



# Regional Differences in Indian Health

2000-2001



U.S. Department of Health and Human Services  
Indian Health Service  
Office of Public Health  
Office of Program Support



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# Preface

Since 1955, the Indian Health Service (IHS) has had the responsibility to uphold the Federal Government's obligation to promote healthy American Indian and Alaska Native people, communities, and cultures and to honor and protect the inherent sovereign rights of Tribes. The IHS mission is to raise the physical, mental, social, and spiritual health status of American Indians and Alaska Natives to the highest level.

*Regional Differences in Indian Health* presents narrative, tables, and charts describing the IHS program and the health status of American Indian and Alaska Native people. Information pertaining to the IHS structure and American Indian and Alaska Native demography and patient care is also included. Current regional differences are presented, and comparisons to the general population are made when appropriate.

The IHS remains committed to our goal of assuring that comprehensive, culturally acceptable personal and public health services are available and accessible to American Indian and Alaska Native people. The data found in this publication will contribute positively to this health care goal.

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Data were analyzed by the following Program Statistics staff:

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- Part II    Population Statistics:  
             Karen Carver and former staff members Linda Querec and Debra Heller
- Part III   Natality and Infant Mortality Statistics:  
             JoAnn Pappalardo and former staff member Aaron Handler
- Part IV   General Mortality Statistics:  
             JoAnn Pappalardo, Barbara Moore, and former staff member Aaron Handler
- Part V    Patient Care Statistics:  
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Charts and tables were created and compiled by Priscilla Sandoval.

Administrative support was provided by Kateri Gachupin.

We would also like to recognize the contributions of the staff of each of the IHS areas and express our appreciation to them for providing data and reviewing information contained in this publication. The report would not have been possible without the efforts of many dedicated individuals across all the IHS areas.

Graphic design by Computercraft, Bethesda, Maryland.

# *Overview of the* **Indian Health Service Program**

The Indian Health Service (IHS), an agency within the Department of Health and Human Services (HHS), is responsible for providing federal health services to American Indian and Alaska Native (AI/AN) people. The provision of health services to federally recognized Indians grew out of a special relationship between the federal government and Indian Tribes. This government-to-government relationship is based on Article I, Section 8, of the United States Constitution, and has been given form and substance by numerous treaties, laws, Supreme Court decisions, and Executive Orders.

The Indian Health program became a primary responsibility of the HHS under P.L. 83-568, the Transfer Act, on August 5, 1954. This Act provides “that all functions, responsibilities, authorities, and duties ... relating to the maintenance and operation of hospital and health facilities for Indians, and the conservation of Indian health ... shall be administered by the Surgeon General of the United States Public Health Service.”

The IHS is the federal health care provider and health advocate for AI/AN people and its goal is to assure that comprehensive, culturally-acceptable personal and public health services are available and accessible to AI/AN people. The mission of the IHS, in partnership with AI/AN people, is to raise their physical, mental, social, and spiritual health to the highest level. It is also the responsibility of the IHS to work with the people involved in the health delivery programs so they may be cognizant of entitlements of AI/AN people, as American citizens, to all federal, state, and local health programs, in addition to IHS and Tribal services. The IHS also acts as the principal federal health advocate for AI/AN people in the building of health coalitions, networks, and partnerships with Tribal nations and other government agencies as well as with non-federal organizations, e.g., academic medical centers and private foundations.



The IHS has carried out its responsibilities through developing and operating a health services delivery system designed to provide a broad-spectrum program of preventive, curative, rehabilitative, and environmental services. This system integrates health services delivered directly through IHS facilities, purchased by IHS through contractual arrangements with providers in the private sector, and delivered through Tribally operated programs and urban Indian health programs.

The 1975 Indian Self-Determination Act, P.L. 93-638 as amended, builds upon IHS policy by giving Tribes the option of staffing and managing IHS programs in their communities, and provides for funding for improvement of Tribal capability to contract under the Act. The 1976 Indian Health Care Improvement Act, P.L. 94-437 as amended, was intended to elevate the health status of AI/AN people to a level equal to that of the general population through a program of authorized higher resource levels in the IHS budget. Appropriated resources were used to expand health services, build and renovate medical facilities, and step up the construction of safe drinking water and sanitary disposal facilities. It also established programs designed to increase the number of Indian health professionals for Indian needs and to improve health care access for Indian people living in urban areas.

The operation of the IHS health services delivery system is managed through local administrative units called service units. A service unit is the basic health organization for a geographic area served by the IHS program, just as a county or city health department is the basic health organization in a state health department.

A few service units cover a number of small reservations; some large reservations are divided into a number of service units. The service units are grouped into larger cultural-demographic-geographic management jurisdictions administered by Area Offices.

# *Regional Differences in Indian Health*

## **Introduction**

*Regional Differences in Indian Health* provides basic statistical information to the IHS and its programs, Tribes, other federal and state government agencies, as well as other customers interested in the IHS. This publication uses narrative, charts, and tables to describe the IHS program and the health status of AI/AN people residing in the IHS service area. The IHS service area consists of counties on and near federal Indian reservations. The Indians residing in the service area comprise about sixty percent of all AI/AN people residing in the U.S. Information pertaining to the IHS organizational structure, AI/AN demography, and patient care is included. Current regional differences are presented, and comparisons to the general population are made when appropriate. Historical trend information can be found in the IHS companion publication *Trends in Indian Health*.

## **Scope and Organization of this Report**

Narrative, charts, and tables are grouped into five major categories:

### **IHS Structure**

### **Population Statistics**

### **Natality and Infant/Maternal Mortality Statistics**

### **General Mortality Statistics**

### **Patient Care Statistics**

The tables provide detailed data, while the charts further depict significant relationships. Throughout this report each table and its corresponding chart appear next to each other. However, some self-explanatory charts do not have a corresponding table. In other instances, a table may have more than one chart associated with it.

## Summary of Data Shown

### INDIAN HEALTH SERVICE ORGANIZATIONAL STRUCTURE

The IHS is comprised of twelve regional administrative units called Area Offices:

- Aberdeen
- Alaska
- Albuquerque
- Bemidji
- Billings
- California
- Nashville
- Navajo
- Oklahoma
- Phoenix
- Portland
- Tucson

As of October 1, 2001, the Area Offices consisted of 155 basic administrative units called service units. Of the 155 service units, 92 were operated by Tribes. The number of service units ranged from one in Albuquerque to 27 in California.

The IHS operated 36 hospitals, 59 health centers, two school health centers, and 49 health stations. Tribes have two different vehicles for exercising their self determination – they can choose to take over the operation of an IHS facility through a P.L. 93-638 self-determination contract (Title I) or a P.L. 93-638 self-governance compact, as amended (Title V). A distinction is made in this publication regarding these two Tribal modes of operation, i.e., Title I and Title V. A non-638 contract mechanism is used by Alaska to provide funding to several tribally operated village clinics that are not eligible for Title I funding. Tribes operated thirteen hospitals (Title I, two hospitals and Title V, eleven hospitals), 172 health centers (Title I, 108 and Title V, 64), three school health centers (Title I, two and Title V, one), 84 health stations (Title I, 55 and Title V, 29), and 176 Alaska village clinics (Title I, nine, Title V, 160, and Non-638 contract, seven). Both California and Portland had no hospitals while Aberdeen and Phoenix had eight hospitals each. Tucson had the fewest health centers with three, and California the most with 45.





## Population Statistics

In fiscal year (FY) 2001, the IHS user population – a count of those AI/AN people who used IHS services at least once during the last three-year period – was over 1.3 million. Tucson (23,406) and Nashville (44,434) had the smallest user populations while Oklahoma (285,172) and Navajo (224,969) had the largest user populations.

The AI/AN population is younger, less educated and poorer than the U.S. all-races population. For the IHS user population in FY 2001 10.0 percent of the persons were under age five compared to 6.8 percent for the U.S. all-races population (Census 2000). There was considerable variation by Area with California at 8.5 percent and Aberdeen at 11.2 percent.

According to the 1990 Census, 65.3 percent of AI/AN people (ages 25 and older) residing in the current Reservation States are high school graduates or higher compared to 75.2 percent for the U.S. all-races population. For three IHS Areas (Tucson, Navajo, and Phoenix), the percentage was less than 60.0 (based on state-level AI/AN data). The 1990 Census also indicated that the median household income in 1989 for AI/AN people residing in the current Reservation States was \$19,897, while for the U.S. all-races it was \$30,056, which is over fifty percent higher than AI/AN people residing in Reservation States. Aberdeen had the lowest median household income at \$12,310, and California the highest at \$28,029 (based on state-level AI/AN data).

## Nativity and Infant/Maternal Mortality Statistics

The birth rate for AI/AN people residing in the IHS service area was 24.0 (rate per 1,000 population) in 1996-98. It is 1.7 times the 1997 birth rate of 14.5 for the U.S. all-races population. For the period 1996-98, there were seven maternal deaths in the IHS service area population. Only one IHS Area had more than one maternal death, the Navajo Area, with three deaths in 1996-98.

The infant mortality rate for AI/AN people residing in the IHS service area was 8.9 per 1,000 live births in 1996-98 compared to 7.2 for the U.S. all-races population in 1997. The AI/AN rate is 24 percent higher than the U.S. all-races rate. The infant mortality rate varied considerably among the IHS Areas, ranging from 6.9 in Albuquerque to 12.5 in Aberdeen. These data are adjusted for misreporting of AI/AN race on the death certificate.<sup>1</sup>

## General Mortality Statistics

In 1996-98, the age-adjusted death rate (all causes) for AI/AN people residing in the IHS service area was 715.2 per 100,000 population compared to 479.1 for the U.S. all-races population in 1997. The AI/AN rate is 49 percent greater than the U.S. all-races rate. The rates for the Bemidji and Aberdeen Areas both exceed 1,000.0.

The top two leading causes of death for the IHS service area population in 1996-98 were diseases of the heart and malignant neoplasms, the same as the U.S. all-races in 1997. However, six IHS Areas (Alaska, Albuquerque, Billings, Navajo, Phoenix, and Tucson) had different top two leading causes. The leading causes of death were determined without any adjustment for age which is the customary method. However, it should be noted that the age composition of a population does influence its mortality pattern and therefore could have an effect on the leading causes of death ranking.

For most of the specific causes of death identified in this publication, the 1996-98 AI/AN age-adjusted death rate (with data that have also been adjusted for misreporting of AI/AN race on death certificates) was greater than the 1997 U.S. all-races rate. There was also considerable variation in the rates among the IHS Areas. Some of the Area rates should be interpreted with caution, because of the small number of deaths involved. The following list is a comparison of the AI/AN age-adjusted rate (using data that are also adjusted for misreporting of AI/AN race on the death certificate) to the U.S. rate where there are substantial differences.

|   |            |                 |
|---|------------|-----------------|
| <b>alcoholism</b> . . . . .                                   | <b>638</b> | percent greater |
| <b>tuberculosis</b> . . . . .                                 | <b>400</b> | percent greater |
| <b>diabetes mellitus</b> . . . . .                            | <b>291</b> | percent greater |
| <b>accidents</b> . . . . .                                    | <b>215</b> | percent greater |
| <b>suicide</b> . . . . .                                      | <b>91</b>  | percent greater |
| <b>homicide</b> . . . . .                                     | <b>81</b>  | percent greater |
| <b>pneumonia and influenza</b> . . . .                        | <b>67</b>  | percent greater |
| <b>firearm injury</b> . . . . .                               | <b>44</b>  | percent greater |
| <b>gastrointestinal disease</b> . . . .                       | <b>38</b>  | percent greater |
| <b>diseases of the heart</b> . . . . .                        | <b>20</b>  | percent greater |
| <b>cerebrovascular diseases</b> . . . .                       | <b>14</b>  | percent greater |
| <b>malignant neoplasms</b> . . . . .                          | <b>1</b>   | percent less    |
| <b>human immunodeficiency virus (HIV) infection</b> . . . . . | <b>43</b>  | percent less    |

*Comparison of 1996-98 AI/AN Death Rates to 1997 U.S. All Races Death Rates.*



## Patient Care Statistics

In FY 2001, there were over 81,000 admissions to IHS and Tribal direct and contract general hospitals. The number of admissions ranged from 205 in California to 19,280 in Navajo. Obstetric deliveries and complications of pregnancy accounted for the overall leading cause of hospitalization in IHS and Tribal direct and contract general hospitals. However, on an area-by-area basis, diseases of the respiratory system led hospital admissions in Aberdeen, Bemidji, Billings, Nashville, Phoenix, and Tucson; diseases of the digestive system led in Albuquerque and Portland; and, lastly, diseases of the circulatory system led in California.

IHS and Tribal direct and contract facilities reported ambulatory medical visits in excess of eight million for FY 2001. Tucson reported the fewest ambulatory medical visits with 132,050 and Oklahoma had the most with 1,460,570. The supplementary classification – an ambulatory visit that does not directly deal with an injury or disease, but rather includes such preventative care as well-child visits, vaccinations, physical examinations, tests only (lab, x-ray, screening), hospital, medical, or surgical follow-up, and prescription refills – led as the number-one cause of ambulatory medical visits for all IHS Area. Most Areas evidenced a significant increase in supplementary classification visits during FY 2001; a change in the IHS prescription refill policy (from a 90-day prescription to a 30-day prescription) accounts for the increase.

In FY 2001, 83.3 percent of AI/AN children 3–27 months and residing in the IHS service area received all required immunizations. In the general population in FY 2001, 73.7 percent of children aged 19 to 35 months received all required immunizations. The Alaska Area had the lowest IHS rate at 75.5 percent, while the Billings Area had the highest rate, 91.5.

In FY 2001, over 2.7 million dental services were provided at IHS and Tribal direct and contract facilities, as reported to the IHS central database. Two IHS Areas provided 29.4 percent of these dental services, Navajo (376,867) and Oklahoma (419,679).

# Sources and Limitations of Data

## Population Statistics

Registered AI/AN patients with at least one direct or contract inpatient stay, outpatient visit, or dental visit during the last three years are defined as users. IHS user population estimates are drawn from data in the IHS Patient Registration System. First implemented in 1984, the Patient Registration System functioned adequately for many years; but, in recent years, system changes resulted in registration record errors. New system-wide improvements were implemented. From August through December 2001 local facilities re-sent complete and up-to-date information for all patients who had ever received direct or contract health services from IHS or Tribally-operated programs to a central data repository. Data matching software was then applied to the information, allowing for the identification and removal of duplicate records. Thanks to the dedicated efforts of area statistical officers and information technologists alike, this publication contains some of the most accurate user population estimates ever produced.

The IHS user population estimates shown in this publication should be contrasted with the IHS service population (eligible population) estimates, which are shown in the *Trends in Indian Health* publication. The service population estimates are based on official U.S. Census Bureau county data, representing self-identified AI/AN people who may or may not use

IHS services. IHS service populations between census years (e.g., 1980 and 1990) are estimated using a smoothing technique in order to show a gradual transition between census years. This normally results in upward revisions to service population figures projected prior to a census, since each Census tends to do a better job in enumerating AI/AN people. IHS service populations beyond the latest census year (1990) are projected through linear regression techniques, using the most current ten years of AI/AN birth and death data provided by the National Center for Health Statistics (NCHS), Centers for Disease Control and Prevention (CDC).

IHS user population figures are used for calculating IHS patient care rates. However, since state birth and death certificates do not provide information on use of IHS services, IHS service population figures are used in calculating AI/AN vital event rates for the IHS service areas.

The social and economic data contained in this publication are from the 1990 census and reflect the characteristics of persons self-identifying as AI/AN.



## Vital Event Statistics

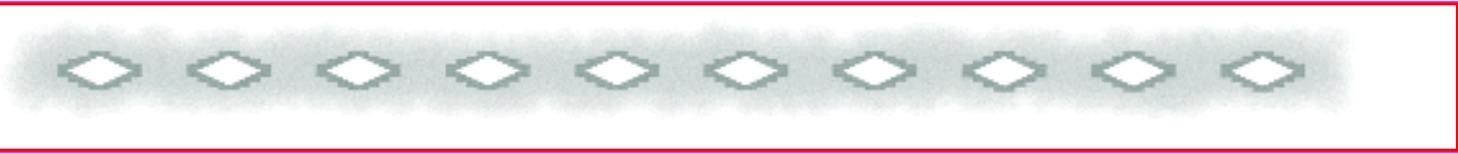
AI/AN vital event statistics are derived from data provided annually to the IHS by NCHS. Vital event statistics for the U.S. population were derived from data reported in various NCHS publications,<sup>2,3,4</sup> as well as from some unpublished data from NCHS.<sup>5</sup> NCHS obtains birth and death records for all U.S. residents from state health departments, based on information reported on official state birth and death certificates. The records NCHS provides to IHS contain the same basic demographic items as the vital event records maintained by NCHS for all U.S. residents, but with names, addresses, and record identification numbers deleted. It should be noted that Tribal identity is not recorded on these records.

The natality and mortality data are only as accurate as the reporting by the states to NCHS. NCHS does perform numerous edit checks, applies verification methods, and imputes values for non-responses.<sup>2</sup>

Misreporting of AI/AN race on state death certificates occurs, especially in areas distant from traditional AI/AN reservations.<sup>7</sup> In order to determine the degree and scope of the misreporting, IHS conducted a study utilizing the National Death Index (NDI) maintained by the NCHS. The study involved matching IHS patient records of those patients who could have died during 1986 through 1988 with all death records of U.S. residents for 1986 through 1988 as contained on the NDI. The results were published in a document entitled, *Adjusting for Miscoding of Indian Race on State Death Certificates*, November 1996.<sup>1</sup> The study revealed

that on 10.9 percent of the matched IHS-NDI records, the race reported for the decedent was other than AI/AN. The percentage of records with inconsistent classification of race ranged from 1.2 percent in the Navajo Area to 28.0 and 30.4 percent in the Oklahoma and California Areas, respectively.

The results of the NDI study provide sufficient numbers to calculate adjustments for each IHS Area, IHS overall, and selected age groups. In addition to these adjustments based on the study findings, IHS assumed the following: a) the results from 1986-88 apply to other years; b) IHS age-group adjustments applied also to each Area; and c) the Area adjustments applied to the causes of death used in this publication, i.e. if an Area's total deaths needed to be increased by ten percent, then the deaths for each cause of death would also increase by this same rate. These assumptions cannot be statistically supported by the results of the study. However, it was necessary to adjust all the death rates in this publication to provide a meaningful and comprehensive look at health status.




These NDI adjustments were used for the first time in the 1997 edition of this publication. Both unadjusted and adjusted information are shown, as applicable. The adjustments were applied to the results obtained from using an unadjusted death file. IHS has more specific adjustment factors for the age group less than one year. These are derived from the linked birth/infant death data sets produced by the NCHS. In this edition unadjusted and adjusted infant mortality rates will be shown. It is reasonably assumed that data years for which linked data sets were not produced (NCHS did not produce linked data sets prior to data year 1983 and for data years 1992-94) may be adjusted based on the results from other linked data sets. These adjustments based on the linked data sets take precedent over the NDI adjustments for the under one-year age group, described above.

Nativity statistics are based on the total file of birth records occurring in the U.S. each year. Mortality statistics are based on the total file of registered deaths occurring in the U.S. each year. Tabulations of vital events for IHS Areas are by place of residence.

The AI/AN vital event statistics in this publication pertain only to AI/AN people residing in the counties that make up the IHS service area, in contrast to earlier editions of the *Trends in Indian Health* publication which showed vital event statistics for all AI/AN people residing in the Reservation States. Calculations done on a

Reservation State basis include all counties within the State, even those outside the IHS service area. Reservation State vital event rates tend to be lower in value (i.e., lower birth rates, lower death rates) than IHS service area rates. Since prior to 1972, only Reservation State data were available; these data were used to show trends going back to 1955, the inception of the IHS. However, now that sufficient vital event data are available for the IHS service area to show meaningful trends, the *Trends in Indian Health* publication, beginning with the 1992 edition, shows vital event statistics for the IHS service population. IHS service area data are more indicative of the health status of the AI/AN people that IHS serves.

The AI/AN population is considerably younger than the U.S. All-races population. Death rates presented in this publication have been age-adjusted to the 1940 standard population, where applicable, so that appropriate comparisons can be made between these population groups. One exception is the information presented for leading causes of death: In order to determine the leading causes of death for a population group, it is necessary to rank causes of death without any adjustment for age. However, it should be kept in mind that the ranking of causes of death for a population group is affected by its age composition. Future publications will utilize the new age-adjustment standard – the estimated 2000 U.S. standard population.



All age-adjusted death rates calculated using a small number of deaths should be interpreted with caution as the observed rate may be quite different from the true underlying rate. This occasionally occurred when an Area rate was calculated for a specific cause of death, e.g., tuberculosis. Any rate based upon fewer than twenty deaths may not be reliable as the sample will be too small.

Prior to the 1993 edition of this publication, alcohol-related deaths were defined through the use of three ICD-9 cause of death code groups: 291 – alcoholic psychoses; 303 – alcohol dependence syndrome and; 571.0–571.3 – alcoholic liver disease. Various IHS Area statisticians and epidemiologists believed this definition to be incomplete and suggested that it be expanded to include five additional ICD-9 code categories. These categories were used for the first time in the 1993 edition and include: 305.0 – alcohol overdose; 425.5 – alcoholic cardiomyopathy; 535.3 – alcoholic gastritis; 790.3 – elevated blood-alcohol level; and E860.0, E860.1 – accidental poisoning by alcohol, not elsewhere classified. The expanded definition results in about a 25-percent increase in the number of alcohol-related deaths identified in comparison to the previous three-group definition. NCHS

is now publishing alcohol-related deaths with a definition that includes codes that IHS had not used, i.e., 357.5 – alcoholic polyneuropathy and all of E860 (not just E860.0 and E860.1) – accidental poisoning by alcohol. To be consistent with NCHS, these additional codes are now used by IHS starting with the 1996 edition. The NCHS definition of alcohol-related deaths includes all of the code groups previously used by IHS plus these new codes and is now used in all IHS publications, including *Trends in Indian Health*.

NCHS also publishes drug-related deaths with a definition that includes codes that IHS had not used, i.e., 292 – drug psychoses – and E962.0 – assaults from poisoning by drugs and medicaments.<sup>3</sup> The NCHS definition includes all of the code groups previously used by IHS plus these two codes. To be consistent with NCHS, these additional codes are now used by IHS starting with the 1996 edition. The NCHS definition of drug-related deaths is now used in all IHS publications, including *Trends in Indian Health*.





## Patient Care Statistics

Patient care statistics are derived from many IHS reporting systems.

### Monthly Inpatient Services Report

A patient census report prepared by each IHS hospital indicating the number of discharges and days by type of service (e.g., adult, pediatric, obstetric, newborn), used for direct inpatient workload statistics.

### Direct Inpatient Care System

The source of IHS hospital inpatient data pertaining to various patient characteristics (age, sex, principal diagnoses, other diagnoses, community of residence, etc.), collected daily, one record per discharge.

### Direct Ambulatory Patient Care System

The source of data pertaining to the number of ambulatory medical visits at IHS facilities by various patient characteristics (age, sex, clinical impression, community of residence, etc.). The data are collected daily, one record per ambulatory medical visit.

### Contract Care System

Provides ambulatory and inpatient contract care data similar to the Direct Inpatient Care and the Direct Ambulatory Patient Care systems. The data are collected through the Contract Health System and may be reported directly or through the IHS Fiscal Intermediary (FI).

### Immunization Data

Information obtained by IHS Area Immunization Coordinators from facility quarterly reports.

### Dental Data System

The source for dental services data, monitored by IHS Headquarters dental personnel.

### Tuberculosis Data

Based on cases reported to the Centers for Disease Control and Prevention.

The data from these systems are subject to recording, inputting, and transmitting errors. However, the IHS Program Statistics Team closely monitors the reporting systems, and each is computer edited. In these ways, errors are kept to an acceptable level.



# Glossary

**Age-Adjustment (direct method):** The application of age-specific rates in a population of interest to a standardized age distribution in order to eliminate differences in observed rates that result from age differences in population composition. This adjustment is usually done when comparing two or more populations at one point in time or one population at two or more points in time.<sup>6</sup>

**Area:** A defined geographic region for Indian Health Service (IHS) administrative purposes. Each Area Office administers several service units

**Average Daily Patient Load:** The average number of patients occupying beds in a hospital on a daily basis. It is calculated by dividing total inpatient days for the year by 365.

**Birthweight:** Weight of fetus or infant at time of delivery (recorded in pounds and ounces, or grams).

**Cause of Death:** For the purpose of national mortality statistics, every death is attributed to one underlying condition, based on information reported on the death certificate and using the international rules for selecting the underlying cause of death from the conditions stated on the death certificate. The underlying cause is defined by the World Health Organization (WHO) as the disease or injury that initiated the train of events leading directly to death, or the circumstances of the accident or violence, which produced the fatal injury. Generally, more


medical information is reported on death certificates than is directly reflected in the underlying cause of death. The conditions that are not selected as underlying cause of death constitute the non-underlying cause of death, also known as multiple cause of death. Cause of death is coded according to the appropriate revision of the International Classification of Diseases (ICD). Effective with deaths occurring in 1999, the United States began using the Tenth Revision of the ICD (ICD-10); during the period 1979-98, causes of death were coded and classified according to the Ninth Revision (ICD-9). Each of these revisions has produced discontinuities in cause-of-death trends. These discontinuities are measured using comparability ratios.<sup>7</sup>

**Contract Care:** Services not available directly from IHS or Tribes that are purchased under contract from community hospitals and practitioners.

**Health Center:** A facility, physically separated from a hospital, with a full range of ambulatory services including at least primary care physicians, nursing, pharmacy, laboratory, and x-ray, which are available at least forty hours a week for ambulatory care.

**Health Station:** A facility, physically separated from a hospital or health center, where primary care physician services are available on a regularly scheduled basis but for less than forty hours a week.

**High Birthweight:** Birthweight of 4,000 grams or more.



**Infant Mortality:** The death of a live-born child before his or her first birthday. Deaths in the first year of life may be further classified according to age as neonatal and postneonatal. Neonatal deaths are those that occur before the 28th day of life; postneonatal deaths are those that occur between 28 and 365 days of age.

**Infant Mortality Rate:** A rate based on period files calculated by dividing the number of infant deaths during a calendar year by the number of live births reported in the same year. It is expressed as the number of infant deaths per 1,000 live births.<sup>8</sup>

**Life Expectancy:** Life expectancy is the average number of years of life remaining to a person at a particular age and is based on a given set of age-specific death rates, generally the mortality conditions existing in the period mentioned. Life expectancy may be determined by race, sex, or other characteristics using age-specific death rates for the population with that characteristic.<sup>9</sup>

**Live Birth:** In the WHO's definition, also adopted by the United Nations and the National Center for Health Statistics, a live birth is the complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of the pregnancy, which, after such separation, breathes or shows any other evidence of life such as heartbeat, umbilical cord pulsation, or definite movement of voluntary muscles, whether the umbilical cord has been cut or the placenta is attached. Each product of such a birth is considered live born.<sup>10</sup>

**Low Birthweight:** Birthweight of less than 2,500 grams.

**Maternal Death:** The death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and the site of the pregnancy. Maternal death is one for which the certifying physician has designated a maternal condition as the underlying cause of death. Maternal conditions are those assigned to Complications of Pregnancy, Childbirth, and the Puerperium, ICD-9 codes 630-676 (ICD-10 codes O00-O99).<sup>11</sup>

**Neonatal Mortality Rate:** The number of deaths under 28 days of age per 1,000 live births.


**Occurrence:** Place where the event occurred.

**Postneonatal Mortality Rate:** The number of deaths that occur from 28 days to 365 days after birth per 1,000 live births.

**Race:** In 1977 the Office of Management and Budget (OMB) issued Race and Ethnic Standards for Federal Statistics and Administrative Reporting in order to promote comparability of data among Federal data systems. The standards called for the Federal Government's data systems to classify individuals into the following four racial groups:

- American Indian or Alaska Native
- Asian or Pacific Islander
- Black
- White

Depending on the data source, the classification by race was based on self-classification or on observation by an interviewer or other person filling out the questionnaire.



In 1997 new standards were announced for classification of individuals by race within the Federal Government's data systems. The latest standards have five racial groups:

- American Indian or Alaska Native
- Asian
- Black or African American
- Native Hawaiian or other Pacific Islander
- White

These five categories are the minimum set for data on race for Federal statistics. The 1997 standards also offer an opportunity for respondents to select more than one of the five groups, leading to many possible multiple race categories. As with the single race groups, data for the multiple race groups are to be reported when estimates meet agency requirements for reliability and confidentiality. The 1997 standards allow for observer or proxy identification of race but clearly state a preference for self-classification. The Federal government considers race and Hispanic origin to be two separate and distinct concepts. Thus Hispanics may be of any race. Federal data systems are required to comply with the 1997 Standards by 2003.<sup>12</sup>

On the death certificate, race is usually recorded by the funeral director who may or may not query the family members of the decedent. The race of a newborn does not appear on the birth certificate. To determine race on the birth certificate, if either the mother, or the father, or both parents were recorded as AI/AN on the birth certificate, the birth is considered as an AI/AN birth.

**Reservation State:** A state in which IHS has responsibilities for providing health care to American Indians or Alaska Natives.

**Residence:** Usual place of residence of a person to whom an event occurred. For births and deaths, residence is defined as the mother's place of residence.

**Service Area:** The geographic areas in which IHS has responsibilities – “on or near” reservations, i.e., contract health service delivery areas.

**Service Population:** AI/AN people identified to be eligible for IHS services.

**Service Unit:** The local administrative unit of IHS.

**User Population:** AI/AN people who have used IHS services at least once during the last three-year period.

**Years of Potential Life Lost (YPLL):** A mortality indicator that measures the burden of premature deaths, calculated by subtracting the age at death from age 65 and summing the result over all deaths.



## Sources of Additional Information

Additional AI/AN health status information can be obtained from the IHS Program Statistics Team. Specific responsibilities are as follows:

### General Information

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Copies of this and other statistical publications may be obtained from Kateri L. Gachupin, Secretary at:

Indian Health Service  
Office of Public Health  
Office of Program Support  
Division of Program Statistics  
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Rockville, Maryland 20852

Phone (301) 443-1180  
Fax (301) 443-4087/1522

This publication, other IHS statistical publications, and links to IHS data files are available on the Division of Program Statistics website at:

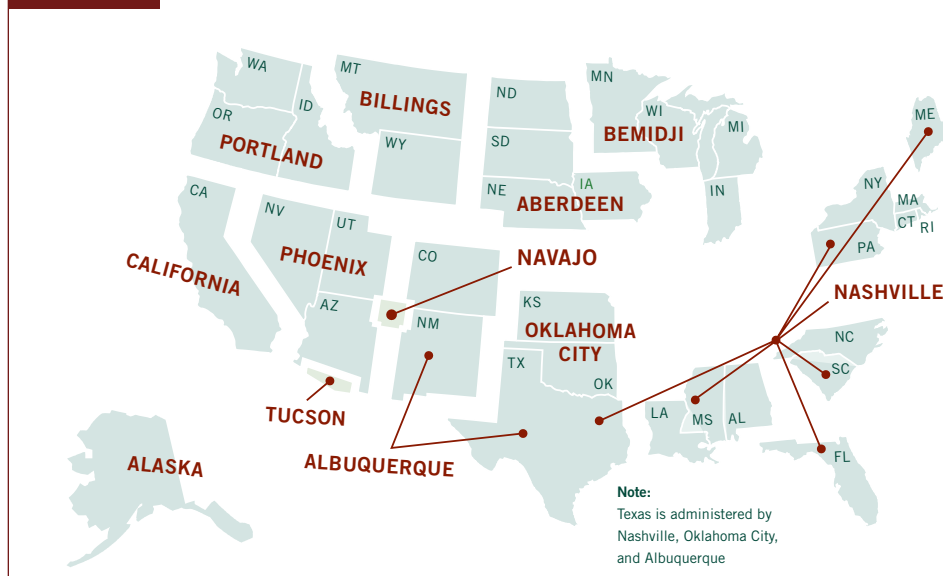
[http://www.ihs.gov/NonMedicalPrograms/IHS\\_Stats/](http://www.ihs.gov/NonMedicalPrograms/IHS_Stats/)

# Part 1

## Indian Health Service Structure

The Indian Health Service is comprised of twelve regional administrative units called Area Offices. IHS responsibilities extend to all or parts of 35 states known as Reservation States.

**Chart 1.1 Indian Health Service Area Offices**



Indian Health Service operated 36 hospitals, 59 health centers, two school health centers, and 49 health stations as of October 1, 2001. Tribes can operate a facility under a P.L. 93-638 self-determination contract (Title I), or P.L. 106-260 Tribal Self-Governance Amendment of 2000 (Title V), or – in Alaska only – a Non-638 village clinic. Tribes operated thirteen hospitals (Title I, two hospitals and Title V, eleven hospitals), 172 health centers (Title I, 108 and Title V, 64), three school health centers (Title I, two and Title V, one), 84 health stations (Title I, 55 and Title V, 29), and 176 Alaska village clinics (Title I, nine, Title V, 160, and Non-638 Contract, seven).

**Chart 1.2 Number of Service Units and Facilities**

*Operated by IHS and Tribes, October 1, 2001*

| Type of Facility       | Total | IHS | Tribal |     |     |                  |
|------------------------|-------|-----|--------|-----|-----|------------------|
|                        |       |     | Total  | I   | V   | Non-638 Contract |
| Service Units          | 155   | 63  | 92     | —   | —   | —                |
| Hospitals              | 49    | 36  | 13     | 2   | 11  | —                |
| Ambulatory Facilities  | 545   | 110 | 435    | 174 | 254 | 7                |
| Health Centers         | 231   | 59  | 172    | 108 | 64  | —                |
| School Health Centers  | 5     | 2   | 3      | 2   | 1   | —                |
| Health Stations        | 133   | 49  | 84     | 55  | 29  | —                |
| Alaska Village Clinics | 176   | —   | 176    | 9   | 160 | 7                |

I – operated under Title I, P.L. 93-638 Self-Determination Contracts

V – operated under Title V, P.L. 106-260 Tribal Self-Governance Amendment of 2000

Non-638 Contract – A mechanism used by Alaska to fund tribally operated clinics not eligible for Title I funding

In the Aberdeen Area, Indian Health Service operated eight hospitals, fourteen health centers, two school health centers, and fifteen health stations as of October 1, 2001. Tribes operated six health centers, one school health center, and three health stations, all under Title I.

**Chart 1.3**

**Number of Service Units and Facilities**

*Operated by Aberdeen Area and Tribes, October 1, 2001*

| Type of Facility             | Total | IHS | Total | Tribal |   |
|------------------------------|-------|-----|-------|--------|---|
|                              |       |     |       | I      | V |
| Service Units                | 18    | 13  | 5     | —      | — |
| Hospitals                    | 8     | 8   | —     | —      | — |
| Ambulatory Facilities        | 31    | 21  | 10    | 10     | — |
| <i>Health Centers</i>        | 14    | 8   | 6     | 6      | — |
| <i>School Health Centers</i> | 2     | 1   | 1     | 1      | — |
| <i>Health Stations</i>       | 15    | 12  | 3     | 3      | — |

I – operated under Title I, P.L. 93-638 Self-Determination Contracts

V – operated under Title V, P.L. 106-260 Tribal Self-Governance Amendment of 2000

In the Alaska Area, Indian Health Service did not operate any facilities as of October 1, 2001. Tribes operated seven hospitals, 24 health centers (Title I, six and, Title V, 18), and 176 village clinics (Title I, nine; Title V, 160; and Non-638 Contract, seven).

**Chart 1.4**

**Number of Service Units and Facilities**

*Operated by Alaska Area and Tribes, October 1, 2001*

| Type of Facility              | Total | IHS | Total | Tribal |     |                  |
|-------------------------------|-------|-----|-------|--------|-----|------------------|
|                               |       |     |       | I      | V   | Non-638 Contract |
| Service Units                 | 9     | —   | 9     | —      | —   | —                |
| Hospitals                     | 7     | —   | 7     | —      | 7   | —                |
| Ambulatory Facilities         | 200   | —   | 200   | 15     | 178 | 7                |
| <i>Health Centers</i>         | 24    | —   | 24    | 6      | 18  | —                |
| <i>School Health Centers</i>  | —     | —   | —     | —      | —   | —                |
| <i>Health Stations</i>        | —     | —   | —     | —      | —   | —                |
| <i>Alaska Village Clinics</i> | 176   | —   | 176   | 9      | 160 | 7                |

I – operated under Title I, P.L. 93-638 Self-Determination Contracts

V – operated under Title V, P.L. 106-260 Tribal Self-Governance Amendment of 2000

Non-638 Contract – A mechanism used by Alaska to fund tribally operated clinics not eligible for Title I funding

In the Albuquerque Area, Indian Health Service operated five hospitals, eight health centers, and seven health stations as of October 1, 2001. Tribes operated four health centers and one health station, all under Title I.

**Chart 1.5**

**Number of Service Units and Facilities**

*Operated by Albuquerque Area and Tribes, October 1, 2001*

| Type of Facility             | Total | IHS | Total | Tribal |   |
|------------------------------|-------|-----|-------|--------|---|
|                              |       |     |       | I      | V |
| Service Units                | 9     | 8   | 1     | —      | — |
| Hospitals                    | 5     | 5   | —     | —      | — |
| Ambulatory Facilities        | 20    | 15  | 5     | 5      | — |
| <i>Health Centers</i>        | 12    | 8   | 4     | 4      | — |
| <i>School Health Centers</i> | —     | —   | —     | —      | — |
| <i>Health Stations</i>       | 8     | 7   | 1     | 1      | — |

I – operated under Title I, P.L. 93-638 Self-Determination Contracts

V – operated under Title V, P.L. 106-260 Tribal Self-Governance Amendment of 2000

In the Bemidji Area, Indian Health Service operated two hospitals, four health centers, and two health stations as of October 1, 2001. Tribes operated 24 health centers (Title I, fourteen and Title V, ten) and eleven health stations (Title I, seven and Title V, four).

**Chart 1.6**

**Number of Service Units and Facilities**

*Operated by Bemidji Area and Tribes, October 1, 2001*

| Type of Facility             | Total | IHS | Total | Tribal |    |
|------------------------------|-------|-----|-------|--------|----|
|                              |       |     |       | I      | V  |
| Service Units                | 14    | 3   | 11    | —      | —  |
| Hospitals                    | 2     | 2   | —     | —      | —  |
| Ambulatory Facilities        | 41    | 6   | 35    | 21     | 14 |
| <i>Health Centers</i>        | 28    | 4   | 24    | 14     | 10 |
| <i>School Health Centers</i> | —     | —   | —     | —      | —  |
| <i>Health Stations</i>       | 13    | 2   | 11    | 7      | 4  |

I – operated under Title I, P.L. 93-638 Self-Determination Contracts

V – operated under Title V, P.L. 106-260 Tribal Self-Governance Amendment of 2000

In the Billings Area, Indian Health Service operated three hospitals, seven health centers, and three health stations as of October 1, 2001. Tribes operated three health centers and four health stations, all under Title V.

**Chart 1.7**

**Number of Service Units and Facilities**

*Operated by Billings Area and Tribes, October 1, 2001*

| Type of Facility             | Total | IHS | Total | Tribal |   |
|------------------------------|-------|-----|-------|--------|---|
|                              |       |     |       | I      | V |
| Service Units                | 6     | 6   | —     | —      | — |
| Hospitals                    | 3     | 3   | —     | —      | — |
| Ambulatory Facilities        | 17    | 10  | 7     | —      | 7 |
| <i>Health Centers</i>        | 10    | 7   | 3     | —      | 3 |
| <i>School Health Centers</i> | —     | —   | —     | —      | — |
| <i>Health Stations</i>       | 7     | 3   | 4     | —      | 4 |

I – operated under Title I, P.L. 93-638 Self-Determination Contracts

V – operated under Title V, P.L. 106-260 Tribal Self-Governance Amendment of 2000

In the California Area, Indian Health Service did not operate any facilities as of October 1, 2001. Tribes operated 45 health centers (Title I, 42 and Title V, three) and sixteen health stations (Title I, fourteen, Title V, two).

**Chart 1.8**

**Number of Service Units and Facilities**

*Operated by California Area and Tribes, October 1, 2001*

| Type of Facility             | Total | IHS | Total | Tribal |   |
|------------------------------|-------|-----|-------|--------|---|
|                              |       |     |       | I      | V |
| Service Units                | 27    | —   | 27    | —      | — |
| Hospitals                    | —     | —   | —     | —      | — |
| Ambulatory Facilities        | 61    | —   | 61    | 56     | 5 |
| <i>Health Centers</i>        | 45    | —   | 45    | 42     | 3 |
| <i>School Health Centers</i> | —     | —   | —     | —      | — |
| <i>Health Stations</i>       | 16    | —   | 16    | 14     | 2 |

I – operated under Title I, P.L. 93-638 Self-Determination Contracts

V – operated under Title V, P.L. 106-260 Tribal Self-Governance Amendment of 2000



In the Nashville Area, Indian Health Service operated one hospital and one health station as of October 1, 2001. Tribes operated one hospital (Title V), twenty health centers (Title I, nineteen and Title V, one), one school health center (Title I), and seven health stations (Title I, four and Title V, three).

**Chart 1.9**

**Number of Service Units and Facilities**

*Operated by Nashville Area and Tribes, October 1, 2001*

| Type of Facility             | Total | IHS | Total | Tribal |   |
|------------------------------|-------|-----|-------|--------|---|
|                              |       |     |       | I      | V |
| Service Units                | 23    | 1   | 22    | —      | — |
| Hospitals                    | 2     | 1   | 1     | —      | 1 |
| Ambulatory Facilities        | 29    | 1   | 28    | 24     | 4 |
| <i>Health Centers</i>        | 20    | —   | 20    | 19     | 1 |
| <i>School Health Centers</i> | 1     | —   | 1     | 1      | — |
| <i>Health Stations</i>       | 8     | 1   | 7     | 4      | 3 |

I – operated under Title I, P.L. 93-638 Self-Determination Contracts

V – operated under Title V, P.L. 106-260 Tribal Self-Governance Amendment of 2000

In the Navajo Area, Indian Health Service operated six hospitals, six health centers, one school health center, and fourteen health stations as of October 1, 2001. There were no Tribally-operated facilities as of October 1, 2001.

**Chart 1.10**

**Number of Service Units and Facilities**

*Operated by Navajo Area and Tribes, October 1, 2001*

| Type of Facility             | Total | IHS | Total | Tribal |   |
|------------------------------|-------|-----|-------|--------|---|
|                              |       |     |       | I      | V |
| Service Units                | 8     | 8   | —     | —      | — |
| Hospitals                    | 6     | 6   | —     | —      | — |
| Ambulatory Facilities        | 21    | 21  | —     | —      | — |
| <i>Health Centers</i>        | 6     | 6   | —     | —      | — |
| <i>School Health Centers</i> | 1     | 1   | —     | —      | — |
| <i>Health Stations</i>       | 14    | 14  | —     | —      | — |

I – operated under Title I, P.L. 93-638 Self-Determination Contracts

V – operated under Title V, P.L. 106-260 Tribal Self-Governance Amendment of 2000

In the Oklahoma Area, Indian Health Service operated four hospitals and ten health centers as of October 1, 2001. Tribes operated three hospitals (Title I, one and Title V, two), 28 health centers (Title I, six and Title V, 22), and one school health center (Title V).

**Chart 1.11**

**Number of Service Units and Facilities**

*Operated by Oklahoma Area and Tribes, October 1, 2001*

| Type of Facility      | Total | IHS | Total | Tribal |    |
|-----------------------|-------|-----|-------|--------|----|
|                       |       |     |       | I      | V  |
| Service Units         | 12    | 8   | 4     | —      | —  |
| Hospitals             | 7     | 4   | 3     | 1      | 2  |
| Ambulatory Facilities | 39    | 10  | 29    | 6      | 23 |
| Health Centers        | 38    | 10  | 28    | 6      | 22 |
| School Health Centers | 1     | —   | 1     | —      | 1  |
| Health Stations       | —     | —   | —     | —      | —  |

I – operated under Title I, P.L. 93-638 Self-Determination Contracts

V – operated under Title V, P.L. 106-260 Tribal Self-Governance Amendment of 2000

In the Phoenix Area, Indian Health Service operated six hospitals, six health centers, and six health stations as of October 1, 2001 Tribes operated two hospitals (Title I, one and Title V, one), ten health centers (Title I, nine and Title V, one), and fourteen health stations (Title I, eleven and Title V, three).

