.1 | 62.4 |
| Healthy People 2020 Target[2] | | 81.9 |

Sources: Pediatric Nutrition Surveillance System Tables 13C, 19C, 19D
[1]2011 data not available for Minnesota- 2007-2010 data are presented
[2]HP2020 MICH-21.1 (Increase the proportion of infants who are ever breastfed)

## Infant Mortality Rates

Infant mortality is an important measure of a community's health. Because factors that affect populations as a whole affect the ability of infants to survive, improving infant mortality corresponds with improvements in the health of all members of a community.[38]

This report uses the race of the mother, the race of the father, and the race of the infant to determine an infant's race when calculating infant mortality. Data presented in this section cannot be compared to findings in reports created by other organizations because the standard methodology only uses the mother's race to determine the infants' race.

As seen in Table 3.12, in the three-state area, American Indian/Alaska Native infant mortality rates were about 50% higher than in the all races population. This varied across the states—while the American Indian/Alaska Native rate in Minnesota was twice as high as the all races rate, in Wisconsin the all races rate was slightly higher than the American Indian/Alaska Native rate.

Differences in the timing of the infant deaths ex-

isted as well. In the three-state area (Table 3.14 and Figure 3.9), among American Indian/Alaska Natives, 46% of deaths occurred in the post neonatal period (when the infant was at least 28 days but less than a year old). Among all races, only 33% of infant deaths occurred during this time period.

### Table 3.12. Infant Mortality Rates (per 1,000 Live Births) Three-State Area and Nationally, 2008-2012 Birth Cohorts

| | ***American Indian/Alaska Native*** | All Races |
|---|---|---|
| Michigan | 12.7 | 7.3 |
| Minnesota | 9.8 | 4.9 |
| Wisconsin | 5.9[1] | 6.2 |
| Three-State Area | 9.5 | 6.3 |
| IHS 2007-2009[2] | 7.3 | — |
| United States[3] | 8.35 | 6.25 |
| Healthy People 2020 Target[4] | | 6.0 |

Sources: Sources: Vital statistics files from Michigan Department of Community Health, Minnesota Center for Health Statistics, and Wisconsin Bureau of Health Information; Wisconsin Interactive Statistics on Health (WISH)
[1] Wisconsin Interactive Statistics on Health (WISH) data for 2008-2012, using race of the mother, indicated that the American Indian/Alaska Native infant mortality rate was 8.15 per 1,000 births. See the Appendix 2 for discussion. [2]Unadjusted mortality rate for IHS service areas. [3]CDC WONDER. Deaths occurred in 2008-2012 [4]HP2020 MICH-1.3 (reduce the rate of all infant deaths (within one year))

### Table 3.13. Neonatal Infant Mortality Rates (per 1,000 Live Births) (Deaths Before 28 Days) Three-State Area and Nationally, 2008-2012 Birth Cohorts

| | ***American Indian/Alaska Native*** | All Races |
|---|---|---|
| Michigan | 7.8 | 4.9 |
| Minnesota | 4.6 | 3.3 |
| Wisconsin | 3.1 | 4.1 |
| Three-State Area | 5.1 | 4.3 |
| IHS 2007-2009[1] | 3.6 | — |
| United States[2] | 4.48 | 4.12 |
| Healthy People 2020 Target[3] | | 4.1 |

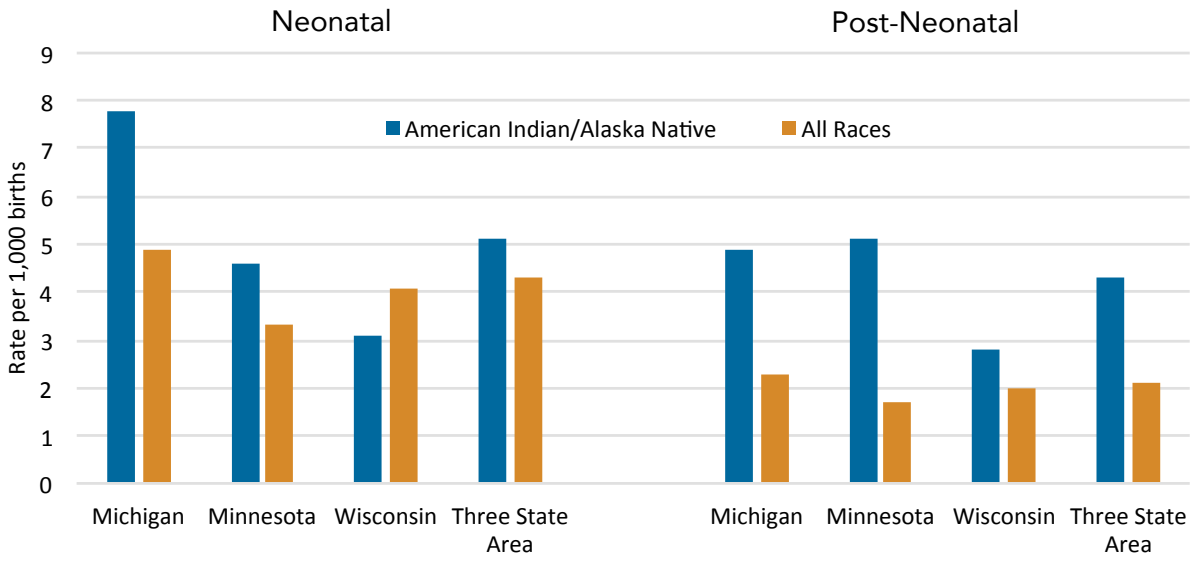
Sources: Vital statistics files from Michigan Department of Community Health, Minnesota Center for Health Statistics, and Wisconsin Bureau of Health Information; Wisconsin Interactive Statistics on Health
[1]Unadjusted mortality rate for IHS service areas. [2]CDC WONDER. Deaths occurred in 2008-2012
[3]HP2020 MICH-1.4 (reduce the rate of neonatal deaths (within the first 28 days of life))

## Table 3.14. Post-Neonatal Infant Mortality Rates (per 1,000 Live Births) (Deaths from 28 Days to One Year) Three-State Area and Nationally, 2008-2012 Birth Cohorts

| | ***American Indian/Alaska Native*** | All Races |
|---|---|---|
| Michigan | 4.9 | 2.3 |
| Minnesota | 5.1 | 1.7 |
| Wisconsin | 2.8 | 2.0 |
| Three-State Area | 4.3 | 2.1 |
| IHS 2007-2009[1] | 3.7 | - |
| United States[2] | 3.88 | 2.12 |
| Healthy People 2020 Target[3] | | 2.0 |

Sources: Vital statistics files from Michigan Department of Community Health, Minnesota Center for Health Statistics, and Wisconsin Bureau of Health Information; Wisconsin Interactive Statistics on Health
[1]Unadjusted mortality rate for IHS service areas. [2]CDC WONDER. Deaths occurred in 2008-2012
[3]HP2020 MICH-1.5 (reduce the rate of postneonatal deaths (between 28 days and one year))

## Figure 3.9. Neonatal and Post-Neonatal Infant Mortality Rates (per 1,000 Live Births) Three-State Area and Nationally, 2008-2012 Birth Cohorts




Sources: Vital statistics files from Michigan Department of Community Health, Minnesota Center for Health Statistics, and Wisconsin Bureau of Health Information; Wisconsin Interactive Statistics on Health

### *Sudden Unexpected Infant Death (SUID)*

Sudden Unexpected Infant Death (SUID) is a term that refers to infants who die suddenly and unexpectedly. Each year in the U.S. 3,500 infants die suddenly and unexpectedly. SUID is not the same as Sudden Infant Death Syndrome (SIDS)—rather, SIDS is a category within SUID. Generally, a SUID death consists of one of three causes of death:

- Unknown cause,
- Accidental suffocation and strangulation in bed (ASSB),
- And SIDS.[39]

These were the causes of death used in this report to identify SUID cases.

Within the three-state area, SUID mortality rates range from 1.5 SUID deaths per 1,000 births in Wisconsin to 3.7 in Minnesota (Table 3.15). In the three-state area, the SUID death rate for American Indian/Alaska Native infants (2.7 per 1,000) is higher than for American Indian/Alaska Natives nationwide (1.97 per 1,000), and over twice as high for all races nationally (0.92 per 1,000).