**Chart 1.12**

**Number of Service Units and Facilities**

*Operated by Phoenix Area and Tribes, October 1, 2001*

| Type of Facility      | Total | IHS | Total | Tribal |   |
|-----------------------|-------|-----|-------|--------|---|
|                       |       |     |       | I      | V |
| Service Units         | 11    | 7   | 4     | —      | — |
| Hospitals             | 8     | 6   | 2     | 1      | 1 |
| Ambulatory Facilities | 36    | 12  | 24    | 20     | 4 |
| Health Centers        | 16    | 6   | 10    | 9      | 1 |
| School Health Centers | —     | —   | —     | —      | — |
| Health Stations       | 20    | 6   | 14    | 11     | 3 |

I – operated under Title I, P.L. 93-638 Self-Determination Contracts

V – operated under Title V, P.L. 106-260 Tribal Self-Governance Amendment of 2000

In the Portland Area, Indian Health Service operated seven health centers as of October 1, 2000. Tribes operated eight health centers (Title I, two and Title V, six) and 28 health stations (Title I, fifteen and Title V, thirteen).

**Chart 1.13**

**Number of Service Units and Facilities**

*Operated by Portland Area and Tribes, October 1, 2001*

| Type of Facility             | Total | IHS | Total | Tribal |    |
|------------------------------|-------|-----|-------|--------|----|
|                              |       |     |       | I      | V  |
| Service Units                | 16    | 7   | 9     | —      | —  |
| Hospitals                    | —     | —   | —     | —      | —  |
| Ambulatory Facilities        | 43    | 7   | 36    | 17     | 19 |
| <i>Health Centers</i>        | 15    | 7   | 8     | 2      | 6  |
| <i>School Health Centers</i> | —     | —   | —     | —      | —  |
| <i>Health Stations</i>       | 28    | —   | 28    | 15     | 13 |

I – operated under Title I, P.L. 93-638 Self-Determination Contracts

V – operated under Title V, P.L. 106-260 Tribal Self-Governance Amendment of 2000

In the Tucson Area, Indian Health Service operated one hospital, three health centers, and four health stations as of October 1, 2000. Tribes did not operate any facilities as of October 1, 2001.

**Chart 1.14**

**Number of Service Units and Facilities**

*Operated by Tucson Area and Tribes, October 1, 2001*

| Type of Facility             | Total | IHS | Total | Tribal |   |
|------------------------------|-------|-----|-------|--------|---|
|                              |       |     |       | I      | V |
| Service Units                | 2     | 2   | —     | —      | — |
| Hospitals                    | 1     | 1   | —     | —      | — |
| Ambulatory Facilities        | 7     | 7   | —     | —      | — |
| <i>Health Centers</i>        | 3     | 3   | —     | —      | — |
| <i>School Health Centers</i> | —     | —   | —     | —      | — |
| <i>Health Stations</i>       | 4     | 4   | —     | —      | — |

I – operated under Title I, P.L. 93-638 Self-Determination Contracts

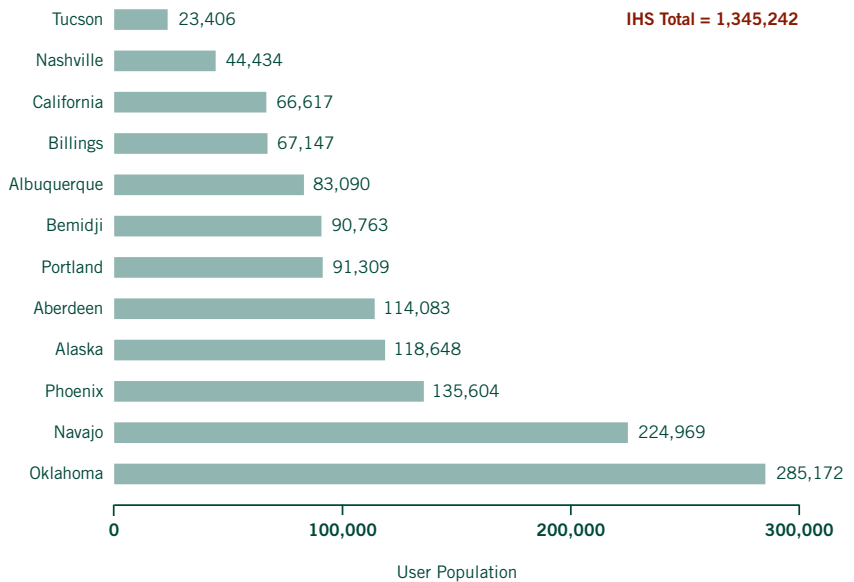
V – operated under Title V, P.L. 106-260 Tribal Self-Governance Amendment of 2000

## Part 2

# Population Statistics

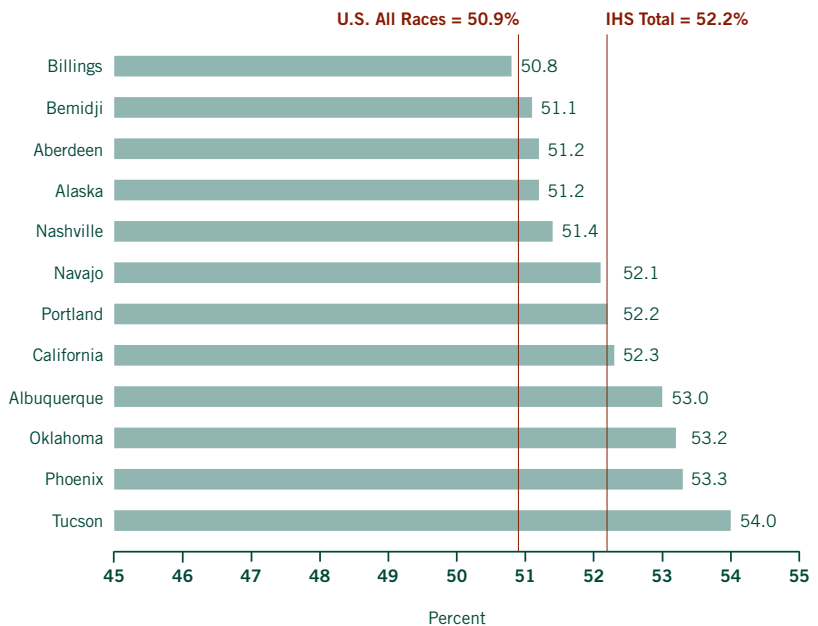
In FY 2001, the IHS user population – a count of those AI/AN people who used IHS services at least once during the last three-year period – was over 1.3 million. Approximately 38 percent of the user population was concentrated in two IHS Areas: Oklahoma and Navajo.

**Chart 2.1** IHS User Population, FY 2001



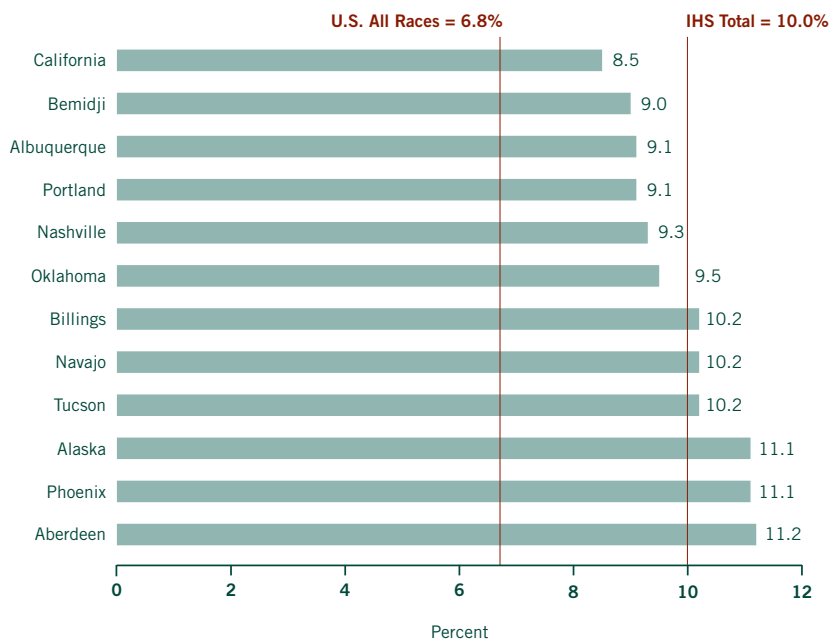
There was a slightly higher percentage of females in FY 2001 in the IHS user population than the U.S. all-races population (CY 2000). Phoenix and Tucson had the two highest percentages at 53.3 and 54.0, respectively.

**Chart 2.2** Percent of Females in User Population, FY 2001



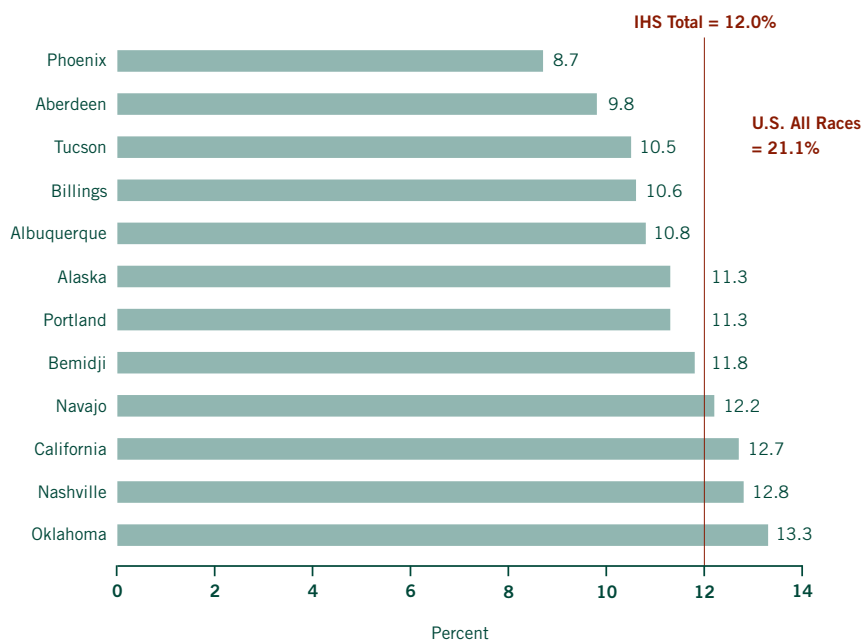
The IHS user population in FY 2001 was considerably younger than the U.S. all-races population (CY 2001). The California Area, which had the lowest percentage of population under age five (8.5), still had a percentage that was over 1.2 times the U.S. all-races percentage (10.0).

**Chart 2.3** Percent of User Population Under Age Five, FY 2001



In CY 2000, 21.1 percent of the U.S. all-races population was over age 54 compared to 12.0 for the IHS user population (FY 2001). Nashville and Oklahoma had the highest percentages for this age group, 12.8 and 13.3, respectively.

**Chart 2.4** Percent of User Population Over Age 54, FY 2001

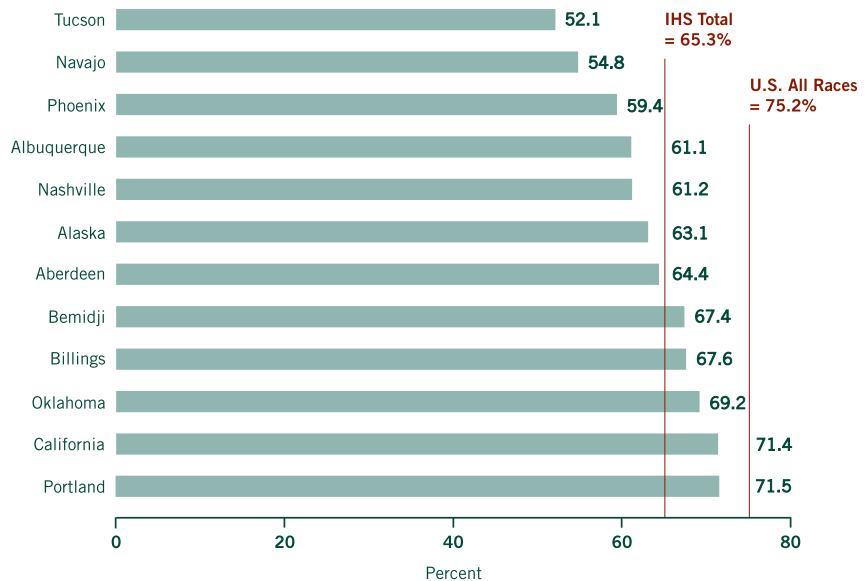


According to the 1990 Census, 65.3 percent of AI/AN people, age 25 and older, residing in the current Reservation States are high school graduates or higher compared to 75.2 percent for the U.S. all-races population. Tucson, Navajo, and Phoenix had percent-ages of less than 60.0.

**Chart 2.5**

### Percent High School Graduate or Higher

*Age 25 and Older, 1990 Census State-level American Indian/Alaska Native Data*



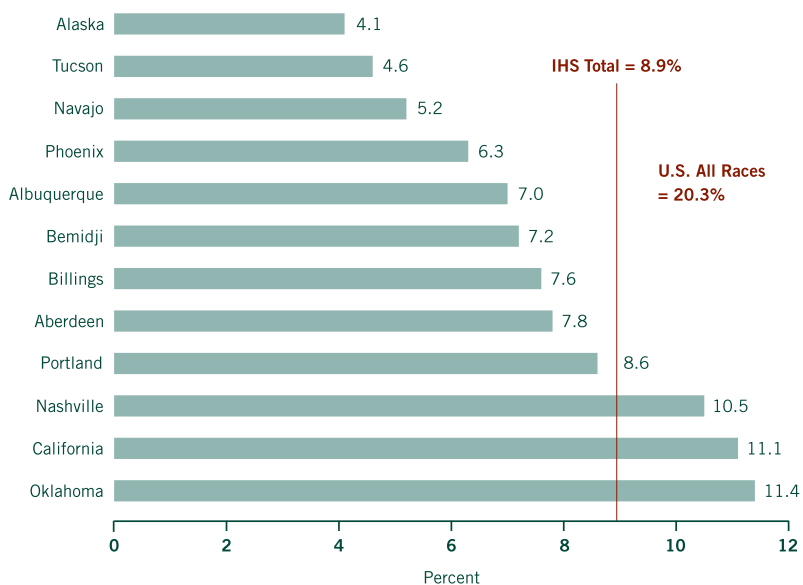
NOTE: Includes data for 35 Reservation States (South Carolina and Indiana were added as Reservation States in 1994 and 1995, respectively).

The 1990 Census indicated that 8.9 percent of AI/AN people, age 25 and older, residing in the current Reservation States have a bachelor's degree or higher. This is less than half the rate of U.S. all-races with a bachelor's degree (20.3 percent). The Area percentages ranged from 4.1 percent in Alaska to 11.4 percent in Oklahoma.

**Chart 2.6**

### Percent Bachelor's Degree or Higher

*Age 25 and Older, 1990 Census State-level American Indian/Alaska Native Data*



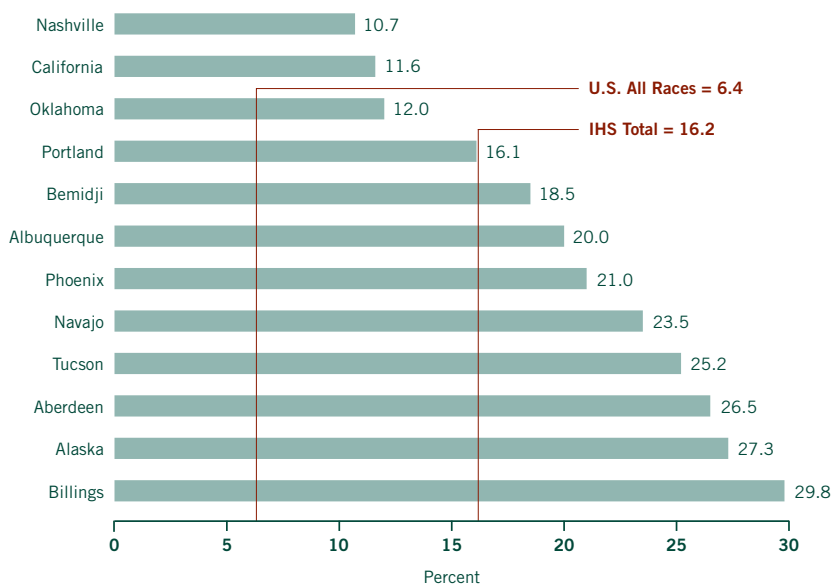
NOTE: Includes data for 35 Reservation States (South Carolina and Indiana were added as Reservation States in 1994 and 1995, respectively).

In 1990, 16.2 percent of AI/AN males, age sixteen and older, residing in the current Reservation States were unemployed compared to 6.4 percent for the U.S. all-races male population. Billings, Alaska, Aberdeen, and Tucson had unemployment rates greater than 25.0 percent.

**Chart 2.7**

### Percent of Males Unemployed

*Age 16 and Older, 1990 Census State-level American Indian/Alaska Native Data*



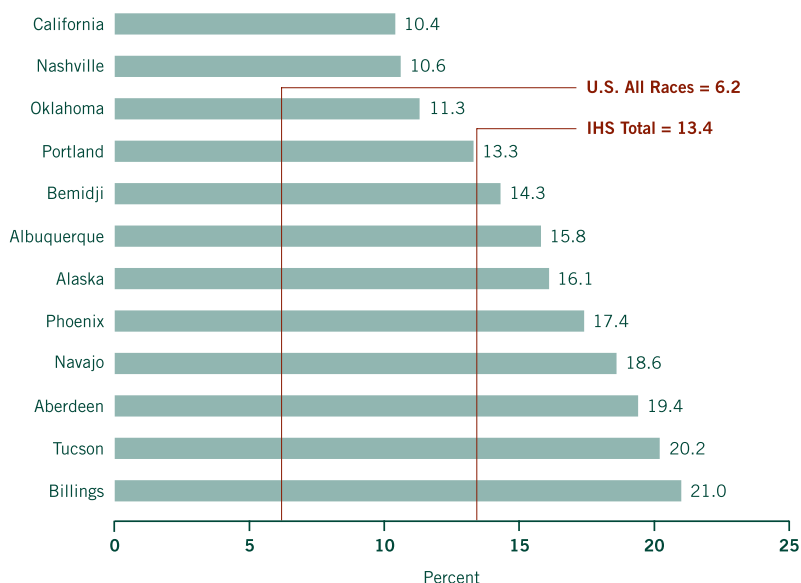
NOTE: Includes data for 35 Reservation States (South Carolina and Indiana were added as Reservation States in 1994 and 1995, respectively).

In 1990, 13.4 percent of AI/AN females, age sixteen and older, residing in the current Reservation States were unemployed a rate that is over two times greater than the U.S. all-races female population (6.2 percent). The Area unemployment rates ranged from 10.4 in California to 21.0 in Billings.

**Chart 2.8**

### Percent of Females Unemployed

*Age 16 and Older, 1990 Census State-level American Indian/Alaska Native Data*



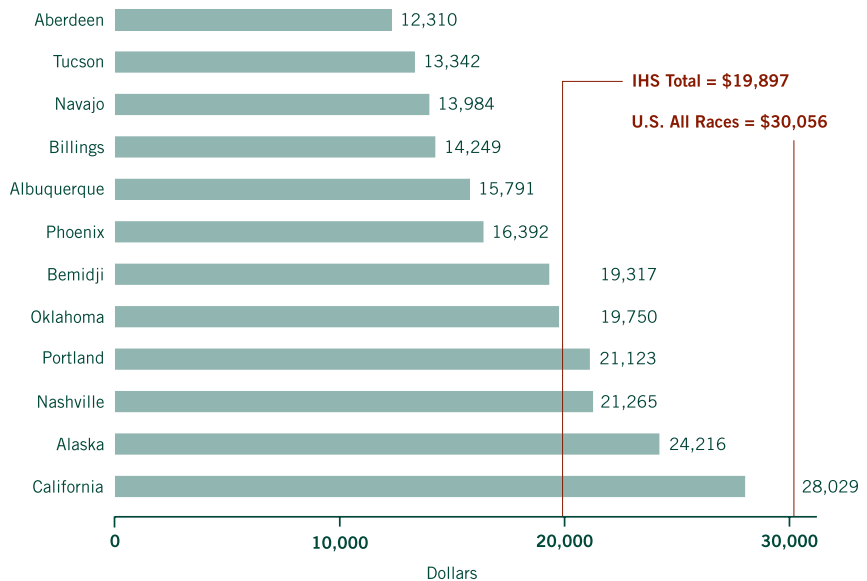
NOTE: Includes data for 35 Reservation States (South Carolina and Indiana were added as Reservation States in 1994 and 1995, respectively).

According to the 1990 Census, the median household income in 1989 for AI/AN people residing in the current Reservation States was \$19,897. This is two-thirds of the U.S. all-races figure for 1989 of \$30,056. Aberdeen, Tucson, Navajo, and Billings had median household incomes that were less than half the U.S. figure.

**Chart 2.9**

### Median Household Income in 1989

*1990 Census State-level American Indian/Alaska Native Data*



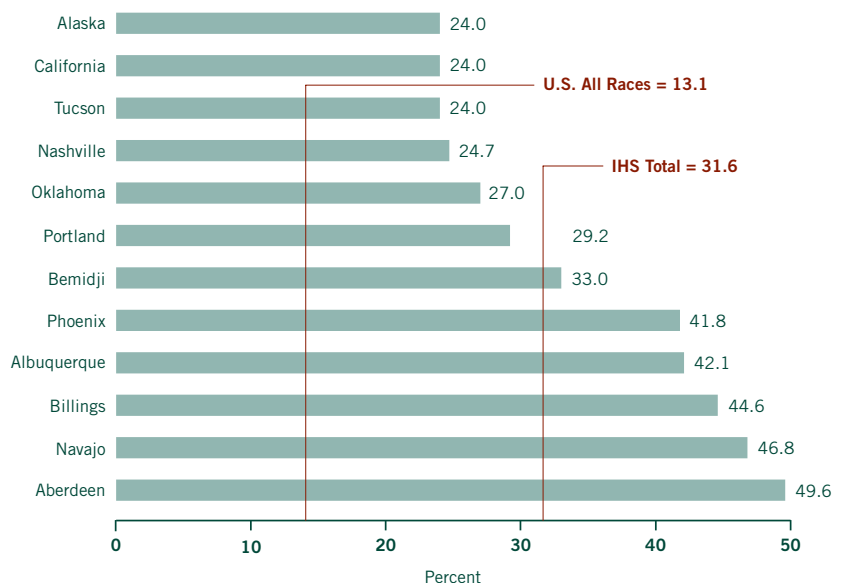
NOTE: Includes data for 35 Reservation States (South Carolina and Indiana were added as Reservation States in 1994 and 1995, respectively).

The 1990 Census indicated that almost one-third (31.6 percent) of AI/AN people residing in the current Reservation States were below the poverty level. This is 2.4 times the comparable U.S. all-races figure of 13.1 percent below the poverty level. Aberdeen, Navajo, Billings, Albuquerque, and Phoenix had percentages exceeding 40.0.

**Chart 2.10**

### Percent of Population Below Poverty Level

*1990 Census State-level American Indian/Alaska Native Data*



NOTE: Includes data for 35 Reservation States (South Carolina and Indiana were added as Reservation States in 1994 and 1995, respectively).



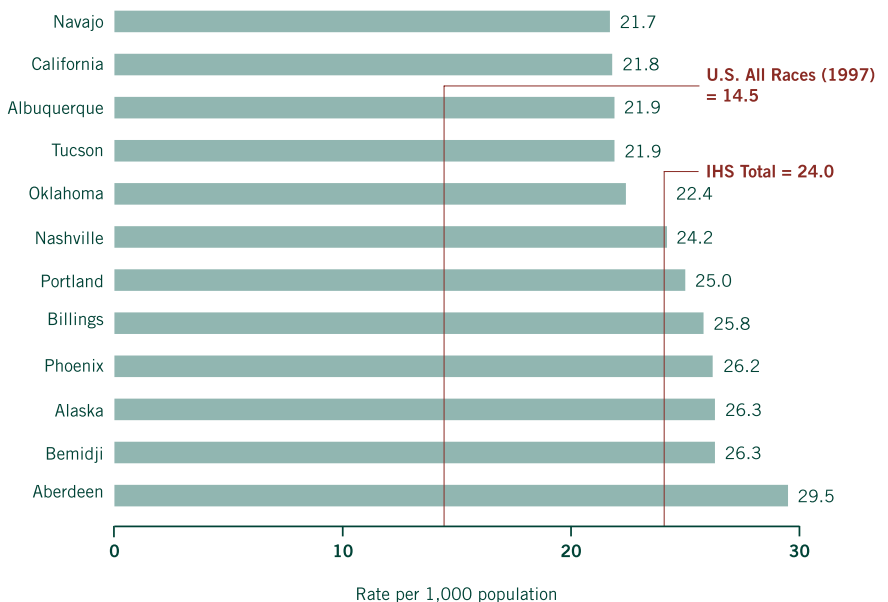
# Part 3    Natality & Infant/Maternal Mortality Statistics

The birth rate for the IHS service area population in 1996-98 was 1.7 times the rate for the U.S. all-races population in 1997, (24.0 percent and 14.5 percent, respectively). Even the IHS Area with the lowest birth rate (Navajo, 21.7) had a rate considerably greater than the U.S. all-races rate (fifty percent greater).

**Chart 3.1**

## Birth Rates

Calendar Years 1996-1998



**Table 3.1**

## Number and Rate of Live Births

Calendar Years 1996-1998

|                       | Number    | Rate <sup>1</sup> |
|-----------------------|-----------|-------------------|
| U.S. All Races (1997) | 3,880,894 | 14.5              |
| All IHS Areas         | 103,202   | 24.0              |
| Aberdeen              | 8,389     | 29.5              |
| Alaska                | 8,058     | 26.3              |
| Albuquerque           | 5,102     | 21.9              |
| Bemidji               | 6,495     | 26.3              |
| Billings              | 4,243     | 25.8              |
| California            | 8,075     | 21.8              |
| Nashville             | 5,298     | 24.2              |
| Navajo                | 13,739    | 21.7              |
| Oklahoma              | 19,972    | 22.4              |
| Phoenix               | 10,978    | 26.2              |
| Portland              | 11,046    | 25.0              |
| Tucson                | 1,807     | 21.9              |

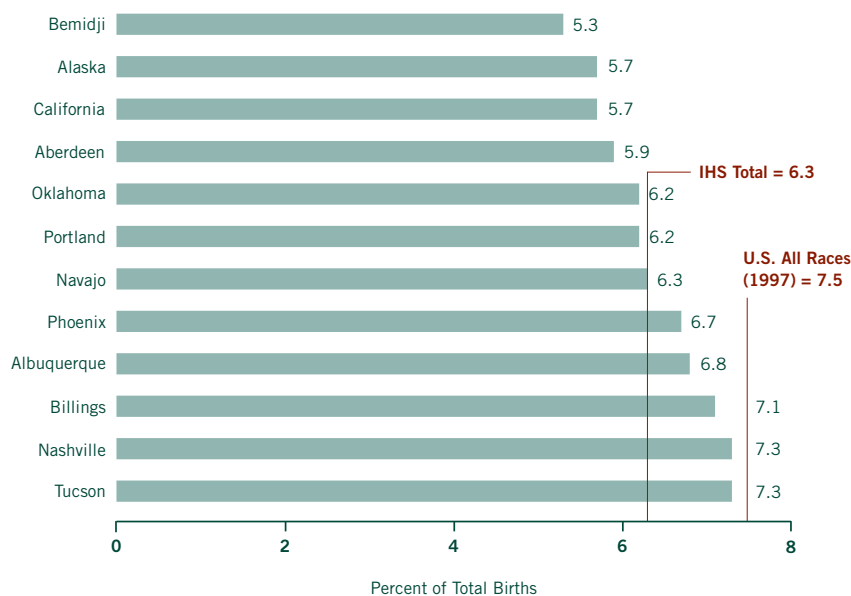
<sup>1</sup> Rate per 1,000 population.

For 1996–98, 6.3 percent of all AI/AN births in the IHS service area were considered low birthweight (less than 2,500 grams). This was better than the figure for the U.S. all-races population (7.5 percent in 1997). All IHS Areas had lower proportions of low birthweight births than the general population.

**Chart 3.2**

**Low Birthweight**

*Calendar Years 1996-1998*



**Table 3.2**

**Low Birthweight as a Percent of Total Live Births**

*Calendar Years 1996-1998*

|                              | Total Live Births <sup>1</sup> | Number Low Birthweight <sup>2</sup> | Percent Low Birthweight <sup>3</sup> |
|------------------------------|--------------------------------|-------------------------------------|--------------------------------------|
| <i>U.S. All Races (1997)</i> | <i>3,880,894</i>               | <i>291,154</i>                      | <i>7.5</i>                           |
| <i>All IHS Areas</i>         | <i>103,202</i>                 | <i>6,442</i>                        | <i>6.3</i>                           |
| Aberdeen                     | 8,389                          | 498                                 | 5.9                                  |
| Alaska                       | 8,058                          | 457                                 | 5.7                                  |
| Albuquerque                  | 5,102                          | 342                                 | 6.8                                  |
| Bemidji                      | 6,495                          | 345                                 | 5.3                                  |
| Billings                     | 4,243                          | 300                                 | 7.1                                  |
| California                   | 8,075                          | 461                                 | 5.7                                  |
| Nashville                    | 5,298                          | 384                                 | 7.3                                  |
| Navajo                       | 13,739                         | 860                                 | 6.3                                  |
| Oklahoma                     | 19,972                         | 1,238                               | 6.2                                  |
| Phoenix                      | 10,978                         | 740                                 | 6.7                                  |
| Portland                     | 11,046                         | 685                                 | 6.2                                  |
| Tucson                       | 1,807                          | 132                                 | 7.3                                  |

<sup>1</sup> Includes 4,028 U.S. All Races live births and 256 American Indian/Alaska Native live births with birthweight not stated.

<sup>2</sup> Births of less than 2,500 grams.

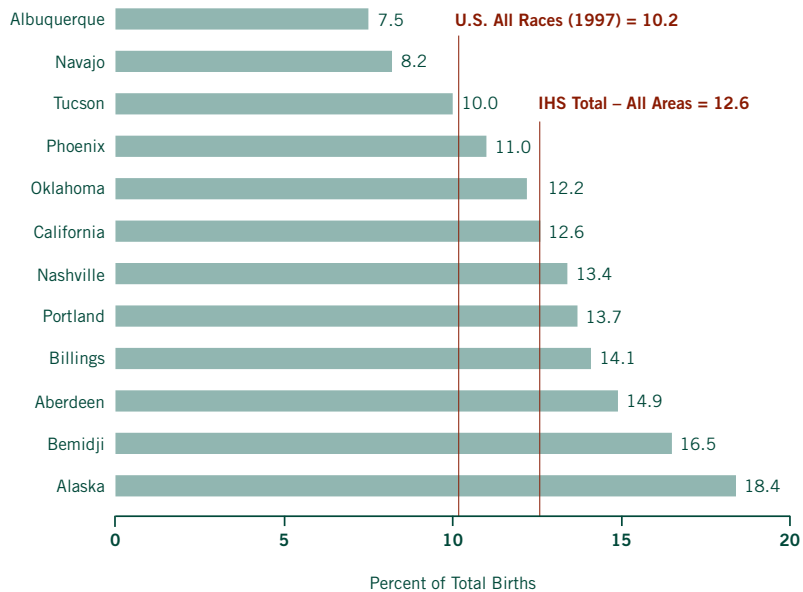
<sup>3</sup> Percent low weight based on live births with a birthweight reported.

The AI/AN population experiences more high birthweights than the U.S. all-races population. High birthweight may be a complication of diabetic pregnancies. In 1996-98, 12.6 percent of all births in the IHS service area were high birthweight (4,000 grams or more). In contrast, the U.S. all-races percentage was 2.4 percentage points lower (10.2 percent) in 1997. The rates varied considerably by Area ranging from 7.5 percent in Albuquerque to 18.4 percent in Alaska.

**Chart 3.3**

**High Birthweight**

*Calendar Years 1996-1998*



**Table 3.3**

**High Birthweight as a Percent of Total Live Births**

*Calendar Years 1996-1998*

|                              | Total Live Births <sup>1</sup> | Number High Birthweight <sup>2</sup> | Percent High Birthweight <sup>3</sup> |
|------------------------------|--------------------------------|--------------------------------------|---------------------------------------|
| <i>U.S. All Races (1997)</i> | 3,880,894                      | 394,799                              | 10.2                                  |
| <i>All IHS Areas</i>         | 103,202                        | 12,953                               | 12.6                                  |
| Aberdeen                     | 8,389                          | 1,249                                | 14.9                                  |
| Alaska                       | 8,058                          | 1,479                                | 18.4                                  |
| Albuquerque                  | 5,102                          | 381                                  | 7.5                                   |
| Bemidji                      | 6,495                          | 1,071                                | 16.5                                  |
| Billings                     | 4,243                          | 598                                  | 14.1                                  |
| California                   | 8,075                          | 1,021                                | 12.6                                  |
| Nashville                    | 5,298                          | 709                                  | 13.4                                  |
| Navajo                       | 13,739                         | 1,125                                | 8.2                                   |
| Oklahoma                     | 19,972                         | 2,423                                | 12.2                                  |
| Phoenix                      | 10,978                         | 1,203                                | 11.0                                  |
| Portland                     | 11,046                         | 1,513                                | 13.7                                  |
| Tucson                       | 1,807                          | 181                                  | 10.0                                  |

<sup>1</sup> Includes 4,028 U.S. All Races live births and 256 American Indian/Alaska Native live births with birthweight not stated.

<sup>2</sup> Births of 4,000 grams.

<sup>3</sup> Percent high weight based on live births with a birthweight reported.

During 1996–98, prenatal care began in the first trimester for 68.5 percent of AI/AN live births among the IHS service area population, which is over fourteen percent lower than the number of births with prenatal care among the U.S. all-races population (82.5 percent) in 1997. The percentages varied widely among IHS Areas, ranging from 56.4 for Navajo to 77.1 for Nashville.

**Chart 3.4**

**Prenatal Care in First Trimester**

*Calendar Years 1996–1998*



**Table 3.4**

**Prenatal Care in First Trimester**

*Calendar Years 1996–1998*

|                              | Total Live Births <sup>1</sup> | Live Births with Trimester Prenatal Care Began Reported | Live Births with Prenatal Care in the First Trimester <sup>2</sup> |         |
|------------------------------|--------------------------------|---|--|---------|
|                              |                                |   | Number   | Percent |
| <i>U.S. All Races (1997)</i> | 3,880,894                      | 3,780,202   | 3,119,693  | 82.5    |
| <i>All IHS Areas</i>         | 103,202                        | 99,729  | 68,287   | 68.5    |
| Aberdeen                     | 8,389                          | 8,260   | 5,610  | 67.9    |
| Alaska                       | 8,058                          | 7,929   | 6,074  | 76.6    |
| Albuquerque                  | 5,102                          | 4,761   | 3,007  | 63.2    |
| Bemidji                      | 6,495                          | 6,390   | 4,518  | 70.7    |
| Billings                     | 4,243                          | 4,203   | 2,798  | 66.6    |
| California                   | 8,075                          | 7,957   | 5,634  | 70.8    |
| Nashville                    | 5,298                          | 5,247   | 4,047  | 77.1    |
| Navajo                       | 13,739                         | 13,471  | 7,601  | 56.4    |
| Oklahoma                     | 19,972                         | 18,729  | 13,393   | 71.5    |
| Phoenix                      | 10,978                         | 10,731  | 6,937  | 64.6    |
| Portland                     | 11,046                         | 10,266  | 7,448  | 72.6    |
| Tucson                       | 1,807                          | 1,785   | 1,220  | 68.3    |

<sup>1</sup> Includes 100,692 U.S. All Races live births and 3,473 American Indian/Alaska Native live births for which trimester of pregnancy that prenatal care began was not reported on the state birth certificate.

<sup>2</sup> Percent based on live births with this information reported.

During 1996-98, 3.6 percent of mothers of AI/AN newborns drank alcohol during pregnancy (as reported on the birth certificate), more than three times the rate for mothers in the general population (1.1 percent) in 1997. The Alaska Area (8.7 percent) was 2.4 times the all IHS Area rate. The rate of alcohol use increased with age, with the exception of AI/AN mothers under-eighteen years who had a higher proportion of drinking during pregnancy than eighteen- to nineteen-year-old AI/AN mothers.

**Chart 3.5**

**Mothers Who Drank Alcohol During Pregnancy**



**Table 3.5**

**Percent of Mothers Who Drank Alcohol During Pregnancy<sup>1</sup> by Age of Mother**

Calendar Years 1996-1998

(Mothers who drank alcohol during pregnancy include those who drank even less than one drink per week during pregnancy.)

|                       | All Ages | Under 18 Years | 18-19 Years | 20-24 Years | 25-29 Years | 30-34 Years | 35-54 Years |
|-----------------------|----------|----------------|-------------|-------------|-------------|-------------|-------------|
| U.S. All Races (1997) | 1.1      | 0.7            | 0.8         | 0.9         | 1.0         | 1.4         | 2.0         |
| All IHS Areas         | 3.6      | 3.5            | 2.8         | 3.5         | 4.2         | 5.4         | 5.8         |
| Aberdeen              | 4.7      | 5.7            | 5.8         | 3.8         | 6.5         | 6.8         | 9.3         |
| Alaska                | 8.7      | 9.1            | 6.9         | 8.5         | 8.3         | 13.4        | 12.2        |
| Albuquerque           | 3.4      | 4.6            | 4.9         | 2.4         | 3.1         | 3.6         | 5.2         |
| Bemidji               | 4.6      | 3.8            | 3.4         | 3.8         | 5.3         | 6.3         | 10.6        |
| Billings              | 6.6      | 3.1            | 5.7         | 7.3         | 9.4         | 7.8         | 7.8         |
| California            | 3.1      | —              | —           | —           | —           | 33.3*       | —           |
| Nashville             | 1.3      | —              | 0.5         | 1.2         | 1.8         | 0.8         | 1.9         |
| Navajo                | 2.8      | 4.4            | 2.2         | 3.0         | 3.9         | 3.3         | 3.2         |
| Oklahoma              | 1.6      | 1.4            | 0.6         | 1.8         | 1.4         | 2.7         | 3.7         |
| Phoenix               | 3.4      | 3.7            | 3.4         | 2.8         | 4.7         | 5.7         | 5.2         |
| Portland              | 3.3      | 3.0            | 2.3         | 4.4         | 4.3         | 5.3         | 6.2         |
| Tucson                | 1.5      | 1.5            | 1.4         | 0.5         | 0.8         | 3.7         | 4.4         |

— Represents zero. \*Percent based on less than twenty births in the age group specified.

<sup>1</sup>Based on the number of live births with drinking status of the mother reported.

NOTE: The states of California and South Dakota do not include a question on drinking history of the mother during pregnancy on state birth certificates. Persons usually residing in one of these two states responding to this question reported their drinking history on a form from another state, since the delivery was performed out of their usual state of residence.

During 1996–98, 20.2 percent of women who gave birth to AI/AN newborns smoked tobacco during pregnancy. Women in the U.S. all-races population smoked at a lower rate during pregnancy (13.2 percent) in 1997. There is an established relationship between smoking during pregnancy and low-birthweight births.<sup>13,14</sup> Of all AI/AN low birthweights, 28.3 percent were to women who reported smoking during pregnancy. There were considerable variations among the IHS Areas and age groups in terms of these two types of rates.

**Chart 3.6**

**Mothers Who Smoked During Pregnancy**

*Calendar Years 1996-1998*

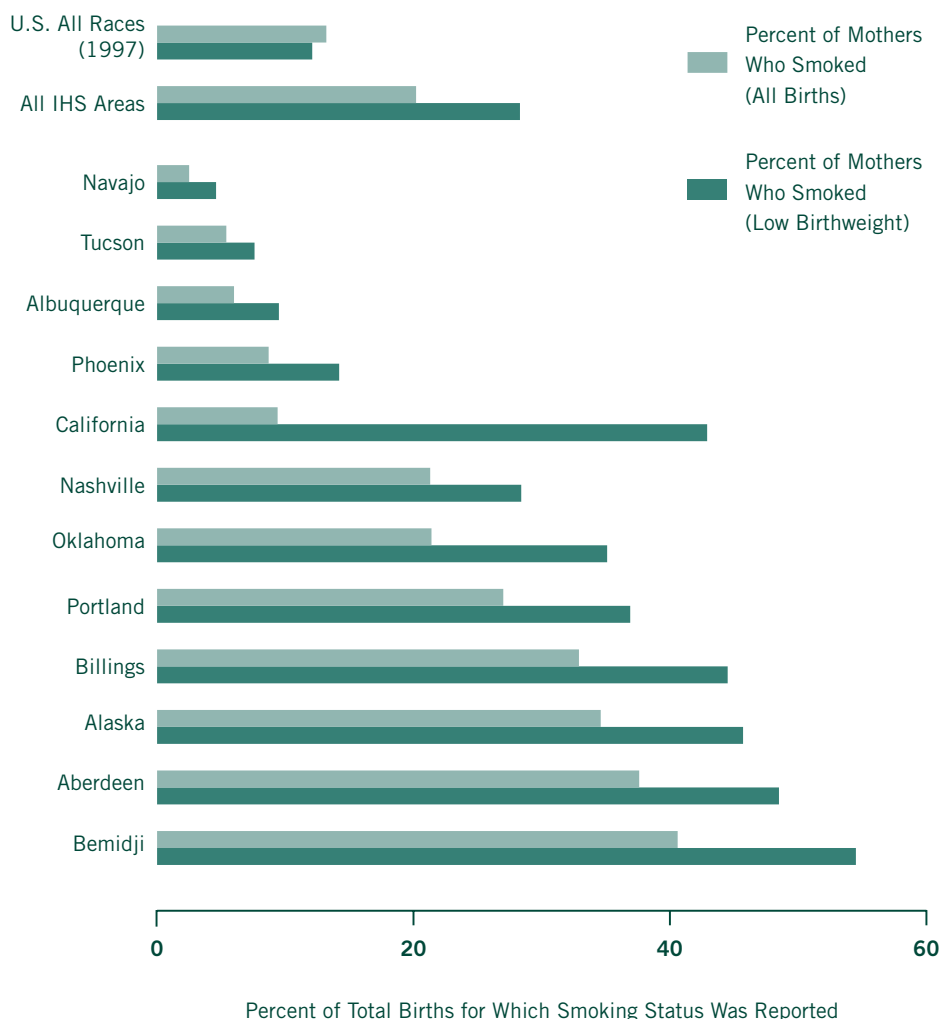


Table 3.6

**Percent of Mothers Who Smoked  
During Pregnancy for All Births and  
Low Birthweight by Age of Mother**

*Calendar Years 1996-1998*

*(Low birthweight is defined as weight less than 2,500 grams (5 lb., 8 oz.))*

|                              | Percent of Live Births <sup>1</sup> for Which the Mother Reported Smoking     |                   |                |                |                |
|------------------------------|---|-------------------|----------------|----------------|----------------|
|                              | All<br>Ages   | Under 15<br>Years | 15-19<br>Years | 20-34<br>Years | 35-54<br>Years |
| <i>U.S. All Races (1997)</i> | 13.2  | 8.1               | 17.6           | 12.7           | 11.0           |
| <i>All IHS Areas</i>         | 20.2  | 14.4              | 21.8           | 20.0           | 18.6           |
| Aberdeen                     | 37.6  | 25.0              | 34.2           | 38.9           | 36.8           |
| Alaska                       | 34.6  | 34.5              | 39.3           | 34.1           | 30.6           |
| Albuquerque                  | 6.0   | 8.0               | 6.4            | 5.7            | 6.8            |
| Bemidji                      | 40.6  | 16.7              | 41.7           | 40.5           | 40.6           |
| Billings                     | 32.9  | 45.0              | 32.5           | 32.8           | 34.7           |
| California                   | 9.4   | —*                | —*             | 11.1           | —*             |
| Nashville                    | 21.3  | 5.6*              | 22.2           | 20.9           | 23.7           |
| Navajo                       | 2.5   | 11.6              | 4.1            | 2.3            | 1.2            |
| Oklahoma                     | 21.4  | 9.0               | 22.1           | 20.7           | 28.4           |
| Phoenix                      | 8.7   | 4.8               | 9.5            | 8.5            | 8.4            |
| Portland                     | 27.0  | 17.3              | 29.2           | 26.5           | 25.8           |
| Tucson                       | 5.4   | —*                | 6.0            | 4.9            | 8.6            |
|                              | Percent of Low Birthweight <sup>1</sup> for Which the Mother Reported Smoking |                   |                |                |                |
|                              | All<br>Ages   | Under 15<br>Years | 15-19<br>Years | 20-34<br>Years | 35-54<br>Years |
| <i>U.S. All Races (1997)</i> | 12.1  | 15.7              | 11.4           | 12.7           | 12.0           |
| <i>All IHS Areas</i>         | 28.3  | 14.3              | 28.7           | 28.4           | 27.9           |
| Aberdeen                     | 48.5  | —*                | 41.3           | 50.3           | 52.0*          |
| Alaska                       | 45.7  | 50.0*             | 38.2           | 46.8           | 47.8           |
| Albuquerque                  | 9.5   | —*                | 5.5            | 7.9            | 22.2           |
| Bemidji                      | 54.5  | —*                | 50.0           | 55.0           | 59.3           |
| Billings                     | 44.5  | 100.0*            | 39.2           | 47.5           | 36.4           |
| California                   | 42.9*   | —*                | —*             | 42.9*          | —*             |
| Nashville                    | 28.4  | —*                | 32.2           | 28.3           | 23.1           |
| Navajo                       | 4.6   | —*                | 7.7            | 4.1            | 3.8            |
| Oklahoma                     | 35.1  | —*                | 36.0           | 34.6           | 39.5           |
| Phoenix                      | 14.2  | 33.3*             | 14.0           | 13.7           | 16.7           |
| Portland                     | 36.9  | —*                | 37.3           | 37.1           | 37.9           |
| Tucson                       | 7.6   | —*                | 6.3            | 4.8            | 26.7*          |

— Represents zero.

\* Percent based on less than twenty births with smoking status reported in the age group specified.

<sup>1</sup>Based on the number of live births with smoking status of the mother reported.

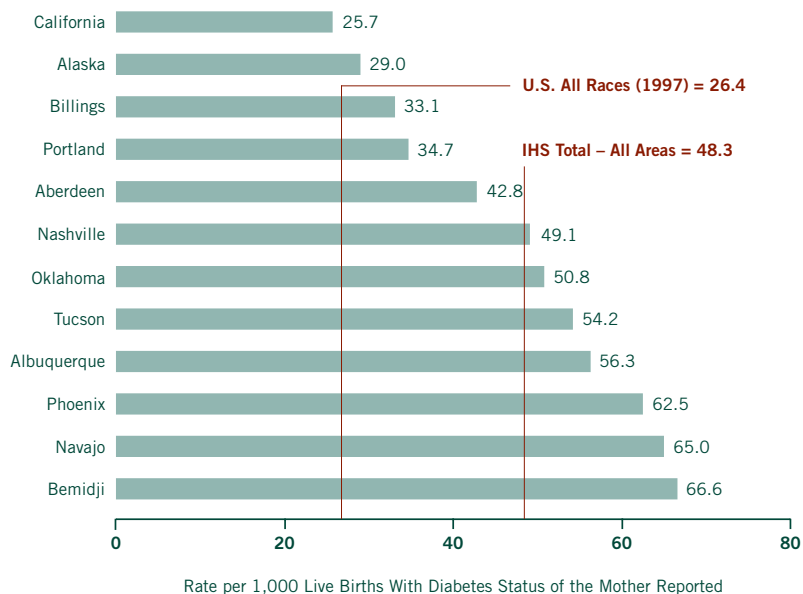
NOTE: The states of California, Indiana, New York (except New York City) and South Dakota do not include a question on smoking history of the mother during pregnancy. Persons usually residing in one of these four states responding to this question reported their smoking history on a form from another state, since the delivery was performed out of their usual state of residence.

During 1996-98 mothers of AI/AN newborns were more likely to have diabetes than their counterparts in the U.S. all-races population in 1997. The 1996-98 rate for AI/AN people was 1.8 times larger than the U.S. all-races rate (26.4 births to mothers with diabetes per 1,000 live births). For the AI/AN population, there were 48.3 births to mothers with diabetes per 1,000 of all live births (a six-percent increase from the 1994-96 rate of 45.4.) The Area proportions ranged from 25.7 per 1,000 live births in California to 66.6 in Bemidji.

**Chart 3.7**

**Birth Rates among Mothers with Diabetes**

*Calendar Years 1996-1998*



**Table 3.7**

**Rate of Live Births<sup>1</sup> among Mothers with Diabetes by Age of Mother**

*Calendar Years 1996-1998*

|                              | All Ages | Under 20 Years | 20-24 Years | 25-29 Years | 30-34 Years | 35-39 Years | 40-54 Years |
|------------------------------|----------|----------------|-------------|-------------|-------------|-------------|-------------|
| <i>U.S. All Races (1997)</i> | 26.4     | 8.2            | 16.3        | 25.5        | 35.0        | 47.8        | 64.9        |
| <i>All IHS Areas</i>         | 48.3     | 15.0           | 29.4        | 52.5        | 84.5        | 119.8       | 168.7       |
| Aberdeen                     | 42.8     | 13.1           | 22.4        | 54.0        | 95.9        | 126.5       | 93.8        |
| Alaska                       | 29.0     | 8.3            | 17.8        | 36.4        | 38.7        | 54.9        | 84.6        |
| Albuquerque                  | 56.3     | 9.3            | 28.9        | 61.5        | 94.0        | 131.6       | 252.6       |
| Bemidji                      | 66.6     | 36.3           | 44.2        | 60.1        | 123.4       | 187.1       | 174.6       |
| Billings                     | 33.1     | 7.8            | 18.4        | 45.7        | 73.0        | 57.0        | 145.2       |
| California                   | 25.7     | 7.7            | 20.0        | 25.9        | 36.1        | 62.8        | 84.5        |
| Nashville                    | 49.1     | 13.3           | 31.6        | 56.9        | 81.1        | 121.7       | 137.9       |
| Navajo                       | 65.0     | 16.0           | 31.0        | 62.9        | 96.1        | 162.3       | 244.8       |
| Oklahoma                     | 50.8     | 18.7           | 36.6        | 60.6        | 101.9       | 121.7       | 167.7       |
| Phoenix                      | 62.5     | 18.8           | 35.7        | 66.0        | 111.0       | 160.6       | 201.2       |
| Portland                     | 34.7     | 9.3            | 23.5        | 35.5        | 61.3        | 93.4        | 116.6       |
| Tucson                       | 54.2     | 16.9           | 31.7        | 53.4        | 135.0       | 102.9       | 185.2       |

<sup>1</sup> Number of live births among mothers with diabetes per 1,000 live births with diabetes status reported in age group specified.

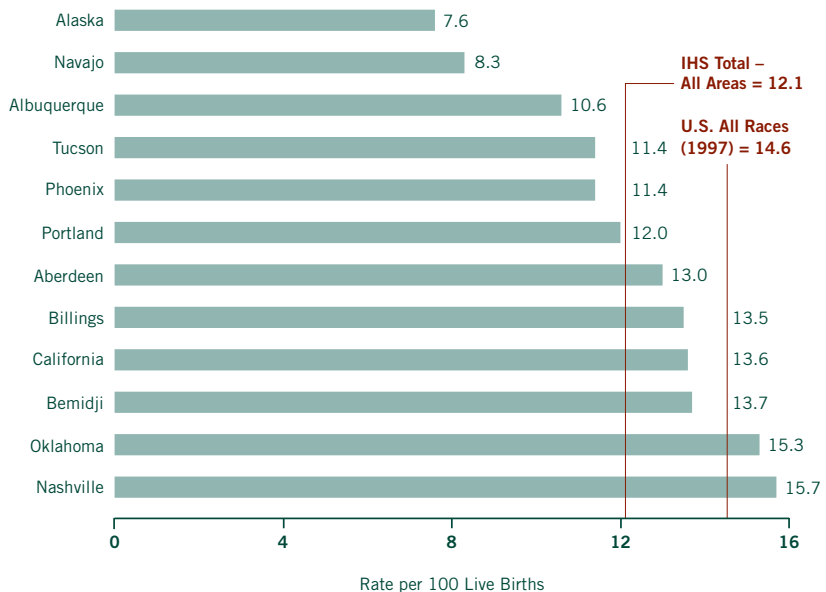


Mothers of AI/AN newborns have a seventeen percent lower rate of cesarean deliveries than do women in the U.S. all-races population. The AI/AN rate of primary cesarean deliveries was 12.1 per 100 live births in 1996-98, while the 1997 U.S. all-races rate was 14.6. Only two IHS Areas exceeded the U.S. all-races rate, Nashville (15.7) and Oklahoma (15.3). The lowest rate occurred in Alaska (7.6).

**Chart 3.8**

**First Cesarean Delivery**

*Calendar Years 1996-1998*



Mothers of AI/AN newborns who had a cesarean delivery were fourteen percent more likely to have a subsequent vaginal delivery (VBAC) than women in the U.S. all-races population. The AI/AN rate is 31.1 vaginal births per 100 live births to women with a prior cesarean delivery in 1996-98 compared to a U.S. all-races rate of 27.4 in 1997. The rate ranged among IHS Areas from 20.1 in Oklahoma to 59.2 in Alaska.

**Chart 3.9**

**Vaginal Births After Previous Cesarean Delivery (VBAC)**

*Calendar Years 1996-1998*

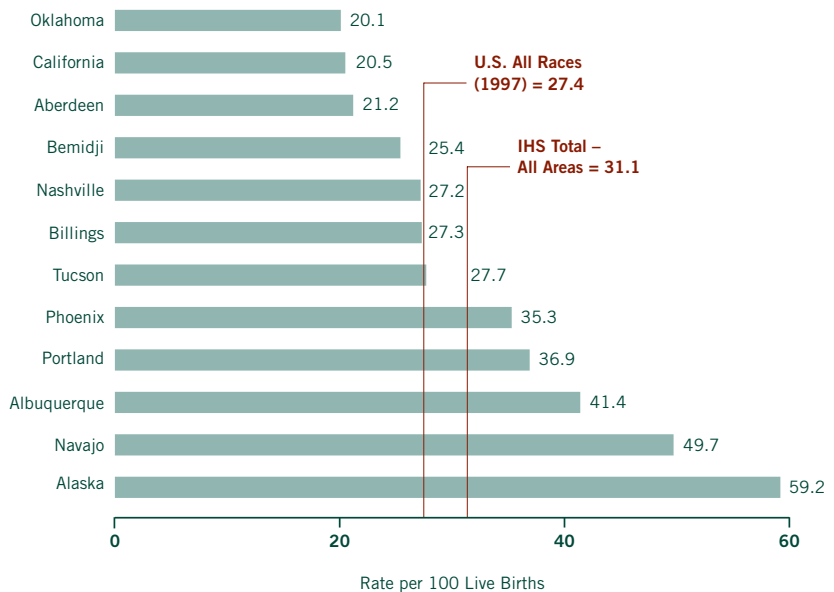


Table 3.8

### Rates of First Cesarean Delivery and Vaginal Birth after Previous Cesarean Delivery by age of Mother

Calendar Years 1996-1998

(Rates per 100 live births)

|                       | Rate of First Cesarean Delivery |                |             |             | Rate of Vaginal Births after Previous Cesarean (VBAC) Delivery |                |             |             |
|-----------------------|---------------------------------|----------------|-------------|-------------|--|----------------|-------------|-------------|
|                       | All Ages                        | Under 25 Years | 25-34 Years | 35-54 Years | All Ages   | Under 25 Years | 25-34 Years | 35-54 Years |
| U.S. All Races (1997) | 14.6                            | 13.0           | 14.9        | 18.8        | 27.4   | 30.3           | 27.8        | 23.6        |
| All IHS Areas         | 12.1                            | 11.8           | 11.9        | 15.2        | 31.1   | 31.9           | 31.1        | 29.5        |
| Aberdeen              | 13.0                            | 12.4           | 13.8        | 15.6        | 21.2   | 23.7           | 19.4        | 19.2        |
| Alaska                | 7.6                             | 6.8            | 8.0         | 10.2        | 59.2   | 57.9           | 61.1        | 55.3        |
| Albuquerque           | 10.6                            | 9.2            | 11.6        | 14.8        | 41.4   | 45.9           | 39.5        | 41.4        |
| Bemidji               | 13.7                            | 13.8           | 12.8        | 17.9        | 25.4   | 29.7           | 24.4        | 18.7        |
| Billings              | 13.5                            | 13.8           | 11.8        | 19.0        | 27.3   | 32.5           | 26.1        | 17.2        |
| California            | 13.6                            | 12.8           | 13.7        | 18.5        | 20.5   | 25.2           | 17.9        | 20.5        |
| Nashville             | 15.7                            | 16.1           | 14.4        | 20.7        | 27.2   | 28.2           | 28.7        | 15.7        |
| Navajo                | 8.3                             | 7.9            | 7.9         | 11.9        | 49.7   | 51.1           | 52.3        | 40.9        |
| Oklahoma              | 15.3                            | 15.2           | 14.9        | 19.6        | 20.1   | 20.9           | 20.1        | 17.3        |
| Phoenix               | 11.4                            | 10.8           | 12.0        | 13.2        | 35.3   | 39.7           | 33.5        | 31.5        |
| Portland              | 12.0                            | 11.0           | 12.8        | 16.0        | 36.9   | 40.7           | 36.2        | 32.2        |
| Tucson                | 11.4                            | 10.3           | 11.5        | 18.7        | 27.7   | 30.3           | 22.5        | 34.5        |

NOTE: Rate of first cesarean delivery is computed by dividing the total number of such deliveries by the number of all women who have never had a cesarean delivery. The denominator for this rate includes all births less those with method of delivery classified as repeat cesarean, vaginal birth after previous cesarean, or method not stated.

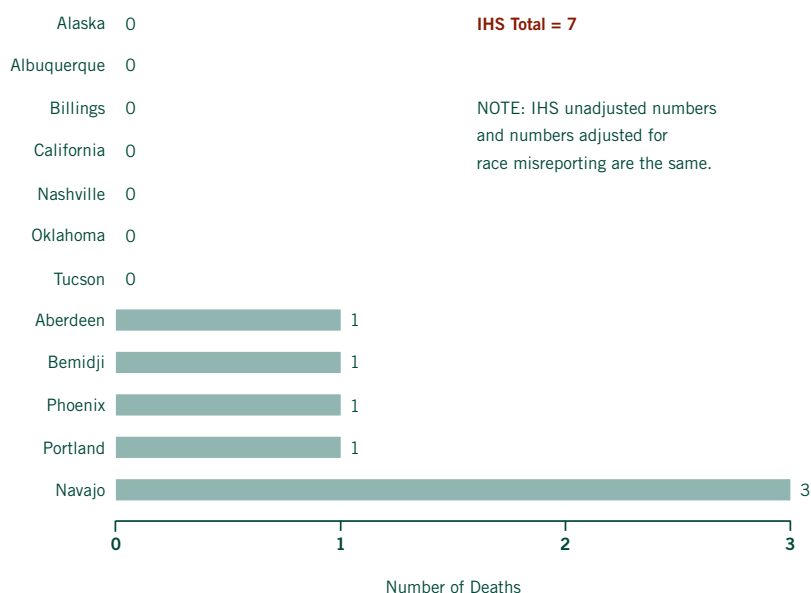
Rate of vaginal births after previous cesarean delivery is computed by dividing the number of such deliveries by the sum of these deliveries plus repeat cesarean deliveries, that is, to women with a previous cesarean section.

There were seven maternal deaths in the IHS service area population in 1996-98 (five maternal deaths in 1995, two in 1997 and zero in 1998). Only one IHS Area had more than one maternal death in 1996-98 — the Navajo Area (three deaths).

Chart 3.10

### Maternal Deaths

Calendar Years 1996-1998

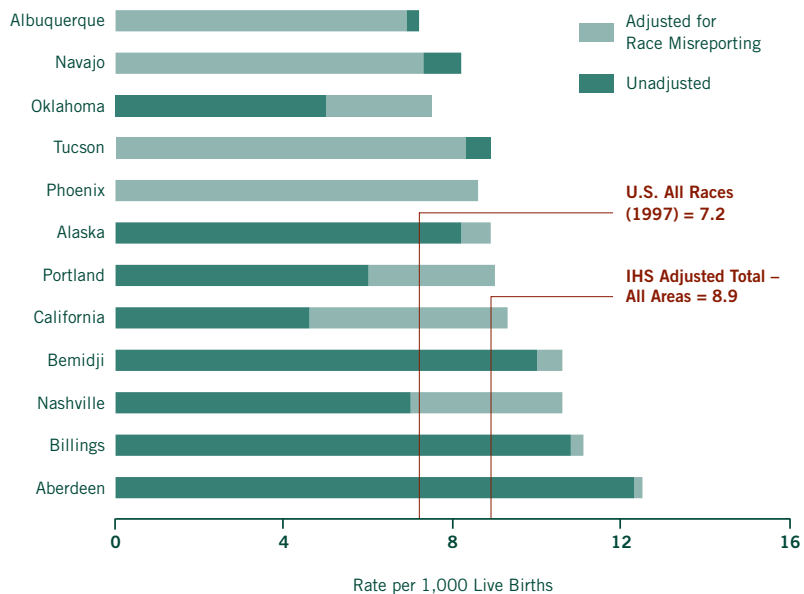


The infant mortality rate for the IHS service area population in 1996-98 was 8.9 deaths per 1,000 live births. The rate is adjusted for misreporting of AI/AN race on the death certificate. The AI/AN rate is 24-percent higher than the U.S. all-races (7.2 deaths per 1,000 live births for 1997). Two IHS Areas (Aberdeen and Billings) had rates exceeding the U.S. all-races rate by over fifty percent.

**Chart 3.11**

**Infant Mortality Rates**

Calendar Years 1996-1998



**Table 3.11**

**Infant Mortality Rates**

Calendar Years 1996-1998

(Under One Year)

|                       | Live Births | Infant Deaths    |                       | Rate <sup>1</sup> |                       |
|-----------------------|-------------|------------------|-----------------------|-------------------|-----------------------|
|                       |             | Unadjusted       | Adjusted <sup>2</sup> | Unadjusted        | Adjusted <sup>2</sup> |
| U.S. All Races (1997) | 3,880,894   | 28,045           |                       | 7.2               |                       |
| All IHS Areas         | 103,202     | 780              | 916                   | 7.6               | 8.9                   |
| Aberdeen              | 8,389       | 103              | 105                   | 12.3              | 12.5                  |
| Alaska                | 8,058       | 66               | 72                    | 8.2               | 8.9                   |
| Albuquerque           | 5,102       | 36 <sup>3</sup>  | 35 <sup>3</sup>       | 7.1 <sup>3</sup>  | 6.9 <sup>3</sup>      |
| Bemidji               | 6,495       | 65               | 69                    | 10.0              | 10.6                  |
| Billings              | 4,243       | 46               | 47                    | 10.8              | 11.1                  |
| California            | 8,075       | 37               | 75                    | 4.6               | 9.3                   |
| Nashville             | 5,298       | 37               | 56                    | 7.0               | 10.6                  |
| Navajo                | 13,739      | 112 <sup>3</sup> | 100 <sup>3</sup>      | 8.2 <sup>3</sup>  | 7.3 <sup>3</sup>      |
| Oklahoma              | 19,972      | 100              | 149                   | 5.0               | 7.5                   |
| Phoenix               | 10,978      | 96 <sup>3</sup>  | 94 <sup>3</sup>       | 8.7 <sup>3</sup>  | 8.6 <sup>3</sup>      |
| Portland              | 11,046      | 66               | 99                    | 6.0               | 9.0                   |
| Tucson                | 1,807       | 16 <sup>3</sup>  | 15 <sup>3</sup>       | 8.9 <sup>3</sup>  | 8.3 <sup>3</sup>      |

<sup>1</sup>Rate per 1,000 live births.

<sup>2</sup>Adjusted to compensate for misreporting of American Indian/Alaska Native race on the state death certificate.

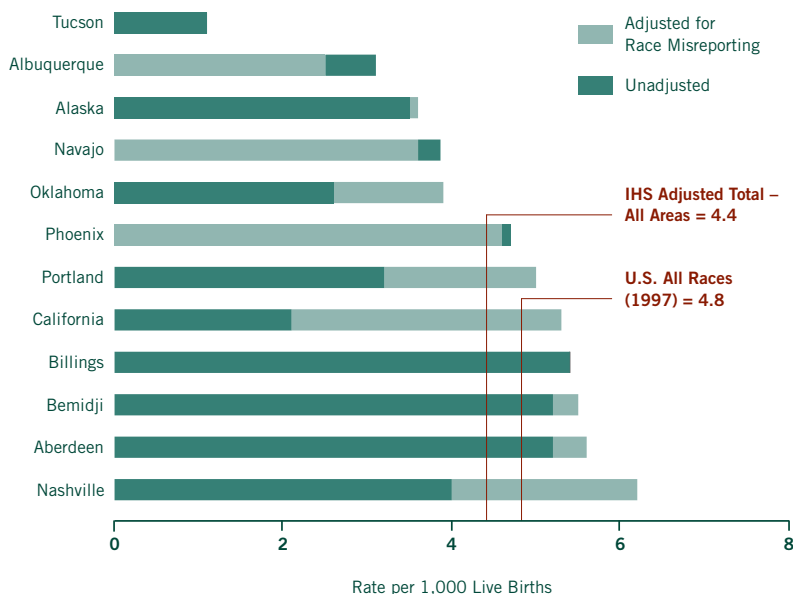
<sup>3</sup>For the Albuquerque, Navajo, Phoenix and Tucson Areas there were more American Indian and Alaska Native Infant deaths identified through use of the state death certificate records (36, 112, 96 and 16 infant deaths-unadjusted data) than through use of a match between state birth and death certificate records (35, 100, 94 and 15 infant deaths-adjusted data).

The neonatal mortality rate for the IHS service area population in 1996–98 was 4.4 deaths per 1,000 live births. The rate is adjusted for misreporting of AI/AN race on the death certificate. The AI/AN rate is eight percent lower than the U.S. all-races rate of 4.8 deaths per 1,000 live births in 1997. Six IHS Areas (Nashville, Aberdeen, Bemidji, Billings, California, and Portland) had rates that exceeded the U.S. all-races rate.

**Chart 3.12**

**Neonatal Mortality Rates**

*Calendar Years 1996-1998*



**Table 3.12**

**Neonatal Mortality Rates**

*Calendar Years 1996-1998*

*(Under 28 Days)*

|                              | Live Births | Infant Deaths   |                       | Rate <sup>1</sup> |                       |
|------------------------------|-------------|-----------------|-----------------------|-------------------|-----------------------|
|                              |             | Unadjusted      | Adjusted <sup>2</sup> | Unadjusted        | Adjusted <sup>2</sup> |
| <i>U.S. All Races (1997)</i> | 3,880,894   | 18,524          |                       | 4.8               |                       |
| <i>All IHS Areas</i>         | 103,202     | 376             | 458                   | 3.6               | 4.4                   |
| Aberdeen                     | 8,389       | 44              | 47                    | 5.2               | 5.6                   |
| Alaska                       | 8,058       | 28              | 29                    | 3.5               | 3.6                   |
| Albuquerque                  | 5,102       | 16 <sup>3</sup> | 13 <sup>3</sup>       | 3.1 <sup>3</sup>  | 2.5 <sup>3</sup>      |
| Bemidji                      | 6,495       | 34              | 36                    | 5.2               | 5.5                   |
| Billings                     | 4,243       | 23              | 23                    | 5.4               | 5.4                   |
| California                   | 8,075       | 17              | 43                    | 2.1               | 5.3                   |
| Nashville                    | 5,298       | 21              | 33                    | 4.0               | 6.2                   |
| Navajo                       | 13,739      | 52 <sup>3</sup> | 49 <sup>3</sup>       | 3.8 <sup>3</sup>  | 3.6 <sup>3</sup>      |
| Oklahoma                     | 19,972      | 52              | 78                    | 2.6               | 3.9                   |
| Phoenix                      | 10,978      | 52 <sup>3</sup> | 50 <sup>3</sup>       | 4.7 <sup>3</sup>  | 4.6 <sup>3</sup>      |
| Portland                     | 11,046      | 35              | 55                    | 3.2               | 5.0                   |
| Tucson                       | 1,807       | 2               | 2                     | 1.1               | 1.1                   |

<sup>1</sup>Rate per 1,000 live births.

<sup>2</sup>Adjusted to compensate for misreporting of American Indian/Alaska Native race on the death certificate.

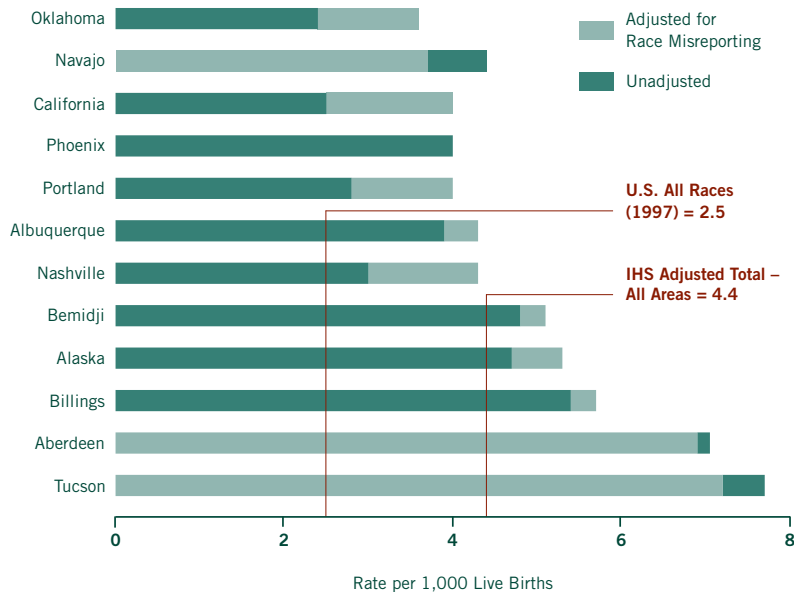
<sup>3</sup>The adjusted numbers and rates for neonatal deaths for Albuquerque, Navajo and Phoenix Areas are lower than the unadjusted numbers and rates because the linked birth/infant death file (used to obtain the adjusted counts for neonatal deaths) had three, three, and two less deaths, respectively, than did the unadjusted mortality file for each Area (1996-1998 data).

The postneonatal mortality rate for the IHS service area population in 1996–98 was 4.4 deaths per 1,000 live births. The rate is adjusted for misreporting of AI/AN race on the death certificate. The AI/AN rate is 1.8 times higher than the U.S. all-races rate of 2.5 deaths per 1,000 live births for 1997. The Tucson Area had the highest rate (7.2 deaths per 1,000 live births) among the IHS Areas followed by Aberdeen (6.9 deaths per 1,000 live births).

**Chart 3.13**

**Postneonatal Mortality Rates**

*Calendar Years 1996-1998*



**Table 3.13**

**Postneonatal Mortality Rates**

*Calendar Years 1996-1998*

*(28 Days to Under One Year)*

|                              | Live Births      | Infant Deaths   |                       | Rate <sup>1</sup> |                       |
|------------------------------|------------------|-----------------|-----------------------|-------------------|-----------------------|
|                              |                  | Unadjusted      | Adjusted <sup>2</sup> | Unadjusted        | Adjusted <sup>2</sup> |
| <i>U.S. All Races (1997)</i> | <i>3,880,894</i> | <i>9,521</i>    |                       | <i>2.5</i>        |                       |
| <i>All IHS Areas</i>         | <i>103,202</i>   | <i>404</i>      | <i>458</i>            | <i>3.9</i>        | <i>4.4</i>            |
| Aberdeen                     | 8,389            | 59 <sup>3</sup> | 58 <sup>3</sup>       | 7.0 <sup>3</sup>  | 6.9 <sup>3</sup>      |
| Alaska                       | 8,058            | 38              | 43                    | 4.7               | 5.3                   |
| Albuquerque                  | 5,102            | 20              | 22                    | 3.9               | 4.3                   |
| Bemidji                      | 6,495            | 31              | 33                    | 4.8               | 5.1                   |
| Billings                     | 4,243            | 23              | 24                    | 5.4               | 5.7                   |
| California                   | 8,075            | 20              | 32                    | 2.5               | 4.0                   |
| Nashville                    | 5,298            | 16              | 23                    | 3.0               | 4.3                   |
| Navajo                       | 13,739           | 60 <sup>3</sup> | 51 <sup>3</sup>       | 4.4 <sup>3</sup>  | 3.7 <sup>3</sup>      |
| Oklahoma                     | 19,972           | 48              | 71                    | 2.4               | 3.6                   |
| Phoenix                      | 10,978           | 44              | 44                    | 4.0               | 4.0                   |
| Portland                     | 11,046           | 31              | 44                    | 2.8               | 4.0                   |
| Tucson                       | 1,807            | 14 <sup>3</sup> | 13 <sup>3</sup>       | 7.7 <sup>3</sup>  | 7.2 <sup>3</sup>      |

<sup>1</sup>Rate per 1,000 live births.

<sup>2</sup>Adjusted to compensate for misreporting of American Indian/Alaska Native race on the death certificate.

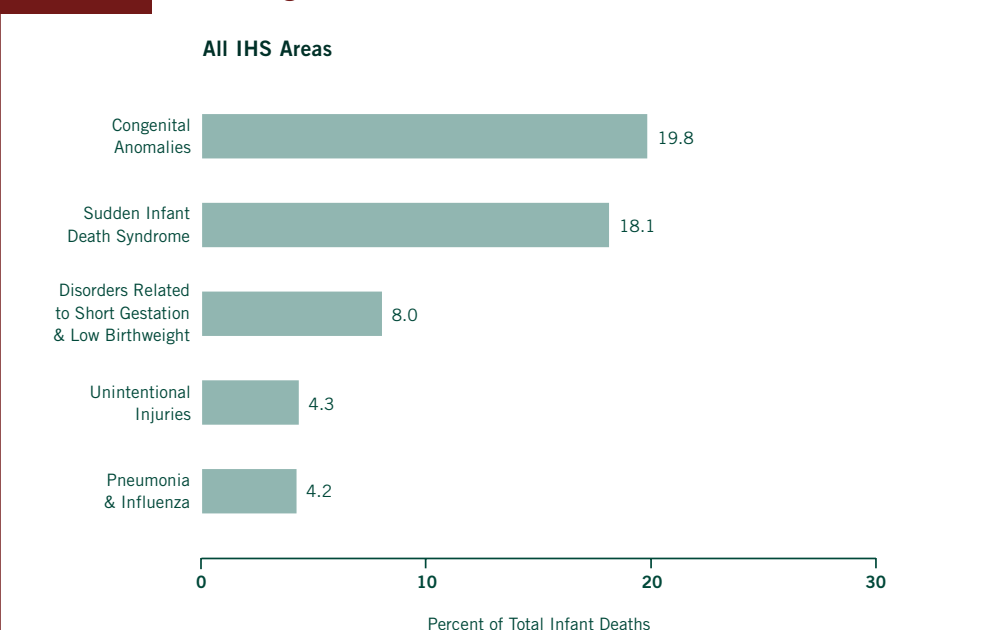
<sup>3</sup>The adjusted numbers and rates for postneonatal deaths for Aberdeen, Navajo and Tucson Areas are lower than the unadjusted numbers and rates because the linked birth/infant death file (used to obtain the adjusted counts for postneonatal deaths) had one, nine and one less deaths than, respectively, did the unadjusted mortality file for each Area (1996-1998 data).

In 1996–98, 19.8 percent of all infant deaths in the IHS service area were caused by congenital anomalies. This was followed by sudden infant death syndrome (18.1 percent), disorders related to short gestation and low birthweight (8.0 percent), unintentional injuries (4.3 percent), and pneumonia and influenza (4.2 percent).

**Chart 3.14**

**Leading Causes of Infant Deaths**

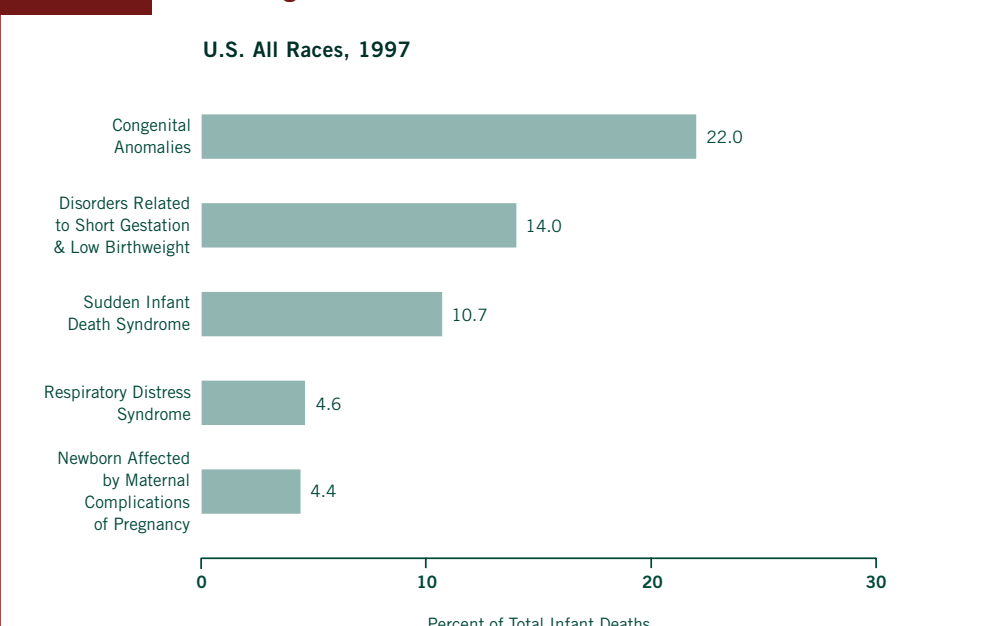
*Calendar Years 1996-1998*



In 1997, 22.0 percent of all infant deaths in the U.S. were caused by congenital anomalies, followed by disorders related to short gestation and low birthweight at 14.0 percent.

**Chart 3.15**

**Leading Causes of Infant Deaths**

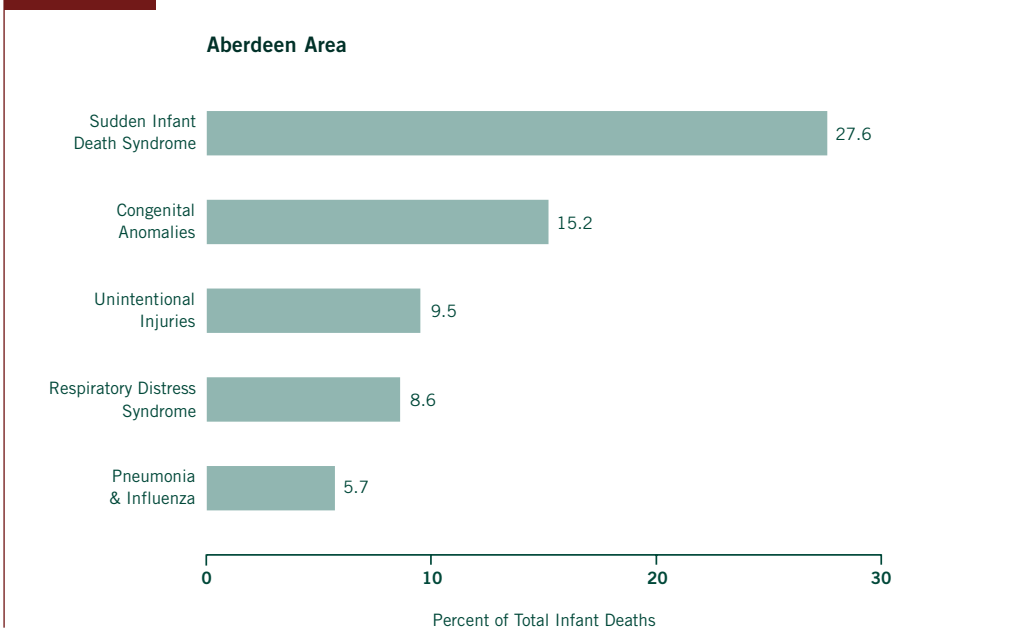


In 1996-98, 27.6 percent of all infant deaths in the Aberdeen Area were caused by sudden infant death syndrome, followed by congenital anomalies at 15.2 percent.

**Chart 3.16**

**Leading Causes of Infant Deaths**

*Calendar Years 1996-1998*

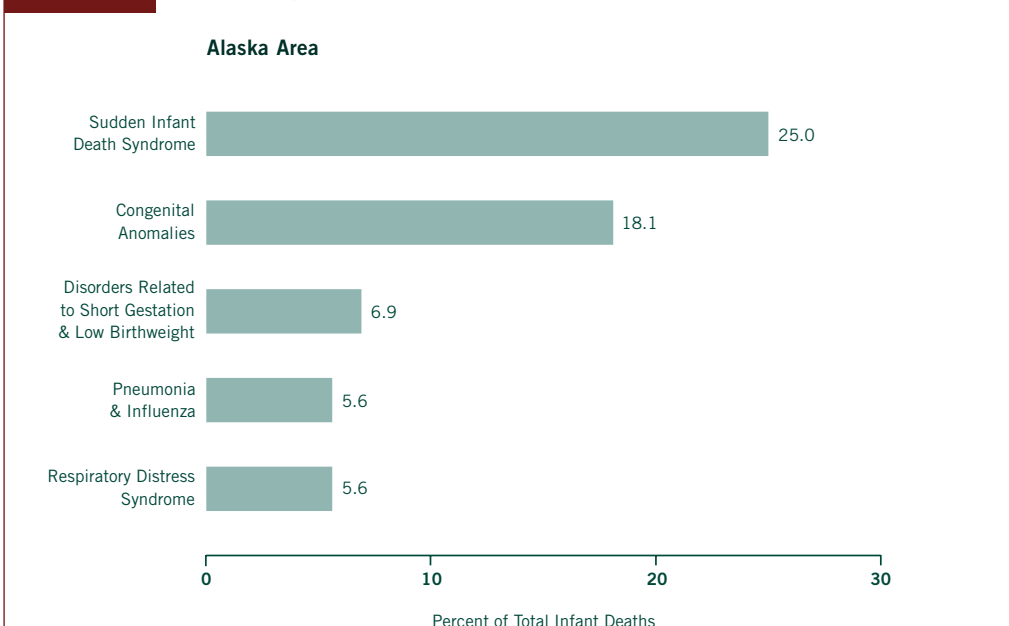


In 1996-98, 25.0 percent of all infant deaths in the Alaska Area were caused by sudden infant death syndrome, followed by congenital anomalies at 18.1 percent.

**Chart 3.17**

**Leading Causes of Infant Deaths**

*Calendar Years 1996-1998*

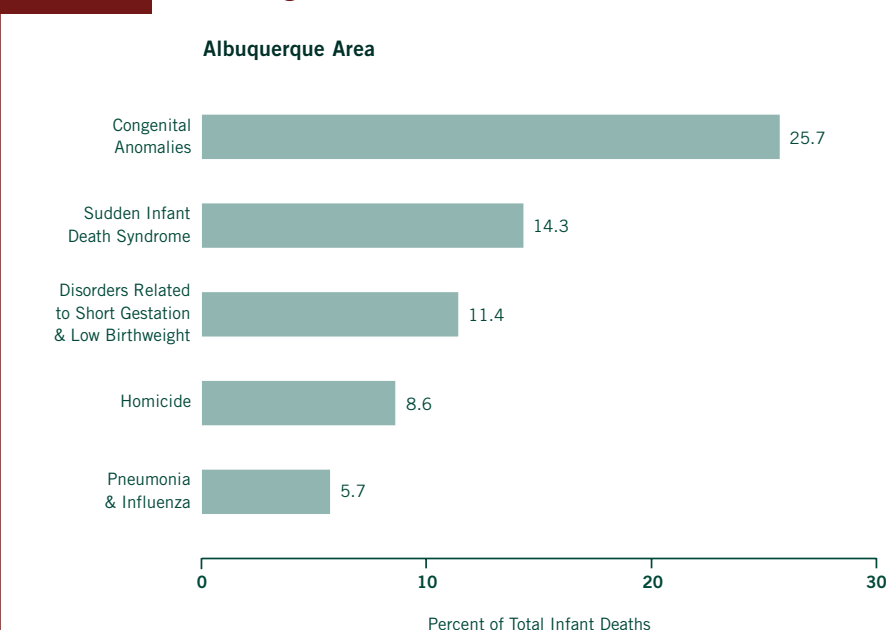


In 1996–98, 25.7 percent of all infant deaths in the Albuquerque Area were caused by congenital anomalies, followed by sudden infant death syndrome at 14.3 percent.

**Chart 3.18**

**Leading Causes of Infant Deaths**

*Calendar Years 1996–1998*

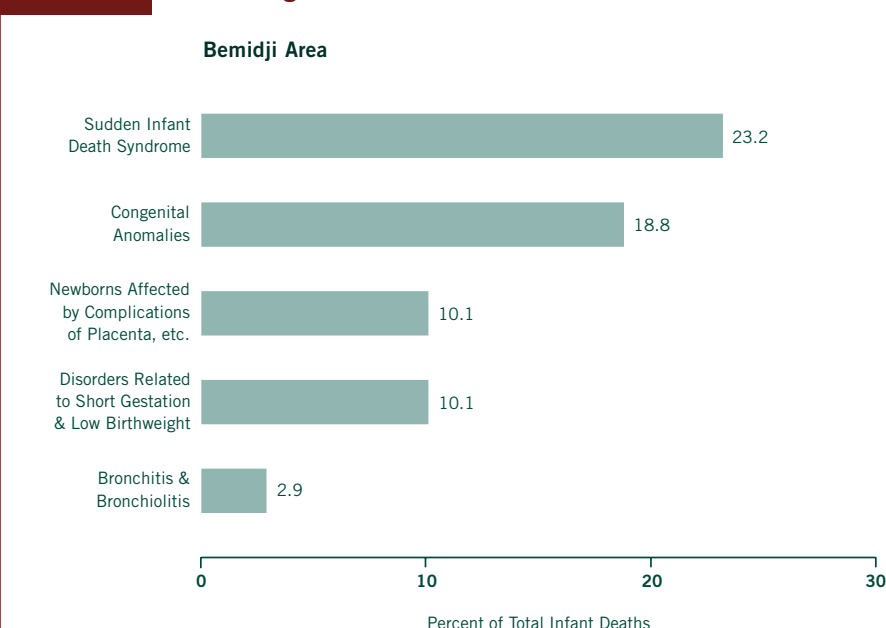


In 1996–98, 23.2 percent of all infant deaths in the Bemidji Area were caused by sudden infant death syndrome, followed by congenital anomalies at 18.8 percent.

**Chart 3.19**

**Leading Causes of Infant Deaths**

*Calendar Years 1996–1998*



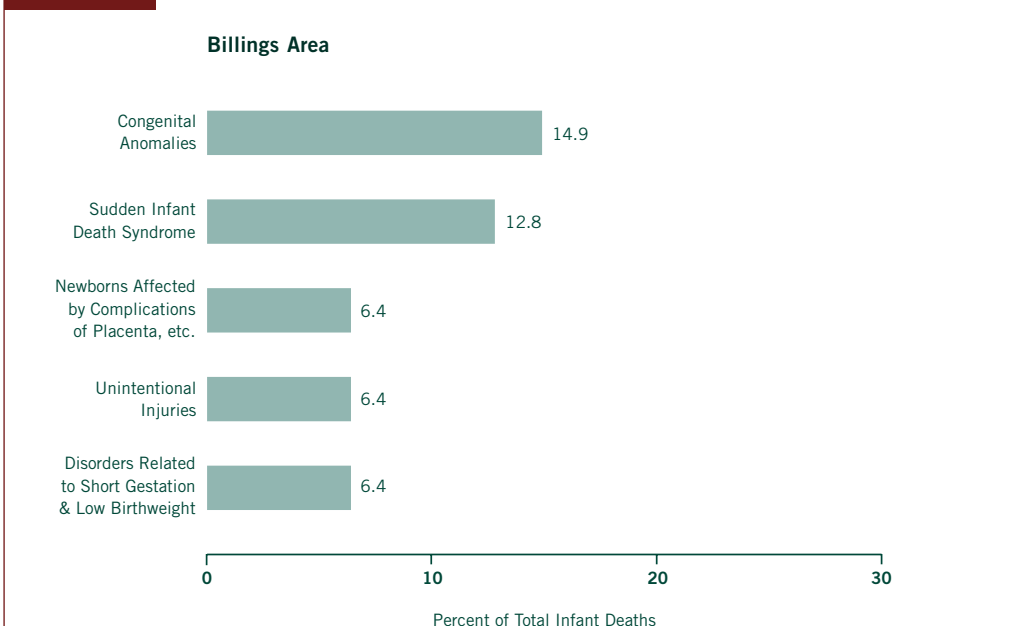


In 1996-98, 14.9 percent of all infant deaths in the Billings Area were caused by congenital anomalies, followed by sudden infant death syndrome at 12.8 percent.