**Table 3.15. Sudden Unexpected Infant Deaths (SUID) Mortality Rates (per 1,000 Live Births), Three-State Area and Nationally, 2008-2012 Birth Cohorts**

| | ***American Indian/Alaska Native*** | All Races |
|---|---|---|
| Michigan | 2.5 | 0.9 |
| Minnesota | 3.7 | 0.7 |
| Wisconsin[1] | 1.5 | — |
| Three-State Area[1] | 2.7 | — |
| United States[2] | 1.97 | 0.92 |
| Healthy People 2020 Target[3] | | 0.84 |

Sources: Vital statistics files from Michigan Department of Community Health, Minnesota Center for Health Statistics, and Wisconsin Bureau of Health Information

[1]Not all causes of death were available for all races in Wisconsin, so Wisconsin and the three-state area rates for all races could not be calculated [2]CDC WONDER. Deaths occurred in 2008-2012 [3]HP2020 MICH-1.9 (Reduce the rate of infant deaths from sudden unexpected infant deaths (includes SIDS, Unknown Cause, Accidental Suffocation, and Strangulation in Bed))

### *Causes of Infant Death*

In 2009, in the United States the top five causes of infant death were congenital malformations, deformations, chromosomal abnormalities; disorders related to short gestation and low birth weight, not elsewhere classified; Sudden Infant Death Syndrome (SIDS); newborn affected by maternal complications of pregnancy; and unintentional injuries (accidents). These account for 56.3% of all infant deaths.[40]

Seventeen conditions were examined for American Indian/Alaska Native and all races infants in the three-state area. As seen in Table 3.16, the top five causes of American Indian/Alaska Native infant mortality in the three-state area combined were the same as the top five causes nationally, and accounted for 68% of all infant deaths. For all races in this same area, 61% of the infant deaths are due to these causes. As illustrated in Figure 3.10, although a similar proportion of American Indian/Alaska Natives and all races infants died from congenital and chromosomal-related causes, two and a half times as many American Indian/Alaska Natives died from SIDS. One and a half times as many American Indian infants died from accidents.

## Table 3.16. Rank and Percent of Infant Death from Select Causes, Three-State Area American Indian/Alaska Natives and All Races, 2008-2012 Birth Cohorts

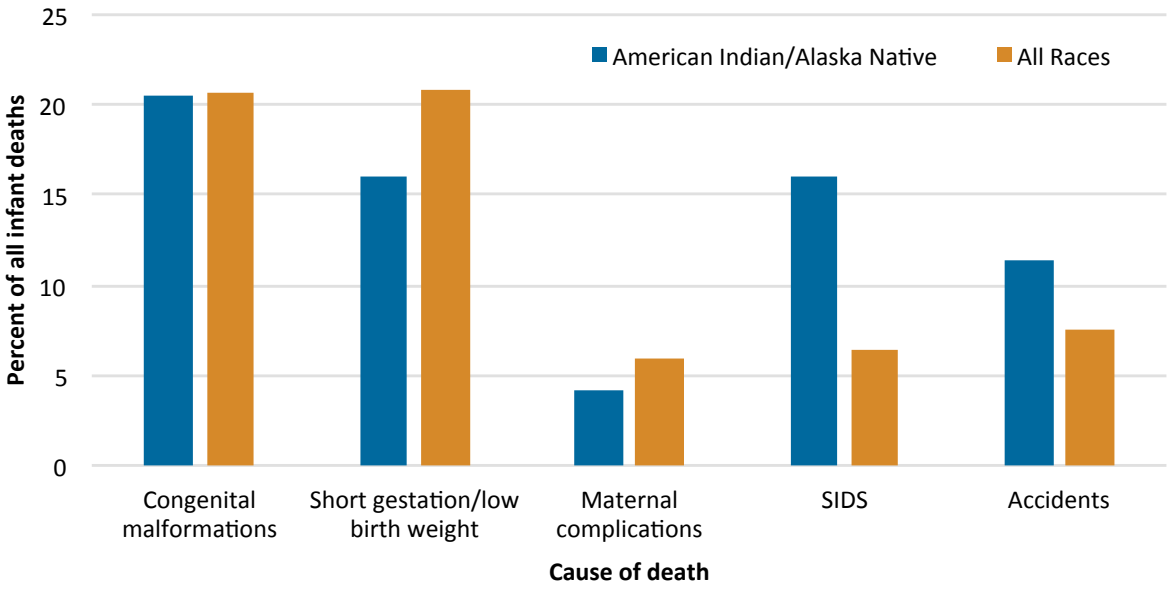
| | ***American Indian/ Alaska Native*** | | All Races | |
|---|---|---|---|---|
| | Rank | Percent of Deaths | Rank | Percent of Deaths |
| Congenital malformations, deformations, chromosomal abnormalities | 1 | 20.5 | 2 | 20.6 |
| Disorders related to short gestation and low birth weight, not elsewhere classified | 2 | 16.0 | 1 | 20.9 |
| Newborn affected by maternal complications of pregnancy[2] | 5 | 4.1 | 5 | 5.9 |
| Sudden Infant Death Syndrome (SIDS) | 2 | 16.0 | 4 | 6.4 |
| Unintentional injuries (accidents) | 4 | 11.4 | 3 | 7.5 |
| Other causes of death | — | 32.0 | — | 38.7 |

Sources: Vital statistics files from Michigan Department of Community Health, Minnesota Center for Health Statistics, and Wisconsin Bureau of Health Information; Wisconsin Interactive Statistics on Health

[1]Data regarding cause of death were not available for all races for all selected causes in Wisconsin

[2]For American Indian/Alaska Natives, this cause was with complications of placenta, cord, and membranes tied for fifth-most common cause of infant death

## Figure 3.10. Percent of Infant Death from Select Causes, Three-State Area American Indian/Alaska Natives and All Races, 2008-2012 Birth Cohorts




Sources: Vital statistics files from Michigan Department of Community Health, Minnesota Center for Health Statistics, and Wisconsin Bureau of Health Information

## Child and Adolescent Mortality Rates

All-cause mortality rates and confidence intervals for one to 24 year old American Indian/Alaska Natives, whites, and the all races population, as well as disparity ratios between American Indian/Alaska Natives and whites, are presented in Table 3.17.

In Minnesota, Wisconsin, and the Three-state area combined, American Indian/Alaska Native children and youths die from all causes at a higher rate than whites; this difference is statistically significant.

Table 3.17. All Causes Age Adjusted Child and Adolescent (1-24 Years) Mortality Rates (per 100,000) and Disparities, 2010-2014

| | | Age-Adjusted Mortality Rate | 95% Confidence Interval | American Indian/ Alaska Native-White Disparity Ratio |
|---|---|---|---|---|
| Michigan | ***AI/AN*** | ***33.5*** | ***(25.7 - 43.0)*** | 0.96 |
| | White | 34.8 | (33.8 - 35.8) | |
| | All Races | 39.7 | (38.7 - 40.6) | — |
| Minnesota* | ***AI/AN*** | ***76.0*** | ***(63.2 - 88.8)*** | 2.66 |
| | White | 28.6 | (27.4 - 29.9) | |
| | All Races | 30.3 | (29.1 - 31.4) | — |
| Wisconsin* | ***AI/AN*** | ***52.7*** | ***(41.7 - 65.6)*** | 1.62 |
| | White | 32.6 | (31.3 - 33.8) | |
| | All Races | 34.2 | (33.0 - 35.3) | — |
| Three State Area* | ***AI/AN*** | ***54.0*** | ***(47.7 - 60.4)*** | 1.66 |
| | White | 32.6 | (31.9 - 33.3) | |
| | All Races | 35.9 | (35.2 - 36.5) | — |
| United States* | ***AI/AN*** | ***41.7*** | ***(40.4 - 43.0)*** | 1.19 |
| | White | 35.1 | (34.9 - 35.2) | |
| | All Races | 36.8 | (36.7 - 37.0) | — |

*Areas in which American Indian/Alaska Native mortality rates are statistically significantly higher than the white rate
Source: CDC Wonder

# Chapter Four
# Health Status and Access to Care

## Health Status

Self-assessed general health status is considered a useful indicator of a person's overall health. Studies have shown a good association between an individual's perceived health and their mortality across many populations.[41] For the American Indian/Alaska Native population in the three-state area, more people indicated their health was fair or poor (28.3%) as compared to the all races population (15.44%) (Table 4.1).

When asked how many days their physical health was not good during the previous 30 days, almost twice as many American Indian/Alaska Natives people (11.18%) stated that every day their physical health was not good, as compared to individuals in the all races population (6.66%) (Table 4.2). Similarly, as seen in Table 4.3, when asked about days when their mental health was not good about twice as many American Indians (8.17%) as people in the all races population (4.36%) responded that their mental health was not good every day.