**Chart 3.20**

**Leading Causes of Infant Deaths**

*Calendar Years 1996-1998*

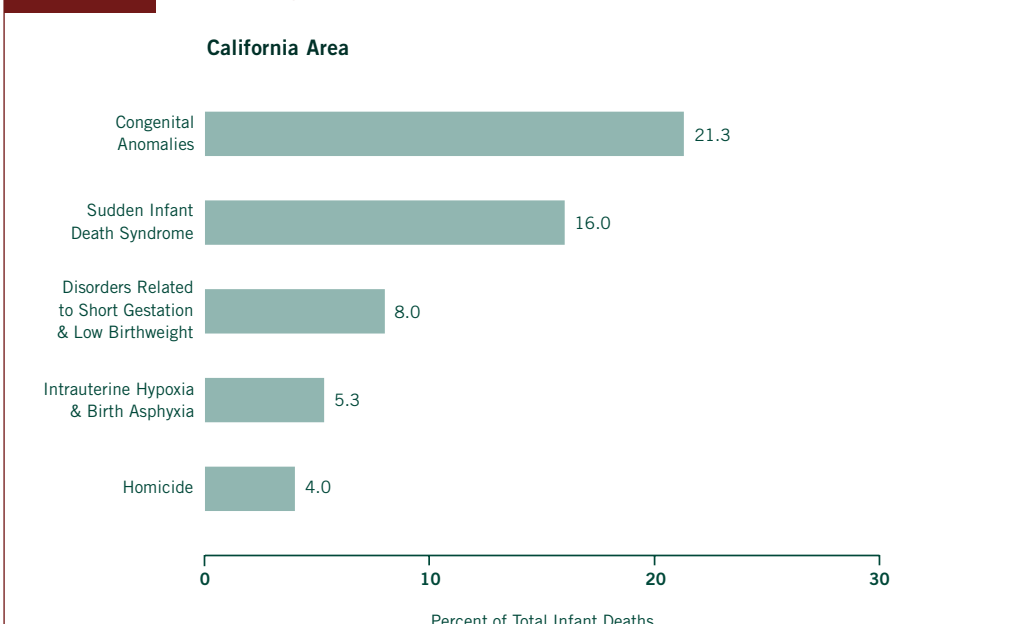


In 1996-98, 21.3 percent of all infant deaths in the California Area were caused by congenital anomalies, followed by sudden infant death syndrome at 16.0 percent.

**Chart 3.21**

**Leading Causes of Infant Deaths**

*Calendar Years 1996-1998*

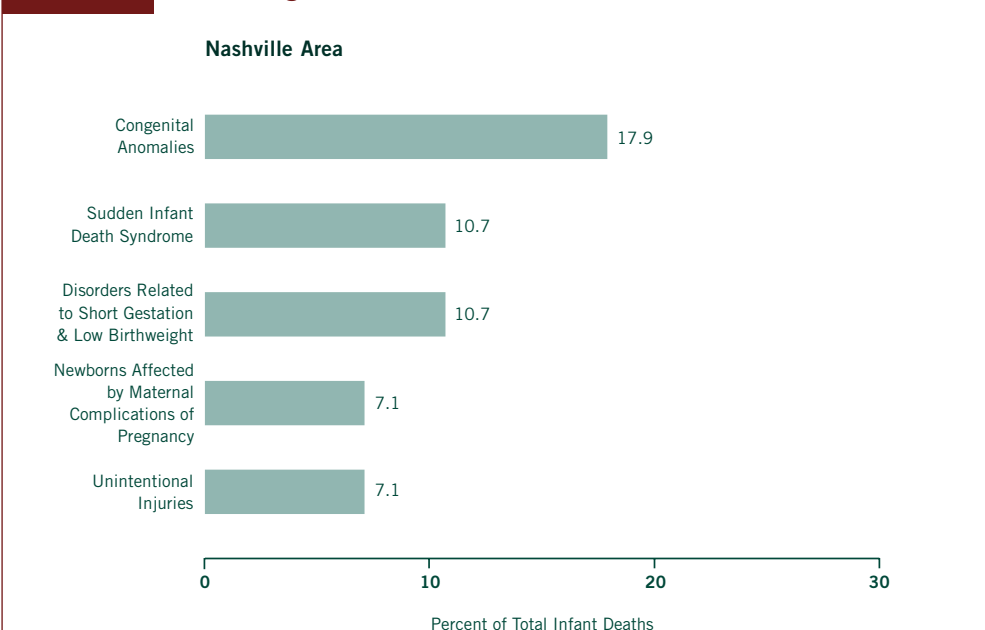


In 1996–98, 17.9 percent of all infant deaths in the Nashville Area were caused by congenital anomalies, followed by sudden infant death syndrome and disorders related to short gestation and low birthweight both at 10.7 percent.

**Chart 3.22**

**Leading Causes of Infant Deaths**

*Calendar Years 1996–1998*

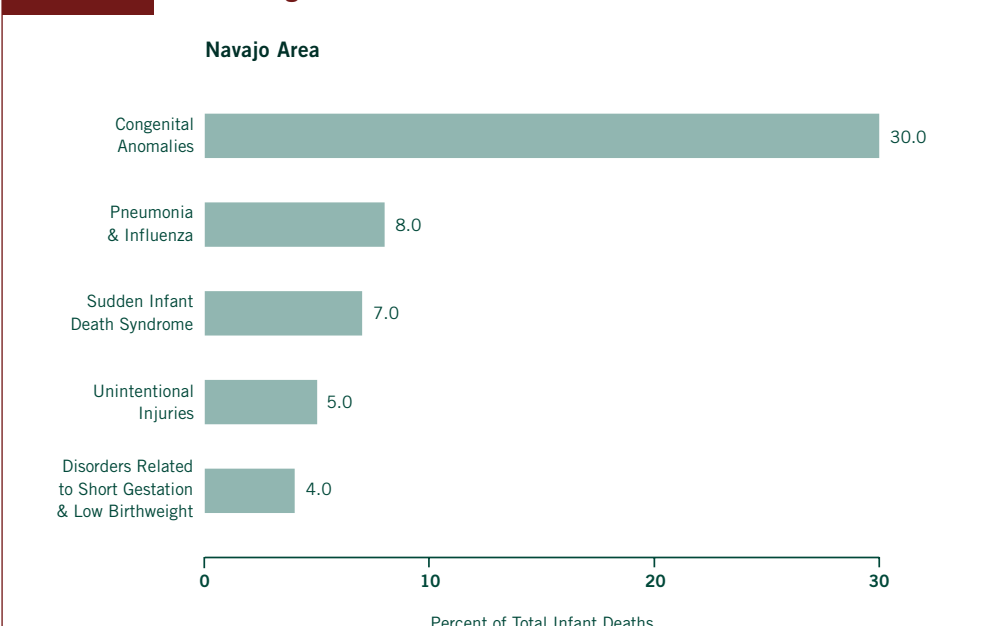


In 1996–98, 30.0 percent of all infant deaths in the Navajo Area were caused by congenital anomalies, followed by pneumonia and influenza at 8.0 percent.

**Chart 3.23**

**Leading Causes of Infant Deaths**

*Calendar Years 1996–1998*

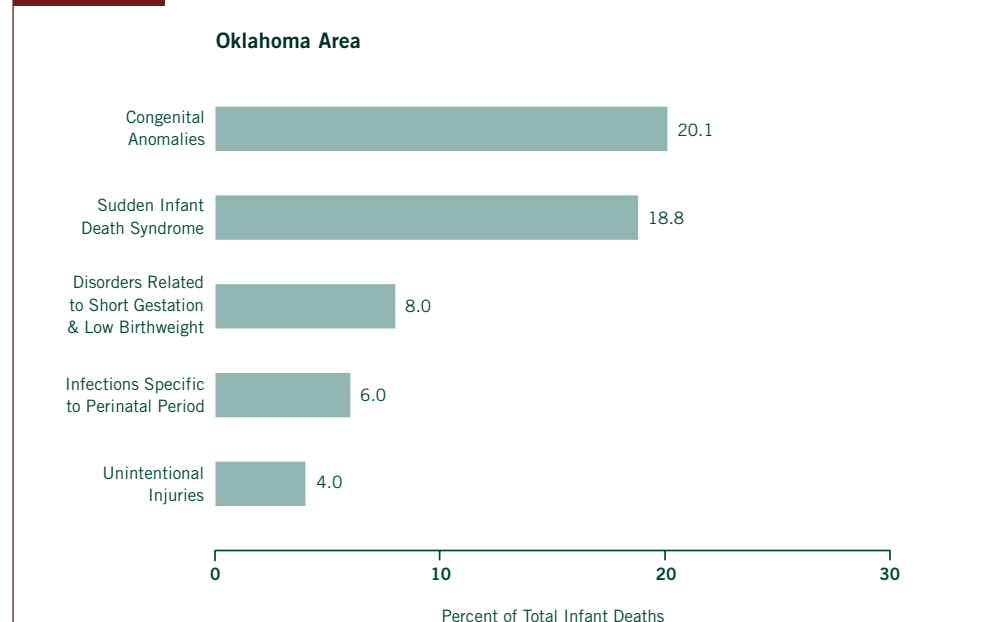


In 1996-98, 20.1 percent of all infant deaths in the Oklahoma Area were caused by congenital anomalies, followed by sudden infant death syndrome at 18.8 percent.

**Chart 3.24**

**Leading Causes of Infant Deaths**

*Calendar Years 1996-1998*

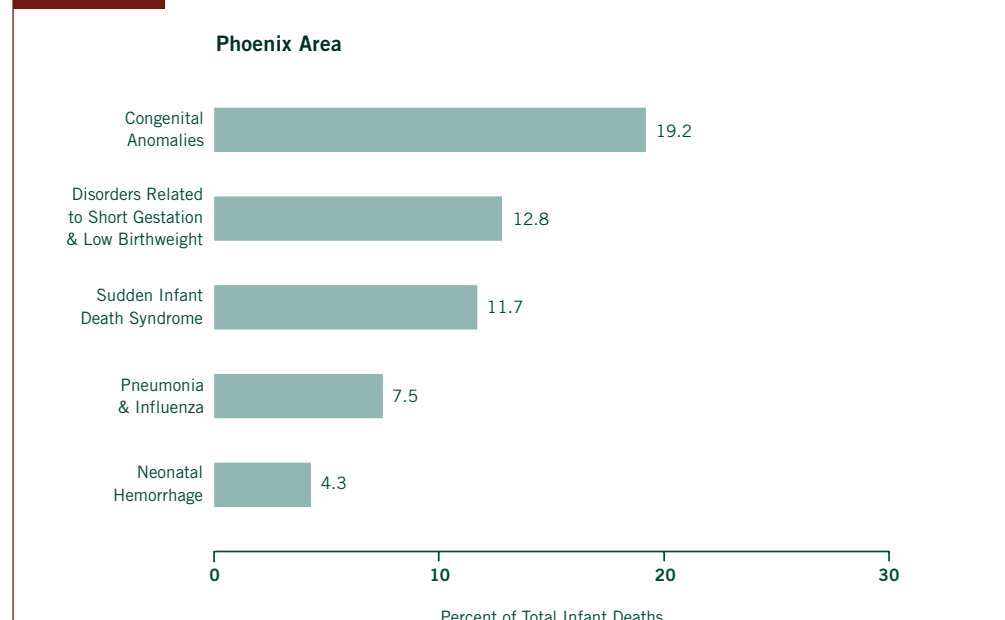


In 1996-98, 19.2 percent of all infant deaths in the Phoenix Area were caused by congenital anomalies, followed by disorders related to short gestation and low birthweight at 12.8 percent.

**Chart 3.25**

**Leading Causes of Infant Deaths**

*Calendar Years 1996-1998*

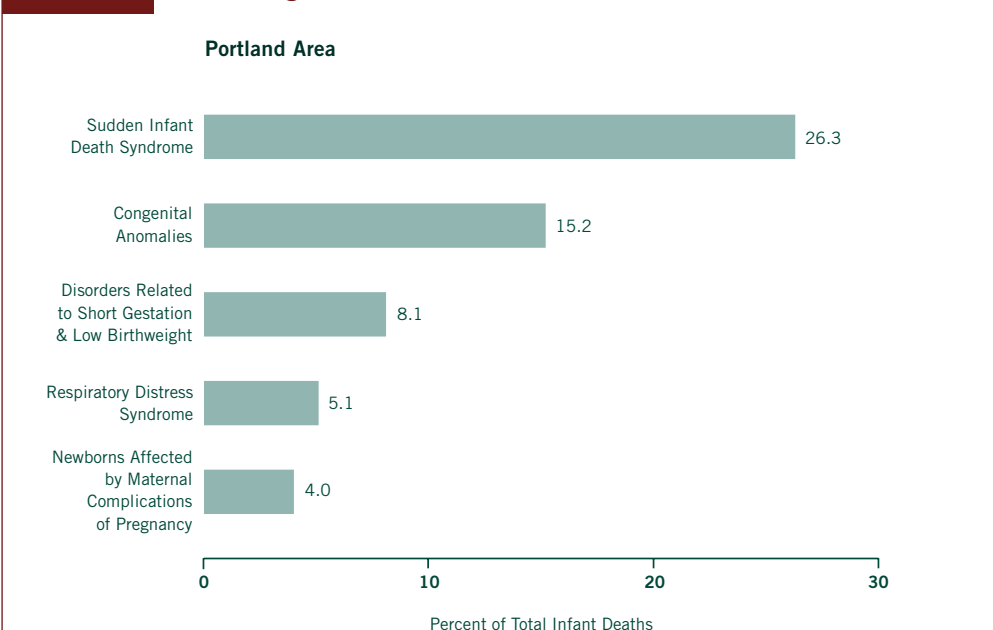


In 1996–98, 26.3 percent of all infant deaths in the Portland Area were caused by sudden infant death syndrome, followed by congenital anomalies at 15.2 percent.

**Chart 3.26**

**Leading Causes of Infant Deaths**

*Calendar Years 1996-1998*

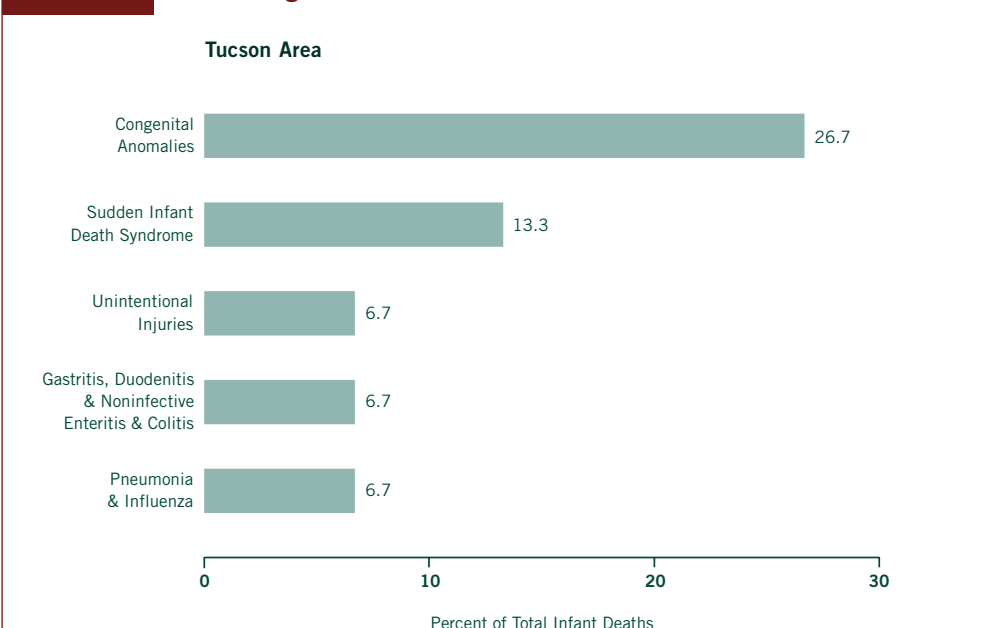


In 1996–98, 26.7 percent of all infant deaths in the Tucson Area were caused by congenital anomalies, followed by sudden infant death syndrome at 13.3 percent.

**Chart 3.27**

**Leading Causes of Infant Deaths**

*Calendar Years 1996-1998*

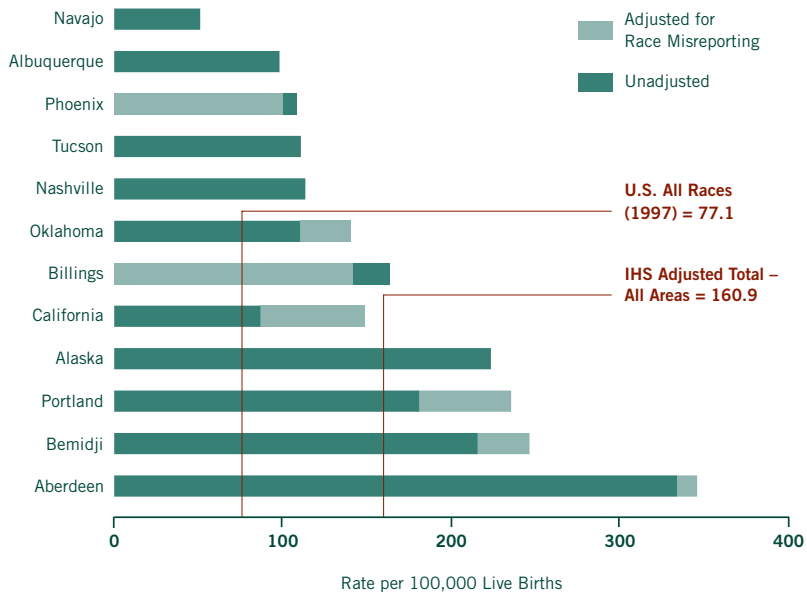


In 1996-98, the mortality rate for sudden infant death syndrome (SIDS) for the IHS service area population was 2.1 times the rate for the U.S. all-races population in 1997 (160.9 and 77.1, respectively). The rate is adjusted for misreporting of AI/AN race on the death certificate.

**Chart 3.28**

**Sudden Infant Death Syndrome (SIDS) Rates**

*Calendar Years 1996-1998*



**Table 3.28**

**Sudden Infant Death Syndrome (SIDS) Rates**

*Calendar Years 1996-1998*

|                              | Live Births      | Infant Deaths   |                       | Rate <sup>1</sup>  |                       |
|------------------------------|------------------|-----------------|-----------------------|--------------------|-----------------------|
|                              |                  | Unadjusted      | Adjusted <sup>2</sup> | Unadjusted         | Adjusted <sup>2</sup> |
| <i>U.S. All Races (1997)</i> | <i>3,880,894</i> | <i>2,991</i>    |                       | <i>77.1</i>        |                       |
| <i>All IHS Areas</i>         | <i>103,202</i>   | <i>148</i>      | <i>166</i>            | <i>143.4</i>       | <i>160.9</i>          |
| Aberdeen                     | 8,389            | 28              | 29                    | 333.8              | 345.7                 |
| Alaska                       | 8,058            | 18              | 18                    | 223.4              | 223.4                 |
| Albuquerque                  | 5,102            | 5               | 5                     | 98.0               | 98.0                  |
| Bemidji                      | 6,495            | 14              | 16                    | 215.6              | 246.3                 |
| Billings                     | 4,243            | 7 <sup>3</sup>  | 6 <sup>3</sup>        | 165.0 <sup>3</sup> | 141.4 <sup>3</sup>    |
| California                   | 8,075            | 7               | 12                    | 86.7               | 148.6                 |
| Nashville                    | 5,298            | 6               | 6                     | 113.3              | 113.3                 |
| Navajo                       | 13,739           | 7               | 7                     | 51.0               | 51.0                  |
| Oklahoma                     | 19,972           | 22              | 28                    | 110.2              | 140.2                 |
| Phoenix                      | 10,978           | 12 <sup>3</sup> | 11 <sup>3</sup>       | 109.3 <sup>3</sup> | 100.2 <sup>3</sup>    |
| Portland                     | 11,046           | 20              | 26                    | 181.0              | 235.4                 |
| Tucson                       | 1,807            | 2               | 2                     | 110.7              | 110.7                 |

<sup>1</sup>Rate per 100,000 live births.

<sup>2</sup>Adjusted to compensate for misreporting of American Indian/Alaska Native race on the death certificate.

<sup>3</sup>The adjusted numbers and rates (Billings and Phoenix Areas) are lower than the unadjusted numbers and rates because the linked birth/infant death file (used to obtain the adjusted counts for infant deaths) had one less death for this cause than did the unadjusted mortality file for each IHS area (1996-1998 data).

# Part 4

## General Mortality Statistics

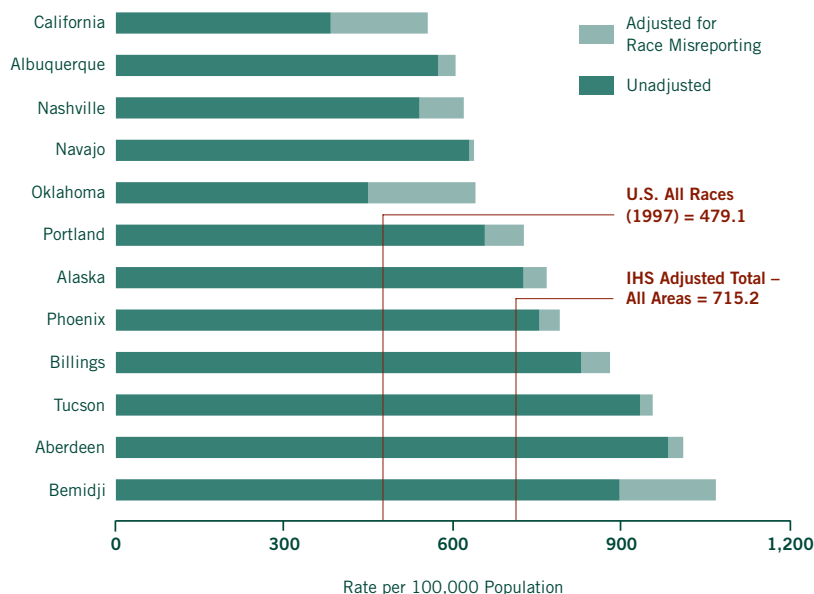
# Part 4

In 1996–98, the age-adjusted death rate (all causes) for the IHS service area population was 715.2 deaths per 100,000 population. The rate is adjusted for misreporting of AI/AN race on the death certificate. The AI/AN rate is 49 percent higher than the U.S. all-races rate of 479.1 for 1997. The Bemidji (1,067.5) and Aberdeen (1,009.4) rates are more than double the U.S. all-races rate.

**Chart 4.1**

### Age-Adjusted Death Rates

Calendar Years 1996-1998



**Table 4.1**

### Age-Adjusted Death Rates

Calendar Years 1996-1998

(All Causes)

|                       | Deaths <sup>1</sup> |                       | Rate <sup>2</sup> |                       |
|-----------------------|---------------------|-----------------------|-------------------|-----------------------|
|                       | Unadjusted          | Adjusted <sup>3</sup> | Unadjusted        | Adjusted <sup>3</sup> |
| U.S. All Races (1997) | 2,314,245           |                       | 479.1             |                       |
| All IHS Areas         | 23,508              | 26,964                | 620.7             | 715.2                 |
| Aberdeen              | 2,113               | 2,168                 | 982.9             | 1,009.4               |
| Alaska                | 1,790               | 1,888                 | 725.2             | 766.5                 |
| Albuquerque           | 1,182               | 1,238                 | 573.4             | 604.4                 |
| Bemidji               | 1,853               | 2,201                 | 896.2             | 1,067.5               |
| Billings              | 1,036               | 1,097                 | 828.0             | 879.2                 |
| California            | 1,269               | 1,841                 | 382.2             | 554.9                 |
| Nashville             | 1,095               | 1,258                 | 540.1             | 619.0                 |
| Navajo                | 3,426               | 3,457                 | 628.9             | 637.2                 |
| Oklahoma              | 4,372               | 6,066                 | 448.6             | 639.8                 |
| Phoenix               | 2,399               | 2,508                 | 753.5             | 789.8                 |
| Portland              | 2,333               | 2,589                 | 656.4             | 725.9                 |
| Tucson                | 640                 | 653                   | 932.6             | 955.1                 |

<sup>1</sup>Includes deaths with age not reported (6 deaths IHS-wide; Aberdeen-1 death, Nashville-1 death, Oklahoma-1 death, and Tucson-3 deaths).

<sup>2</sup> Age-adjusted rate per 100,000 population.

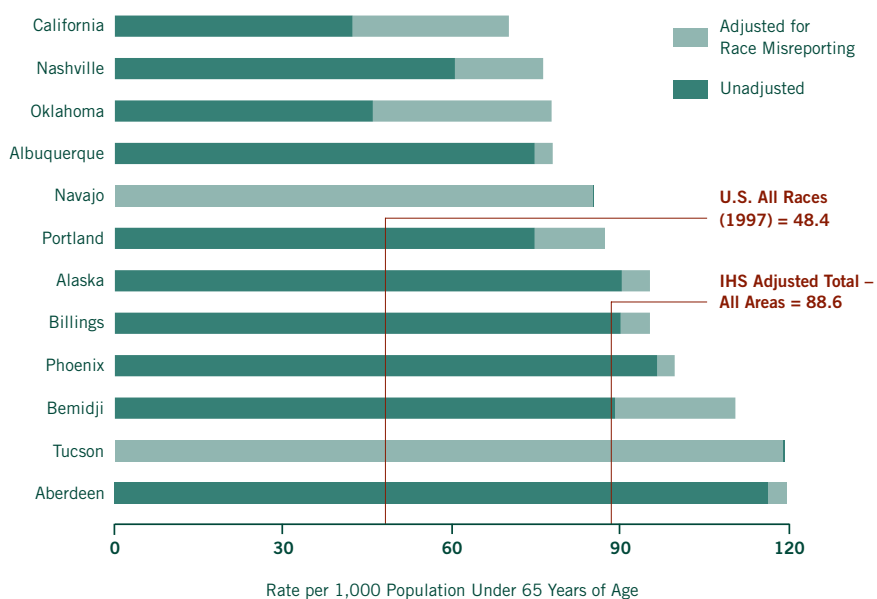
<sup>3</sup> Adjusted to compensate for misreporting of American Indian/Alaska Native race on the death certificate.

In 1996-98, the years of potential life lost rate for the IHS service area population was 88.6 years per 1,000 persons under 65 years, which is 83 percent higher than the U.S. all-races rate of 48.4 for 1997. The IHS service area rate is adjusted for misreporting of AI/AN race on the death certificate. The rate of each IHS Area is higher than the U.S. all-races rate. The lowest Area rate, California (70.1 years of potential life lost per 1,000 persons under 65 years), is 45 percent greater than the U.S. all-races rate, while the highest Area rate, Aberdeen, (119.5) is 2.5 times the U.S. all-races rate.

**Chart 4.2**

**Years of Potential Life Lost (YPLL) Rates**

*Calendar Years 1996-1998*



**Table 4.2**

**Years of Potential Life Lost (YPLL) Rates**

*Calendar Years 1996-1998*

(All Causes)

|                              | Number of YPLL <sup>1</sup> |                       | Rate <sup>2</sup> |                       |
|------------------------------|-----------------------------|-----------------------|-------------------|-----------------------|
|                              | Unadjusted                  | Adjusted <sup>3</sup> | Unadjusted        | Adjusted <sup>3</sup> |
| <i>U.S. All Races (1997)</i> | 11,267,822                  |                       | 48.4              |                       |
| <i>All IHS Areas</i>         | 304,450                     | 358,557               | 75.3              | 88.6                  |
| Aberdeen                     | 31,420                      | 32,287                | 116.2             | 119.5                 |
| Alaska                       | 26,292                      | 27,752                | 90.2              | 95.2                  |
| Albuquerque                  | 16,495                      | 17,193                | 74.7              | 77.9                  |
| Bemidji                      | 20,751                      | 25,751                | 89.0              | 110.4                 |
| Billings                     | 14,144                      | 14,961                | 90.0              | 95.2                  |
| California                   | 14,758                      | 24,449                | 42.3              | 70.1                  |
| Nashville                    | 12,411                      | 15,631                | 60.5              | 76.2                  |
| Navajo                       | 51,083                      | 50,892                | 85.3              | 85.0                  |
| Oklahoma                     | 37,655                      | 63,697                | 45.9              | 77.7                  |
| Phoenix                      | 38,619                      | 39,873                | 96.5              | 99.6                  |
| Portland                     | 31,520                      | 36,813                | 74.7              | 87.2                  |
| Tucson                       | 9,302                       | 9,258                 | 119.4             | 118.8                 |

<sup>1</sup> Years of Potential Life Lost (YPLL) is a mortality indicator which measures the burden of premature deaths. It is calculated by subtracting the age at death from age 65 and summing the result over all deaths.

This calculation was performed through the use of age groups under one, one to four, and five-year age groups through sixty to 64 years. The age at death was calculated based upon the mid-point of each of these age groups.

<sup>2</sup> Rate per 1,000 population under 65 years of age.

<sup>3</sup> Adjusted to compensate for misreporting of American Indian/Alaska Native race on the death certificate.

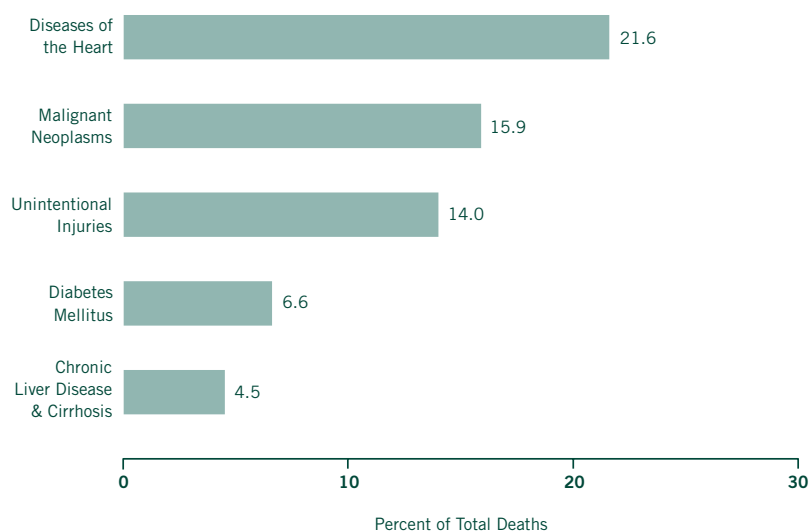
In 1996-98, 21.6 percent of all deaths in the IHS service area were caused by diseases of the heart, followed by malignant neoplasms (15.9 percent), unintentional injuries (14.0 percent), diabetes mellitus (6.6 percent), and chronic liver disease and cirrhosis (4.5 percent).

**Chart 4.3**

**Leading Causes of Death**

*Calendar Years 1996-1998*

**All IHS Areas**



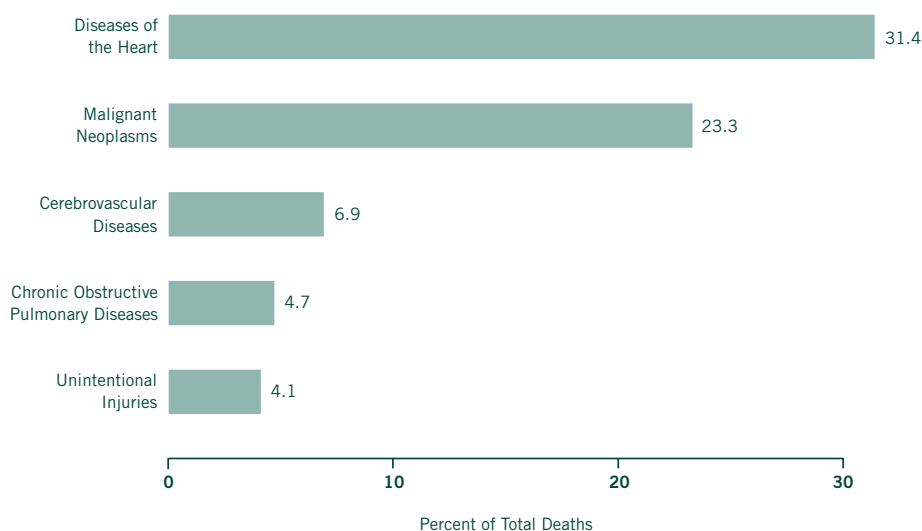
In 1997, 31.4 percent of all deaths in the U.S. were caused by diseases of the heart, followed by malignant neoplasms at 23.3 percent.

**Chart 4.4**

**Leading Causes of Death**

*Calendar Year 1997*

**U.S. All Races**



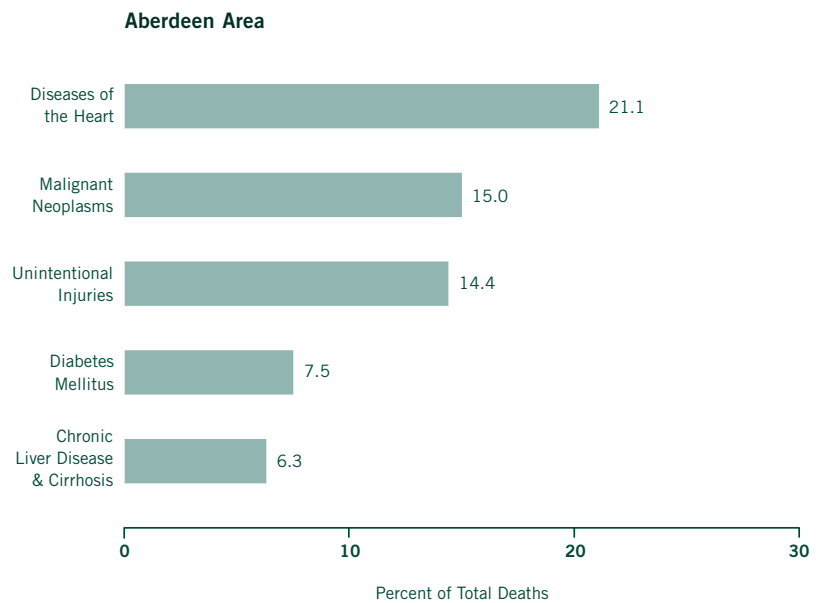


In 1996-98, 21.1 percent of all deaths in the Aberdeen Area were caused by diseases of the heart, followed by malignant neoplasms at 15.0 percent.

**Chart 4.5**

**Leading Causes of Death**

*Calendar Years 1996-1998*

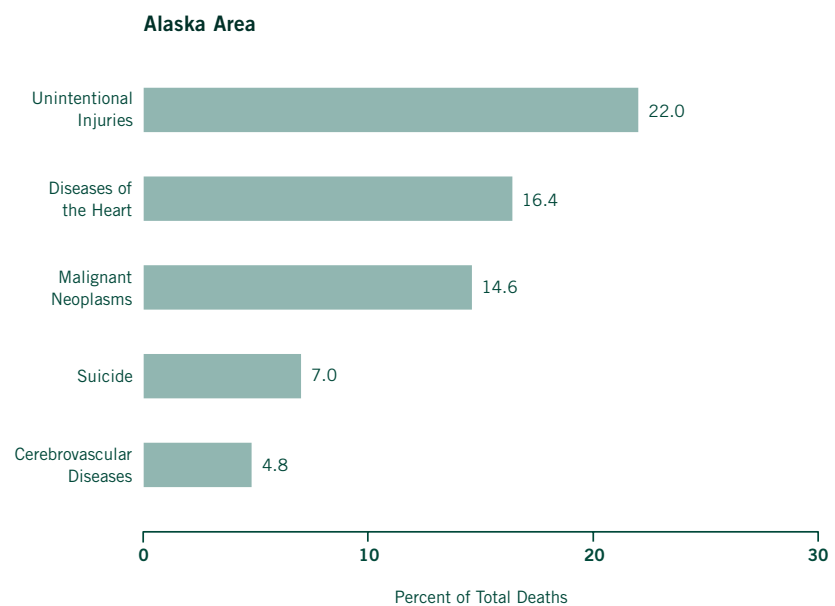


In 1996-98, 22.0 percent of all deaths in the Alaska Area were caused by unintentional injuries, followed by diseases of the heart at 16.4 percent.

**Chart 4.6**

**Leading Causes of Death**

*Calendar Years 1996-1998*



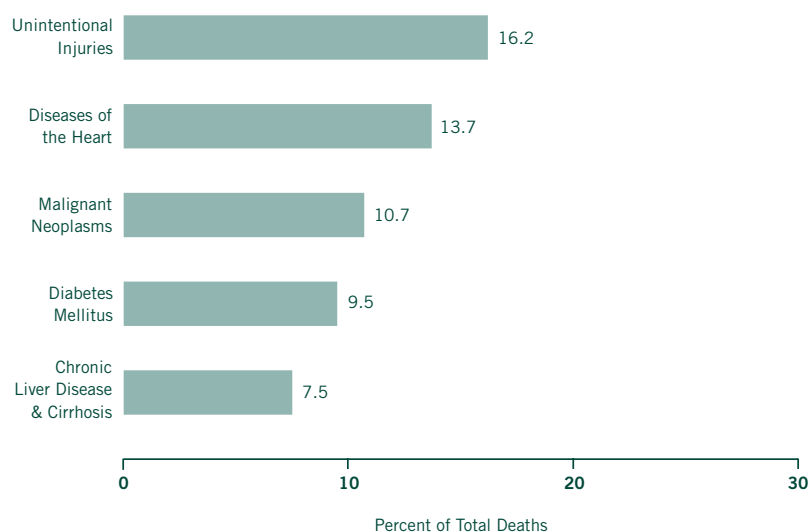
In 1996–98, 16.2 percent of all deaths in the Albuquerque Area were caused by unintentional injuries, followed by diseases of the heart at 13.7 percent.

**Chart 4.7**

### Leading Causes of Death

*Calendar Years 1996–1998*

#### Albuquerque Area



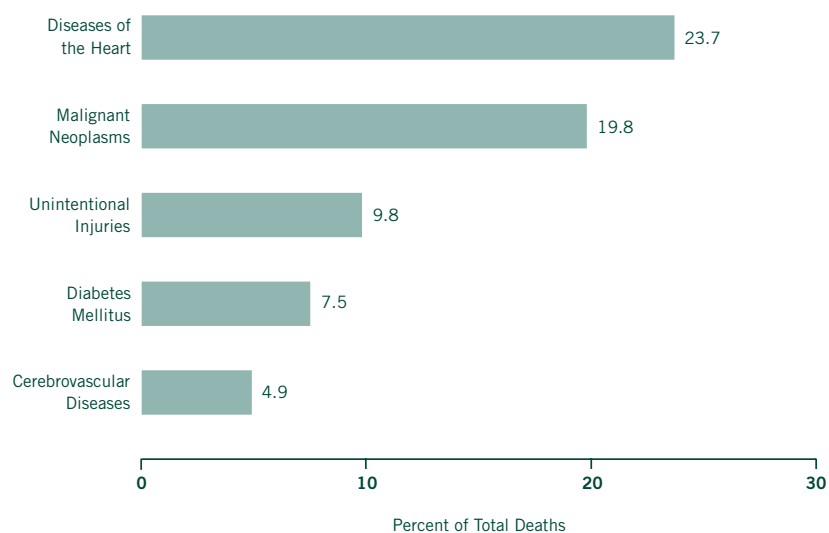
In 1996–98, 23.7 percent of all deaths in the Bemidji Area were caused by diseases of the heart, followed by malignant neoplasms at 19.8 percent.

**Chart 4.8**

### Leading Causes of Death

*Calendar Years 1996–1998*

#### Bemidji Area



In 1996-98, 18.4 percent of all deaths in the Billings Area were caused by diseases of the heart, followed by unintentional injuries at 16.2 percent.

**Chart 4.9**

**Leading Causes of Death**

*Calendar Years 1996-1998*

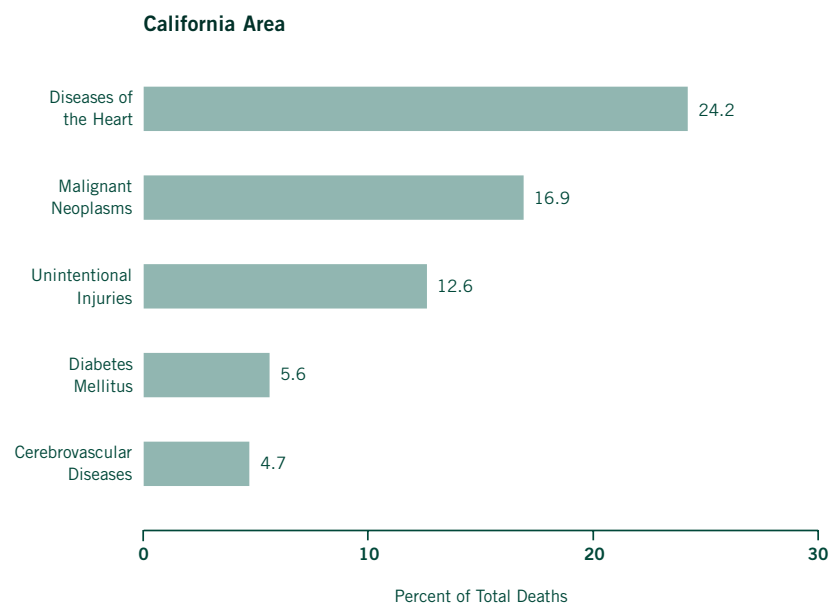


In 1996-98, 24.2 percent of all deaths in the California Area were caused by diseases of the heart, followed by malignant neoplasms at 16.9 percent.

**Chart 4.10**

**Leading Causes of Death**

*Calendar Years 1996-1998*

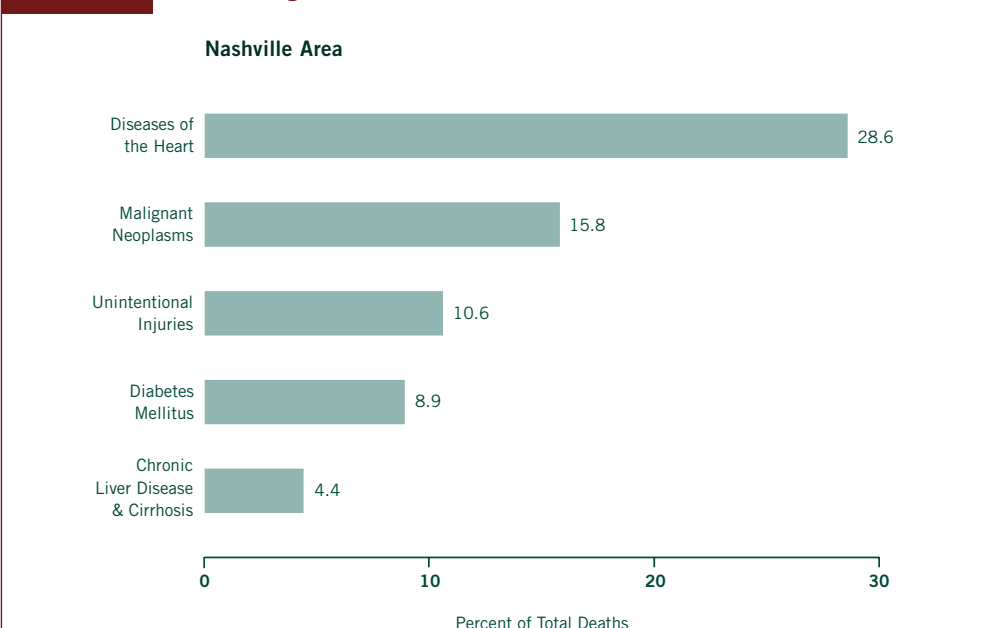


In 1996–98, 28.6 percent of all deaths in the Nashville Area were caused by diseases of the heart, followed by malignant neoplasms at 15.8 percent.

**Chart 4.11**

### Leading Causes of Death

*Calendar Years 1996-1998*

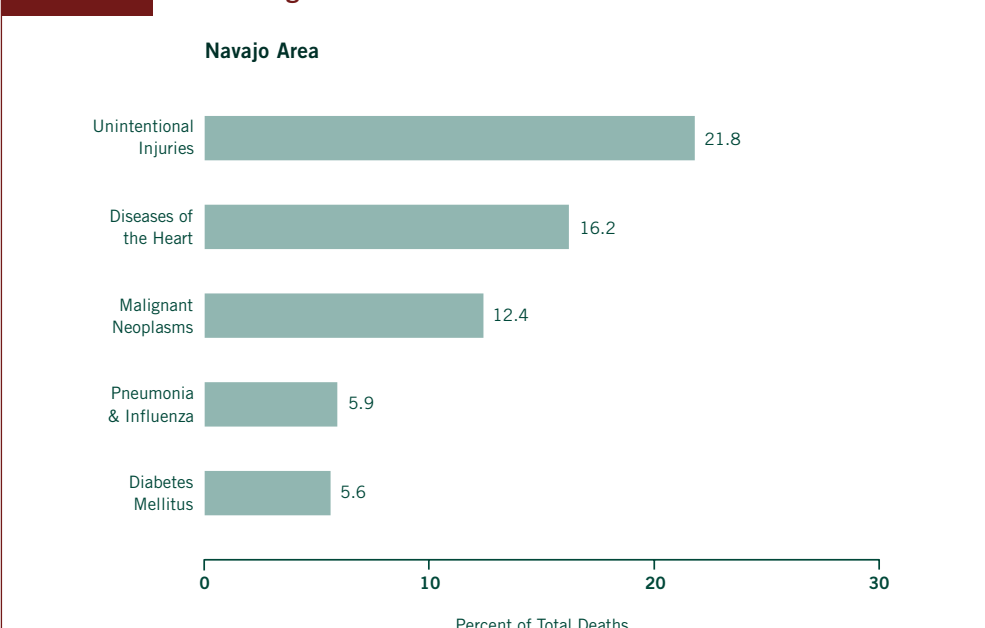


In 1996–98, 21.8 percent of all deaths in the Navajo Area were caused by unintentional injuries, followed by diseases of the heart at 16.2 percent.

**Chart 4.12**

### Leading Causes of Death

*Calendar Years 1996-1998*

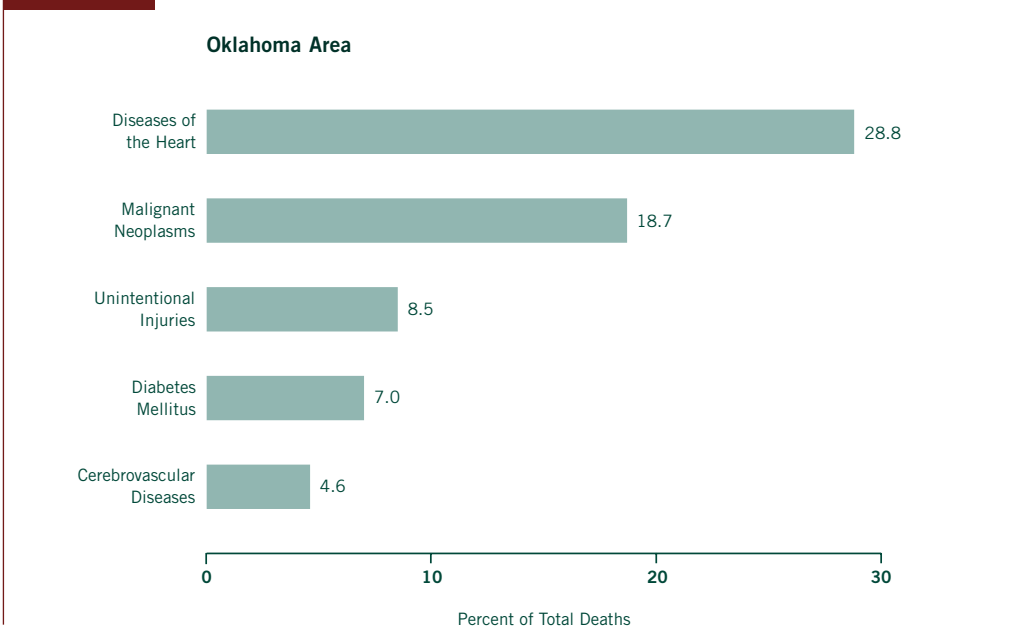


In 1996–98, 28.8 percent of all deaths in the Oklahoma Area were caused by diseases of the heart, followed by malignant neoplasms at 18.7 percent.

**Chart 4.13**

**Leading Causes of Death**

*Calendar Years 1996-1998*

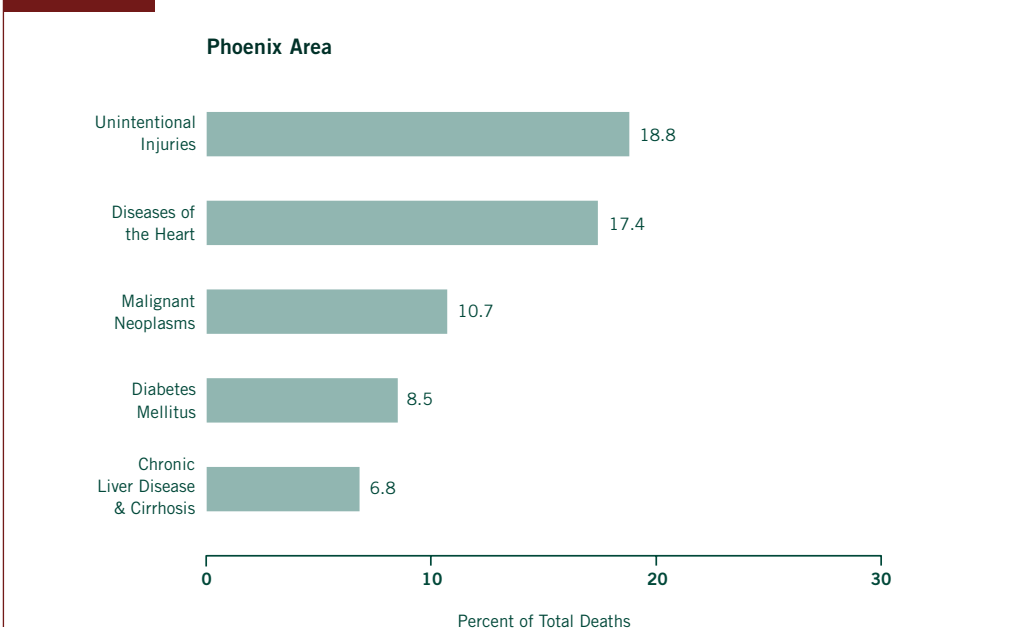


In 1996–98, 18.8 percent of all deaths in the Phoenix Area were caused by unintentional injuries, followed by diseases of the heart at 17.4 percent.

**Chart 4.14**

**Leading Causes of Death**

*Calendar Years 1996-1998*

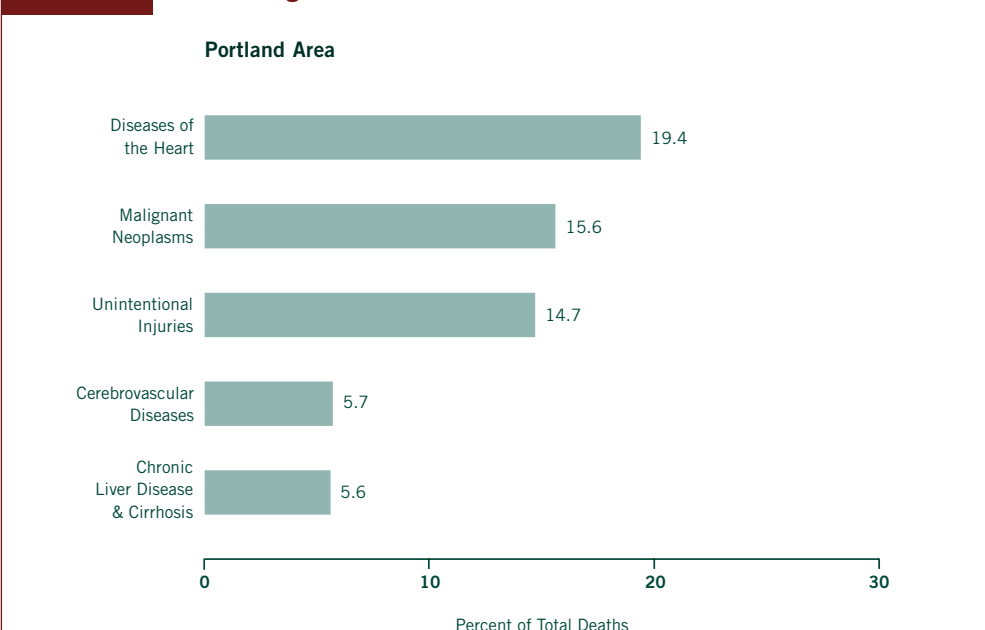


In 1996-98, 19.4 percent of all deaths in the Portland Area were caused by diseases of the heart, followed by malignant neoplasms at 15.6 percent.

**Chart 4.15**

**Leading Causes of Death**

*Calendar Years 1996-1998*

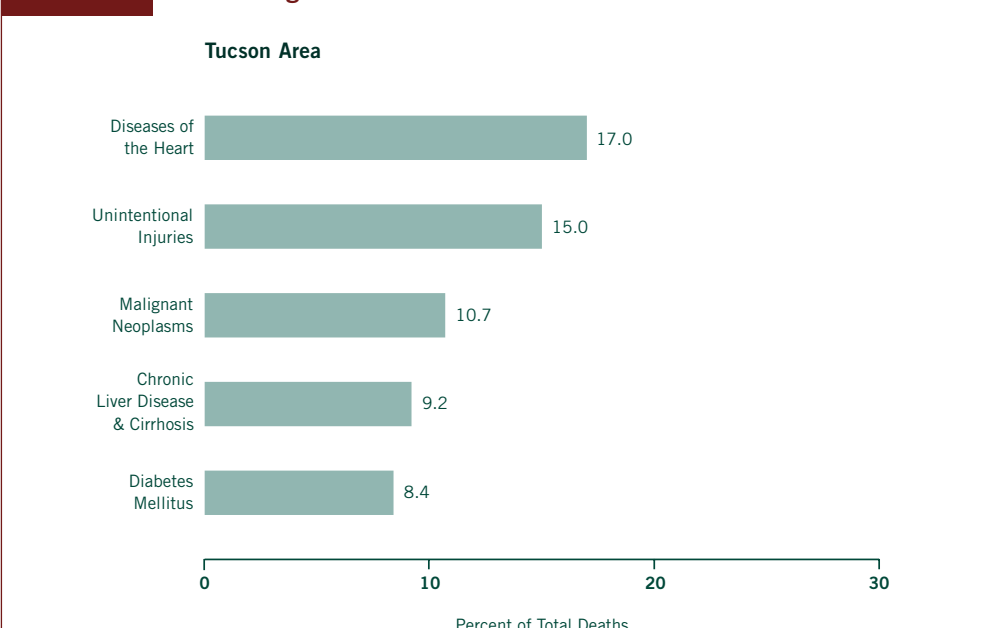


In 1996-98, 17.0 percent of all deaths in the Tucson Area were caused by diseases of the heart, followed by unintentional injuries at 15.0 percent.

**Chart 4.16**

**Leading Causes of Death**

*Calendar Years 1996-1998*

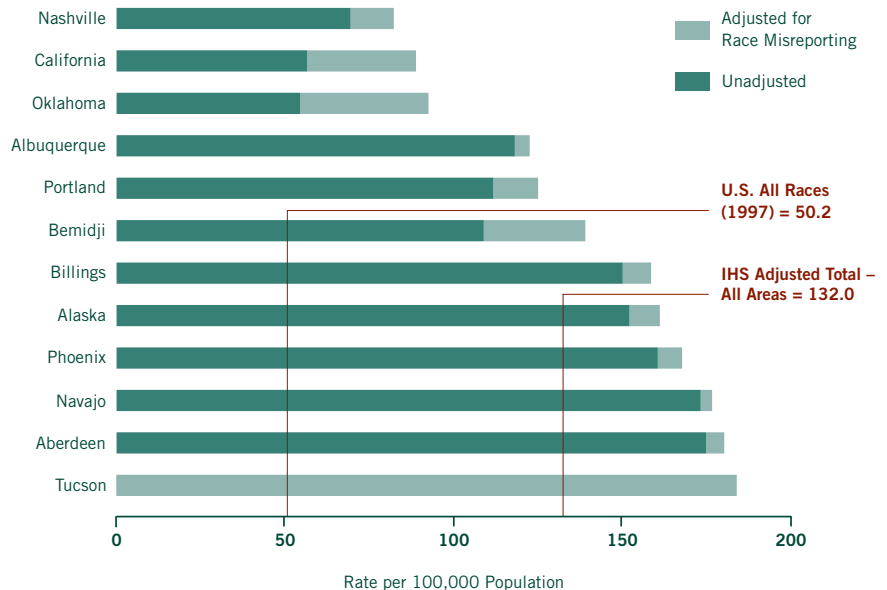


In 1996–98, the age-adjusted injury and poisoning death rate for the IHS service area population was 132.0 deaths per 100,000 population. The age-adjusted rate is also adjusted for misreporting of AI/AN race on the death certificate. The AI/AN rate is 2.6 times the U.S. all-races rate (50.2 per 100,000 population) for 1997. The Tucson Area rate (183.9 per 100,000 population), which is the highest among the IHS Areas, is 3.7 times the U.S. all-races rate. The Nashville Area rate (82.2), which is the lowest among the IHS areas, is 1.6 times the U.S. all-races rate.

**Chart 4.17**

**Age-Adjusted Injury and Poisoning<sup>1</sup>  
Death Rates**

*Calendar Years 1996-1998*



**Table 4.17**

**Age-Adjusted Injury and Poisoning<sup>1</sup>  
Death Rates**

*Calendar Years 1996-1998*

|                       | Deaths <sup>2</sup> |                       | Rate <sup>3</sup> |                       |
|-----------------------|---------------------|-----------------------|-------------------|-----------------------|
|                       | Unadjusted          | Adjusted <sup>4</sup> | Unadjusted        | Adjusted <sup>4</sup> |
| U.S. All Races (1997) | 146,400             |                       | 50.2              |                       |
| All IHS Areas         | 4,560               | 5,277                 | 114.7             | 132.0                 |
| Aberdeen              | 425                 | 439                   | 174.8             | 180.2                 |
| Alaska                | 423                 | 448                   | 152.1             | 161.1                 |
| Albuquerque           | 264                 | 275                   | 118.1             | 122.5                 |
| Bemidji               | 252                 | 327                   | 108.9             | 139.0                 |
| Billings              | 217                 | 230                   | 150.1             | 158.5                 |
| California            | 200                 | 318                   | 56.5              | 88.8                  |
| Nashville             | 149                 | 179                   | 69.4              | 82.2                  |
| Navajo                | 949                 | 967                   | 173.2             | 176.6                 |
| Oklahoma              | 465                 | 790                   | 54.4              | 92.5                  |
| Phoenix               | 600                 | 629                   | 160.5             | 167.7                 |
| Portland              | 475                 | 535                   | 111.7             | 125.0                 |
| Tucson                | 141                 | 140                   | 184.6             | 183.9                 |

<sup>1</sup> Includes the following ICD-9 cause of death groups combined: Motor vehicle accidents-E810-E825. Other accidents-E800-E807, E826-E949. Suicide-E950-E959. Homicide-E960-E978. Injury undetermined whether accidentally or purposely inflicted-E980-E989. Injury resulting from operations of war-E990-E999.

<sup>2</sup> Includes two deaths with age not reported. Both deaths were in the Tucson Area.

<sup>3</sup> Age-adjusted rate per 100,000 population.

<sup>4</sup> Adjusted to compensate for misreporting of American Indian/Alaska Native race on the death certificate.

In 1996-98, the age-adjusted unintentional injury death rate for the IHS service area population was 94.7 per 100,000 population. The age-adjusted rate is also adjusted for misreporting of AI/AN race on the death certificate. The AI/AN rate is over three times higher than the U.S. all-races rate of 30.1 for 1997. The Oklahoma Area has the lowest rate among the IHS Areas (59.3), but it is still almost two times the rate of the U.S. all-races. The highest Area rate (Navajo, 138.5) is 4.6 times the U.S. all-races rate.

**Chart 4.18**

### Age-Adjusted Unintentional Injury Death Rates

*Calendar Years 1996-1998*

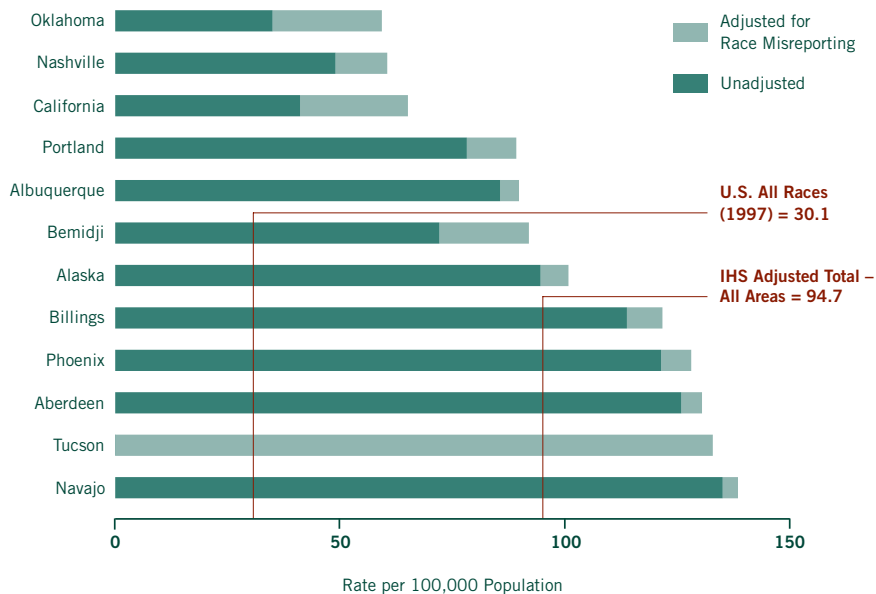




Table 4.18

## Age-Adjusted Unintentional Injury Death Rates

Calendar Years 1996-1998

|                       | All Unintentional Injuries |                       |                   |                       | Motor Vehicle Crashes |                       |   | Other Unintentional Injuries |                       |
|-----------------------|----------------------------|-----------------------|-------------------|-----------------------|-----------------------|-----------------------|---|------------------------------|-----------------------|
|                       | Deaths                     |                       | Rate <sup>2</sup> |                       | Totals                |                       | Percent of Motor Vehicle Crash Deaths Pedestrian-related <sup>1</sup> | Rate <sup>2</sup>            |                       |
|                       |                            |                       |                   |                       | Rate <sup>2</sup>     |                       |   |                              |                       |
|                       | Unadjusted                 | Adjusted <sup>3</sup> | Unadjusted        | Adjusted <sup>3</sup> | Unadjusted            | Adjusted <sup>3</sup> |   | Unadjusted                   | Adjusted <sup>3</sup> |
| U.S. All Races (1997) | 95,644                     |                       | 30.1              |                       | 15.9                  |                       |   | 14.2                         |                       |
| All IHS Areas         | 3,245                      | 3,761                 | 82.1              | 94.7                  | 46.6                  | 54.8                  | 19.5%   | 35.6                         | 39.9                  |
| Aberdeen              | 300                        | 312                   | 125.9             | 130.5                 | 73.3                  | 77.4                  | 11.1%   | 52.6                         | 53.1                  |
| Alaska                | 258                        | 275                   | 94.6              | 100.8                 | 24.4                  | 24.7                  | 20.0%   | 70.2                         | 76.1                  |
| Albuquerque           | 191                        | 201                   | 85.6              | 89.8                  | 49.9                  | 53.9                  | 18.9%   | 35.7                         | 35.9                  |
| Bemidji               | 165                        | 215                   | 72.1              | 92.0                  | 41.9                  | 55.0                  | 19.7%   | 30.2                         | 37.0                  |
| Billings              | 165                        | 177                   | 113.8             | 121.7                 | 74.4                  | 82.5                  | 8.2%  | 39.5                         | 39.2                  |
| California            | 144                        | 231                   | 41.1              | 65.1                  | 20.1                  | 31.4                  | 17.5%   | 21.0                         | 33.7                  |
| Nashville             | 106                        | 133                   | 49.0              | 60.5                  | 32.1                  | 42.5                  | 23.2%   | 16.9                         | 18.0                  |
| Navajo                | 735                        | 753                   | 135.1             | 138.5                 | 84.1                  | 87.2                  | 30.6%   | 51.0                         | 51.3                  |
| Oklahoma              | 305                        | 514                   | 35.0              | 59.3                  | 22.2                  | 39.1                  | 9.8%  | 12.8                         | 20.2                  |
| Phoenix               | 446                        | 472                   | 121.4             | 128.1                 | 72.6                  | 77.7                  | 23.6%   | 48.8                         | 50.3                  |
| Portland              | 331                        | 380                   | 78.2              | 89.2                  | 38.6                  | 45.1                  | 16.0%   | 39.6                         | 44.1                  |
| Tucson                | 99                         | 98                    | 133.6             | 132.9                 | 76.4                  | 76.4                  | 23.2%   | 57.2                         | 56.5                  |

<sup>1</sup> Includes Motor vehicle crashes having ICD-9 codes E810-E825 with a fourth digit code .7. The fourth digit code .7 indicates a pedestrian was the subject decedent as a result of the motor vehicle crash. Percentages are based upon adjusted numbers of deaths.

<sup>2</sup> Age-adjusted rate per 100,000 population.

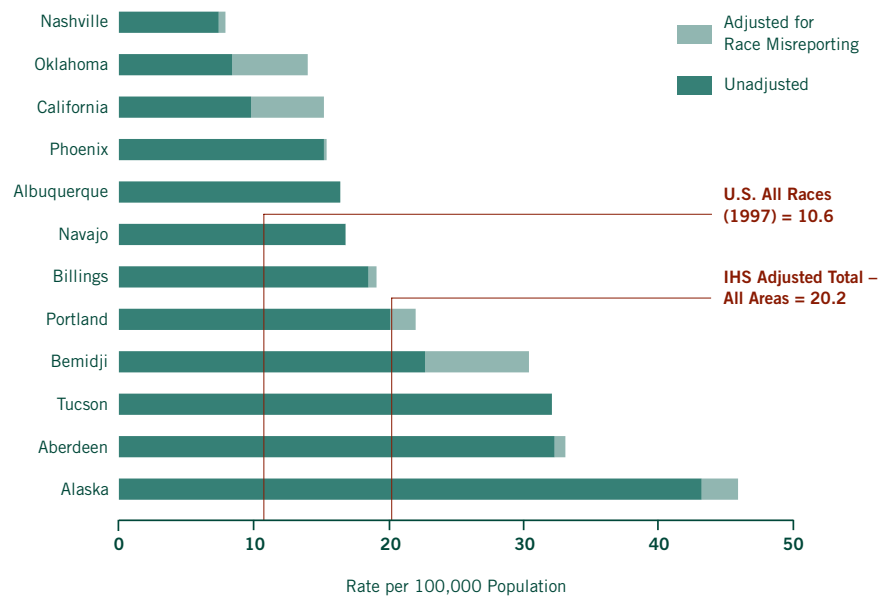
<sup>3</sup> Adjusted to compensate for misreporting of American Indian/Alaska Native race on the death certificate.

In 1996-98, the age-adjusted suicide death rate for the IHS service area population was 20.2 per 100,000 population. The age-adjusted rate is also adjusted for misreporting of AI/AN race on the death certificate. The AI/AN rate is 91 percent higher than the U.S. all-races rate of 10.6 per 100,000 population for 1997. The Alaska Area rate (45.9) is 4.3 times the U.S. rate while four other Area rates (Aberdeen, Tucson, Bemidji, and Portland) are at least double the U.S. all-races rate.

**Chart 4.19**

**Age-Adjusted Suicide Death Rates**

*Calendar Years 1996-1998*



**Table 4.19**

**Age-Adjusted Suicide Death Rates**

*Calendar Years 1996-1998*

|                              | Deaths     |                       | Rate <sup>1</sup> |                       |
|------------------------------|------------|-----------------------|-------------------|-----------------------|
|                              | Unadjusted | Adjusted <sup>2</sup> | Unadjusted        | Adjusted <sup>2</sup> |
| <i>U.S. All Races (1997)</i> | 30,535     |                       | 10.6              |                       |
| <i>All IHS Areas</i>         | 711        | 818                   | 17.6              | 20.2                  |
| Aberdeen                     | 83         | 85                    | 32.3              | 33.1                  |
| Alaska                       | 124        | 132                   | 43.2              | 45.9                  |
| Albuquerque                  | 37         | 37                    | 16.4              | 16.4                  |
| Bemidji                      | 53         | 72                    | 22.7              | 30.4                  |
| Billings                     | 27         | 28                    | 18.5              | 19.1                  |
| California                   | 34         | 53                    | 9.8               | 15.2                  |
| Nashville                    | 16         | 17                    | 7.4               | 7.9                   |
| Navajo                       | 94         | 94                    | 16.8              | 16.8                  |
| Oklahoma                     | 69         | 116                   | 8.4               | 14.0                  |
| Phoenix                      | 61         | 62                    | 15.2              | 15.4                  |
| Portland                     | 87         | 96                    | 20.1              | 22.0                  |
| Tucson                       | 26         | 26                    | 32.1              | 32.1                  |

<sup>1</sup> Age-adjusted rate per 100,000 population.

Rates based on a small number of deaths should be interpreted with caution.

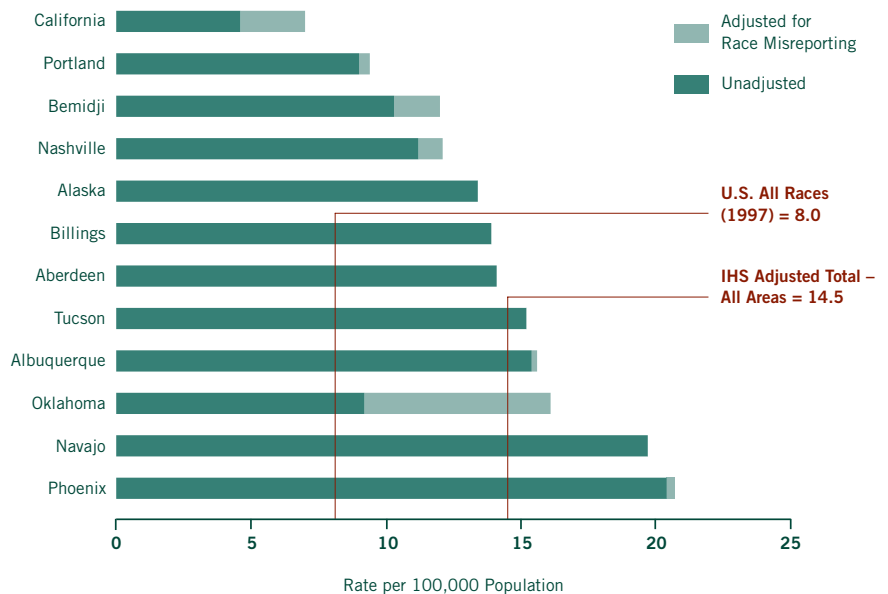
<sup>2</sup> Adjusted to compensate for misreporting of American Indian/Alaska Native race on the death certificate.

In 1996-98, the age-adjusted homicide death rate for the IHS service area population was 14.5 per 100,000 population. The age-adjusted rate is also adjusted for misreporting of AI/AN race on the death certificate. The AI/AN rate is 81 percent higher than the U.S. all-races rate of 8.0 per 100,000 population for 1997. The Phoenix (20.7) and Navajo (19.7) rates are more than double the U.S. all-races rate.

**Chart 4.20**

**Age-Adjusted Homicide Death Rates**

*Calendar Years 1996-1998*



**Table 4.20**

**Age-Adjusted Homicide Death Rates**

*Calendar Years 1996-1998*

|                              | Deaths        |                       | Rate <sup>1</sup> |                       |
|------------------------------|---------------|-----------------------|-------------------|-----------------------|
|                              | Unadjusted    | Adjusted <sup>2</sup> | Unadjusted        | Adjusted <sup>2</sup> |
| <i>U.S. All Races (1997)</i> | <i>19,846</i> |                       | <i>8.0</i>        |                       |
| <i>All IHS Areas</i>         | <i>514</i>    | <i>594</i>            | <i>12.7</i>       | <i>14.5</i>           |
| Aberdeen                     | 36            | 36                    | 14.1              | 14.1                  |
| Alaska                       | 38            | 38                    | 13.4              | 13.4                  |
| Albuquerque                  | 34            | 35                    | 15.4              | 15.6                  |
| Bemidji                      | 25            | 29                    | 10.3              | 12.0                  |
| Billings                     | 20            | 20                    | 13.9              | 13.9                  |
| California                   | 18            | 28                    | 4.6               | 7.0                   |
| Nashville                    | 24            | 26                    | 11.2              | 12.1                  |
| Navajo                       | 111           | 111                   | 19.7              | 19.7                  |
| Oklahoma                     | 76            | 135                   | 9.2               | 16.1                  |
| Phoenix                      | 80            | 82                    | 20.4              | 20.7                  |
| Portland                     | 39            | 41                    | 9.0               | 9.4                   |
| Tucson                       | 13            | 13                    | 15.2              | 15.2                  |

<sup>1</sup> Age-adjusted rate per 100,000 population.

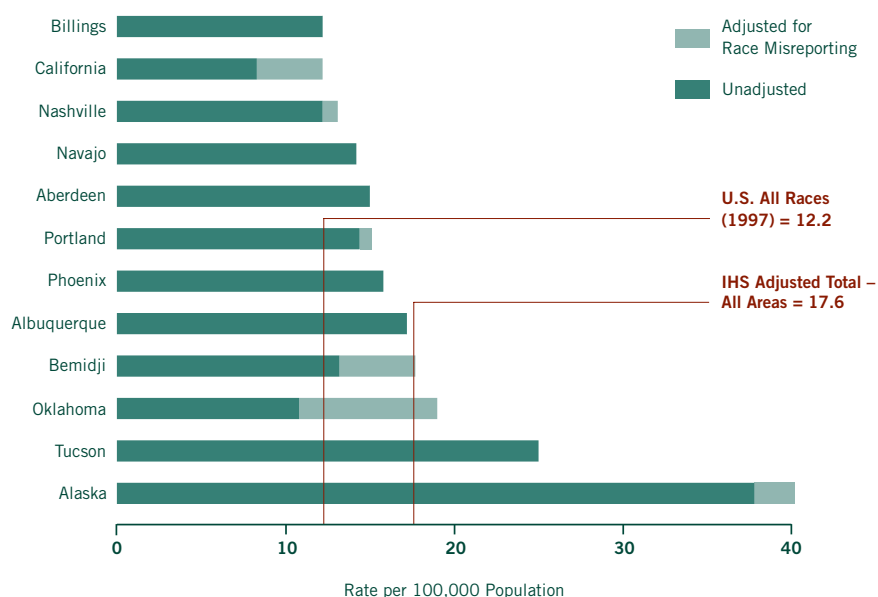
Rates based on a small number of deaths should be interpreted with caution.

<sup>2</sup> Adjusted to compensate for misreporting of American Indian/Alaska Native race on the death certificate.

NOTE: Includes deaths due to homicide and legal intervention.

In 1996–98 the age-adjusted firearm injury death rate for the IHS service area population was 17.6 per 100,000 population. The age-adjusted rate is also adjusted for misreporting of AI/AN race on the death certificate. The AI/AN rate is 1.4 times the U.S. all-races rate of 12.2 per 100,000 population for 1997. The Alaska Area rate (40.2) far exceeds the rates of the other Areas and is 1.6 times higher than the next highest Area rate (Tucson, 25.0) and 3.3 times higher than the lowest Area rate (Billings and California, each with rates of 12.2).

**Chart 4.21** Age-Adjusted Firearm Injury Death Rates *Calendar Years 1996-1998*



**Table 4.21** Age-Adjusted Firearm Injury<sup>1</sup> Death Rates *Calendar Years 1996-1998*

|                              | Deaths     |                       | Rate       |                       |
|------------------------------|------------|-----------------------|------------|-----------------------|
|                              | Unadjusted | Adjusted <sup>2</sup> | Unadjusted | Adjusted <sup>2</sup> |
| <i>U.S. All Races (1997)</i> | 32,436     |                       | 12.2       |                       |
| <i>All IHS Areas</i>         | 603        | 709                   | 15.0       | 17.6                  |
| Aberdeen                     | 39         | 39                    | 15.0       | 15.0                  |
| Alaska                       | 108        | 115                   | 37.8       | 40.2                  |
| Albuquerque                  | 37         | 37                    | 17.2       | 17.2                  |
| Bemidji                      | 31         | 42                    | 13.2       | 17.7                  |
| Billings                     | 18         | 18                    | 12.2       | 12.2                  |
| California                   | 29         | 43                    | 8.3        | 12.2                  |
| Nashville                    | 25         | 27                    | 12.2       | 13.1                  |
| Navajo                       | 81         | 81                    | 14.2       | 14.2                  |
| Oklahoma                     | 88         | 157                   | 10.8       | 19.0                  |
| Phoenix                      | 64         | 64                    | 15.8       | 15.8                  |
| Portland                     | 62         | 65                    | 14.4       | 15.1                  |
| Tucson <sup>2</sup>          | 21         | 21                    | 25.0       | 25.0                  |

<sup>1</sup> Includes deaths with ICD-9 codes: Accident caused by firearm missile-E922, Suicide and self-inflicted injury by firearms-E955.0-E955.4, Assault by firearms and legal intervention-E965.0-E965.4, E970, and Injury by firearms, undetermined whether accidentally or purposely inflicted-E985.0-E985.4. Injury by firearm causes exclude explosive and other causes indirectly related to firearms.

<sup>2</sup> Adjusted to compensate for misreporting of American Indian/Alaska Native race on the death certificate.

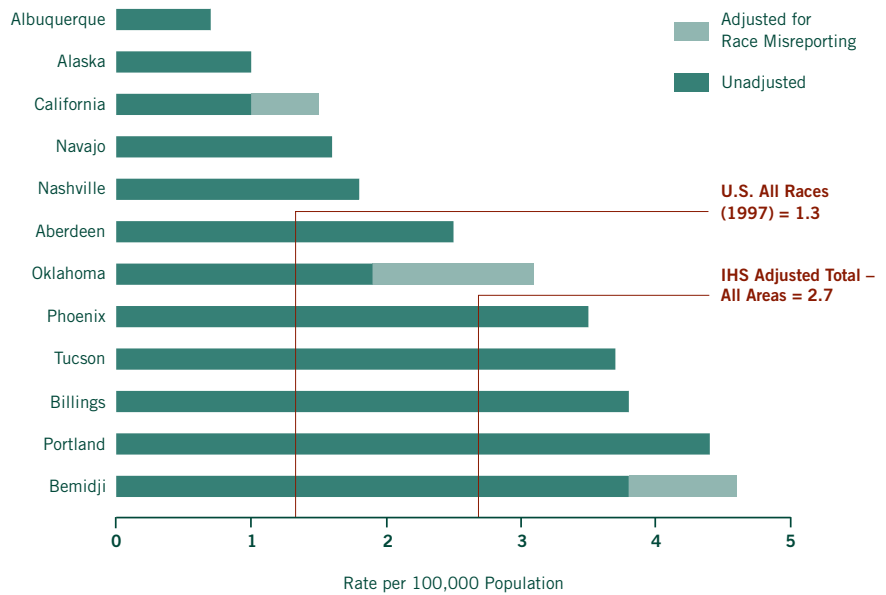
In 1996-98 for the IHS service area population, the age-adjusted death rate for injury and poisoning deaths due to other causes was 2.7 per 100,000 population. The age-adjusted rate is also adjusted for misreporting of AI/AN race on the death certificate. The AI/AN rate is slightly more than double the U.S. all-races rate of 1.3 deaths per 100,000 population for 1997. The Area rates should be interpreted with caution because of the relatively small numbers of deaths involved (See *Sources and Limitations of Data: Population Statistics*).

**Chart 4.22**

**Age-Adjusted Death Rates  
for Injury and Poisoning**

*Calendar Years 1996-1998*

**Deaths Due to Other Causes**



**Table 4.22**

**Age-Adjusted Death Rates  
for Injury and Poisoning**

*Calendar Years 1996-1998*

**Deaths Due to Other Causes<sup>1</sup>**

|                              | Deaths       |                       | Rate <sup>2</sup> |                       |
|------------------------------|--------------|-----------------------|-------------------|-----------------------|
|                              | Unadjusted   | Adjusted <sup>3</sup> | Unadjusted        | Adjusted <sup>3</sup> |
| <i>U.S. All Races (1997)</i> | <i>3,680</i> |                       | <i>1.3</i>        |                       |
| <i>All IHS Areas</i>         | <i>90</i>    | <i>104</i>            | <i>2.3</i>        | <i>2.7</i>            |
| Aberdeen                     | 6            | 6                     | 2.5               | 2.5                   |
| Alaska                       | 3            | 3                     | 1.0               | 1.0                   |
| Albuquerque                  | 2            | 2                     | 0.7               | 0.7                   |
| Bemidji                      | 9            | 11                    | 3.8               | 4.6                   |
| Billings                     | 5            | 5                     | 3.8               | 3.8                   |
| California                   | 4            | 6                     | 1.0               | 1.5                   |
| Nashville                    | 3            | 3                     | 1.8               | 1.8                   |
| Navajo                       | 9            | 9                     | 1.6               | 1.6                   |
| Oklahoma                     | 15           | 25                    | 1.9               | 3.1                   |
| Phoenix                      | 13           | 13                    | 3.5               | 3.5                   |
| Portland                     | 18           | 18                    | 4.4               | 4.4                   |
| Tucson                       | 3            | 3                     | 3.7               | 3.7                   |

<sup>1</sup> Includes the following ICD-9 cause of death groups combined: Injury undetermined whether accidentally or purposely inflicted-E980-E989. Injury resulting from operations of war-E990-E999.

<sup>2</sup> Age-adjusted rate per 100,000 population. Rates based on a small number of deaths should be interpreted with caution.

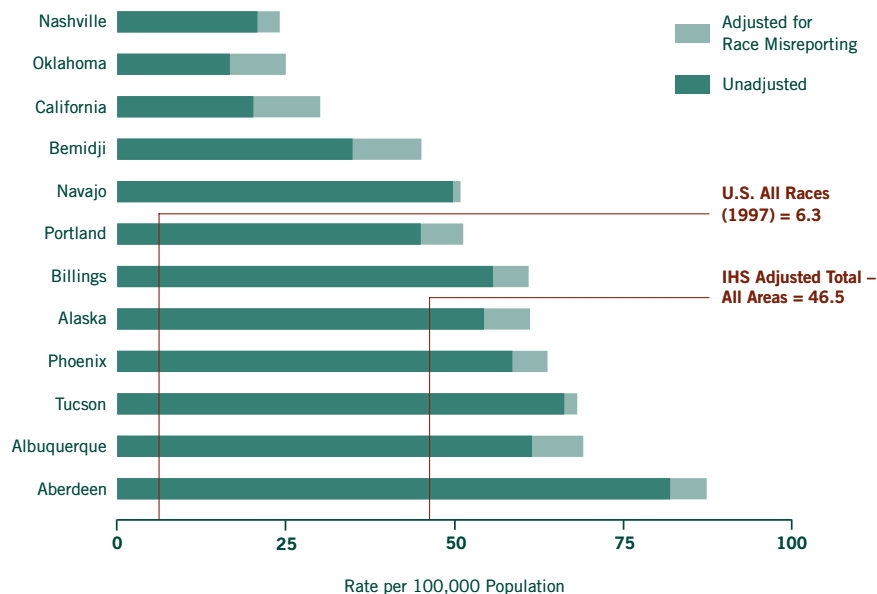
<sup>3</sup> Adjusted to compensate for misreporting of American Indian/Alaska Native race on the death certificate.

The age-adjusted alcohol-related death rate for the IHS service area population in 1996-98 was 46.5 per 100,000 population. The age-adjusted rate is also adjusted for misreporting of AI/AN race on the death certificate. The AI/AN rate is 7.4 times the U.S. all-races rate of 6.3 for 1997. The Aberdeen Area rate of 87.4 is 13.9 times the U.S. all-races rate and 1.3 times the second highest Area rate, Albuquerque at 69.1.

**Chart 4.23**

**Age-Adjusted Alcohol-Related Death Rates**

*Calendar Years 1996-1998*



**Table 4.23**

**Age-Adjusted Alcohol-Related Death Rates**

*Calendar Years 1996-1998*

|                              | Deaths     |                       | Rate <sup>1</sup> |                       |
|------------------------------|------------|-----------------------|-------------------|-----------------------|
|                              | Unadjusted | Adjusted <sup>2</sup> | Unadjusted        | Adjusted <sup>2</sup> |
| <i>U.S. All Races (1997)</i> | 19,576     |                       | 6.3               |                       |
| <i>All IHS Areas</i>         | 1,356      | 1,563                 | 40.3              | 46.5                  |
| Aberdeen                     | 158        | 168                   | 82.0              | 87.4                  |
| Alaska                       | 127        | 143                   | 54.4              | 61.2                  |
| Albuquerque                  | 108        | 121                   | 61.5              | 69.1                  |
| Bemidji                      | 66         | 85                    | 34.9              | 45.1                  |
| Billings                     | 67         | 74                    | 55.7              | 61.0                  |
| California                   | 61         | 91                    | 20.2              | 30.1                  |
| Nashville                    | 39         | 45                    | 20.8              | 24.1                  |
| Navajo                       | 226        | 231                   | 49.8              | 50.9                  |
| Oklahoma                     | 126        | 189                   | 16.7              | 25.0                  |
| Phoenix                      | 180        | 195                   | 58.6              | 63.8                  |
| Portland                     | 157        | 179                   | 45.0              | 51.3                  |
| Tucson                       | 41         | 42                    | 66.3              | 68.2                  |

<sup>1</sup> Age-adjusted rate per 100,000 population.

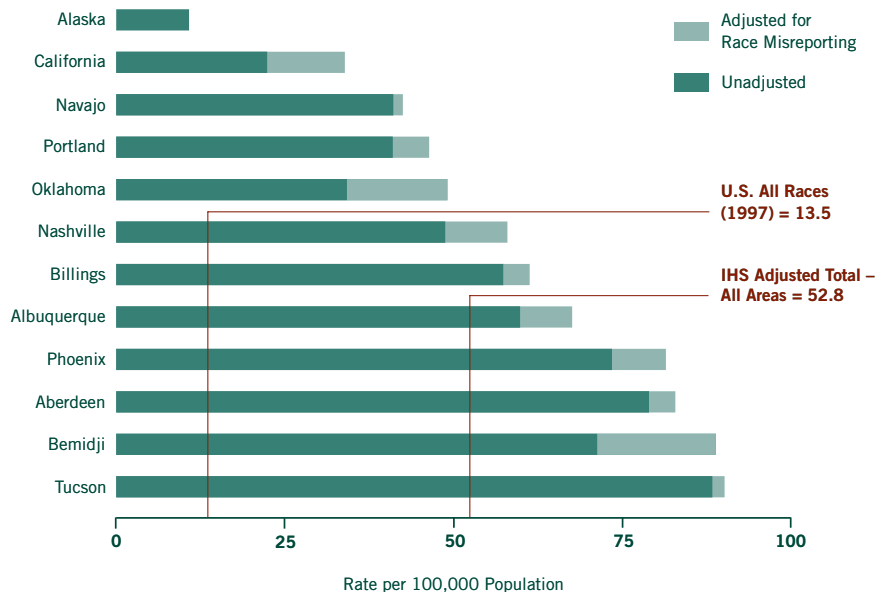
<sup>2</sup> Adjusted to compensate for misreporting of American Indian/Alaska Native race on the death certificate.

The age-adjusted diabetes death rate for the IHS service area population in 1996–98 was 52.8 per 100,000 population. The age-adjusted rate is also adjusted for misreporting of AI/AN race on the death certificate. The diabetes death rate increased 13.8 percent from the rate experienced by the IHS service area during 1994–96 (46.4 per 100,000 population). The 1996–98 AI/AN rate is 3.9 times the U.S. all-races rate of 13.5 per 100,000 population for 1997. The IHS Area rates vary widely, ranging from 10.8 in Alaska (which is twenty per-cent lower than the U.S. all-races rate) to 90.2 in Tucson (which is 568 percent higher than the U.S. all-races rate).

**Chart 4.24**

**Age-Adjusted Diabetes Mellitus Death Rates**

Calendar Years 1996–1998



**Table 4.24**

**Age-Adjusted Diabetes Mellitus Death Rates**

Calendar Years 1996–1998

|                              | Deaths     |                       | Rate <sup>1</sup> |                       |
|------------------------------|------------|-----------------------|-------------------|-----------------------|
|                              | Unadjusted | Adjusted <sup>2</sup> | Unadjusted        | Adjusted <sup>2</sup> |
| <i>U.S. All Races (1997)</i> | 62,636     |                       | 13.5              |                       |
| <i>All IHS Areas</i>         | 1,511      | 1,780                 | 44.4              | 52.8                  |
| Aberdeen                     | 155        | 162                   | 79.0              | 82.9                  |
| Alaska                       | 24         | 24                    | 10.8              | 10.8                  |
| Albuquerque                  | 106        | 118                   | 59.9              | 67.6                  |
| Bemidji                      | 134        | 165                   | 71.3              | 88.9                  |
| Billings                     | 65         | 69                    | 57.4              | 61.3                  |
| California                   | 69         | 103                   | 22.4              | 33.9                  |
| Nashville                    | 94         | 111                   | 48.8              | 58.0                  |
| Navajo                       | 187        | 193                   | 41.1              | 42.5                  |
| Oklahoma                     | 301        | 422                   | 34.2              | 49.1                  |
| Phoenix                      | 194        | 214                   | 73.5              | 81.5                  |
| Portland                     | 128        | 144                   | 41.0              | 46.4                  |
| Tucson                       | 54         | 55                    | 88.4              | 90.2                  |

<sup>1</sup> Age-adjusted rate per 100,000 population.