Table 4.1. Health Status (by Percent), American Indian/Alaska Natives and All Races, Three-State Area, 2011-2014[1]

| | ***American Indian/Alaska Natives*** | All Races |
|---|---|---|
| Excellent | 12.60 | 17.80 |
| Very good | 25.53 | 36.24 |
| Good | 33.57 | 30.53 |
| Fair | 18.98 | 11.21 |
| Poor | 9.32 | 4.23 |

American Indian/Alaska Native n=1,802; All Races n=125,086
[1] BRFSS 2011-2014

Table 4.2. Days When Physical Health Was Not Good During Last 30 Days (by Percent), American Indian/Alaska Natives and All Races, Three-State Area, 2011-2014[1]

| | ***American Indian/Alaska Natives*** | All Races |
|---|---|---|
| 0 days | 55.05 | 65.11 |
| 1 day | 3.41 | 4.93 |
| 2 days | 6.70 | 5.93 |
| 3 days | 2.72 | 3.18 |
| 4 days | 1.82 | 1.66 |
| 5 days | 2.44 | 2.78 |
| 6 to 9 days | 4.03 | 2.48 |
| 10 to 14 days | 4.37 | 3.11 |
| 15 to 29 days | 8.29 | 4.16 |
| 30 days | 11.18 | 6.66 |

American Indian/Alaska Native n=1,762; All Races n=123,310
[1] BRFSS 2011-2014

Table 4.3. Days When Mental Health Was Not Good During Last 30 Days (by Percent), American Indian/Alaska Natives and All Races, Three-State Area, 2011-2014[1]

| | ***American Indian/Alaska Natives*** | All Races |
|---|---|---|
| 0 days | 60.23 | 68.75 |
| 1 day | 3.04 | 3.70 |
| 2 days | 5.30 | 5.53 |
| 3 days | 2.25 | 2.89 |
| 4 days | 1.58 | 1.42 |
| 5 days | 3.66 | 3.61 |
| 6 to 9 days | 3.21 | 2.00 |
| 10 to 14 days | 4.28 | 3.17 |
| 15 to 29 days | 8.28 | 4.56 |
| 30 days | 8.17 | 4.36 |

American Indian/Alaska Native n=1,775; All Races n=123,610
[1] BRFSS 2011-2014

## Overweight and Obesity

The Healthy People 2020 goal related to healthy weight is for fewer than 30.5% of Americans to be obese. A number of health conditions are associated with obesity, such as type 2 diabetes and heart disease.[42] Many factors affect overweight and obesity, including the environment, genetics, health conditions, and medication use.[43] Socioeconomic factors such as income and education are also related to being overweight or obese.[44]

In the three-state area, similar proportions of American Indian/Alaska Natives and people of all races were overweight or obese (Table 4.4).

Table 4.4. Body Mass Index (by Percent), American Indian/Alaska Natives and All Races, Three-State Area, 2011-2013[1]

| | ***American Indian/Alaska Natives*** | All Races |
|---|---|---|
| Not overweight or obese (BMI <25.0) | ***28.51*** | 34.34 |
| Overweight (BMI 25.0-29.9) | ***32.53*** | 36.58 |
| Obese (BMI ≥30.0) | ***38.96*** | 29.08 |

American Indian/Alaska Native n=1,291; All Races n=87,523
[1] BRFSS 2011-2013

## Health Conditions

The Behavioral Risk Factor Surveillance System (BRFSS) asks participants if they have ever been told by a health care provider that they have certain health conditions (Tables 4.5-4.12). Results presented here are not age adjusted, and no tests for significance were performed.

A greater percent of American Indian/Alaska Natives than people in the all races population reported having been told they had arthritis, asthma, diabetes, heart attack, heart disease, high blood pressure, high cholesterol, or a stroke. Of these, the prevalence of diabetes and stroke was about 75% higher among

American Indian/Alaska Natives than among the all races population (Table 4.7 and 4.11). Rates for asthma and heart attack were about 50% higher for American Indian/Alaska Natives (Tables 4.6 and 4.8).

### Table 4.5. Ever Told Had Arthritis, American Indian/Alaska Natives and All Races, Three-State Area, 2011-2014[1]

| | Percent |
|---|---|
| ***American Indian/Alaska Natives*** | ***37.69*** |
| All Races | 32.45 |

American Indian/Alaska Native n=1,796; All Races n=124,643 [1] BRFSS 201--2014

### Table 4.6. Ever Told Had Asthma, American Indian/Alaska Natives and All Races, Three-State Area, 2011-2014[1]

| | Percent |
|---|---|
| ***American Indian/Alaska Natives*** | ***18.97*** |
| All Races | 12.46 |

American Indian/Alaska Native n=1,803; All Races n=124,954 [1] BRFSS 2011-2014

### Table 4.7. Ever Told Had Diabetes,* American Indian/Alaska Natives and All Races, Three-State Area, 2011-2014[1]

| | Percent |
|---|---|
| ***American Indian/Alaska Natives*** | ***20.01*** |
| All Races | 11.44 |

* Excludes those who had the conditions only while pregnant and those with pre-diabetes
American Indian/Alaska Native n=1,734; All Races n=122,202
[1] BRFSS 2011-2014

### Table 4.8. Ever Told Had a Heart Attack, American Indian/Alaska Natives and All Races, Three-State Area, 2011-2014[1]

| | Percent |
|---|---|
| ***American Indian/Alaska Natives*** | ***8.33*** |
| All Races | 5.41 |

American Indian/Alaska Native n=1,788; All Races n=124,817 [1] BRFSS 2011-2014

### Table 4.9. Ever Told Had Heart Disease, American Indian/Alaska Natives and All Races, Three-State Area, 2011-2014[1]

| | Percent |
|---|---|
| ***American Indian/Alaska Natives*** | ***7.83*** |
| All Races | 5.52 |

American Indian/Alaska Native n=1,789; All Races n=124,501 [1] BRFSS 2011-2014

Table 4.10. Ever Told Had High Cholesterol, American Indian/Alaska Natives and All Races, Three-State Area, 2011 and 2013[1]

| | Percent |
|---|---|
| ***American Indian/Alaska Natives*** | ***43.62*** |
| All Races | 42.33 |

American Indian/Alaska Native n=839; All Races n=55,841
[1] BRFSS 2011 and 2013

Table 4.11. Ever Told Had a Stroke, American Indian/Alaska Natives and All Races, Three-State Area, 2011-2014[1]

| | Percent |
|---|---|
| ***American Indian/Alaska Natives*** | ***5.94*** |
| All Races | 3.45 |

American Indian/Alaska Native n=1,800; All Races n=124,985
[1] BRFSS 2011-2014

Table 4.12. Ever Told Had High Blood Pressure, American Indian/Alaska Natives and All Races, Three-State Area, 2011 and 2013[1]

| | Percent |
|---|---|
| ***American Indian/Alaska Natives*** | ***41.55*** |
| All Races | 37.91 |

*Excludes those who had high blood pressure only while pregnant and those with pre-hypertension
American Indian/Alaska Native n=994; All Races n=63,347
[1] BRFSS 2011 and 2013

## Access to Care

When people do not have access to healthcare services, it negatively affects their lives as well as society in general. Those without health insurance are less likely to receive the medical care they need and are more likely to have poor health status or to die early.[45] Those who do not have health insurance are also more likely to only access care in emergency situations when their health may be severely compromised and their care is much more expensive.[46] This extra cost burden is often carried by hospitals, the government, and those who do have insurance.[47] The Healthy People 2020 goal is for 100% of people to have medical insurance, and for fewer than 4.2% of people to be unable to obtain medical care or to delay medical care.[48]

A slightly greater proportion of the all races population had health coverage than did the American Indian/Alaska Native population (Table 4.13). About 70% more American Indian/Alaska Natives as compared to people in the all races population were unable to see a healthcare provider in the previous 12 months because of cost (Table 4.14).

Table 4.13. Health Care Coverage, American Indian/Alaska Natives and All Races, Three-State Area, 2011-2014[1]

| | Percent |
|---|---|
| ***American Indian/Alaska Natives*** | ***89.09*** |
| All Races | 91.70 |

American Indian/Alaska Native n=1,797; All Races n=124,874
[1] BRFSS 2011-2014

Table 4.14. Could Not See Healthcare Provider in Last 12 Months Because of Cost, American Indian/Alaska Natives and All Races, Three-State Area, 2011-2014[1]

| | Percent |
|---|---|
| ***American Indian/Alaska Natives*** | ***17.15*** |
| All Races | 10.26 |

American Indian/Alaska Native n=1,493; All Races n=125,052
[1] BRFSS 2011-2014

## Health System Funding

Although treaties, statute, and federal doctrine state that the U.S. government has a trust obligation to provide healthcare to American Indians and Alaska Natives, IHS has continually been allocated too little funding to adequately do so. In 2013, on average IHS received only 59% of the funding necessary to cover the calculated full costs. In some areas the level of funding was lower.[49] In addition, the funding received per capita was lower for IHS users compared to many other populations—in 2014, it was less than half as much as the national per capita health spending, despite the fact that American Indian/Alaska Natives experience numerous health disparities.[50] (See Figure 4.1.)

## Figure 4.1. 2014 IHS Expenditures per Capita and Other Federal Health Care Expenditures per Capita

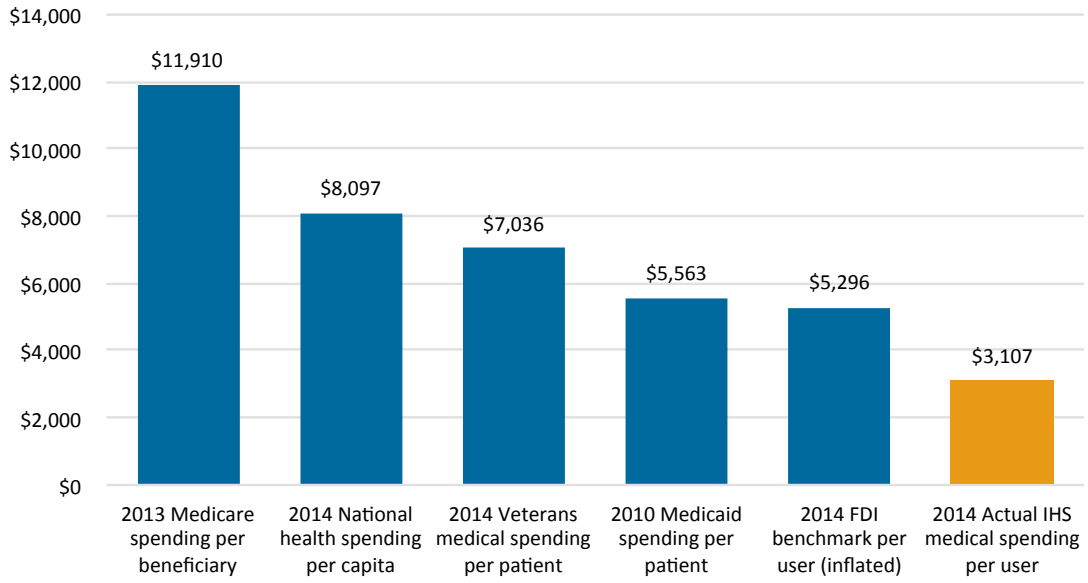



Figure adapted from: Joseph A Jr., Hayes G. Turning the corner in Indian health treaty and trust obligations: Writing a new future for American Indians and Alaska Natives. Presented to: Department of Health and Human Services; May 2015; Washington, DC.