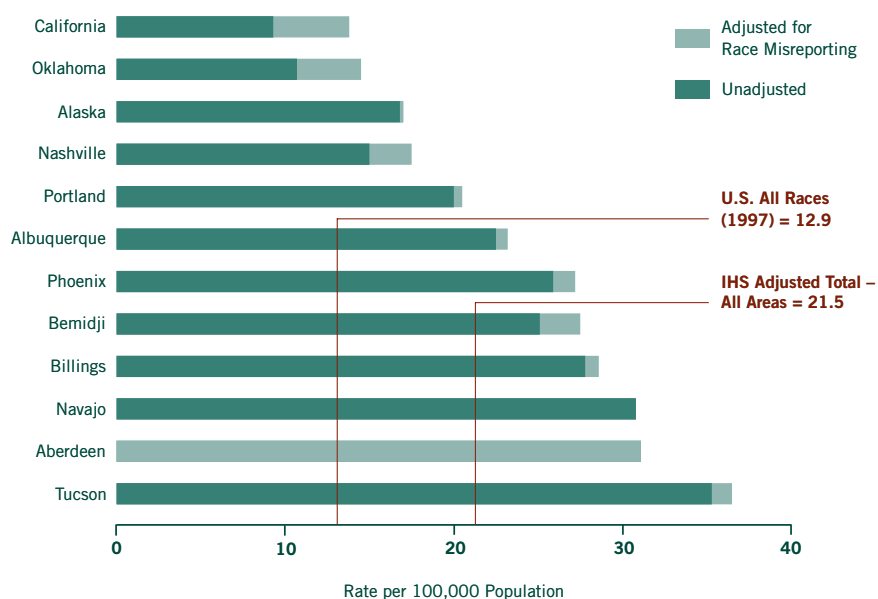
<sup>2</sup> Adjusted to compensate for misreporting of American Indian/Alaska Native race on the death certificate.

The age-adjusted pneumonia and influenza death rate for the IHS service area population in 1996-98 was 21.5 per 100,000 population. The age-adjusted rate is also adjusted for misreporting of AI/AN race on the death certificate. The AI/AN rate is 1.7 times the U.S. all-races rate of 12.9 per 100,000 population for 1997. The three highest Area rates in Tucson (36.5), Aberdeen (31.1), and Navajo (30.8), are at least double the lowest Area rate in California (13.8).

**Chart 4.25**

**Age-Adjusted Pneumonia and Influenza Death Rates**

*Calendar Years 1996-1998*



**Table 4.25**

**Age-Adjusted Pneumonia and Influenza Death Rates**

*Calendar Years 1996-1998*

|                              | Deaths           |                       | Rate <sup>1</sup> |                       |
|------------------------------|------------------|-----------------------|-------------------|-----------------------|
|                              | Unadjusted       | Adjusted <sup>2</sup> | Unadjusted        | Adjusted <sup>2</sup> |
| <i>U.S. All Races (1997)</i> | 86,449           |                       | 12.9              |                       |
| <i>All IHS Areas</i>         | 845              | 915                   | 19.8              | 21.5                  |
| Aberdeen                     | 71 <sup>3</sup>  | 70 <sup>3</sup>       | 31.3 <sup>3</sup> | 31.1 <sup>3</sup>     |
| Alaska                       | 46               | 47                    | 16.8              | 17.0                  |
| Albuquerque                  | 54               | 56                    | 22.5              | 23.2                  |
| Bemidji                      | 56               | 61                    | 25.1              | 27.5                  |
| Billings                     | 37               | 38                    | 27.8              | 28.6                  |
| California                   | 33               | 49                    | 9.3               | 13.8                  |
| Nashville                    | 34               | 36                    | 15.0              | 17.5                  |
| Navajo                       | 205 <sup>3</sup> | 204 <sup>3</sup>      | 30.8 <sup>3</sup> | 30.8 <sup>3</sup>     |
| Oklahoma                     | 128              | 166                   | 10.7              | 14.5                  |
| Phoenix                      | 86               | 91                    | 25.9              | 27.2                  |
| Portland                     | 71               | 73                    | 20.0              | 20.5                  |
| Tucson                       | 24               | 24                    | 35.3              | 36.5                  |

<sup>1</sup> Age-adjusted rate per 100,000 population.

<sup>2</sup> Adjusted to compensate for misreporting of American Indian/Alaska Native race the death certificate.

<sup>3</sup> The adjusted numbers and rates (Aberdeen and Navajo Areas) are lower than the unadjusted numbers and rates because the linked birth/infant death file (used to obtain the adjusted counts of infant deaths) had one less death for this cause than did the unadjusted mortality file (1996-1998 data) for each of these two Areas.

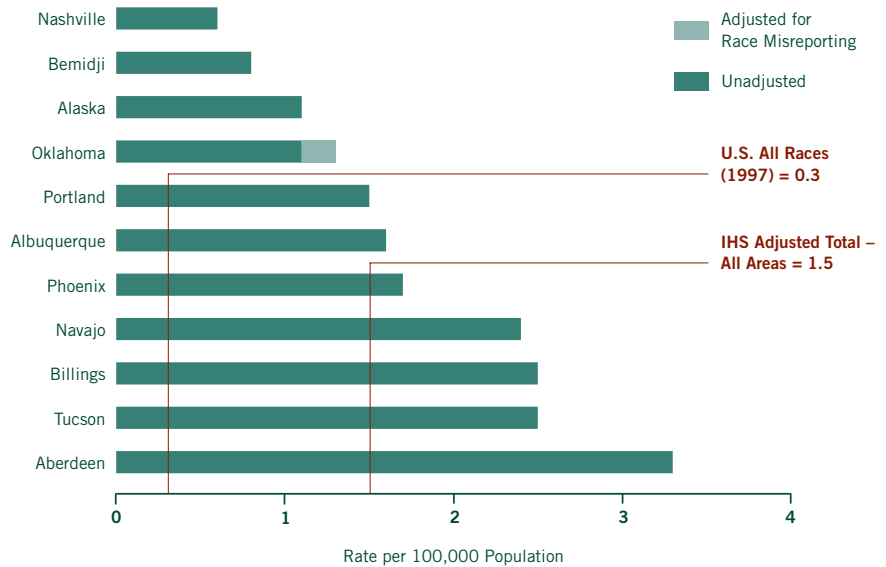


In 1996–98, the age-adjusted tuberculosis death rate for the IHS service area population was 1.5 per 100,000 population. The age-adjusted rate is also adjusted for misreporting of AI/AN race on the death certificate. The AI/AN rate is five times higher than the U.S. all-races rate of 0.3 per 100,000 population for 1997. The Area rates should be interpreted with caution because of the small number of deaths involved. The Navajo (eleven deaths) and Oklahoma (twelve deaths) Areas had the highest numbers of deaths over the three-year period (See *Sources and Limitations of Data: Population Statistics*).

**Chart 4.26**

**Age-Adjusted Tuberculosis Death Rates**

Calendar Years 1996–1998



NOTE: IHS unadjusted rates and rates adjusted for race misreporting are the same except for Oklahoma (1.1 unadjusted, 1.3 adjusted).

**Table 4.26**

**Age-Adjusted Tuberculosis Death Rates**

Calendar Years 1996–1998

|                       | Deaths     |                       | Rate <sup>1</sup> |                       |
|-----------------------|------------|-----------------------|-------------------|-----------------------|
|                       | Unadjusted | Adjusted <sup>2</sup> | Unadjusted        | Adjusted <sup>2</sup> |
| U.S. All Races (1997) | 1,166      |                       | 0.3               |                       |
| All IHS Areas         | 51         | 53                    | 1.4               | 1.5                   |
| Aberdeen              | 6          | 6                     | 3.3               | 3.3                   |
| Alaska                | 2          | 2                     | 1.1               | 1.1                   |
| Albuquerque           | 3          | 3                     | 1.6               | 1.6                   |
| Bemidji               | 2          | 2                     | 0.8               | 0.8                   |
| Billings              | 3          | 3                     | 2.5               | 2.5                   |
| California            | —          | —                     | —                 | —                     |
| Nashville             | 1          | 1                     | 0.6               | 0.6                   |
| Navajo                | 11         | 11                    | 2.4               | 2.4                   |
| Oklahoma              | 10         | 12                    | 1.1               | 1.3                   |
| Phoenix               | 6          | 6                     | 1.7               | 1.7                   |
| Portland              | 5          | 5                     | 1.5               | 1.5                   |
| Tucson                | 2          | 2                     | 2.5               | 2.5                   |

— Represents zero.

<sup>1</sup> Age-adjusted rate per 100,000 population.

Rates based on a small number of deaths should be interpreted with caution.

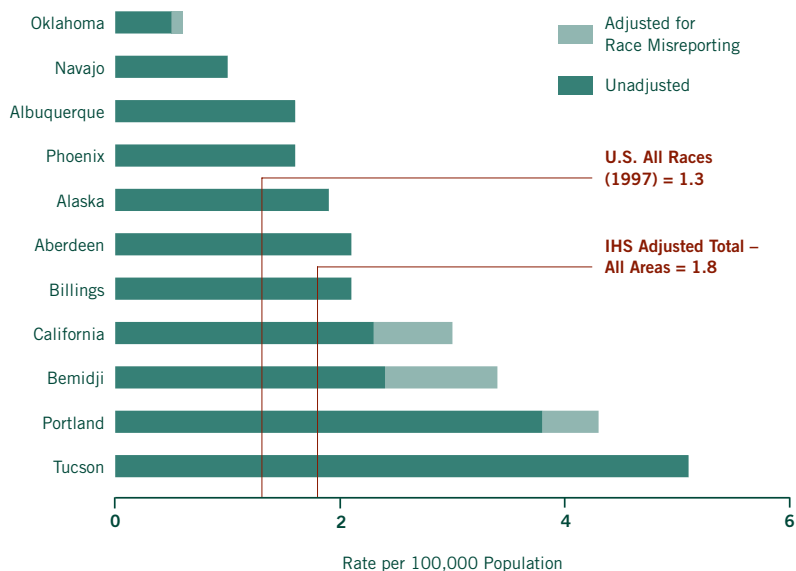
<sup>2</sup> Adjusted to compensate for misreporting of American Indian/Alaska Native race on the death certificate.

In 1996–98, the age-adjusted gastrointestinal diseases death rate for the IHS service area population was 1.8 per 100,000 population. The age-adjusted rate is also adjusted for misreporting of AI/AN race on the death certificate. The AI/AN rate is 38 percent greater than the U.S. all-races rate for 1997 (1.3 per 100,000 population). The Area rates should be interpreted with caution because of the small number of deaths involved. The largest number of deaths over the three-year period for any one Area was fifteen deaths in the Portland Area (see section *Sources and Limitations of Data: Population Statistics*).

**Chart 4.27**

**Age-Adjusted Gastrointestinal Diseases Death Rates**

*Calendar Years 1996-1998*



**Table 4.27**

**Age-Adjusted Gastrointestinal Diseases Death Rates**

*Calendar Years 1996-1998*

|                              | Deaths     |                       | Rate <sup>1</sup> |                       |
|------------------------------|------------|-----------------------|-------------------|-----------------------|
|                              | Unadjusted | Adjusted <sup>2</sup> | Unadjusted        | Adjusted <sup>2</sup> |
| <i>U.S. All Races (1997)</i> | 6,988      |                       | 1.3               |                       |
| <i>All IHS Areas</i>         | 64         | 71                    | 1.6               | 1.8                   |
| Aberdeen                     | 4          | 4                     | 2.1               | 2.1                   |
| Alaska                       | 5          | 5                     | 1.9               | 1.9                   |
| Albuquerque                  | 4          | 4                     | 1.6               | 1.6                   |
| Bemidji                      | 5          | 6                     | 2.4               | 3.4                   |
| Billings                     | 3          | 3                     | 2.1               | 2.1                   |
| California                   | 8          | 10                    | 2.3               | 3.0                   |
| Nashville                    | —          | —                     | —                 | —                     |
| Navajo                       | 5          | 5                     | 1.0               | 1.0                   |
| Oklahoma                     | 8          | 10                    | 0.5               | 0.6                   |
| Phoenix                      | 5          | 5                     | 1.6               | 1.6                   |
| Portland                     | 13         | 15                    | 3.8               | 4.3                   |
| Tucson                       | 4          | 4                     | 5.1               | 5.1                   |

— Represents zero.

<sup>1</sup> Age-adjusted rate per 100,000 population.

Rates based on a small number of deaths should be interpreted with caution.

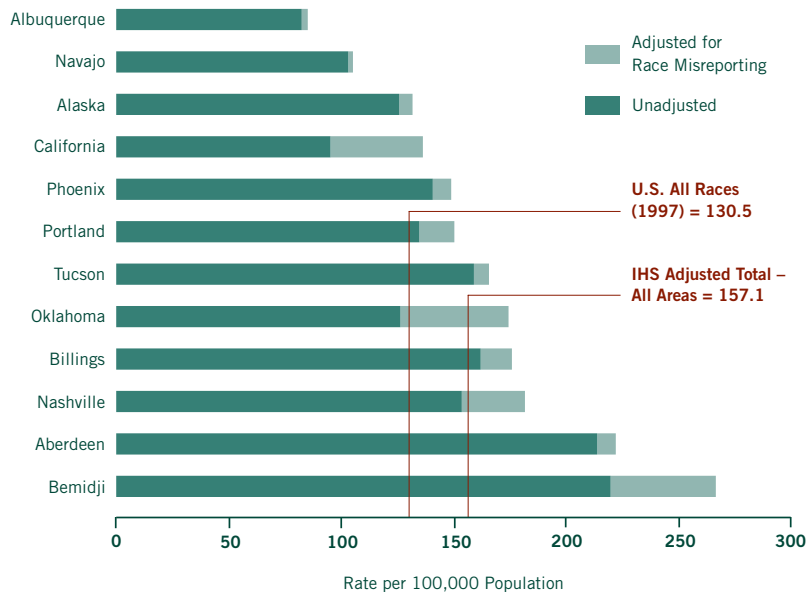
<sup>2</sup> Adjusted to compensate for misreporting of American Indian/Alaska Native race on the death certificate.

In 1996–98, the age-adjusted heart disease death rate for the IHS service area population was 157.1 per 100,000 population. The age-adjusted rate is also adjusted for misreporting of AI/AN race on the death certificate. The AI/AN rate is twenty percent higher than the U.S. all-races rate of 130.5 per 100,000 population in 1997. The lowest Area rate in Albuquerque (85.2) is 35 percent lower than the U.S. all-races rate, while the highest Area rate in Bemidji (266.7) is 104 percent higher than the U.S. all-races rate.

**Chart 4.28**

**Age-Adjusted Heart Disease Death Rates**

*Calendar Years 1996–1998*



**Table 4.28**

**Age-Adjusted Heart Disease Death Rates**

*Calendar Years 1996–1998*

|                              | Deaths     |                       | Rate <sup>1</sup> |                       |
|------------------------------|------------|-----------------------|-------------------|-----------------------|
|                              | Unadjusted | Adjusted <sup>2</sup> | Unadjusted        | Adjusted <sup>2</sup> |
| <i>U.S. All Races (1997)</i> | 726,974    |                       | 130.5             |                       |
| <i>All IHS Areas</i>         | 4,967      | 5,811                 | 132.9             | 157.1                 |
| Aberdeen                     | 441        | 457                   | 213.9             | 222.2                 |
| Alaska                       | 297        | 310                   | 125.8             | 131.8                 |
| Albuquerque                  | 166        | 170                   | 82.5              | 85.2                  |
| Bemidji                      | 433        | 521                   | 219.9             | 266.7                 |
| Billings                     | 186        | 201                   | 162.1             | 176.0                 |
| California                   | 315        | 444                   | 95.3              | 136.4                 |
| Nashville                    | 305        | 359                   | 153.7             | 181.8                 |
| Navajo                       | 549        | 559                   | 103.2             | 105.3                 |
| Oklahoma                     | 1,301      | 1,741                 | 126.4             | 174.5                 |
| Phoenix                      | 413        | 436                   | 140.8             | 149.0                 |
| Portland                     | 454        | 502                   | 134.8             | 150.4                 |
| Tucson                       | 107        | 111                   | 159.1             | 165.8                 |

<sup>1</sup> Age-adjusted rate per 100,000 population.

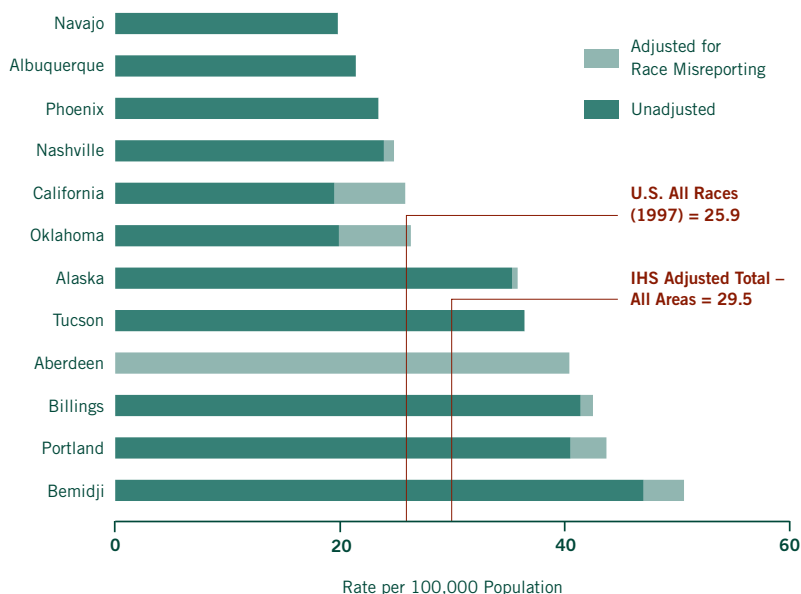
<sup>2</sup> Adjusted to compensate for misreporting of American Indian/Alaska Native race on the death certificate.

In 1996–98, the age-adjusted cerebrovascular diseases death rate for the IHS service area population was 29.5 per 100,000 population. The age-adjusted rate is also adjusted for misreporting of AI/AN race on the death certificate. The AI/AN rate is fourteen percent higher than the U.S. all-races rate of 25.9 per 100,000 population for 1997. The IHS Area rates differ considerably between Areas; the Bemidji rate of 50.6 per 100,000 population is 2.6 times higher than the Navajo rate of 19.8.

**Chart 4.29**

**Age-Adjusted Cerebrovascular Diseases Death Rates**

*Calendar Years 1996-1998*



**Table 4.29**

**Age-Adjusted Cerebrovascular Diseases Death Rates**

*Calendar Years 1996-1998*

|                              | Deaths          |                       | Rate <sup>1</sup> |                       |
|------------------------------|-----------------|-----------------------|-------------------|-----------------------|
|                              | Unadjusted      | Adjusted <sup>2</sup> | Unadjusted        | Adjusted <sup>2</sup> |
| <i>U.S. All Races (1997)</i> | 159,791         |                       | 25.9              |                       |
| <i>All IHS Areas</i>         | 1,061           | 1,164                 | 26.7              | 29.5                  |
| Aberdeen                     | 84 <sup>3</sup> | 83 <sup>3</sup>       | 40.6 <sup>3</sup> | 40.4 <sup>3</sup>     |
| Alaska                       | 90              | 91                    | 35.3              | 35.8                  |
| Albuquerque                  | 49              | 49                    | 21.4              | 21.4                  |
| Bemidji                      | 100             | 108                   | 47.0              | 50.6                  |
| Billings                     | 50              | 51                    | 41.4              | 42.5                  |
| California                   | 66              | 86                    | 19.5              | 25.8                  |
| Nashville                    | 50              | 52                    | 23.9              | 24.8                  |
| Navajo                       | 122             | 122                   | 19.8              | 19.8                  |
| Oklahoma                     | 219             | 281                   | 19.9              | 26.3                  |
| Phoenix                      | 70              | 70                    | 23.4              | 23.4                  |
| Portland                     | 136             | 146                   | 40.5              | 43.7                  |
| Tucson                       | 25              | 25                    | 36.4              | 36.4                  |

<sup>1</sup> Age-adjusted rate per 100,000 population.

<sup>2</sup> Adjusted to compensate for misreporting of American Indian/Alaska Native race on the death certificate.

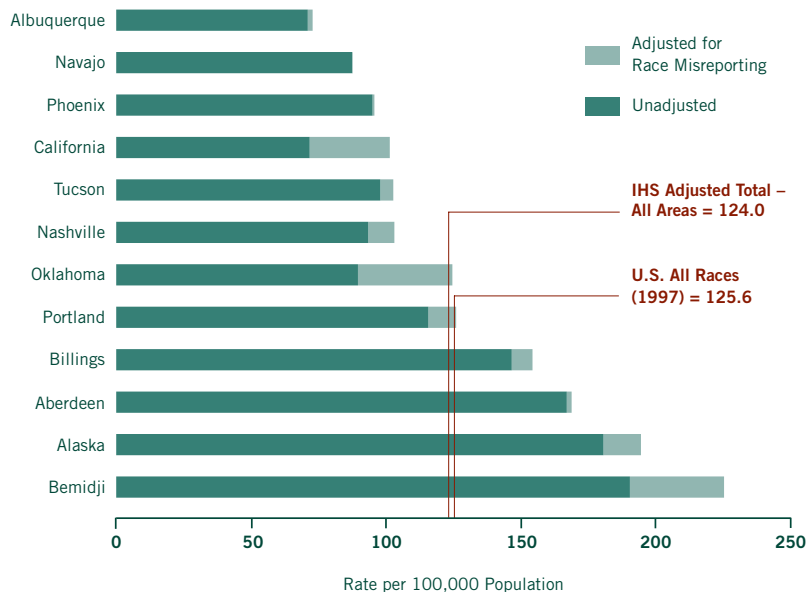
<sup>3</sup> The adjusted number and rate (Aberdeen Area) is lower than the unadjusted number and rate because the linked birth/infant death file (used to obtain the adjusted counts for infant deaths) had one less death for this cause than did the unadjusted mortality file (1996-1998 data).

In 1996-98, the age-adjusted malignant neoplasm death rate for the IHS service area population was 124.0 per 100,000 population. The rate is adjusted for misreporting of AI/AN race on the death certificate. The 1996-98 AI/AN rate is 6.3 percent higher than the 1994-96 AI/AN rate (116.6). The AI/AN rate is slightly less than the U.S. all-races rate of 125.6 for 1997. Five IHS Areas have a rate greater than the U.S. all-races rate; Bemidji (225.3), Alaska (194.5), Aberdeen (168.8), Billings (154.3), and Portland (126.0).

**Chart 4.30**

**Age-Adjusted Malignant Neoplasm Death Rates**

Calendar Years 1996-1998



**Table 4.30**

**Age-Adjusted Malignant Neoplasm Death Rates**

Calendar Years 1996-1998

|                              | Deaths     |                       | Rate <sup>1</sup> |                       |
|------------------------------|------------|-----------------------|-------------------|-----------------------|
|                              | Unadjusted | Adjusted <sup>2</sup> | Unadjusted        | Adjusted <sup>2</sup> |
| <i>U.S. All Races (1997)</i> | 539,577    |                       | 125.6             |                       |
| <i>All IHS Areas</i>         | 3,737      | 4,290                 | 107.5             | 124.0                 |
| Aberdeen                     | 322        | 326                   | 167.0             | 168.8                 |
| Alaska                       | 386        | 414                   | 180.6             | 194.5                 |
| Albuquerque                  | 130        | 133                   | 71.0              | 72.8                  |
| Bemidji                      | 370        | 435                   | 190.4             | 225.3                 |
| Billings                     | 164        | 172                   | 146.6             | 154.3                 |
| California                   | 222        | 311                   | 71.7              | 101.4                 |
| Nashville                    | 180        | 197                   | 93.4              | 103.1                 |
| Navajo                       | 427        | 427                   | 87.5              | 87.5                  |
| Oklahoma                     | 833        | 1,135                 | 89.6              | 124.6                 |
| Phoenix                      | 265        | 267                   | 95.0              | 95.7                  |
| Portland                     | 371        | 403                   | 115.7             | 126.0                 |
| Tucson                       | 67         | 70                    | 97.9              | 102.7                 |

<sup>1</sup> Age-adjusted rate per 100,000 population.

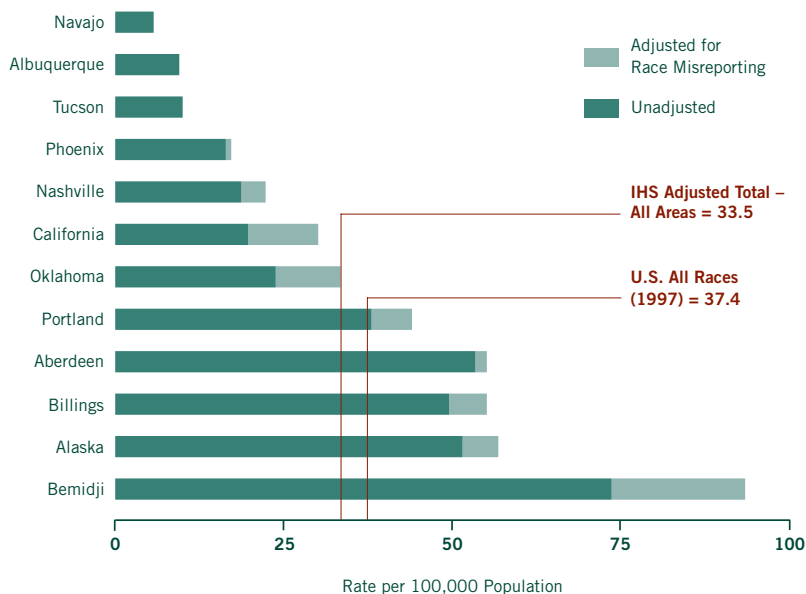
<sup>2</sup> Adjusted to compensate for misreporting of American Indian/Alaska Native race on the death certificate.

In 1996–98, the age-adjusted lung cancer death rate for the IHS service area population was 33.5 per 100,000 population. The definition of lung cancer has been expanded to include the trachea and bronchus. The age-adjusted rate is also adjusted for misreporting of AI/AN race on the death certificate. The 1996–98 AI/AN rate was almost six percent higher than the comparable 1994–96 AI/AN rate (31.7). The 1996–98 AI/AN rate is ten percent less than the U.S. all-races rate of 37.4 deaths per 100,000 population in 1997. Five IHS Areas (Bemidji, Alaska, Aberdeen, Billings and Portland) have rates exceeding the U.S. all-races rate.

**Chart 4.31**

**Age-Adjusted Lung Cancer Death Rates**

*Calendar Years 1996-1998*



**Table 4.31**

**Age-Adjusted Lung Cancer Death Rates**

*Calendar Years 1996-1998*

|                              | Deaths     |                       | Rate <sup>1</sup> |                       |
|------------------------------|------------|-----------------------|-------------------|-----------------------|
|                              | Unadjusted | Adjusted <sup>2</sup> | Unadjusted        | Adjusted <sup>2</sup> |
| <i>U.S. All Races (1997)</i> | 153,276    |                       | 37.4              |                       |
| <i>All IHS Areas</i>         | 920        | 1,120                 | 27.5              | 33.5                  |
| Aberdeen                     | 97         | 100                   | 53.4              | 55.1                  |
| Alaska                       | 108        | 119                   | 51.5              | 56.8                  |
| Albuquerque                  | 16         | 16                    | 9.5               | 9.5                   |
| Bemidji                      | 141        | 179                   | 73.6              | 93.4                  |
| Billings                     | 53         | 59                    | 49.5              | 55.1                  |
| California                   | 60         | 91                    | 19.7              | 30.1                  |
| Nashville                    | 34         | 40                    | 18.7              | 22.3                  |
| Navajo                       | 27         | 27                    | 5.7               | 5.7                   |
| Oklahoma                     | 219        | 304                   | 23.8              | 33.4                  |
| Phoenix                      | 43         | 45                    | 16.4              | 17.2                  |
| Portland                     | 115        | 133                   | 38.0              | 44.0                  |
| Tucson                       | 7          | 7                     | 10.0              | 10.0                  |

<sup>1</sup> Lung cancer death includes deaths due to cancers of the trachea, bronchus and lung, ICD-9 codes 162.0 to 162.9.

<sup>2</sup> Age-adjusted rate per 100,000 population.

Rates based on a small number of deaths should be interpreted with caution.

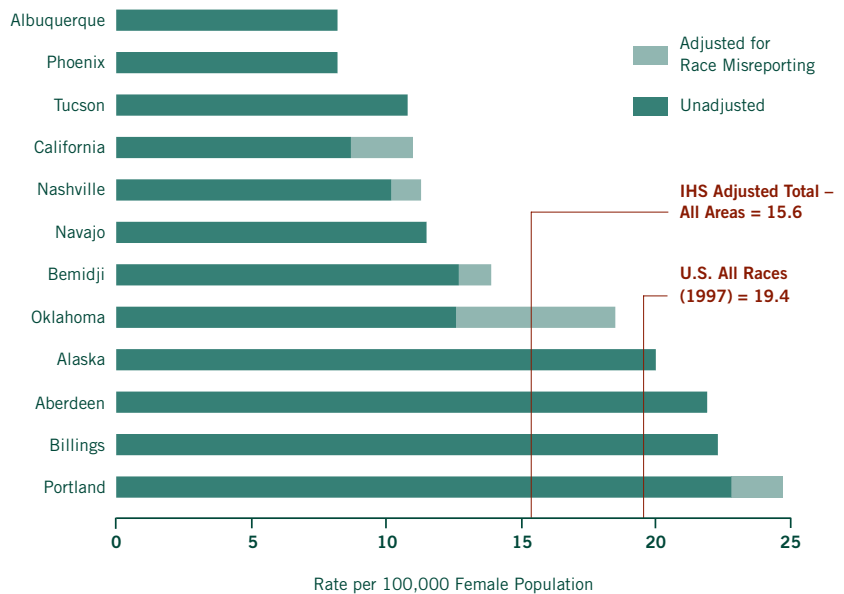
<sup>3</sup> Adjusted to compensate for misreporting of American Indian/Alaska Native race on the death certificate.

In 1996-98, the age-adjusted female breast cancer death rate in the IHS service area population was 15.6 per 100,000 population. The age-adjusted rate is also adjusted for misreporting of AI/AN race on the death certificate. The 1996-98 AI/AN rate was almost eight percent higher than the comparable 1994-96 AI/AN rate (14.5 deaths per 100,000 population). The 1996-98 AI/AN rate is twenty percent less than the U.S. all-races rate of 19.4 per 100,000 population for 1997. Four Areas have rates that exceed the U.S. all-races rate: Portland (24.7), Billings (22.3), Aberdeen (21.9), and Alaska (20.0).

**Chart 4.32**

**Age-Adjusted Female Breast Cancer Death Rates**

Calendar Years 1996-1998



**Table 4.32**

**Age-Adjusted Female Breast Cancer Death Rates**

Calendar Years 1996-1998

|                       | Deaths     |                       | Rate <sup>1</sup> |                       |
|-----------------------|------------|-----------------------|-------------------|-----------------------|
|                       | Unadjusted | Adjusted <sup>2</sup> | Unadjusted        | Adjusted <sup>2</sup> |
| U.S. All Races (1997) | 41,986     |                       | 19.4              |                       |
| All IHS Areas         | 247        | 281                   | 13.6              | 15.6                  |
| Aberdeen              | 22         | 22                    | 21.9              | 21.9                  |
| Alaska                | 23         | 23                    | 20.0              | 20.0                  |
| Albuquerque           | 7          | 7                     | 8.2               | 8.2                   |
| Bemidji               | 14         | 15                    | 12.7              | 13.9                  |
| Billings              | 12         | 12                    | 22.3              | 22.3                  |
| California            | 15         | 19                    | 8.7               | 11.0                  |
| Nashville             | 12         | 13                    | 10.2              | 11.3                  |
| Navajo                | 28         | 28                    | 11.5              | 11.5                  |
| Oklahoma              | 58         | 83                    | 12.6              | 18.5                  |
| Phoenix               | 12         | 12                    | 8.2               | 8.2                   |
| Portland              | 39         | 42                    | 22.8              | 24.7                  |
| Tucson                | 5          | 5                     | 10.8              | 10.8                  |

<sup>1</sup> Age-adjusted rate per 100,000 female population.

Rates based on a small number of deaths should be interpreted with caution.

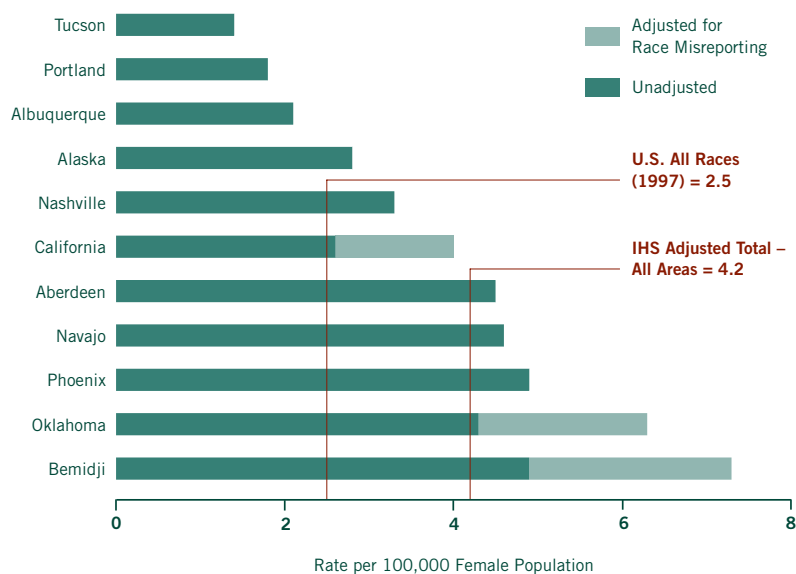
<sup>2</sup> Adjusted to compensate for misreporting of American Indian/Alaska Native race on the death certificate.

In 1996–98, the age-adjusted cervical cancer death rate in the IHS service area population was 4.2 per 100,000 population. The age-adjusted rate is also adjusted for misreporting of AI/AN race on the death certificate. The 1996–98 AI/AN rate was over ten percent higher than the comparable 1994–96 AI/AN rate (3.8 per 100,000 population). The 1996–98 AI/AN rate is 68 percent greater than the U.S. all-races rate of 2.5 per 100,000 population for 1997. The Area rates should be interpreted with caution because of the small number of deaths involved. The largest numbers of cervical cancer deaths occurred in the Oklahoma (28 deaths) and Navajo (twelve deaths) Areas during the three-year period (see section *Sources and Limitations of Data: Population Statistics*).

**Chart 4.33**

**Age-Adjusted Cervical Cancer Death Rates**

*Calendar Years 1996-1998*



**Table 4.33**

**Age-Adjusted Cervical Cancer Death Rates**

*Calendar Years 1996-1998*

|                              | Deaths     |                       | Rate <sup>1</sup> |                       |
|------------------------------|------------|-----------------------|-------------------|-----------------------|
|                              | Unadjusted | Adjusted <sup>2</sup> | Unadjusted        | Adjusted <sup>2</sup> |
| <i>U.S. All Races (1997)</i> | 4,503      |                       | 2.5               |                       |
| <i>All IHS Areas</i>         | 67         | 79                    | 3.5               | 4.2                   |
| Aberdeen                     | 5          | 5                     | 4.5               | 4.5                   |
| Alaska                       | 3          | 3                     | 2.8               | 2.8                   |
| Albuquerque                  | 2          | 2                     | 2.1               | 2.1                   |
| Bemidji                      | 4          | 6                     | 4.9               | 7.3                   |
| Billings                     | —          | —                     | —                 | —                     |
| California                   | 4          | 6                     | 2.6               | 4.0                   |
| Nashville                    | 4          | 4                     | 3.3               | 3.3                   |
| Navajo                       | 12         | 12                    | 4.6               | 4.6                   |
| Oklahoma                     | 20         | 28                    | 4.3               | 6.3                   |
| Phoenix                      | 8          | 8                     | 4.9               | 4.9                   |
| Portland                     | 4          | 4                     | 1.8               | 1.8                   |
| Tucson                       | 1          | 1                     | 1.4               | 1.4                   |

— Represents zero.

<sup>1</sup> Age-adjusted rate per 100,000 female population.

Rates based on a small number of deaths should be interpreted with caution.

<sup>2</sup> Adjusted to compensate for misreporting of American Indian/Alaska Native race on the death certificate.

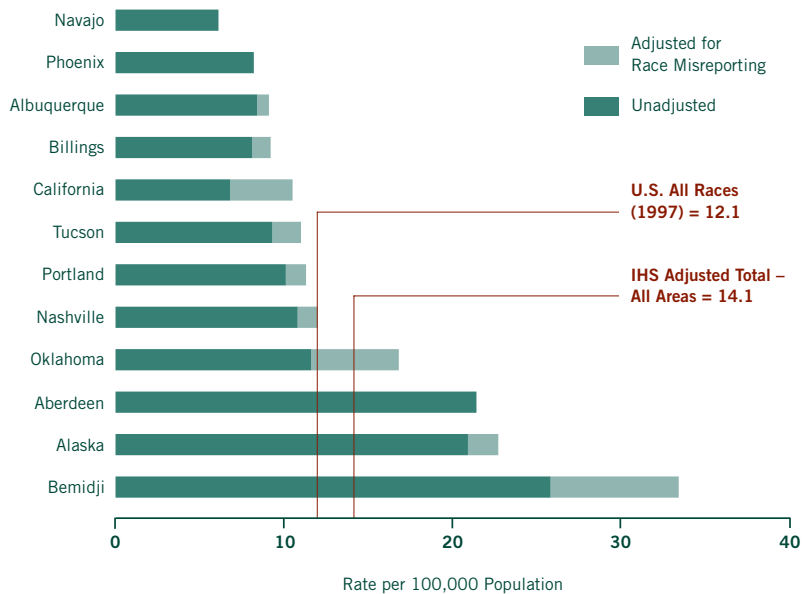


The age-adjusted colon-rectal cancer death rate for the IHS service area population in 1996-98 was 14.1 per 100,000 population. The age-adjusted rate is also adjusted for misreporting of AI/AN race on the death certificate. The 1996-98 AI/AN rate was twelve percent higher than the comparable 1994-96 AI/AN rate (12.6 per 100,000 population). The 1996-98 AI/AN rate is almost seventeen percent higher than the U.S. all-races rate in 1997 (12.1 per 100,000 population). The highest IHS Area rate (Bemidji, 33.4) is 2.8 times the U.S. all-races rate, while the lowest Area rate (Navajo, 6.1) is about half the U.S. all-races rate.

**Chart 4.34**

**Age-Adjusted Colon-Rectal Cancer Death Rates**

*Calendar Years 1996-1998*



**Table 4.34**

**Age-Adjusted Colon-Rectal Cancer Death Rates**

*Calendar Years 1996-1998*

|                              | Deaths        |                       | Rate <sup>1</sup> |                       |
|------------------------------|---------------|-----------------------|-------------------|-----------------------|
|                              | Unadjusted    | Adjusted <sup>2</sup> | Unadjusted        | Adjusted <sup>2</sup> |
| <i>U.S. All Races (1997)</i> | <i>57,155</i> |                       | <i>12.1</i>       |                       |
| <i>All IHS Areas</i>         | <i>409</i>    | <i>493</i>            | <i>11.6</i>       | <i>14.1</i>           |
| Aberdeen                     | 42            | 42                    | 21.4              | 21.4                  |
| Alaska                       | 46            | 50                    | 20.9              | 22.7                  |
| Albuquerque                  | 16            | 17                    | 8.4               | 9.1                   |
| Bemidji                      | 51            | 65                    | 25.8              | 33.4                  |
| Billings                     | 10            | 11                    | 8.1               | 9.2                   |
| California                   | 21            | 32                    | 6.8               | 10.5                  |
| Nashville                    | 20            | 22                    | 10.8              | 12.0                  |
| Navajo                       | 31            | 31                    | 6.1               | 6.1                   |
| Oklahoma                     | 110           | 156                   | 11.6              | 16.8                  |
| Phoenix                      | 22            | 22                    | 8.2               | 8.2                   |
| Portland                     | 34            | 38                    | 10.1              | 11.3                  |
| Tucson                       | 6             | 7                     | 9.3               | 11.0                  |

<sup>1</sup> Age-adjusted rate per 100,000 population.

Rates based on a small number of deaths should be interpreted with caution.

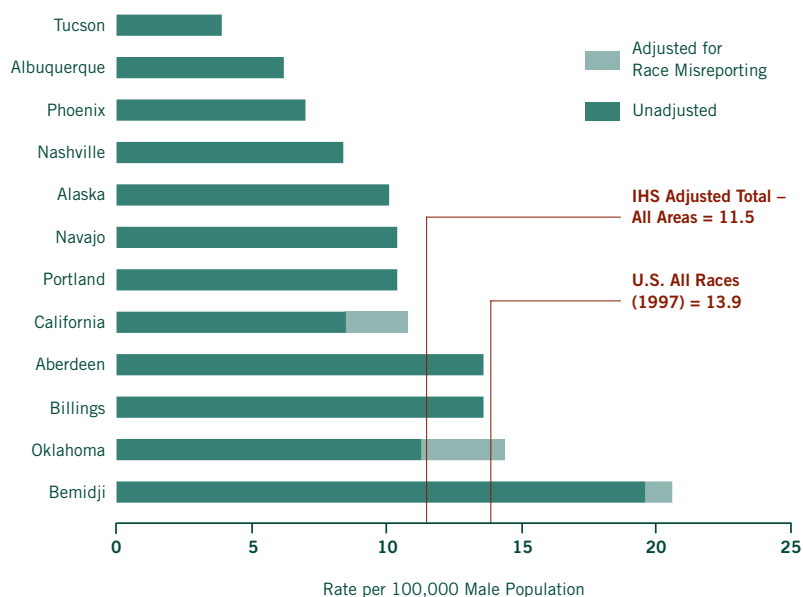
<sup>2</sup> Adjusted to compensate for misreporting of American Indian/Alaska Native race on the death certificate.

In 1996–98, the age-adjusted prostate cancer death rate in the IHS service area population was 11.5 per 100,000 population. The age-adjusted rate is also adjusted for misreporting of AI/AN race on the death certificate. The 1996–98 AI/AN rate was eleven percent lower than the comparable 1994–96 AI/AN rate (12.9 per 100,000 population). The 1996–98 AI/AN rate is seventeen percent lower than the U.S. all-races rate of 13.9 per 100,000 population in 1997. Only the rates for Bemidji (20.6) and Oklahoma (14.4) exceed the rate for the U.S. all-races.

**Chart 4.35**

**Age-Adjusted Prostate Cancer Death Rates**

*Calendar Years 1996–1998*



**Table 4.35**

**Age-Adjusted Prostate Cancer Death Rates**

*Calendar Years 1996–1998*

|                              | Deaths     |                       | Rate <sup>1</sup> |                       |
|------------------------------|------------|-----------------------|-------------------|-----------------------|
|                              | Unadjusted | Adjusted <sup>2</sup> | Unadjusted        | Adjusted <sup>2</sup> |
| <i>U.S. All Races (1997)</i> | 32,891     |                       | 13.9              |                       |
| <i>All IHS Areas</i>         | 174        | 192                   | 10.4              | 11.5                  |
| Aberdeen                     | 12         | 12                    | 13.6              | 13.6                  |
| Alaska                       | 10         | 10                    | 10.1              | 10.1                  |
| Albuquerque                  | 7          | 7                     | 6.2               | 6.2                   |
| Bemidji                      | 18         | 19                    | 19.6              | 20.6                  |
| Billings                     | 7          | 7                     | 13.6              | 13.6                  |
| California                   | 12         | 15                    | 8.5               | 10.8                  |
| Nashville                    | 7          | 7                     | 8.4               | 8.4                   |
| Navajo                       | 24         | 24                    | 10.4              | 10.4                  |
| Oklahoma                     | 52         | 66                    | 11.3              | 14.4                  |
| Phoenix                      | 9          | 9                     | 7.0               | 7.0                   |
| Portland                     | 14         | 14                    | 10.4              | 10.4                  |
| Tucson                       | 2          | 2                     | 3.9               | 3.9                   |

<sup>1</sup> Age-adjusted rate per 100,000 *male* population.

Rates based on a small number of deaths should be interpreted with caution.

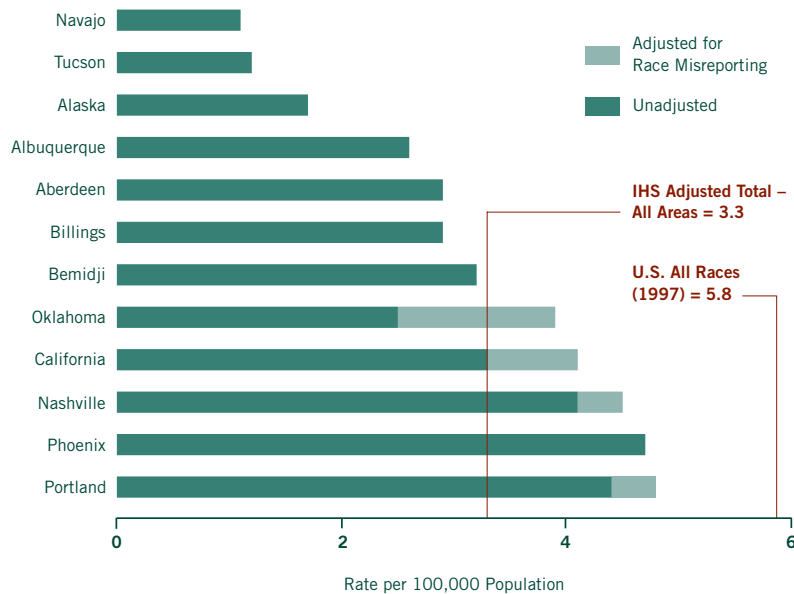
<sup>2</sup> Adjusted to compensate for misreporting of American Indian/Alaska Native race on the death certificate.