In the Bemidji Area, the funding situation is even worse than in other Areas. In 2010, the most recent year for which data were available, the Bemidji Area received funding to meet just 50% of its need—the lowest among all the Areas. Twenty tribes in the Bemidji Area were funded at less than 45% of need. This can be compared to IHS overall being funded at 56.6% of need in 2010.[51]

# Chapter Five
# Behavioral Health

Many decisions and behaviors are strongly influenced by social and other environmental factors. The information in this chapter focuses on behaviors that participants in the Behavioral Risk Factor Surveillance System (BRFSS) reported. Though BRFSS is able to tell us about risky behaviors, it is not able to address those important factors that can affect or explain behavior. For example, whether or not someone eats fresh fruit and vegetables may depend on whether they have easy access to a grocery store with a good selection of affordable, high quality, fresh produce. Additionally, policies forbidding smoking in the workplace and laws prohibiting driving while intoxicated can affect behavior but are not explicitly identified here.

## Alcohol

Excessive alcohol consumption (including heavy drinking, binge drinking, drinking during pregnancy, and underage drinking) is linked to negative short and long term health outcomes. Short term health effects may include injury, violence, alcohol poisoning, and negative birth outcomes including fetal alcohol spectrum disorders (FASDs) for children whose mothers drank while pregnant. Long term effects include liver disease, cancer, and social problems like unemployment.[52]

Compared to the all races population, fewer American Indian/Alaska Natives had a drink of alcohol in the 30 days before they completed the survey (Table 5.1). Among those who drank, American Indian/Alaska Natives tended to drink more on each occasion—7.60% of American Indian/Alaska Natives and 1.78% of the all races population reported that they usually drank more than 10 drinks on days when they drank (Table 5.2). Binge drinking is defined as five or more standard drinks for a man and four or more standard drinks for a woman on one occasion. A standard drink is defined as 14.0 grams (or 0.6 ounces) of pure alcohol, which is the equivalent of 12 ounces of beer,

5 ounces of wine, or a 1.5-ounce shot of liquor.[53] A greater percent of American Indian/Alaska Natives than all races reported binge drinking (Table 5.3).

Table 5.1. Percent Who Had at Least One Drink of Alcohol in the Last 30 Days, American Indian/Alaska Natives and All Races, Three-State Area, 2011-2014[1]

| | Percent |
|---|---|
| ***American Indian/Alaska Natives*** | ***42.56*** |
| All Races | 60.28 |

American Indian/Alaska Native n=1,706 All Races n=119,817
[1] BRFSS 2011-2014

Table 5.2. Average Number of Drinks per Day on Drinking Days (by Percent), American Indian/Alaska Natives and All Races, Three-State Area, 2011 and 2013[1]

| Number of drinks | ***American Indian/Alaska Natives*** | All Races |
|---|---|---|
| 1 | 28.19 | 43.65 |
| 2 | 24.02 | 30.50 |
| 3 | 13.24 | 12.11 |
| 4 | 7.35 | 5.23 |
| 5 | 5.15 | 2.84 |
| 6 to 9 | 14.46 | 3.89 |
| 10 to 14 | 5.39 | 1.27 |
| 15 or more | 2.21 | 0.51 |

American Indian/Alaska Native n=408 All Races n=36,952
[1] BRFSS 2011 and 2013

Table 5.3. Percent Who Binge Drank in Past 30 Days, American Indian/Alaska Natives and All Races, Three-State Area, 2011-2014[1]

| | Percent |
|---|---|
| ***American Indian/Alaska Natives*** | ***20.22*** |
| All Races | 16.76 |

American Indian/Alaska Native n=1,691 All Races n=118,828
[1] BRFSS 2011-2014

## Physical Activity

Physical activity reduces the risk of chronic disease and provides health benefits including improving mental health and mood, strengthening bones and muscles, and preventing the risk of falls for older people.[54] Although recommendations vary by age, being physically active is important to everyone. Generally, adults should have at least 150 minutes of moderate physical activity a week.[55]

A greater percent of the all races population as compared to the American Indian/Alaska Native population participated in any leisure time physical activity during the last 30 days (Table 5.4). However,

as seen in Table 5.5, among those who are physically active, similar proportions of American Indian/Alaska Natives and the all races population reported being physically active for at least 150 minutes a week.

Table 5.4. Percent Who Participated in Any Physical Activity Outside of Their Job in the Last 30 Days, American Indian/Alaska Natives and All Races, Three-State Area, 2011-2014[1]

| | Percent |
|---|---|
| ***American Indian/Alaska Natives*** | ***70.52*** |
| All Races | 77.49 |

American Indian/Alaska Native n=1,723 All Races n=121,419
[1] BRFSS 2011-2014

Table 5.5. Minutes per Week of Physical Activity per Week, American Indian/Alaska Natives (AI/AN) and All Races, Three-State Area, 2011 and 2013[1,2]

| | ***American Indian/Alaska Natives*** | All Races |
|---|---|---|
| 0 to 149 minutes | 31.39 | 30.63 |
| 150 to 299 minutes | 23.16 | 25.93 |
| 300 to 449 minutes | 17.84 | 17.86 |
| 450 to 1,260 minutes | 27.62 | 25.57 |

American Indian/Alaska Native n=583 All Races n=42,535
[1] BRFSS 2011 and 2013 [2] Among those who participated in any leisure time physical activity

## Sleep

Sleep is a crucial component of a healthy life. Although sleep needs vary, healthy adults need about seven to nine hours of sleep daily. Poor sleep or insufficient sleep have been linked to a variety of negative health outcomes, including motor vehicle accidents, medical or other occupational errors, and increased likelihood of having chronic diseases including cardiovascular disease, diabetes, and depression.[56]

In the three-state area, about 40% of American Indian/Alaska Natives slept fewer than seven hours a day. In comparison, about 30% of the all races population slept for fewer than seven hours (Table 5.6).

Table 5.6. Average Hours of Sleep in a 24 Hour Period (by Percent), American Indian/Alaska Natives and All Races, Three-State Area, 2013 and 2014[1]

| | ***American Indian/Alaska Natives*** | All Races |
|---|---|---|
| 0 to <7 hours | 40.79 | 30.04 |
| 7 to 24 hours | 59.21 | 69.96 |

American Indian/Alaska Native n=983 All Races n=64,896
[1] BRFSS 2013 and 2014

## Tobacco

Commercial tobacco is the leading cause of preventable death in the United States. It harms nearly every organ in the body; causes many diseases including cancer and chronic obstructive pulmonary disease (COPD); and increases the risk for many others like cardiovascular disease and stroke.[57]

Traditional tobacco used by American Indians differs from commercial tobacco in many ways, including how it is used and the composition of the tobacco itself. Traditional tobacco (*Nicotinana rustica*) is used for spiritual or ceremonial purposes and often is not smoked at all; traditional tobacco comes from a different species than that used in commercial tobacco (*Nicotinana tabacum*), and may be a mixture of several kinds of plants that may not actually contain tobacco at all.[58] It should be noted that the BRFSS survey does not distinguish between abuse of commercial tobacco and the use of traditional tobacco for spiritual or ceremonial purposes.

More American Indian/Alaska Natives than people of all races in the three-state area—two thirds of all surveyed—are considered to be current or former smoker, meaning they've smoked at least 100 cigarettes in their lifetime (Table 5.8). About 36% of American Indian/Alaska Natives are current smokers, as compared to 17% of the all races population. Many current and former smokers (58%) have tried to quit within the past 12 months (Table 5.9).

### Table 5.7. Percent Who Ever Smoked Cigarettes,[1] American Indian/Alaska Natives and All Races, Three-State Area, 2011-2014[2]

| | Percent |
|---|---|
| ***American Indian/Alaska Natives*** | ***67.20*** |
| All Races | 46.78 |

American Indian/Alaska Native n=1,753 All Races n=122,346
[1]Smoked at least 100 cigarettes in lifetime [2] BRFSS 2011-2014

### Table 5.8. Smoker Status (by Percent), American Indian/Alaska Natives and All Races, Three-State Area, 2011-2013[1]

| | ***American Indian/Alaska Native*** | All Races |
|---|---|---|
| Current every day smoker | 25.42 | 11.94 |
| Current some days smoker | 10.51 | 4.78 |
| Former smoker | 31.16 | 30.60 |
| Never smoker | 32.90 | 52.68 |

American Indian/Alaska Native n= 1,322 All Races n= 90,901
[1] BRFSS 2011-2013

### Table 5.9. Percent of Current and Former Smokers Who Attempted to Quit Smoking in Last 12 Months, American Indian/Alaska Natives and All Races, Three-State Area, 2013[1]

| | Percent |
|---|---|
| ***American Indian/Alaska Natives*** | ***58.16*** |
| All Races | 58.69 |

American Indian/Alaska Native n=196 All Races n= 5,154
[1] BRFSS 2013

## Unintentional Injury

Although a variety of unintentional injuries exist, this report discusses one risk factor for motor vehicle injury and death: seatbelt use. Seatbelt use is the best way to prevent injury and mortality in crashes.[59] More than four out of every five American Indian/Alaska Natives reported always wearing a seatbelt (Table 5.10). However, this is lower than reported for the all races population (89%).

Table 5.10. Frequency of Seatbelt Use (by Percent), American Indian/Alaska Natives and All Races, Three-State Area, 2011-2014[1]

| | ***American Indian/Alaska Native*** | All Races |
|---|---|---|
| Always | 84.27 | 88.81 |
| Nearly always | 8.86 | 6.89 |
| Sometimes | 3.25 | 2.13 |
| Seldom | 1.27 | 0.93 |
| Never | 2.35 | 1.24 |

American Indian/Alaska Native n=1,689 All Races n=118,343

[1] BRFSS 2011-2014

# Chapter Six
# Infectious Disease

## Chlamydia, Gonorrhea, and Syphilis

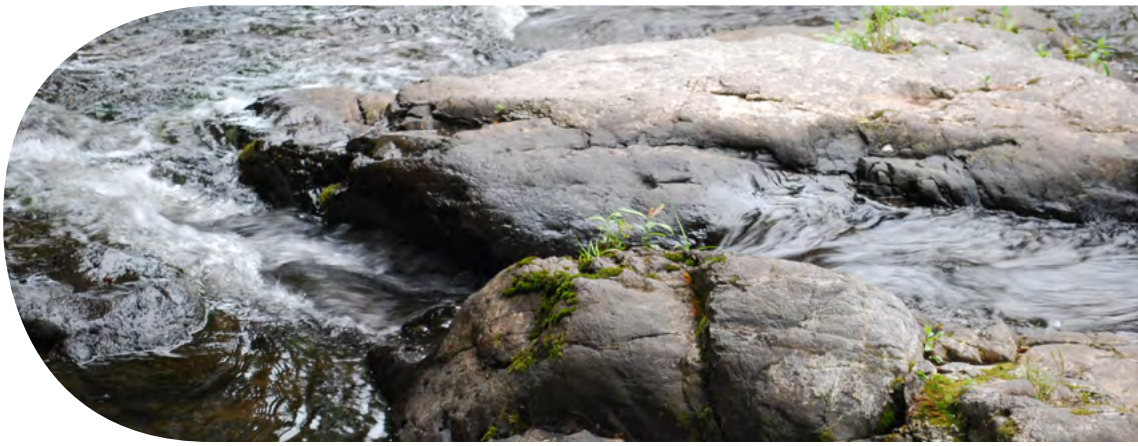
Sexually transmitted diseases (STDs) are very common—it's estimated that there are 20 million new infections each year.[60] STDs can affect people of all genders. There are multiple ways a person can reduce their risk of contracting an STD, including abstinence from oral, vaginal, and anal sex; vaccination; reducing the number of sex partners; mutual monogamy; and using condoms consistently and correctly.[61] This report includes data on three common STDs: chlamydia, gonorrhea, and syphilis (Tables 6.1-6.3).

Chlamydia is a common STD that is spread through vaginal, oral, or anal sex with an infected person. It is easily cured. However, it can cause infertility problems for women if the infection is not treated. Most people who have chlamydia do not have any symptoms, which means that testing is important.[62]

Gonorrhea is another common STD that is transmitted through vaginal, oral, or anal sex with an infected person. It can cause infections in the throat and rectum as well as in the genitals. It can be treated with antibiotics. Men are more likely to show symptoms of gonorrhea than women. In fact, most women do not display any symptoms. This means that testing is important in order to catch and treat any infections. Long term effects of untreated gonorrhea include infertility for both men and women.[63]

Syphilis is an STD that, although easily curable, can have major consequences. Syphilis is spread by direct contact with a syphilis sore during vaginal, oral, or anal sex. It can also be spread from a mother to her infant. The initial stages of syphilis are mild but it is important to receive treatment to prevent the disease from progressing to later stages that carry serious consequences including paralysis, blindness, dementia, and death.[64]

In 2014, in each of the three states of Michigan, Minnesota, and Wisconsin, Chlamydia was the STD with the highest reported rates for the American Indian/Alaska Native and all races populations. In



Michigan, the all races population had a higher rate than the American Indian/Alaska Native population; the reverse was true in Minnesota and Wisconsin. Note that the American Indian/Alaska Native rates should be interpreted with caution due to the small number of cases reported.

Table 6.1. Sexually Transmitted Disease Cases and Rates (per 100,000) for American Indian/Alaska Natives* and All Races in Michigan, 2014

| | ***American Indian/Alaska Natives*** | | All Races | |
|---|---|---|---|---|
| | Number of cases | Rate | Number of cases | Rate |
| Chlamydia | 197 | 396.1 | 44,843 | 452.5 |
| Gonorrhea | 19 | 38.2 | 9,666 | 97.5 |
| Syphilis | 3 | 6.0 | 1,116 | 11.3 |

*Non-Hispanic Source: http://www.mdch.state.mi.us/pha/osr/std/STDbyRace.asp

Table 6.2. Sexually Transmitted Disease Cases and Rates (per 100,000) for American Indian/Alaska Natives and All Races in Minnesota, 2014

| | ***American Indian/Alaska Natives*** | | All Races | |
|---|---|---|---|---|
| | Number of cases | Rate | Number of cases | Rate |
| Chlamydia | 525 | 862.0 | 19,897 | 375.0 |
| Gonorrhea | 146 | 240.0 | 4,073 | 77.0 |
| Syphilis | 2 | 3.3 | 257 | 4.8 |

Source: http://www.health.state.mn.us/divs/idepc/dtopics/stds/stats/2014/stdreport2014.pdf

Table 6.3. Sexually Transmitted Disease Cases and Rates (per 100,000) for American Indian/Alaska Natives* and All Races in Wisconsin, 2014

| | ***American Indian/Alaska Natives*** | | All Races | |
|---|---|---|---|---|
| | Number of cases | Rate | Number of cases | Rate |
| Chlamydia | 318 | 530 | 22,837 | 406 |
| Gonorrhea | 41 | 68 | 4,047 | 72 |
| Syphilis | 2 | 3 | 284 | 5 |

*Non-Hispanic Source: https://www.dhs.wisconsin.gov/publications/p00415-2014-milw.pdf

## HIV Incidence and Prevalence

Human immunodeficiency virus (HIV) is the virus that causes acquired immunodeficiency syndrome, or AIDS. In the United States, most people get HIV through sexual contact with someone who is already infected with HIV or by sharing needles or other equipment for injecting drugs with someone who is already infected with HIV.[65] Because one in eight people who have HIV do not know they have it, routine testing is important, especially for those at higher risk.[66]

This report includes information on new cases of HIV (incidence) as well as information about people who are living with HIV or AIDS (prevalence) (Tables 6.4-6.6). HIV incidence measures the num-

ber of people who are first diagnosed with HIV in a certain year. Because a person can live with HIV for years without symptoms, it is important to remember that these numbers do not represent the year in which a person was infected. HIV/AIDS prevalence measures the number of people who are living with HIV or AIDS.

In each of the three states, the number of statewide American Indian/Alaska Native HIV cases (incidence and prevalence) is a small proportion of the number of statewide all races cases. American Indian/Alaska Native rates should be interpreted with caution due to the small number of cases reported.