In 1996–98, the age-adjusted human immunodeficiency virus (HIV) infection death rate for the IHS service area population was 3.3 per 100,000 population. The age-adjusted rate is also adjusted for misreporting of AI/AN race on the death certificate. The 1996–98 AI/AN rate was 47 percent lower than the comparable 1994–96 AI/AN rate (6.2 per 100,000 population). The 1996–98 AI/AN rate is 43 percent lower than the 1997 U.S. rate of 5.8 per 100,000 population. Some of the Area rates should be interpreted with caution because of the small number of deaths involved. The highest Area rate (Oklahoma, 4.8 based on 32 deaths) is 83 percent of the U.S. all-races rate (see section *Sources and Limitations of Data: Population Statistics*).

**Chart 4.36**

**Age-Adjusted Human Immunodeficiency Virus (HIV) Infection Death Rates**

*Calendar Years 1996–1998*



**Table 4.36**

**Age-Adjusted Human Immunodeficiency Virus (HIV) Infection Death Rates**

*Calendar Years 1996–1998*

|                              | Deaths     |                       | Rate <sup>1</sup> |                       |
|------------------------------|------------|-----------------------|-------------------|-----------------------|
|                              | Unadjusted | Adjusted <sup>2</sup> | Unadjusted        | Adjusted <sup>2</sup> |
| <i>U.S. All Races (1997)</i> | 16,516     |                       | 5.8               |                       |
| <i>All IHS Areas</i>         | 112        | 130                   | 2.9               | 3.3                   |
| Aberdeen                     | 6          | 6                     | 2.9               | 2.9                   |
| Alaska                       | 5          | 5                     | 1.7               | 1.7                   |
| Albuquerque                  | 6          | 6                     | 2.6               | 2.6                   |
| Bemidji                      | 7          | 7                     | 3.2               | 3.2                   |
| Billings                     | 4          | 4                     | 2.9               | 2.9                   |
| California                   | 11         | 14                    | 3.3               | 4.1                   |
| Nashville                    | 9          | 10                    | 4.1               | 4.5                   |
| Navajo                       | 6          | 6                     | 1.1               | 1.1                   |
| Oklahoma                     | 20         | 32                    | 2.5               | 3.9                   |
| Phoenix                      | 18         | 18                    | 4.7               | 4.7                   |
| Portland                     | 19         | 21                    | 4.4               | 4.8                   |
| Tucson                       | 1          | 1                     | 1.2               | 1.2                   |

<sup>1</sup> Age-adjusted rate per 100,000 population.

Rates based on a small number of deaths should be interpreted with caution.

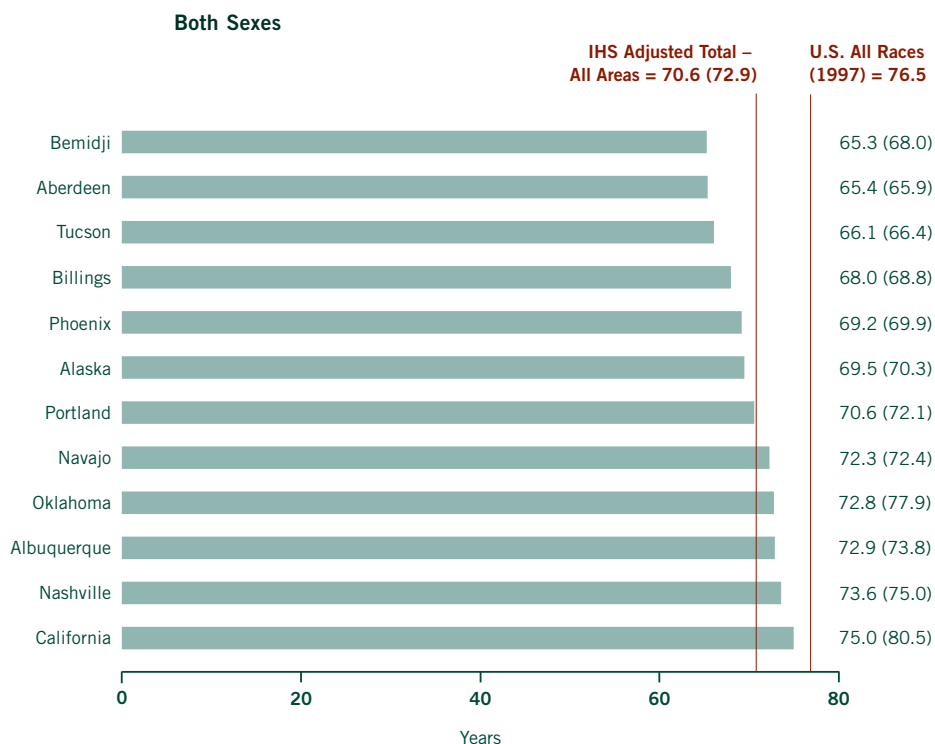
<sup>2</sup> Adjusted to compensate for misreporting of American Indian/Alaska Native race on the death certificate.

In 1996–98, the life expectancy at birth (both sexes) for the IHS service area population was 70.6 years. Life expectancy calculations are based on rates adjusted for misreporting of AI/AN race on the death certificate. Life expectancy at birth is 5.9 years less than the 1997 figure of 76.5 years for the U.S. all-races population. None of the IHS Areas has a life expectancy greater than the U.S. figure. Bemidji Area has a life expectancy (65.3) 11.2 years less than the U.S. figure.

**Chart 4.37**

**Life Expectancy at Birth**

*Calendar Years 1996-1998*



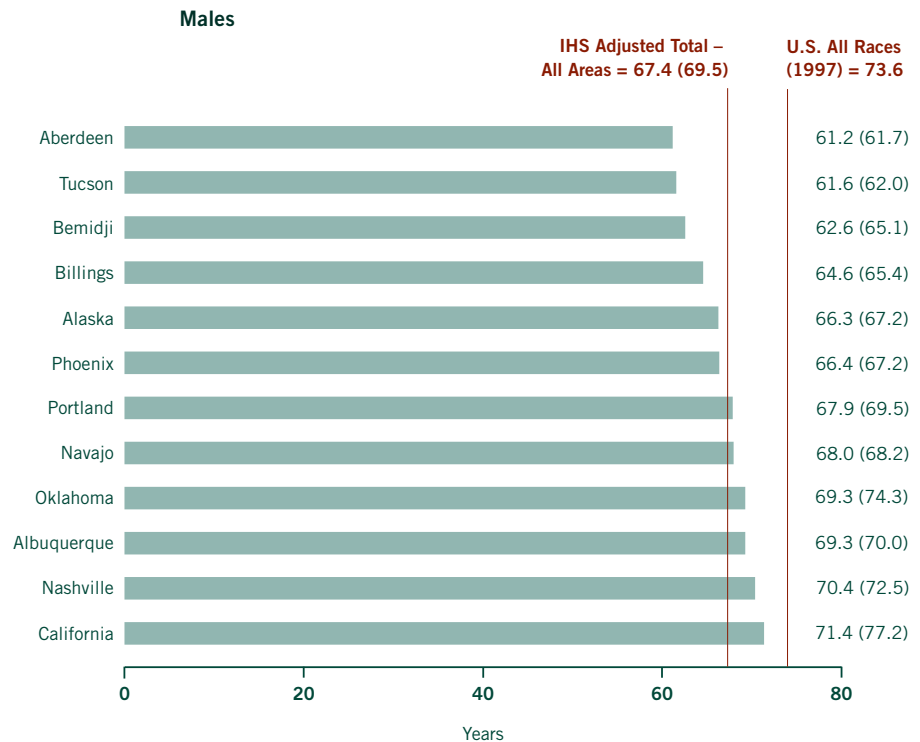
NOTE: Life expectancies not adjusted for misreporting of American Indian/Alaska Native race are shown in parentheses.

In 1996-98, the life expectancy at birth for males in the IHS service area population was 67.4 years. Life expectancy calculations are based on rates adjusted for misreporting of AI/AN race on the death certificate. Life expectancy at birth is 6.2 years less than the 1997 figure of 73.6 years for the U.S. all-races male population. AI/AN males in the Aberdeen Area (61.2) can expect to live from birth 12.4 years less than U.S. males.

**Chart 4.38**

**Life Expectancy at Birth**

*Calendar Years 1996-1998*



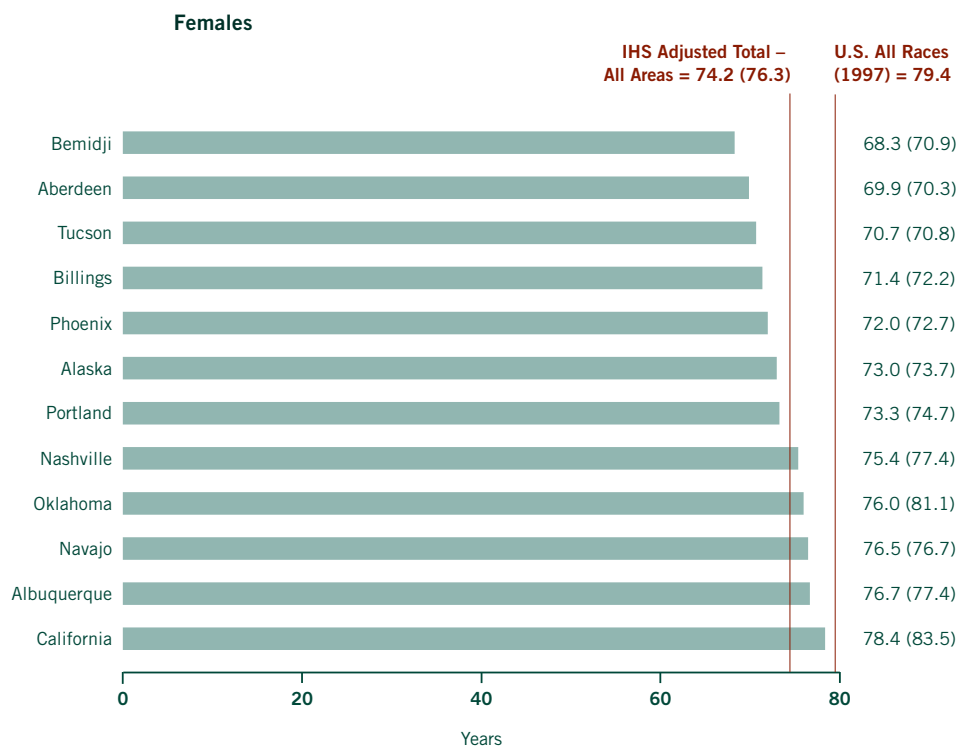
NOTE: Life expectancies not adjusted for misreporting of American Indian/Alaska Native race are shown in parentheses.

In 1996-98, the life expectancy at birth for females in the IHS service area population was 74.2 years. Life expectancy calculations are based on rates adjusted for misreporting of AI/AN race on the death certificate. Life expectancy at birth is 5.2 years less than the 1997 figure of 79.4 years for the U.S. all-races female population. AI/AN females in the California Area (78.4) had the best Area life expectancy, yet can expect to live from birth one year less than their counterparts in the U.S. all-races population. Females in the Bemidji Area have a life expectancy (68.3) that is 11.1 years less than that of U.S. females.

**Chart 4.39**

**Life Expectancy at Birth**

*Calendar Years 1996-1998*



NOTE: Life expectancies not adjusted for misreporting of American Indian/Alaska Native race are shown in parentheses.

# Age-Adjusted Lung Cancer Death Rates CY 1996-1998

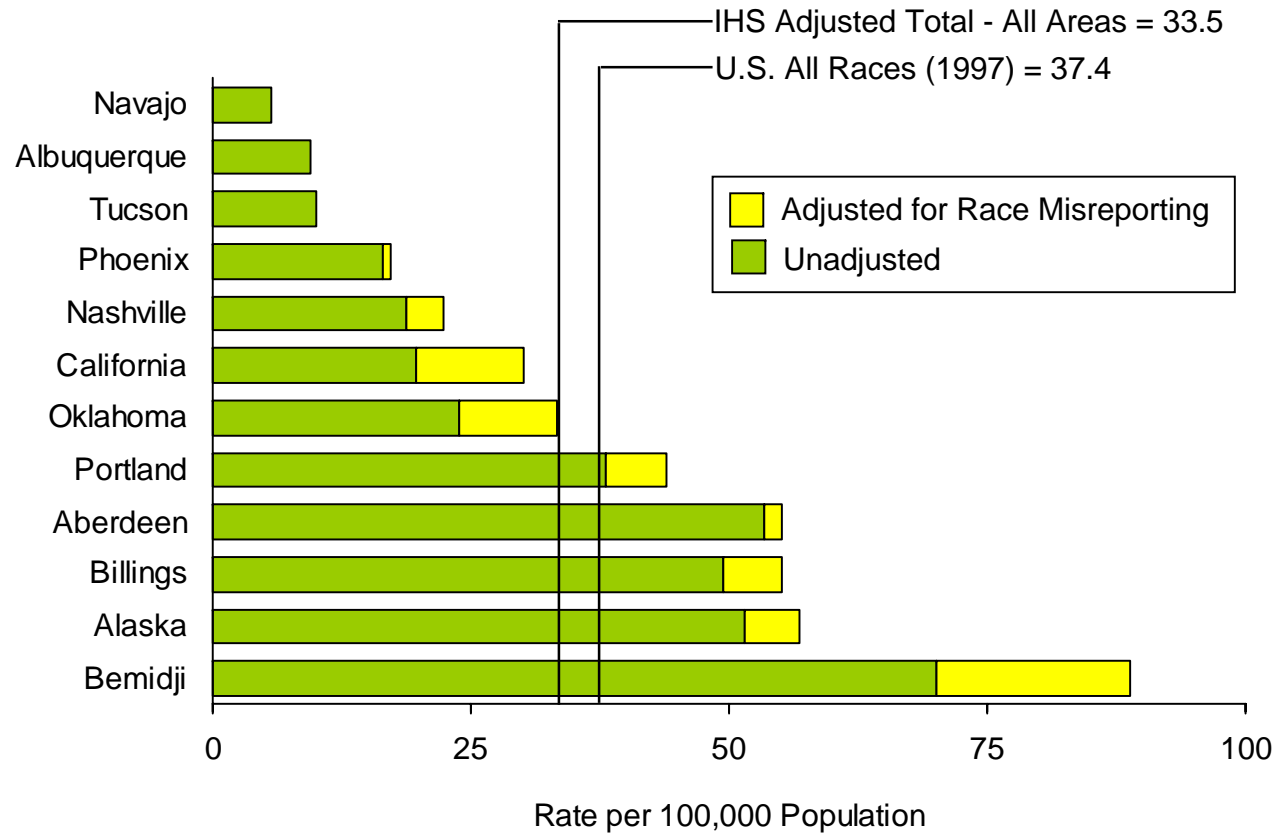


Table 4.31  
Age-Adjusted Lung Cancer <sup>1/</sup> Death Rates  
Calendar Years 1996-1998

|                              | Deaths     |                        | Rate <sup>2/</sup> |                        |
|------------------------------|------------|------------------------|--------------------|------------------------|
|                              | Unadjusted | Adjusted <sup>3/</sup> | Unadjusted         | Adjusted <sup>3/</sup> |
| <i>U.S. All Races (1997)</i> | 153,276    |                        | 37.4               |                        |
| <i>All IHS Areas</i>         | 920        | 1,120                  | 27.5               | 33.5                   |
| Aberdeen                     | 97         | 100                    | 53.4               | 55.1                   |
| Alaska                       | 108        | 119                    | 51.5               | 56.8                   |
| Albuquerque                  | 16         | 16                     | 9.5                | 9.5                    |
| Bemidji                      | 141        | 179                    | 70.1               | 88.9                   |
| Billings                     | 53         | 59                     | 49.5               | 55.1                   |
| California                   | 60         | 91                     | 19.7               | 30.1                   |
| Nashville                    | 34         | 40                     | 18.7               | 22.3                   |
| Navajo                       | 27         | 27                     | 5.7                | 5.7                    |
| Oklahoma                     | 219        | 304                    | 23.8               | 33.4                   |
| Phoenix                      | 43         | 45                     | 16.4               | 17.2                   |
| Portland                     | 115        | 133                    | 38.0               | 44.0                   |
| Tucson                       | 7          | 7                      | 10.0               | 10.0                   |

<sup>1/</sup> Lung cancer death includes deaths due to cancers of the trachea, bronchus and lung, ICD-9 codes 162.0 to 162.9.

<sup>2/</sup> Age-adjusted rate per 100,000 population. Rates based on a small number of deaths should be interpreted with caution.

<sup>3/</sup> Adjusted to compensate for misreporting of American Indian/Alaska Native race on the death certificate.

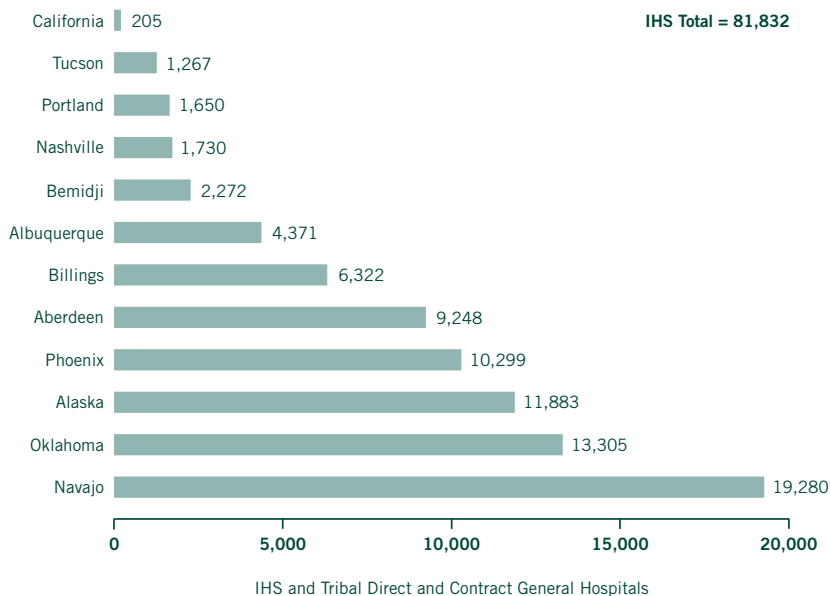


# Part 5

## Patient Care Statistics

In FY 2001, there were over 81,000 admissions to IHS and Tribal direct and contract general hospitals. Approximately forty percent of these admissions were in two IHS Areas, Navajo (19,280) and Oklahoma (13,305).

**Chart 5.1** Number of Admissions, FY 2001



The IHS admission rate of 608.3 admissions per 10,000 user population in FY 2001 was nearly 53 percent lower than the U.S. rate of 1,140.1 in CY 2000. The IHS Area rates ranged from 30.8 in California, where the IHS provides little inpatient care, to 1,001.5 in Alaska.

**Chart 5.2** Hospital Admission Rates, FY 2001

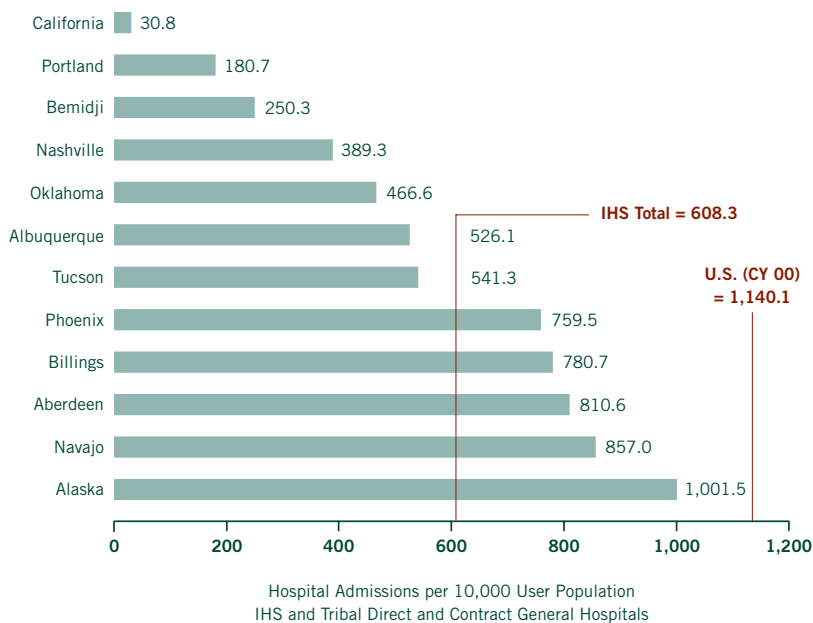


Table 5.1

## Number and Rate of Admissions

Indian Health Service and Tribal Direct and Contract General Hospitals, FY 2001  
and U.S. Short-Stay Community Hospitals, CY 2001

|                              | Total<br>Admission<br>Rate <sup>1</sup> | Total<br>Admissions       | IHS Admissions |               | Tribal Admissions |              |
|------------------------------|---|---------------------------|----------------|---------------|-------------------|--------------|
|                              |   |                           | Direct         | Contract      | Direct            | Contract     |
| <i>U.S. All Races (2000)</i> | <i>1,140.1</i>                          | <i>31,706<sup>2</sup></i> |                |               |                   |              |
| <i>All IHS Areas</i>         | <i>608.3</i>                            | <i>81,832</i>             | <i>45,959</i>  | <i>14,077</i> | <i>17,782</i>     | <i>4,014</i> |
| Aberdeen                     | 810.6                                   | 9,248                     | 5,906          | 3,342         | 0                 | 0            |
| Alaska                       | 1,001.5                                 | 11,883                    | 0              | 0             | 11,678            | 205          |
| Albuquerque                  | 526.1                                   | 4,371                     | 2,972          | 1,399         | 0                 | 0            |
| Bemidji                      | 250.3                                   | 2,272                     | 857            | 440           | 0                 | 975          |
| Billings                     | 780.7                                   | 6,322                     | 2,720          | 2,397         | 0                 | 1,205        |
| California                   | 30.8                                    | 205                       | 0              | 0             | 0                 | 205          |
| Nashville                    | 389.3                                   | 1,730                     | 902            | 213           | 486               | 129          |
| Navajo                       | 857.0                                   | 19,280                    | 17,392         | 1,888         | 0                 | 0            |
| Oklahoma                     | 466.6                                   | 13,305                    | 6,534          | 1,697         | 5,010             | 64           |
| Phoenix                      | 759.5                                   | 10,299                    | 7,817          | 1,849         | 608               | 25           |
| Portland                     | 180.7                                   | 1,650                     | 0              | 444           | 0                 | 1,206        |
| Tucson                       | 541.3                                   | 1,267                     | 859            | 408           | 0                 | 0            |

<sup>1</sup> Number of admissions per 10,000 population.

<sup>2</sup> Number of admissions in thousands.

**Sources:** IHS and Tribal Direct: Monthly Report of Inpatient Services

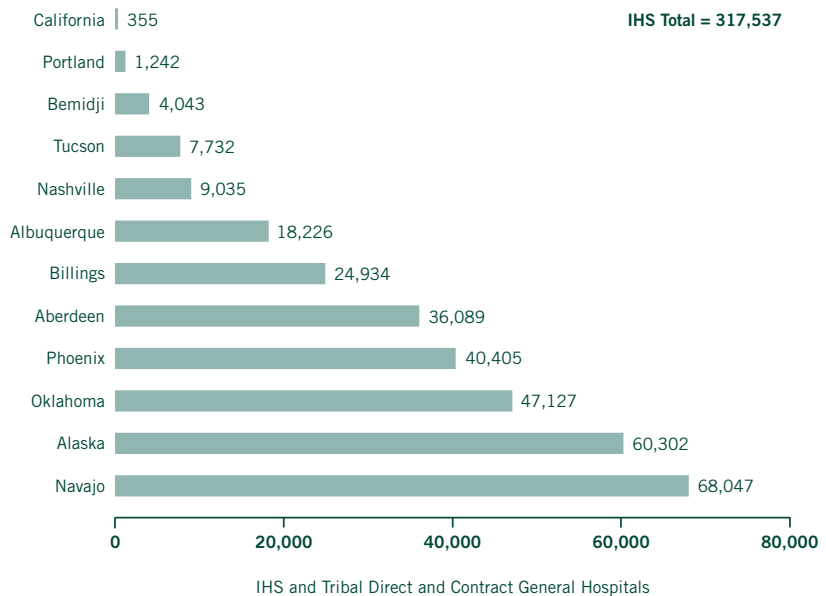
IHS Contract: Contract Statistical System (Report 3I)

Tribal Contract: IHS Area submissions

U.S.: Unpublished Data, NCHS Hospital Discharge Survey Branch

The number of inpatient days in IHS and Tribal direct and contract general hospitals was over 317,000 in FY 2001. The number varied considerably among the IHS Areas, ranging from 355 in California to 68,047 in Navajo.

**Chart 5.3** Number of Hospital Days, FY 2001



**Table 5.3** Number of Hospital Days

Indian Health Service and Tribal Direct and Contract General Hospitals, FY 2001

|                      | Total Days | IHS Days |          | Tribal Days |          |
|----------------------|------------|----------|----------|-------------|----------|
|                      |            | Direct   | Contract | Direct      | Contract |
| <i>All IHS Areas</i> | 317,537    | 169,726  | 58,424   | 82,063      | 7,324    |
| Aberdeen             | 36,089     | 21,691   | 14,398   | 0           | 0        |
| Alaska               | 60,302     | 0        | 1,070    | 59,232      | 0        |
| Albuquerque          | 18,226     | 12,810   | 5,416    | 0           | 0        |
| Bemidji              | 4,043      | 2,602    | 1,441    | 0           | 0        |
| Billings             | 24,934     | 9,099    | 9,863    | 0           | 5,972    |
| California           | 355        | 0        | 0        | 0           | 355      |
| Nashville            | 9,035      | 4,057    | 1,034    | 2,947       | 997      |
| Navajo               | 68,047     | 59,781   | 8,266    | 0           | 0        |
| Oklahoma             | 47,127     | 22,036   | 7,523    | 17,568      | 0        |
| Phoenix              | 40,405     | 31,669   | 6,420    | 2,316       | 0        |
| Portland             | 1,242      | 0        | 1,242    | 0           | 0        |
| Tucson               | 7,732      | 5,981    | 1,751    | 0           | 0        |

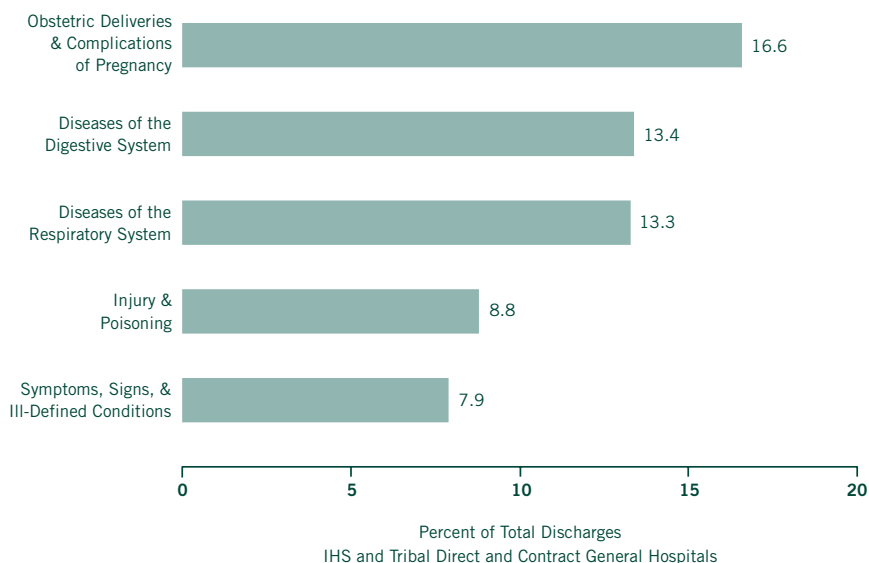
**Sources:** IHS and Tribal Direct: Monthly Report of Inpatient Services  
 IHS Contract: Contract Statistical System (Report 31)  
 Tribal Contract: IHS Area submissions

In FY 2001, 16.6 percent of all discharges from IHS and Tribal direct and contract general hospitals pertained to obstetric deliveries and complications of pregnancy, followed by diseases of the digestive system at 13.4 percent.

**Chart 5.4**

### Leading Causes of Hospitalization

#### All IHS Areas, FY 2001

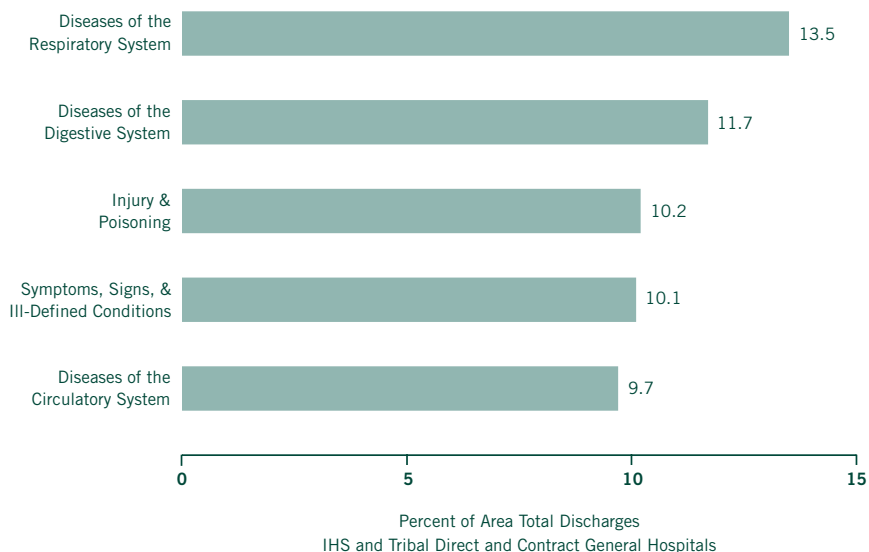


For the Aberdeen Area in FY 2001, 13.5 percent of all discharges from IHS and Tribal direct and contract general hospitals pertained to respiratory system diseases, followed by diseases of the digestive system at 11.7 percent.

**Chart 5.5**

### Leading Causes of Hospitalization

#### Aberdeen Area, FY 2001

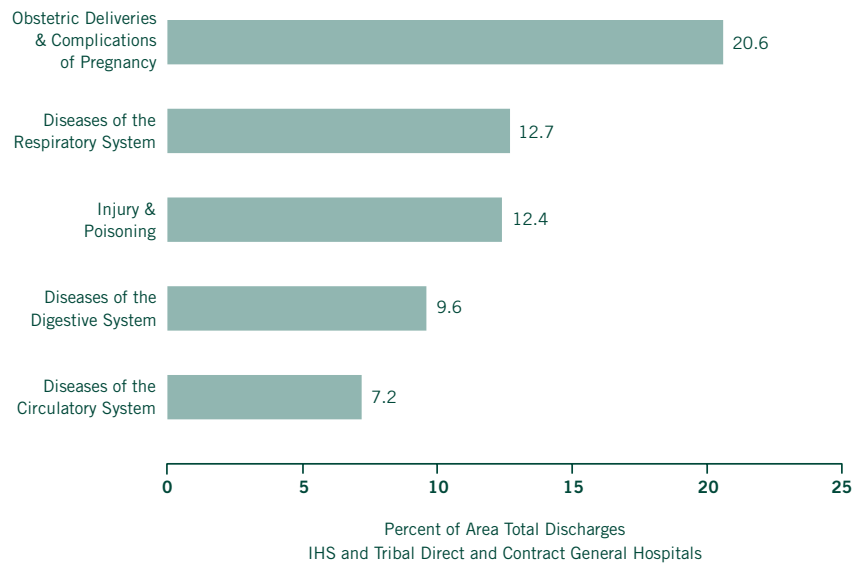


For the Alaska Area in FY 2001, 20.6 percent of all discharges from IHS and Tribal direct and contract general hospitals pertained to obstetric deliveries and complications of pregnancy, followed by diseases of the respiratory system at 12.7 percent.

**Chart 5.6**

**Leading Causes of Hospitalization**

**Alaska Area, FY 2001**

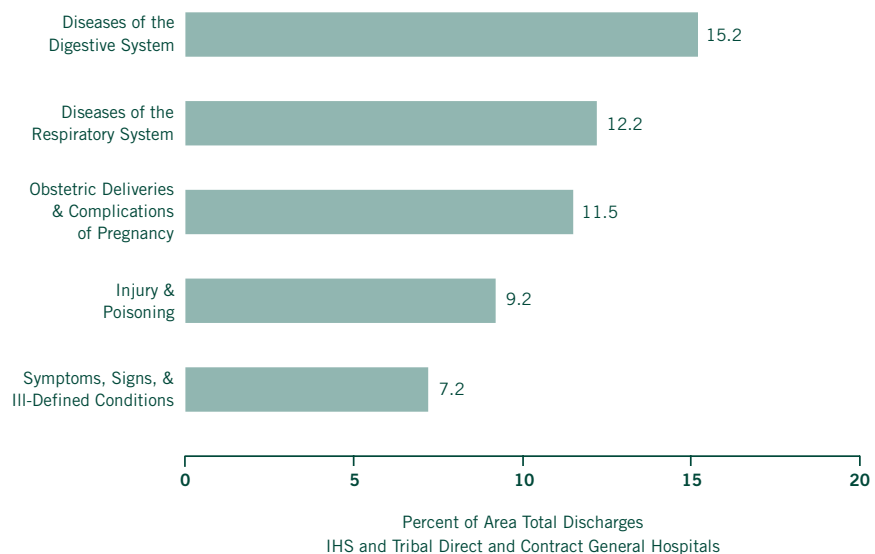


For the Albuquerque Area in FY 2001, 15.2 percent of all discharges from IHS and Tribal direct and contract general hospitals pertained to diseases of the digestive system, closely followed by diseases of the respiratory system at 12.2 percent.

**Chart 5.7**

**Leading Causes of Hospitalization**

**Albuquerque Area, FY 2001**

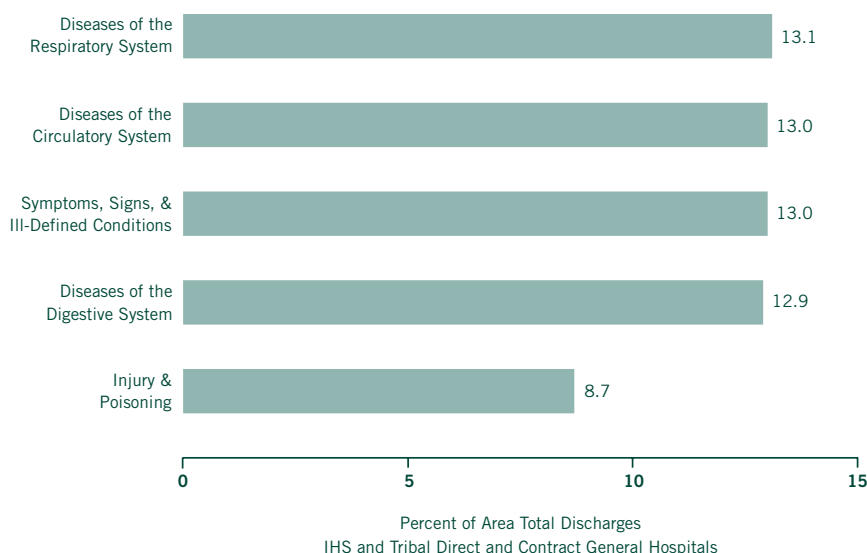


For the Bemidji Area in FY 2001, 13.1 percent of all discharges from IHS and Tribal direct and contract general hospitals pertained to diseases of the respiratory system, followed by diseases of the circulatory system and symptoms, signs, and ill-defined conditions, both at 13.0 percent, diseases of the digestive system at 12.9 percent, and injury and poisoning at 8.7 percent.

**Chart 5.8**

**Leading Causes of Hospitalization**

**Bemidji Area, FY 2001**

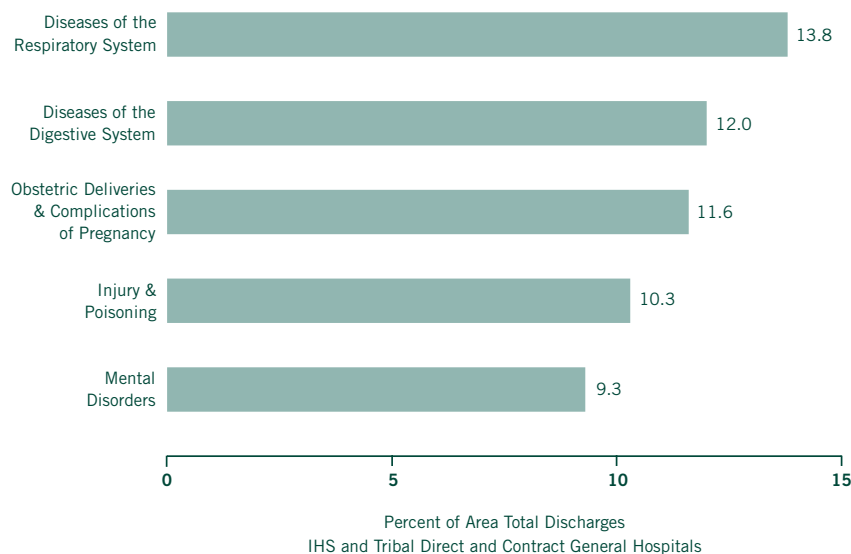


For the Billings Area in FY 2001, 13.8 percent of all discharges from IHS and Tribal direct and contract general hospitals pertained to diseases of the respiratory system, followed by diseases of the digestive system at 12.0 percent, obstetric deliveries and complications of pregnancy at 11.6 percent, injury and poisoning at 10.3 percent, and mental disorders at 9.3 percent.

**Chart 5.9**

**Leading Causes of Hospitalization**

**Billings Area, FY 2001**

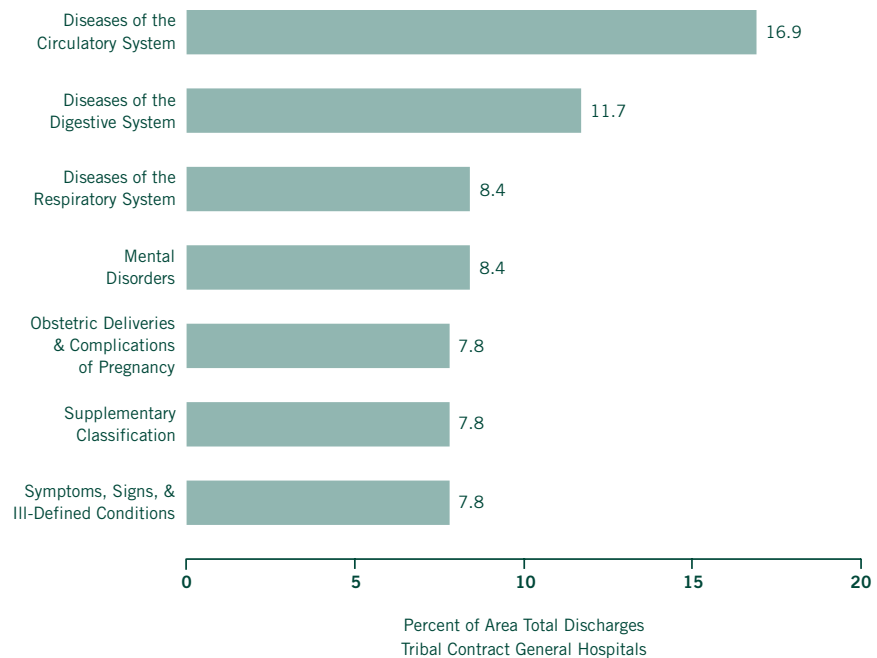


For the California Area in FY 2001, 16.9 percent of all discharges from Tribal contract health service hospitals pertained to diseases of the circulatory system, followed by diseases of the digestive system at 11.7 percent.

**Chart 5.10**

**Leading Causes of Hospitalization**

**California Area, FY 2001**

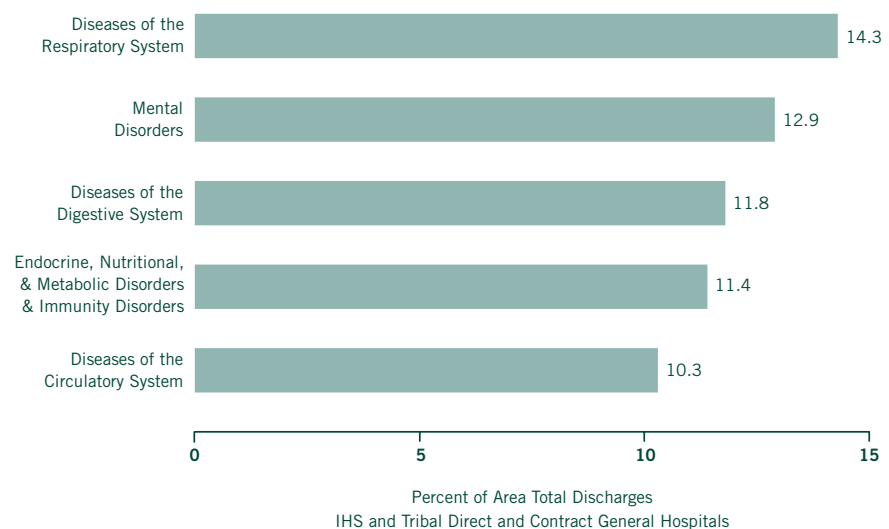


For the Nashville Area in FY 2001, 14.3 percent of all discharges from IHS and Tribal direct and contract general hospitals pertained to diseases of the respiratory system, followed by mental disorders at 12.9 percent.

**Chart 5.11**

**Leading Causes of Hospitalization**

**Nashville Area, FY 2001**

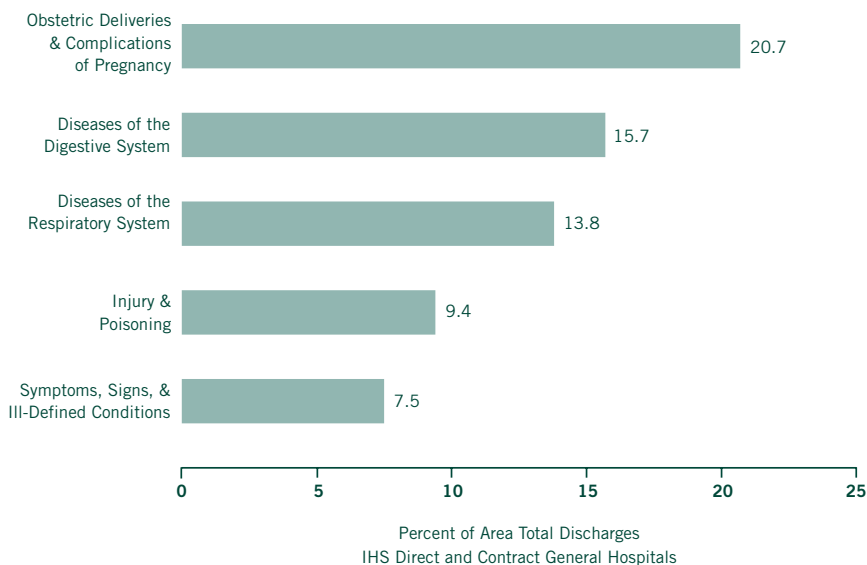


For the Navajo Area in FY 2001, 20.7 percent of all discharges from IHS direct and contract general hospitals pertained to obstetric deliveries and complications of pregnancy, followed by diseases of the digestive system at 15.7 percent.

**Chart 5.12**

**Leading Causes of Hospitalization**

**Navajo Area, FY 2001**

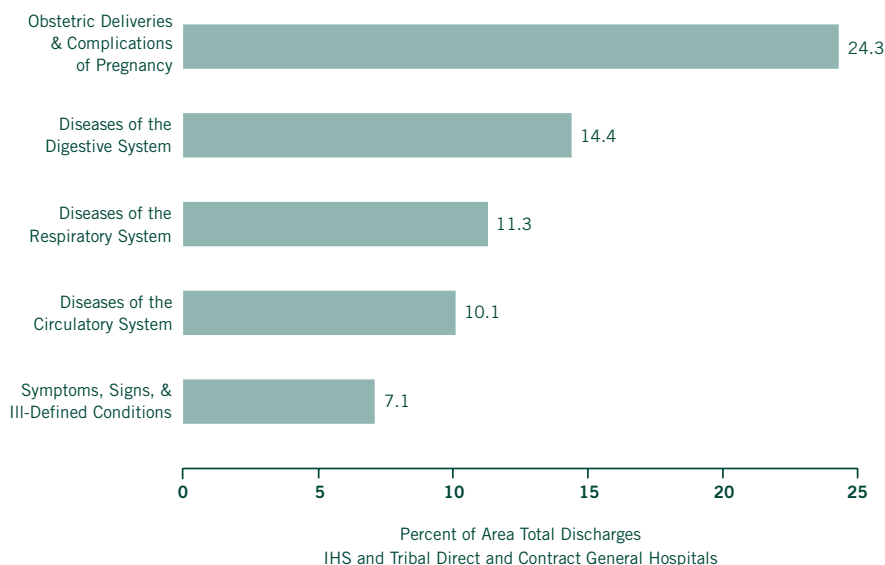


For the Oklahoma Area in FY 2001, 24.3 percent of all discharges from IHS and Tribal direct and contract general hospitals pertained to obstetric deliveries and complications of pregnancy, followed by diseases of the digestive system at 14.4 percent.