Table 6.4. HIV/AIDS Incidence (New Cases) and Prevalence (All Cases) Cases and Rates (per 100,000) for American Indian/Alaska Natives* and All Races in Michigan, 2014

| | ***American Indian/Alaska Natives*** | | All Races | |
|---|---|---|---|---|
| | Number of cases | Rate | Number of cases | Rate |
| HIV/AIDS incidence (new cases) | 3 | 5.0 | 789 | 8 |
| HIV/AIDS prevalence (all cases) | 37 | 66.0 | 16,190 | 163.0 |

*Non-Hispanic Source: Michigan Department of Health and Human Services

Table 6.5. HIV/AIDS Incidence (New Cases) and Prevalence (All Cases) Cases and Rates (per 100,000) for American Indian/Alaska Natives* and All Races in Minnesota, 2014

| | ***American Indian/Alaska Natives*** | | All Races | |
|---|---|---|---|---|
| | Number of cases | Rate | Number of cases | Rate |
| HIV/AIDS incidence (new cases)[1] | 5 | 9.0 | 307 | 5.8 |
| HIV/AIDS prevalence (all cases)[2] | 121 | 198.6 | 7,988 | 150.6 |

*Non-Hispanic
[1]http://www.health.state.mn.us/divs/idepc/diseases/hiv/stats/2014/inctables2014.pdf
[2] http://www.health.state.mn.us/divs/idepc/diseases/hiv/stats/2014/pmtables2014.pdf

Table 6.6. HIV/AIDS Incidence (New Cases) and Prevalence (All Cases) Cases and Crude Rates (per 100,000) for American Indian/Alaska Natives* and All Races in Wisconsin, 2014

| | ***American Indian/Alaska Natives*** | | All Races | |
|---|---|---|---|---|
| | Number of cases | Rate | Number of cases | Rate |
| HIV/AIDS incidence (new cases) | 4 | 8.1 | 226 | 4.0 |
| HIV/AIDS prevalence (all cases) | 41 | 83.5 | 6,899 | 120.8 |

*Non-Hispanic Source: https://www.dhs.wisconsin.gov/publications/p0/p00484.pdf

## HIV Testing

HIV testing is recommended for all people aged 15 to 65 years old, and for older or younger individuals who are at greater risk. In addition, screening is recommended for all pregnant women.[67] As presented in Table 6.7, in the three-state area 45% of American Indian/Alaska Native BRFSS participants reported that they have been tested for HIV, as compared to about 27% of the all races participants.

Table 6.7. Ever Been Tested for HIV, American Indian/Alaska Natives and All Races, Three-State Area, 2011-2014

| | Percent[1] |
|---|---|
| ***American Indian/Alaska Natives*** | ***45.15*** |
| All Races | 27.16 |

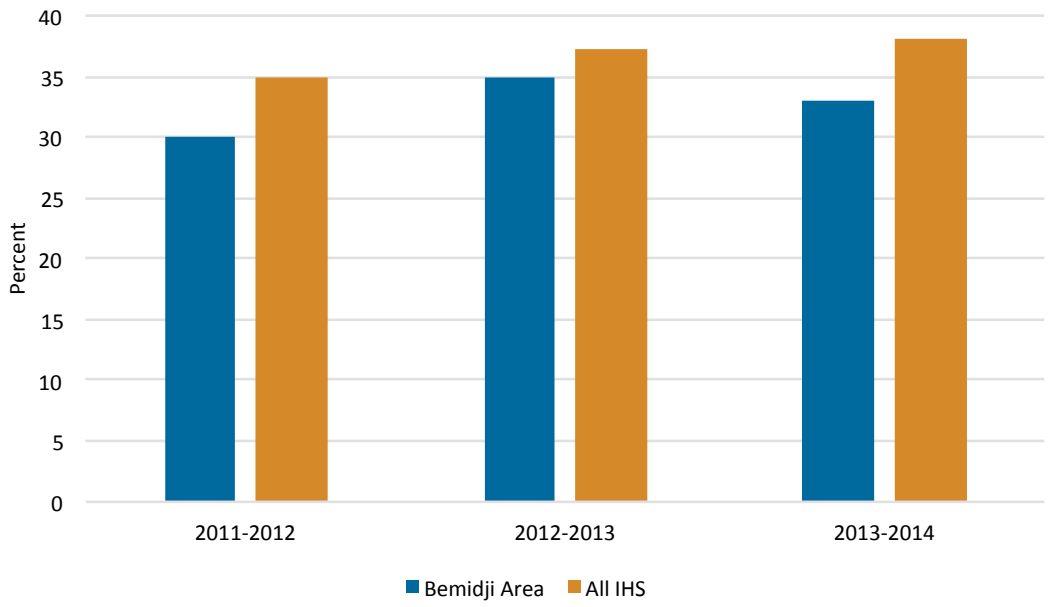
American Indian/Alaska Native n=1,566 All Races n=110,973
[1] BRFSS 2011-2014

## Influenza Vaccination

Influenza is an infectious disease that causes mild to severe illness, and leads to many deaths each year. The best way to prevent the flu is to get the flu vaccine each year.[68] Although certain people are at higher risk for complications from the flu, everyone age six months and older should receive the vaccine.[69]

For the 2013-2014 flu season it was estimated that 46.2% of everyone in the U.S. six months or older received the flu vaccine, while in the Bemidji Area, 33.1% of the active IHS Clinical population was vaccinated, as can be seen in Table 6.8 and Figure 6.1.[70] A comparison with IHS facilities nationwide is presented as a comparison.

Figure 6.1. Percent of the Active Clinical Population Six Months or Older Served by IHS, Tribal and Urban (I/T/U) Facilities Receiving Influenza Vaccination, Bemidji IHS Area and All IHS, 2011-2012 to 2013-2014 Flu Seasons[1]




[1] Indian Health Service Department of Epidemiology and Disease Prevention Vaccine-Preventable Diseases Influenza Vaccine Coverage Report http://www.ihs.gov/epi/index.cfm?module=epi_vaccine_reports

Table 6.8 .Percent of the Active Clinical Population Six Months or Older Served by IHS, Tribal and Urban (I/T/U) Facilities Receiving Influenza Vaccination, Bemidji IHS Area and All IHS, 2011-2012 to 2013-2014 Flu Seasons[1]

| | Bemidji Area | All IHS |
|---|---|---|
| 2013-2014 | 33.1 | 38.0 |
| 2012-2013 | 34.9 | 37.3 |
| 2011-2012 | 30.1 | 35.0 |

[1] Indian Health Service Department of Epidemiology and Disease Prevention Vaccine-Preventable Diseases Influenza Vaccine Coverage Report http://www.ihs.gov/epi/index.cfm?module=epi_vaccine_reports

As seen in Table 6.9, among those who participated in the Behavioral Risk Factor Surveillance System (BRFSS) between 2011 and 2014, similar proportions of American Indian/Alaska Natives (44%) as people in the all races population (45%) reported having received a flu shot in the previous 12 months.

Differences seen between Tables 6.8 and 6.9 may be due to differences in clinic-based populations compared to those sampled as part of a random digit dialing phone survey (as with BRFSS), as well as differences that stem from sampling from a population aged six months or older versus a population aged 18 or older.

Table 6.9. Adults Age 18 or Older Who Received a Flu Shot in Last 12 Months, American Indian/Alaska Natives and All Races, Three-State Area, 2011-2014[1]

| | Percent |
|---|---|
| ***American Indian/Alaska Natives*** | ***43.83*** |
| All Races | 45.36 |

American Indian/Alaska Native n=1,652 All Races n=118,153
[1] BRFSS 2011-2014

# Appendix One Technical Notes

## Limitations

There are limitations related to data presented in this report.

The most important limitation to this report lies in the way in which health and data are conceptualized. The information presented in this report was obtained using Western methods and interpreted through a Western lens. The concept of health used in this report is in itself Western, with a focus on physical health. Though they differ, many indigenous models of health are holistic and good health is seen as a balance between physical, mental, emotional, and spiritual wellbeing. This report overwhelmingly focuses on physical health. Furthermore, other key components of wellness such as communities' connection to their land, language, or their relationships with creation in the Area (such as animals, birds, plants, water, or earth) are absent altogether.

American Indian/Alaska Natives make up a small proportion of the United States as well as the three-state area. As a result, obtaining and using data for this population can be challenging.

States often do not collect or report data using consistent methods from state to state. This means that comparing between geographies may be difficult. Despite this, some data were combined to produce three state aggregates to provide the best possible picture of the three-state area as a whole.

Racial misidentification of American Indian/Alaska Natives in data sets is common. With regard to mortality, the rate of misidentification varies across the country, and may be lower in Contract Service Delivery Areas (CHSDAs, counties that include or adjoin reservations).[12] Studies on all-cause mortality produce varying amounts of racial misclassification of American Indian/Alaska Natives. The National Center for Health Statistics found that mortality rates for American Indian/Alaska Natives were underreported by about 21%;[11] one 2014 study placed misclassification prevalence at 14%.[12] When state and IHS data were compared, 16.1% of mortality reports had an inconsistent racial misclassification in the Bemidji IHS Area (Michigan, Minnesota, and Wisconsin).

Related to misidentification, the incorporation of ethnicity into analyses can reduce the size of small racial populations. When both race and ethnicity are collected, Hispanic American Indian/Alaska Natives will often be grouped with Hispanics of all races, and only non-Hispanic American Indian/Alaska Natives will be considered to be American Indian/Alaska Native, reducing the population size. Where possible only race variables were used in this report, although some secondary data sources calculated data using race and ethnicity in combination.

Western analytical conventions were not necessarily followed when producing the statistics in this report. For example, when possible an infant's race was calculated using the race of both its mother and father. While some important advantages result from using this approach, it also means that not all data in this report are comparable with data presented elsewhere. Careful reading on how data were calculated is recommended.

Table A.1. Causes of Death and Associated ICD-10 Codes

| Condition | ICD-10 Codes |
|---|---|
| Alzheimer's Disease | G30 |
| Cerebrovascular disease | I60-I69 |
| Chronic liver disease and cirrhosis | K70, K73-K74 |
| Chronic Lower Respiratory Disease (CLRD) | J40-J47 |
| Diabetes Mellitus | E10-E14 |
| Diseases of the heart | I00-I09, I11, I13, I20-I51 |
| Homicide | U01-U02, X85-Y09, (Y87.1) |
| Influenza and pneumonia | J09-J18 |
| Lung cancer (trachea, bronchus, and lung) | C33-C34 |
| Malignant Neoplasm (all cancer) | C00-C97 |
| Nephritis, nephrotic syndrome, and nephrosis | N00-N07, N17-N19, N25-N27 |
| Suicide | U03, X60-X84, (Y87.0) |
| Unintentional injury (accidents) | V01-X59, Y85-Y86 |

## Technical Notes

### *Demographics*

Data were retrieved from American Fact Finder. The most recent one year estimates from the American Community Survey were used in the Demographics Chapter.

### *Mortality*

*All Ages Mortality Rates*

The report *Deaths: Leading Causes for 2009* from CDC was used to determine the top ten causes of death for U.S. American Indian/Alaska Natives and the general (all races) population across the United States. These top causes, along with lung cancer (a subset of malignant neoplasm (all cancer)) and homicide, were examined. The five most recent years of data available were aggregated.

Age-adjusted mortality rates and their corresponding confidence intervals were retrieved from CDC WONDER. Causes of death for which rates were suppressed or unreliable were not included. Although sufficient numbers for reporting were available for most causes of death at the national level, only causes of death with reportable rates for the three-state area are included in this report. Due to small numbers, rates could not be reported at the state level for all of the causes examined.

*Child and Adolescent Mortality Rates*

Age adjusted mortality rates and confidence intervals for children and adolescents aged 1-24 years were retrieved from CDC WONDER. The five most recent years of data available were aggregated.

*Infant Mortality*

In most health departments, infant mortality statistics are calculated using the National Center for Health Statistics methodology, where an infant's race is assigned using only its mother's race. In this report, to the greatest extent possible, if the mother and/or father of an infant was identified as American Indian/Alaska Native on the birth certificate, the infant was considered to be American Indian/Alaska Native. However, it should be noted that the data in this report cannot be compared to data

presented elsewhere.

Furthermore, because of differences in how each state provides its birth and death records, differences in methodology exist from state to state.

For Michigan infant deaths, linked birth-death certificate files were used to determine the number of deaths. These files contained all infant deaths in the state, by year of birth. If either the mother or the father was identified on the birth certificate as being American Indian/Alaska Native, or the infant was American Indian/Alaska Native on the death certificate, the infant was considered to be American Indian/Alaska Native for the purpose of this report. American Indian/Alaska Native and all races data were obtained from these files.

As is the case for Michigan, linked birth-death certificate files were used to determine the number of infant deaths in Minnesota. These files contained all infant deaths in the state, by year of birth. If either the mother or the father was identified on the birth certificate as being American Indian/Alaska Native, or the infant was American Indian/Alaska Native on the death certificate, the infant was considered to be American Indian/Alaska Native. American Indian/Alaska Native and all races data were obtained from these files.

For Wisconsin infant deaths, files containing deaths to infants identified on the death certificate as being American Indian/Alaska Native were used in conjunction with files that contain records for births where the mother or father was identified on the birth certificate as being American Indian/Alaska Native but the infant was not identified as American Indian/Alaska Native on the death certificate. These files are organized by year of death and contain only individuals identified as American Indian/Alaska Native (as described above). Only American Indian/Alaska Native data were obtained from these files. All races data were obtained from Wisconsin Interactive Statistics on Health (WISH), a web-based query system (https://www.dhs.wisconsin.gov/wish/index.htm). Not all causes of death were available in the query system.

As seen in Table A.2, this expanded definition of American Indian/Alaska Native race slightly increased the mortality rates for American Indian/Alaska Natives in Michigan and Minnesota. In Wisconsin, however, it led to a decrease in rates. While it isn't possible to examine the exact same cohorts in Wisconsin because of the files that are available, it appears that the number of births increased greatly while the number of deaths only very slightly increased. It should be noted that when only using the mother's race, the infant mortality rate for American Indian/Alaska Natives retrieved from WISH was greater than the all races' rate (8.15 and 6.2 per 1,000, respectively). It is possible that the reduction in the infant mortality rate seen when the expanded definition was used for Wisconsin was due the type of vital statistics files provided to GLITEC.

Table A.2. Effect of Using an Expanded Definition of American Indian/Alaska Native on Infant Mortality Rates, Michigan, Minnesota, and Wisconsin, 2008-2012

| | Standard Definition[1] | | | Expanded Definition[2] | | |
|---|---|---|---|---|---|---|
| | Number of births | Number of deaths | Rate per 1,000 | Number of births | Number of deaths | Rate per 1,000 |
| Michigan[3] | 3,764 | 41 | 10.89 | 6,783 | 86 | 12.68 |
| Minnesota[4] | 7,225 | 66 | 9.13 | 9,266 | 91 | 9.82 |
| Wisconsin[5] | 4,910 | 40 | 8.15 | 7,121 | 42 | 5.90 |

[1]Standard Definition: Infant is assigned his or her mother's race

[2]Expanded Definition: Infant is identified as American Indian/Alaska Native if the mother, father, or infant is identified as American Indian/Alaska Native on the birth or death certificate

[3] Vital statistics files from Michigan Department of Community Health

[4]Vital statistics files from Minnesota Center for Health Statistics

[5]For the standard definition, death cohort were created using data retrieved from WISH. For the expanded definition, birth cohorts were created using vital statistics files from Wisconsin Bureau of Health Information

National-level data were retrieved from two sources: CDC WONDER and an Indian Health Service report, *Trends in Indian Health, 2014 Edition*. CDC WONDER data were retrieved for infants who died in 2008-2012, for all races across the United States and for infants whose mother was identified as American Indian/Alaska Native. The IHS infant mortality data include the years 2007-2009, and are reported based on IHS service areas. IHS service areas "pertain only to AI/AN people residing in the counties that make up the IHS service area. … The IHS service population consists of those enumerated AI/ANs who reside in the geographic areas in which IHS has responsibilities ("on or near" reservations, i.e., contract health service delivery areas (CHSDAs))."[71] Unadjusted (with regard to racial misidentification) rates are reported.

The most common 10 neonatal and 10 postneonatal causes of death for infants nationally were examined where possible to determine the top five causes of infant death; this amounted to seventeen causes of death in all (Atelectasis (P28.0-P28.1) was not included).

Table A.3. Causes of Infant Death and Associated ICD-10 Codes

| Condition | ICD-10 Codes |
|---|---|
| Assault (homicide) | U01, X85-Y09 |
| Bacterial sepsis of newborn | P36 |
| Chronic respiratory disease originating in the perinatal period | P27 |
| Congenital malformations, deformations, chromosomal abnormalities | Q00-Q99 |
| Diarrhea and gastroenteritis of infectious origin | A09 |
| Diseases of the circulatory system | I00-I99 |
| Disorders related to short gestation and low birth weight, not elsewhere classified | P07 |
| Influenza and pneumonia | J08-J18 |
| Intrauterine hypoxia and birth asphyxia | P20-P21 |
| Necrotizing enterocolitis of newborn | P77 |
| Neonatal hemorrhage | P50-P52, P54 |
| Newborn affected by complications of placenta, cord, and membranes | P02 |
| Newborn affected by maternal complications of pregnancy | P01 |
| Respiratory distress of newborn | P22 |
| Septicemia | A40-A41 |
| Sudden Infant Death Syndrome (SIDS) | P95 |
| Unintentional injuries (accidents) | V01-X59 |

Sudden Unexpected Infant Death (SUID) is a term that refers to infants who die suddenly and unexpectedly. Generally, three ICD-10 codes are used to determine which infant deaths may be counted as SUID. However, when more detailed information is available additional methods of determining SUID deaths may be used. In this report, ICD-10 codes were the only method used to determine if an infant death was categorized as SUID.

Table A.4. Causes of Infant Death and Associated ICD-10 Codes that Comprise Sudden Unexpected Infant Deaths (SUIDs)

| Condition | ICD-10 Codes |
|---|---|
| Accidental Suffocation and Strangulation in Bed (ASSB) | W75 |
| Sudden Infant Death Syndrome (SIDS) | R95 |
| Unknown Cause | R99 |

*Mortality Disparity Ratios*

Disparity ratios, consisting of the ratio of the American Indian mortality rate to the white mortality rate, were calculated. A disparity ratio is the ratio of the rates of two different population groups and indicates the degree of disparity between the two groups. The reference group's rate is placed in the denominator, such that a ratio of less than one indicates that the population of interest has a lower mortality rate than the reference population, while a ratio of greater than one shows that the population of interest has a higher mortality rate than the reference population. In the disparity ratios in this report, the white population is always the reference population. In addition, when the ratio is subtracted from one and multiplied by 100%, the degree to which the disparity exists can be identified.

### *Natality (Birth) Data*

In most health departments, natality (birth) statistics are calculated using the National Center for Health Statistics methodology, where an infant's race is assigned using only its mother's race. In this report, to the greatest extent possible, if the mother and/or father of an infant was identified as American Indian/Alaska Native on the birth certificate, the infant was considered to be American Indian/Alaska Native. For teen pregnancy, only the mother's race is used. However, it should be noted that the data in this report cannot be compared to data presented elsewhere. Additionally, it should be noted that health departments may have made changes to their birth certificate forms over time, making them difficult to compare. Regardless, for each individual year, the broadest possible definition of American Indian/Alaska Native infants was used to create the largest possible count and be as inclusive as possible for the five year aggregate.

Low birthweight is defined as a weight at birth of under 2,500 grams, or five pounds and half an ounce. High birth weight is considered to be over 4,000 grams, or 8 pounds 13 ounces. The mother and/or father's race was used when identifying an infant's birth weight.

Preterm birth is defined as a birth occurring before the 37th week of pregnancy. The mother and/or father's race was used when identifying preterm birth for American Indian/Alaska Native infants.

Teen pregnancy rates were calculated using only the mother's race to determine the numerator. The denominator was calculated using data from the American Community Service Tables B01001 and B01001C.

The mother and/or father's race was used to identify the percentage of American Indian/Alaska Native infants exposed prenatally to tobacco smoke.

Although there are various measures relating to prenatal care, this report only makes note of the timing of the first prenatal visit. The mother and/or father's race was used when identifying prenatal care initiation for mothers of American Indian/Alaska Native infants.

### *Behavioral Risk Factor Surveillance System (BRFSS) Data*

Data from the Behavioral Risk Factor Surveillance System (BRFSS) are included in several chapters in this report. No weighting, age-adjusting, or tests for

statistical significance were conducted.

Behavioral Risk Factor Surveillance System (BRFSS) data files for 2011-2014 were retrieved from the CDC website. BRFSS is a survey of civilian, non-institutionalized adults aged 18 and older about health-related risk behaviors, chronic health conditions, and use of health services. Random-digit dialing is used to call landline and cell phones to conduct the interview survey year-round. Few American Indian/Alaska Natives are surveyed each year—from 2011-2014, only 1.45% (n=1,810) of the BRFSS participants in the three states were American Indian/Alaska Native while in 2014, 1.62% of the three state population was American Indian/Alaska Native alone or in combination with another race (American Community Survey Table DP05). Results of analyses were only included in this report when there were at least 50 American Indian/Alaska Native participants for a question in a year in each state, and when the question was asked in all three states. All results are unweighted. "Preferred race" (_PRACE and _PRACE1) was the race variable used in the analysis. Data are reported by year of BRFSS survey interview (IYEAR).

### *Sexually Transmitted Disease and HIV/AIDS*

HIV incidence measures the number of people who are first diagnosed with HIV in a certain year. Because a person can live with HIV for years without symptoms, it is important to remember that these numbers do not represent the year in which a person was infected. HIV/AIDS prevalence measures the number of people who are living with HIV or AIDS.

This report uses the number and rate provided by each state in its public reports.

In each of the three states, differences exist in how infectious disease data by race are categorized. For example, differences exist from state to state with regard to whether American Indian/Alaska Native data include only non-Hispanics or if they include all ethnicities. Variations also exist at the state level regarding how infectious disease rates are calculated. In some cases, the state calculates crude rates, while in other cases age-adjusted rates are calculated. Each state uses different criteria for its denominator selection.

### *Indian Health Service Influenza Vaccination*

Influenza vaccination data for Indian Health Service (IHS) were retrieved from IHS Vaccine Coverage Reports with data from RPMS Influenza Coverage Reports. RPMS Influenza Coverage Report data were generated using the RPMS influenza vaccine reports and were collected from each facility on December 31 and March 31. Data are based on vaccine doses administered and recorded in the RPMS system, and are aggregated at Area and national levels. The population is limited to active clinical patients (patients who have had at least 2 visits in the last 3 years). Not all sites participate in reporting, and patient data are not de-duplicated between facilities which can lead to misestimates of coverage.

National influenza vaccination data were retrieved from CDC; coverage was estimated based on BRFSS surveys of adults aged 18 and older and National Immunization Survey-Flu (NIS-Flu) data for 6 month to 17 year olds.

### *Indian Health Service Childhood and Adolescent Vaccination*

All IHS and Bemidji Area immunization data were received from the National Indian Health Service Immunization Program Quarterly Reports from the website http://www.ihs.gov/epi/index.cfm?module=epi_vaccine_reports. IHS, Tribal, and Urban Indian health centers submit immunization reports to the Immunization Program. The data are reported by the IHS fiscal year (October 1–September 30). The all races data was retrieved from the National Immunization Survey Table Data for 2014. The National Immunization Survey is a list-assisted random digit dialing telephone survey with a mail survey follow up to children's immunization providers, and is reported by calendar year. National Immunization Survey Table Data may be found at http://www.cdc.gov/vaccines/imz-managers/coverage/nis/child/data/tables-2014.html and http://www.cdc.gov/vaccines/

imz-managers/coverage/nis/teen/data/tables-2014.htmlhttp://www.cdc.gov/vaccines/imz-managers/coverage/nis/teen/data/tables-2013.html.

To account for variations in immunization data and to better illustrate long-term trends, the figures presented in this report utilize rolling averages of data from the IHS Immunization Program Quarterly reports. To create the rolling averages, a mean for the earliest four quarters of data was calculated for the first data point; for the second data point, the oldest of the four quarters' data was dropped, and the next-most recent quarter was included in the mean; for the third data point, the oldest quarter (originally, the second-oldest) was dropped while the new next-most recent quarter was included; and so on. Therefore, four quarters of data were always included, but any extreme values were smoothed out.

### *Breastfeeding and Childhood Overweight and Obesity*

The Pediatric Nutrition Surveillance System (PedNSS) and the Pregnancy Nutrition Surveillance System (PNSS) were good sources of information related to the nutrition status of women, children, and infants who received services through federally funded maternal and child health programs. PedNSS and PNSS data were collected through 2011;[72] the surveys were discontinued in 2012.

*Breastfeeding*

Breastfeeding data for Michigan and Wisconsin were obtained from PedNSS table 19C for 2007-2011. Minnesota's breastfeeding data for American Indian/Alaska Natives came from 19C while the all races data was retrieved from Table 13C in 2007 and from 19C in 2008-2010. Data for the entire United States was obtained from Table 19D for 2007-2011. Because breastfeeding data were not available for Minnesota in 2011, a four year average (2007-2010) is reported for them.

*Childhood Overweight and Obesity*

Childhood overweight and obesity data for Michigan and Wisconsin were obtained from PedNSS table 18C; Minnesota's data came from 18C in 2007-2008 and 2010-2011 and from 16C in 2009. Data for the entire United States was obtained from Table 18D.

# Appendix Two Legal Basis of Tribal Epidemiology Centers

Tribal Epidemiology Centers (TECs) were first created in 1996 as part of the Indian Health Care Improvement Act. This Act was permanently authorized as part of the Patient Protection and Affordable Care Act in 2012. Relevant excerpts detailing TEC responsibilities from the Patient Protection and Affordable Care Act, Indian Health Care Improvement Act include:

"In consultation with and on the request of Indian tribes, tribal organizations, and urban Indian organizations, each service area epidemiology center established under this section shall, with respect to the applicable service area—

(1) Collect data relating to, and monitor progress made toward meeting, each of the health status objectives of the service, the Indian tribes, tribal organizations, and urban Indian organizations in the service area;

(2) evaluate existing delivery systems, data systems, and other systems that impact the improvement of Indian health;

(3) assist Indian tribes, tribal organizations, and urban Indian organizations in identifying highest-priority health status objectives and the services needed to achieve those objectives, based on epidemiological data;

(4) make recommendations for the targeting of services needed by the populations served;

(5) make recommendations to improve health care delivery systems for Indians and urban Indians;

(6) provide requested technical assistance to Indian tribes, tribal organizations, and urban Indian organizations in the development of local health service priorities and incidence and prevalence rates of disease and other illness in the community; and

(7) provide disease surveillance and assist Indian tribes, tribal organizations, and urban Indian communities to promote public health."

*Public Law 10L-191, 110 Stat.1936*

*The Tribal Epidemiology Centers have been granted some authorities by law.*

*An epidemiology center operated by a grantee pursuant to a grant awarded under subsection (d) shall be treated as a public health authority (as defined in section 164.501 of title 45, Code of Federal regulations (or a successor regulation)) for purposes of the Health Insurance Portability and Accountability Act of 1996 (Public Law 104–191; 110 Stat. 1936).*

*The Secretary shall grant to each epidemiology center described in paragraph (1) access to use of the data, data sets, monitoring systems, delivery systems, and other protected health information in the possession of the Secretary. The activities of an epidemiology center described in paragraph (1) shall be for the purposes of research and for preventing and controlling disease, injury, or disability (as those activities are described in section 164.512 of title 45, Code of Federal Regulations (or a successor regulation)), for purposes of the Health Insurance Portability and Accountability Act of 1996 (Public Law 104–191; 110 Stat. 1936).*

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