**Chart 5.13**

**Leading Causes of Hospitalization**

**Oklahoma Area, FY 2001**



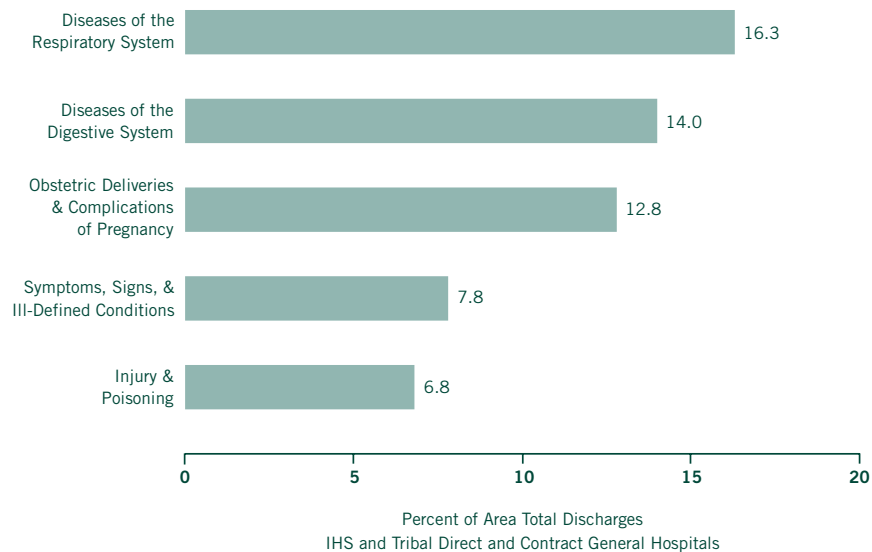


For the Phoenix Area in FY 2001, 16.3 percent of all discharges from IHS and Tribal direct and contract general hospitals pertained to diseases of the respiratory system, followed by diseases of the digestive system at 14.0 percent.

**Chart 5.14**

**Leading Causes of Hospitalization**

**Phoenix Area, FY 2001**

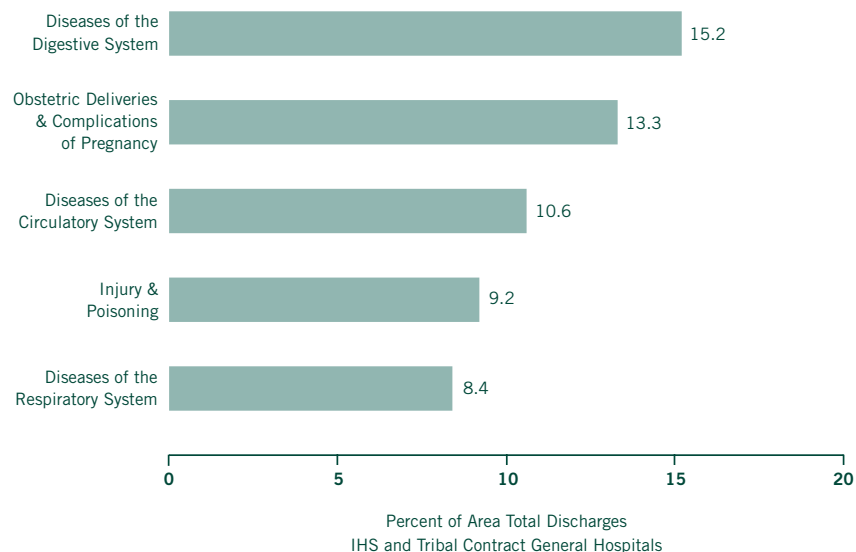


For the Portland Area in FY 2001, 15.2 percent of all discharges from IHS and Tribal contract general hospitals pertained to diseases of the digestive system, followed by obstetric deliveries and complications of pregnancy at 13.3 percent.

**Chart 5.15**

**Leading Causes of Hospitalization**

**Portland Area, FY 2001**

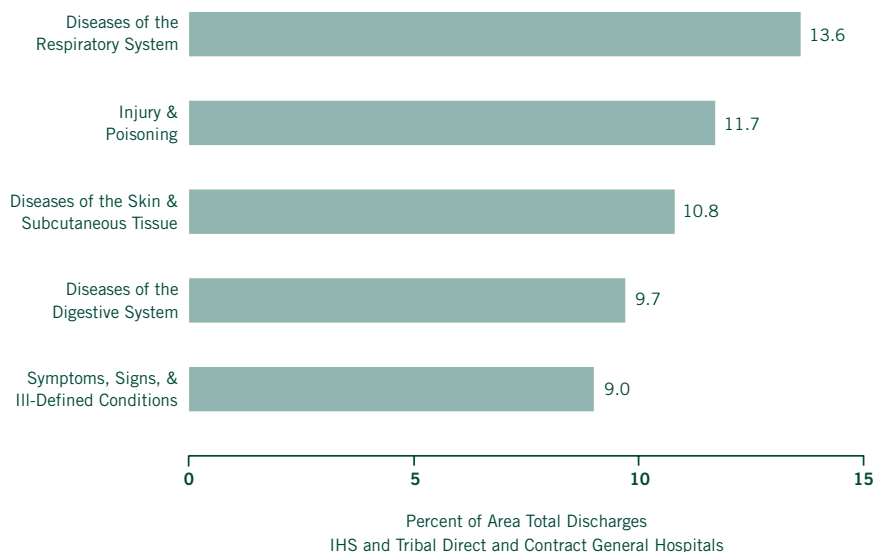


For the Tucson Area in FY 2001, 13.6 percent of all discharges from IHS and Tribal direct and contract general hospitals pertained to diseases of the respiratory system, followed by injury and poisoning at 11.7 percent.

**Chart 5.16**

**Leading Causes of Hospitalization**

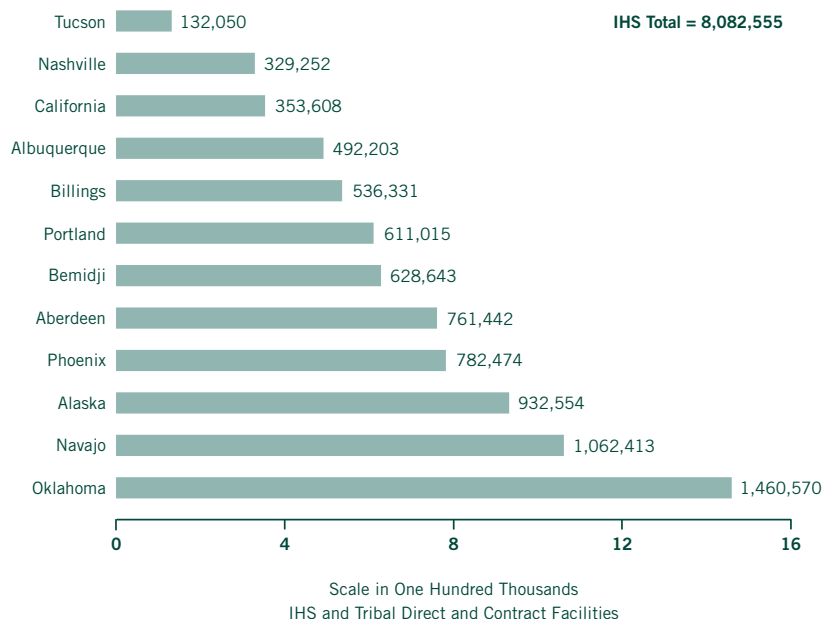
**Tucson Area, FY 2001**



In FY 2001, there were over eight million ambulatory medical visits to IHS and Tribal direct and contract facilities. Two IHS Areas—Oklahoma (1,460,570) and Navajo (1,062,413)—had 31.2 percent of the visits.

**Chart 5.17**

**Number of Ambulatory Medical Visits, FY 2001**



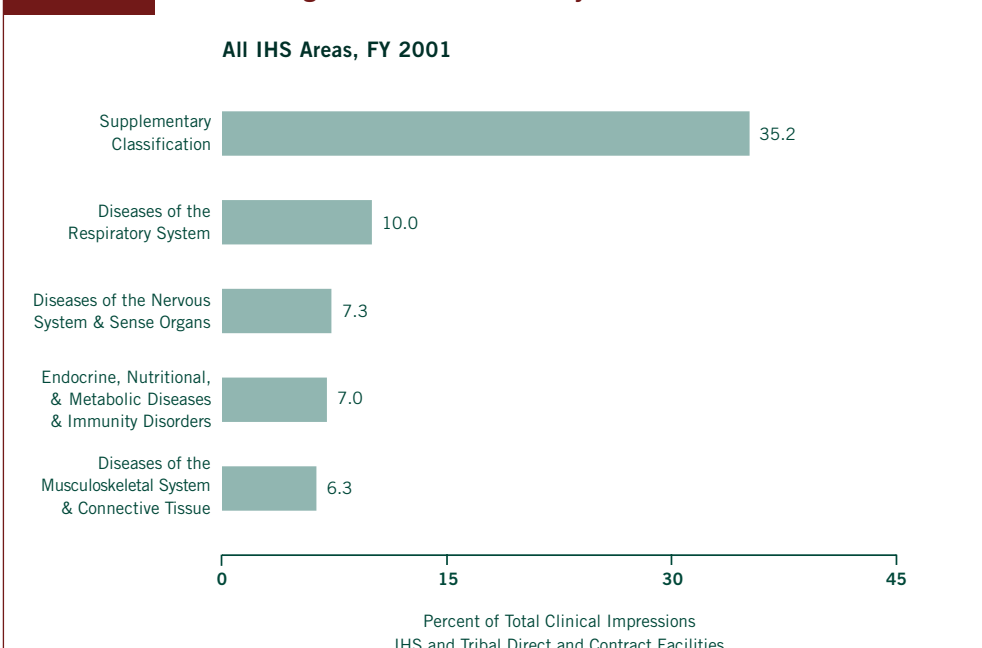
In FY 2001, 35.2 percent of all clinical impressions in IHS and Tribal direct and contract facilities pertained to supplementary classifications, followed by diseases of the respiratory system at 10.0 percent.

**Table 5.17** Number of Ambulatory Medical Visits

| Indian Health Service and Tribal Direct and Contract Facilities, FY 2001 |           |                       |          |           |          |
|--|-----------|-----------------------|----------|-----------|----------|
|  | Total     | Indian Health Service |          | Tribal    |          |
|  |           | Direct                | Contract | Direct    | Contract |
| <i>All IHS Areas</i>   | 8,082,555 | 4,302,548             | 120,621  | 3,516,738 | 142,648  |
| Aberdeen   | 761,442   | 685,810               | 15,939   | 59,667    | 26       |
| Alaska   | 932,554   | 0                     | 0        | 929,424   | 3,130    |
| Albuquerque  | 492,203   | 437,389               | 9,929    | 44,878    | 7        |
| Bemidji  | 628,643   | 185,545               | 7,473    | 411,443   | 24,182   |
| Billings   | 536,331   | 449,961               | 11,914   | 73,955    | 501      |
| California   | 353,608   | 0                     | 0        | 323,045   | 30,563   |
| Nashville  | 329,252   | 69,216                | 2,053    | 227,997   | 29,986   |
| Navajo   | 1,062,413 | 1,047,626             | 14,787   | 0         | 0        |
| Oklahoma   | 1,460,570 | 570,268               | 13,074   | 876,448   | 780      |
| Phoenix  | 782,474   | 545,025               | 24,662   | 207,880   | 4,907    |
| Portland   | 611,015   | 217,002               | 18,692   | 330,790   | 44,531   |
| Tucson   | 132,050   | 94,706                | 2,098    | 31,211    | 4,035    |

**Sources:** IHS Direct: APC Data System (Report 1A)  
IHS Contract: Contract Statistical System (Report 3G)  
Tribal Direct and Contract: IHS Area Submissions

**Chart 5.18** Leading Causes of Ambulatory Medical Visits

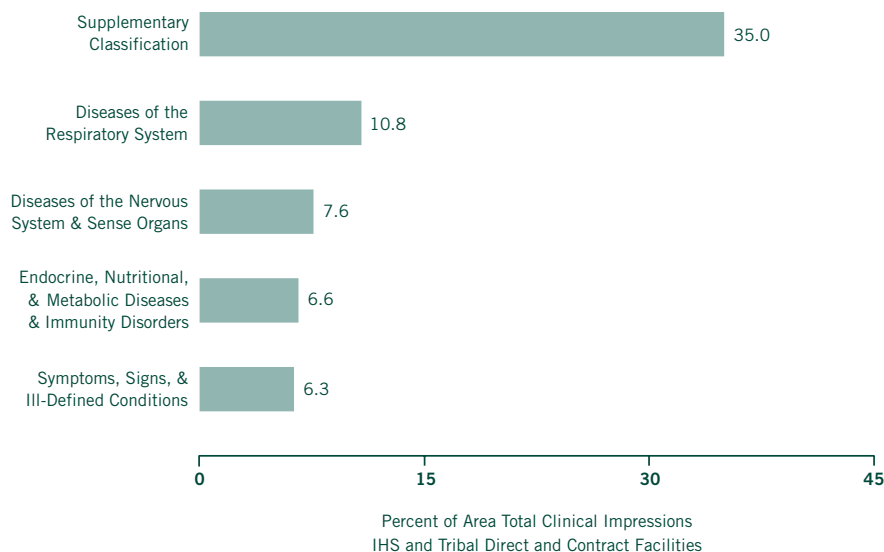


For the Aberdeen Area in FY 2001, 35.0 percent of all clinical impressions in IHS and Tribal direct and contract facilities pertained to supplementary classifications, followed by diseases of the respiratory system at 10.8 percent.

**Chart 5.19**

**Leading Causes of Ambulatory Medical Visits**

**Aberdeen Area, FY 2001**

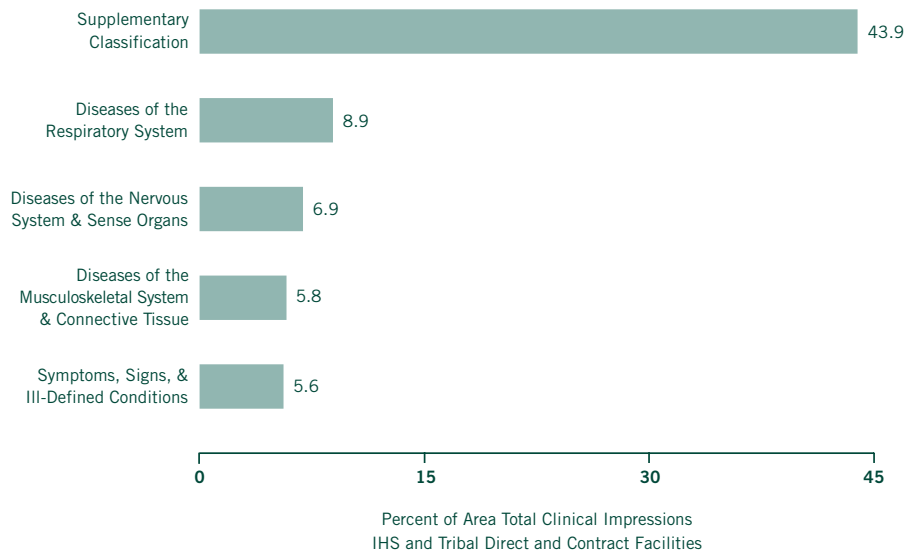


For the Alaska Area in FY 2001, 43.9 percent of all clinical impressions in IHS and Tribal direct and contract facilities pertained to supplementary classifications, followed by diseases of the respiratory system at 8.9 percent.

**Chart 5.20**

**Leading Causes of Ambulatory Medical Visits**

**Alaska Area, FY 2001**

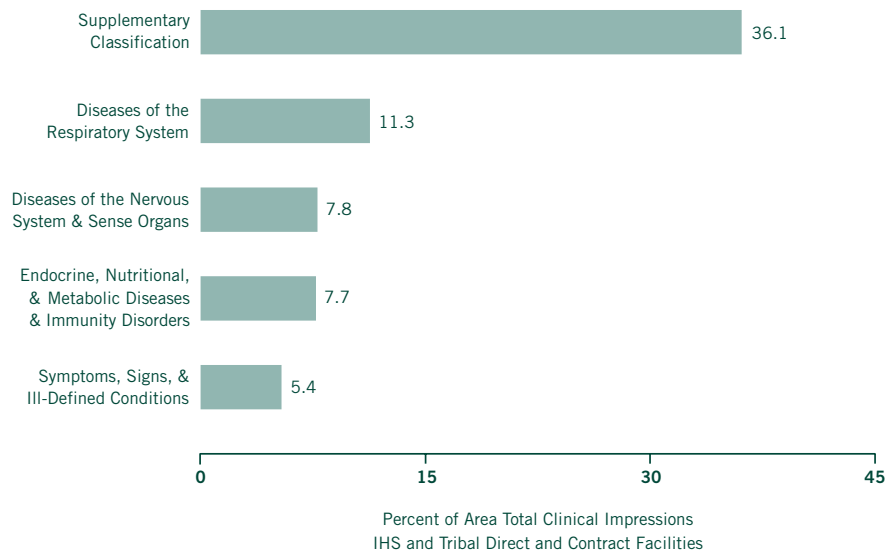


For the Albuquerque Area in FY 2001, 36.1 percent of all clinical impressions in IHS and Tribal direct and contract facilities pertained to supplementary classifications, followed by diseases of the respiratory system at 11.3 percent.

**Chart 5.21**

**Leading Causes of Ambulatory Medical Visits**

**Albuquerque Area, FY 2001**

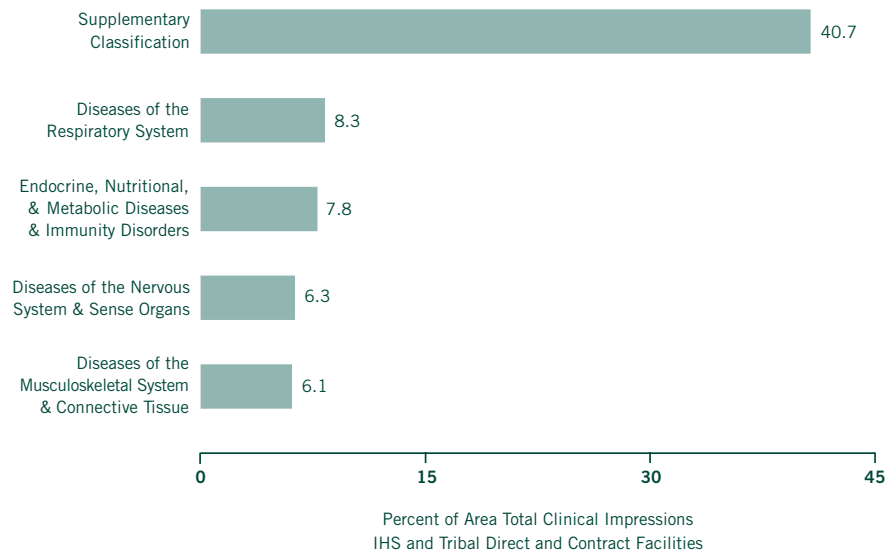


For the Bemidji Area in FY 2001, 40.7 percent of all clinical impressions in IHS and Tribal direct and contract facilities pertained to supplementary classifications, followed by diseases of the respiratory system at 8.3 percent.

**Chart 5.22**

**Leading Causes of Ambulatory Medical Visits**

**Bemidji Area, FY 2001**

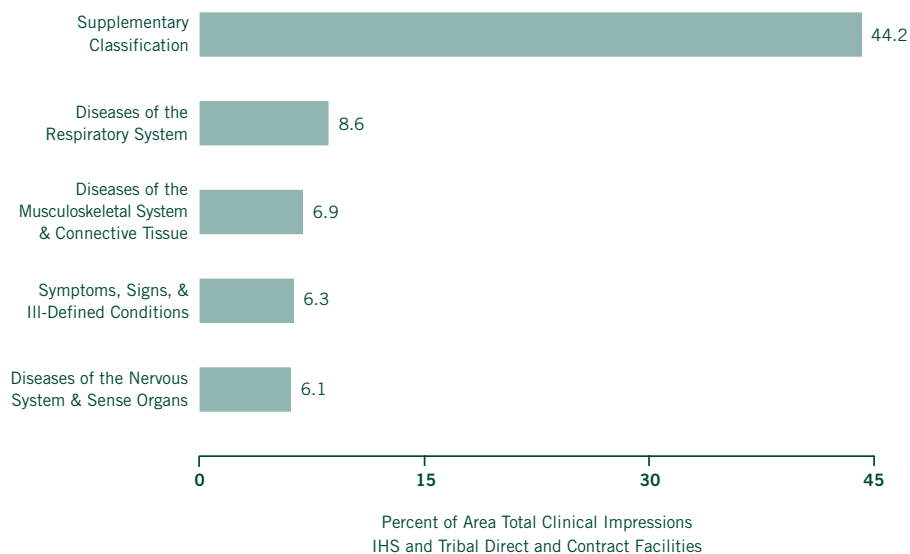


For the Billings Area in FY 2001, 44.2 percent of all clinical impressions in IHS and Tribal direct and contract facilities pertained to supplementary classifications, followed by diseases of the respiratory system at 8.6 percent.

**Chart 5.23**

**Leading Causes of Ambulatory Medical Visits**

**Billings Area, FY 2001**

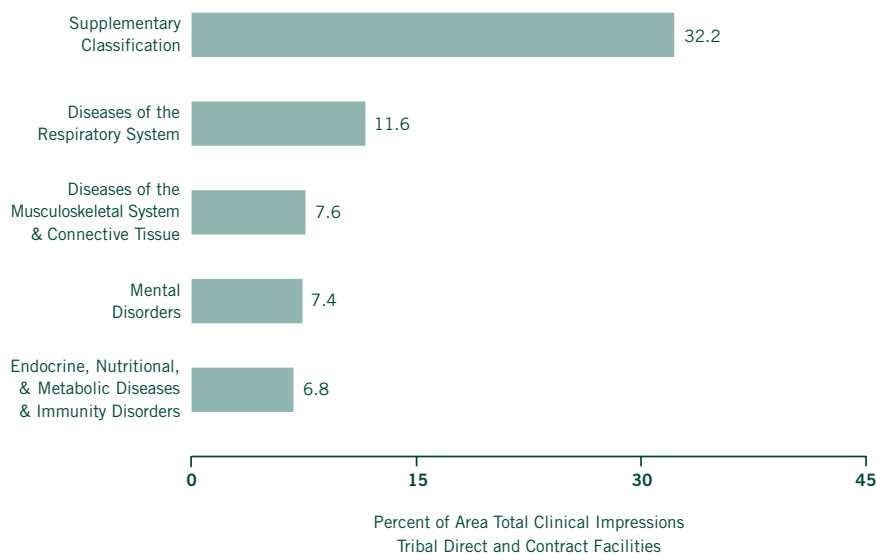


For the California Area in FY 2001, 32.2 percent of all clinical impressions in Tribal direct and contract facilities pertained to supplementary classifications, followed by diseases of the respiratory system at 11.6 percent.

**Chart 5.24**

**Leading Causes of Ambulatory Medical Visits**

**California Area, FY 2001**

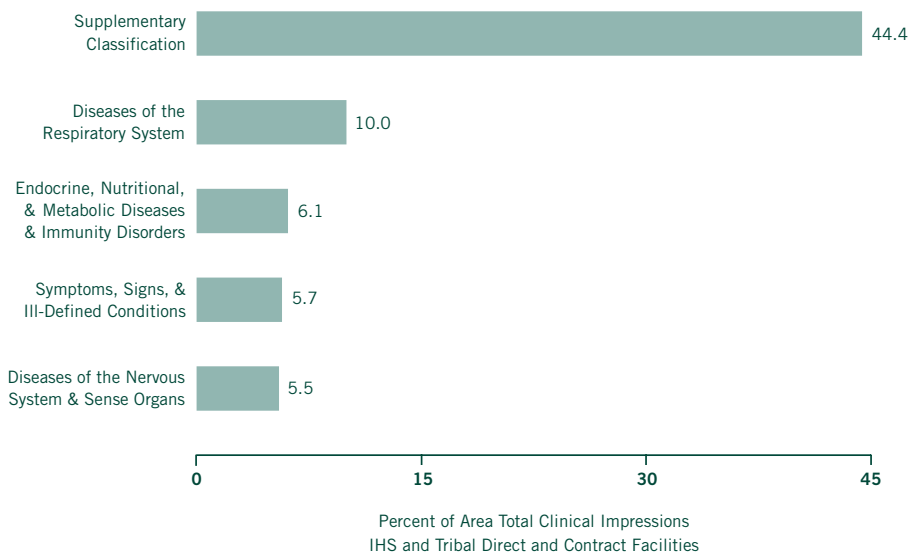


For the Nashville Area in FY 2001, 44.4 percent of all clinical impressions in IHS and Tribal direct and contract facilities pertained to supplementary classifications, followed by diseases of the respiratory system at 10.0 percent.

**Chart 5.25**

**Leading Causes of Ambulatory Medical Visits**

**Nashville Area, FY 2001**

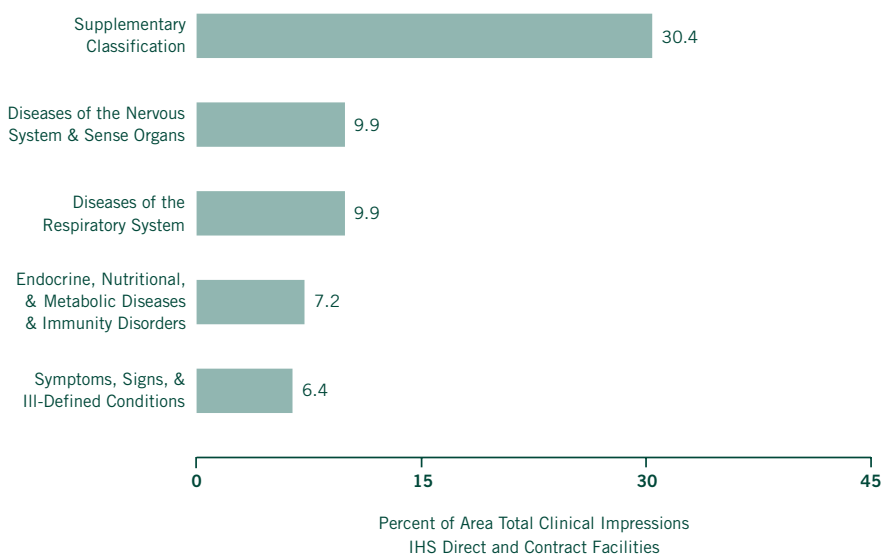


For the Navajo Area in FY 2001, 30.4 percent of all clinical impressions in IHS direct and contract facilities pertained to supplementary classifications, followed by diseases of the respiratory system and diseases of the nervous system and sense organs, both at 9.9 percent.

**Chart 5.26**

**Leading Causes of Ambulatory Medical Visits**

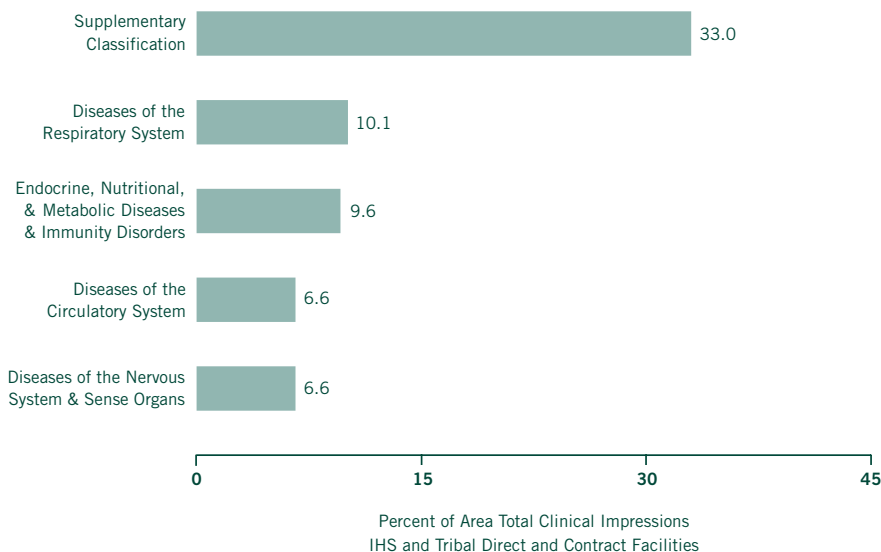
**Navajo Area, FY 2001**



For the Oklahoma Area in FY 2001, 33.0 percent of all clinical impressions in IHS and Tribal direct and contract facilities pertained to supplementary classifications, followed by diseases of the respiratory system at 10.1 percent.

**Chart 5.27**      **Leading Causes of Ambulatory Medical Visits**

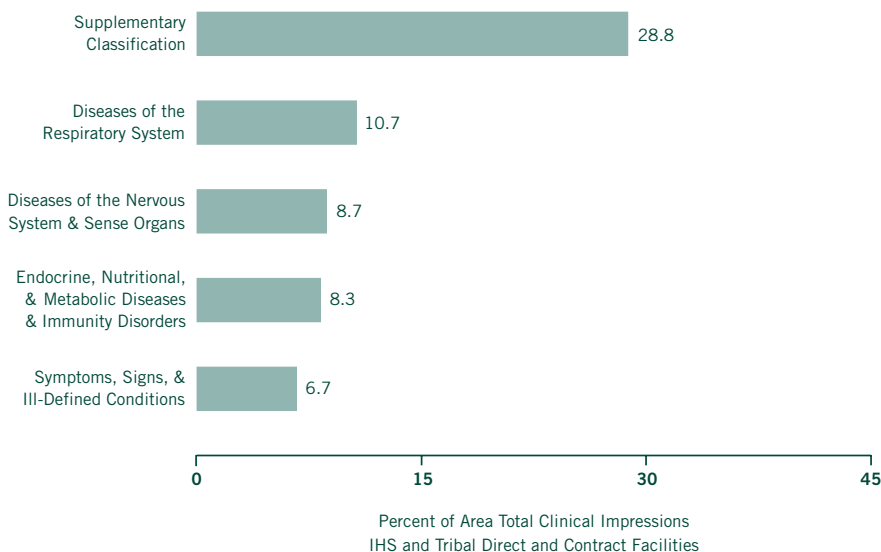
**Oklahoma Area, FY 2001**



For the Phoenix Area in FY 2001, 28.8 percent of all clinical impressions in IHS and Tribal direct and contract facilities pertained to supplementary classifications, followed by diseases of the respiratory system at 10.7 percent.

**Chart 5.28**      **Leading Causes of Ambulatory Medical Visits**

**Phoenix Area, FY 2001**



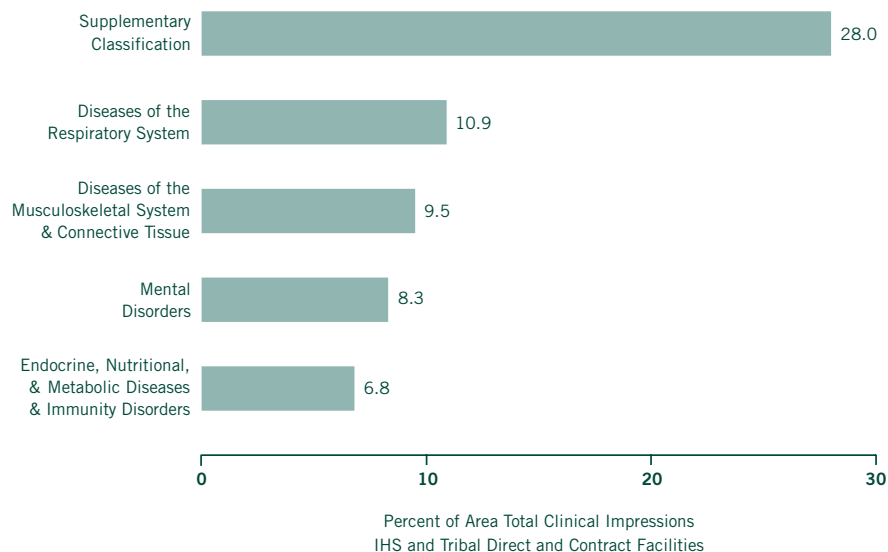


For the Portland Area in FY 2001, 28.0 percent of all clinical impressions in IHS and Tribal direct and contract facilities pertained to supplementary classifications, followed by diseases of the respiratory system at 10.9 percent.

**Chart 5.29**

**Leading Causes of Ambulatory Medical Visits**

**Portland Area, FY 2001**

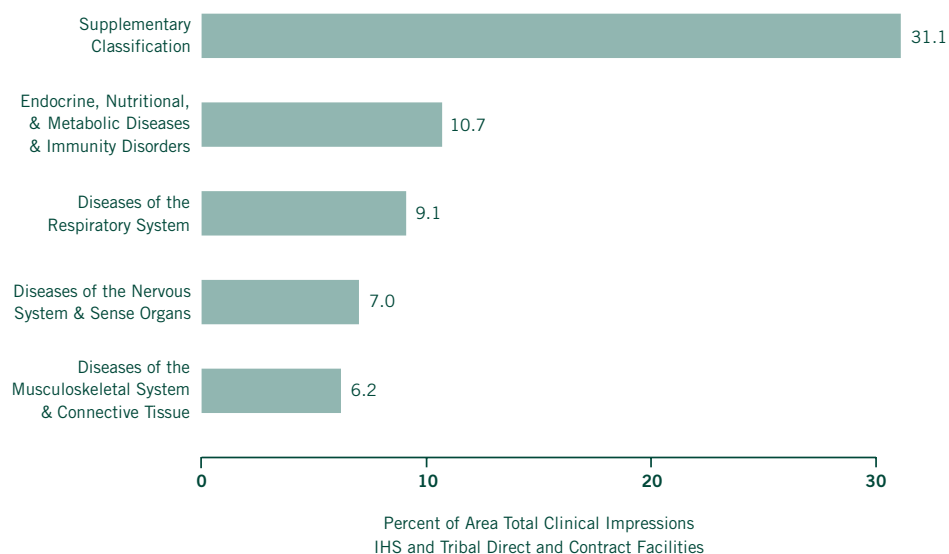


For the Tucson Area in FY 2001, 31.1 percent of all clinical impressions in IHS and Tribal direct and contract facilities pertained to supplementary classifications, followed by endocrine, nutritional, and metabolic diseases and immunity disorders at 10.7 percent.

**Chart 5.30**

**Leading Causes of Ambulatory Medical Visits**

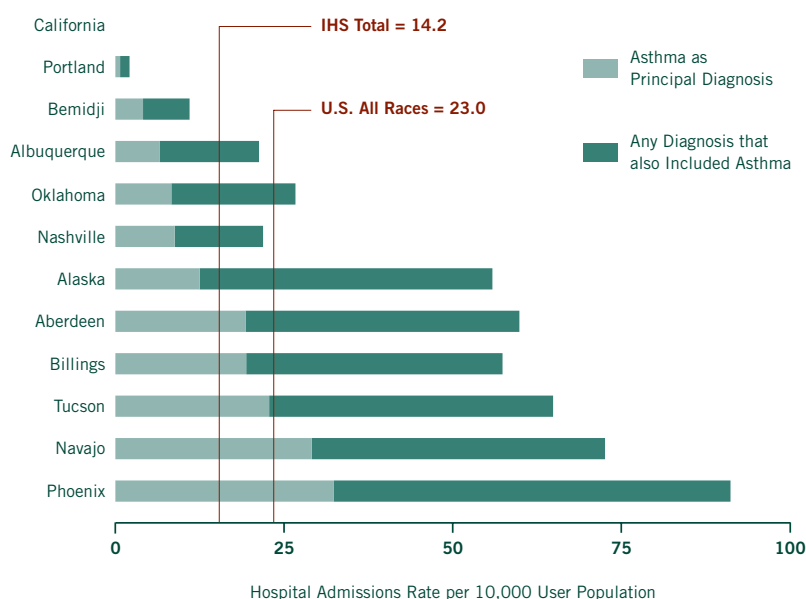
**Tucson Area, FY 2001**



In FY 2001, there were 866 asthma admissions to IHS and Tribal direct and contract general hospitals.\* Approximately 55 percent of these admissions were in two IHS Areas, Navajo (285) and Phoenix (193). \*The AI/AN population compares favorably to the U.S. all-races population (14.2 asthma admissions per 10,000 versus 23.0, respectively).

**Chart 5.31**

**Family Planning Visit Rates, FY 2001**



**Table 5.31**

**Number and Rate of Hospitalizations Among Persons Under 18 Years With Asthma as a Diagnosis, FY 2001**

|                              | Asthma as Principal Diagnosis |                      | Any Diagnosis that also Included Asthma |                      | Number of Persons Under Age 18 <sup>1</sup> |
|------------------------------|-------------------------------|----------------------|---|----------------------|---|
|                              | Admission Rate per 10,000     | Number of Admissions | Admission Rate per 10,000               | Number of Admissions |   |
| <i>U.S. All Races (1997)</i> | 23.0                          |                      |   |                      |   |
| <i>All IHS Areas</i>         | 14.2                          | 866                  | 27.0                                    | 1,646                | 608,614                                     |
| Aberdeen                     | 19.3                          | 93                   | 40.6                                    | 195                  | 48,089                                      |
| Alaska                       | 12.5                          | 56                   | 434.0                                   | 194                  | 44,676                                      |
| Albuquerque                  | 6.6                           | 21                   | 14.7                                    | 47                   | 31,895                                      |
| Bemidji                      | 4.1                           | 16                   | 6.9                                     | 27                   | 38,979                                      |
| Billings                     | 19.4                          | 49                   | 38.0                                    | 96                   | 25,269                                      |
| California                   | —                             | —                    | —                                       | —                    | 46,192                                      |
| Nashville                    | 8.8                           | 24                   | 13.1                                    | 36                   | 27,398                                      |
| Navajo                       | 29.1                          | 285                  | 43.5                                    | 426                  | 97,985                                      |
| Oklahoma                     | 8.3                           | 99                   | 18.4                                    | 219                  | 119,123                                     |
| Phoenix                      | 32.4                          | 193                  | 58.8                                    | 350                  | 59,497                                      |
| Portland                     | 0.7                           | 4                    | 1.4                                     | 8                    | 58,111                                      |
| Tucson                       | 22.8                          | 26                   | 42.1                                    | 48                   | 11,400                                      |

<sup>1</sup> IHS Service Population under age 18 projected for 2001 from Census 1990

Sources: IHS Direct: Inpatient Data System

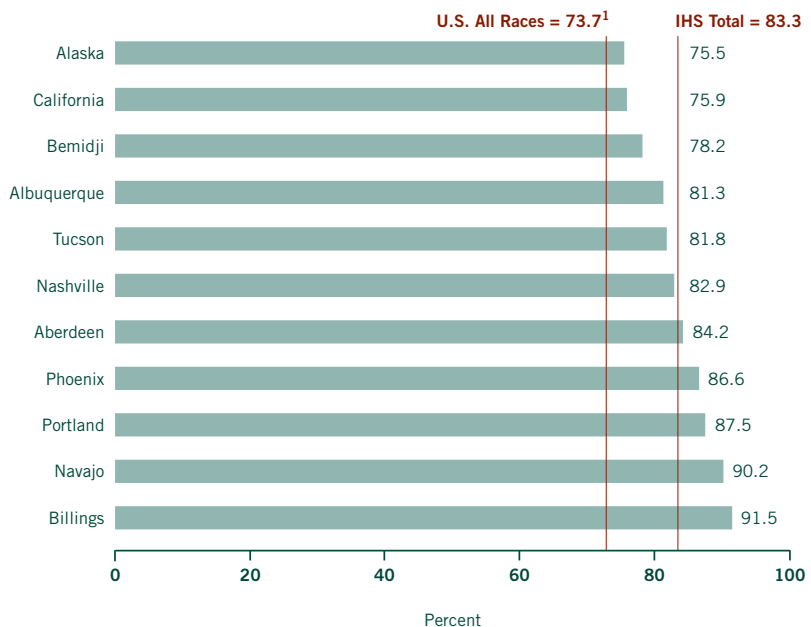
IHS Contract: Contract Statistical System, Healthcare Cost and Utilization Project (HCUP), AHRQ

U.S. Bureau of the Census, County-level Indian Data

In FY 2001, 83.3 percent of AI/AN children 3-27 months and residing in the IHS service area received all required immunizations. In the general population in FY 2001, 73.7 percent of children aged 19 to 35 months received all required immunizations. The Alaska Area had the lowest IHS rate at 75.5 percent, while the Billings Area had the highest rate, 91.5.

**Chart 5.32**

**Immunization Rates, 3-27 Months, FY 2001**



<sup>1</sup> Centers for Disease Control and Prevention. National, state, and urban area vaccination coverage levels among children 19-35 months – United States, 2001. MMWR 51 (30): 664-666. August 2, 2002. (<http://www.cdc.gov/mmwr/PDF/wk/mm5130/pdf>)

In FY 2001, over 2.7 million dental services were provided at IHS and Tribal direct and contract facilities, as reported to the IHS central database. Two IHS Areas provided 31 percent of these dental services, Navajo (376,867) and Oklahoma (419,679).

**Chart 5.33**

**Number of Dental Services Provided, FY 2001**

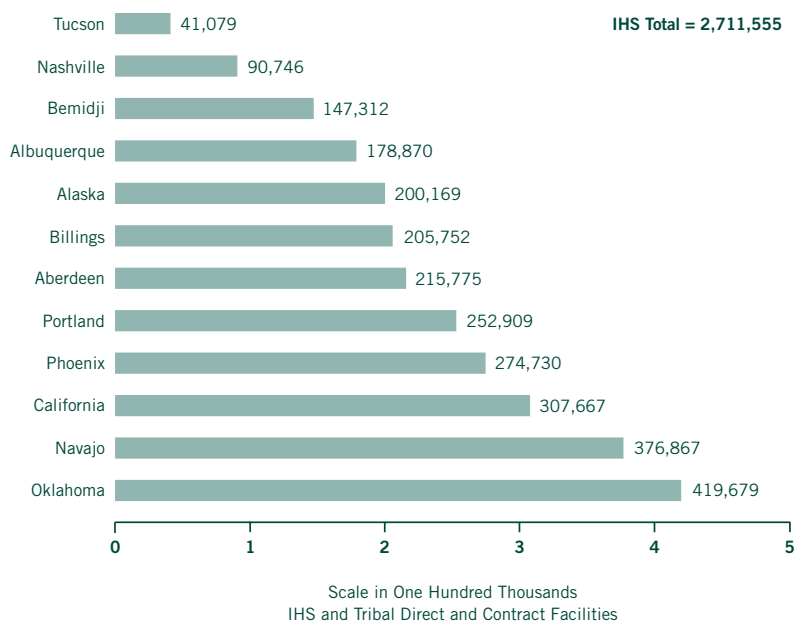


Table 5.33

## Number of Dental Services Provided

## Indian Health Service and Tribal Direct and Contract Facilities, FY 2001

|                      | Total    |           | IHS Direct |           | IHS Contract |          | Tribal Direct |           | Tribal Contract |          |
|----------------------|----------|-----------|------------|-----------|--------------|----------|---------------|-----------|-----------------|----------|
|                      | Patients | Services  | Patients   | Services  | Patients     | Services | Patients      | Services  | Patients        | Services |
| <i>All IHS Areas</i> | 414,119  | 2,711,555 | 252,472    | 1,669,272 | 2,082        | 14,195   | 158,668       | 1,025,010 | 897             | 3,078    |
| Aberdeen             | 36,199   | 215,775   | 31,673     | 191,372   | 1            | 10       | 4,525         | 24,393    | 0               | 0        |
| Alaska               | 30,527   | 200,169   | 11         | 30        | 0            | 0        | 30,516        | 200,139   | 0               | 0        |
| Albuquerque          | 28,737   | 178,870   | 25,575     | 161,252   | 45           | 151      | 3,117         | 17,467    | 0               | 0        |
| Bemidji              | 26,744   | 147,312   | 26,731     | 147,249   | 13           | 63       | 0             | 0         | 0               | 0        |
| Billings             | 25,793   | 205,752   | 20,630     | 157,973   | 13           | 52       | 5,150         | 47,727    | 0               | 0        |
| California           | 42,285   | 307,667   | 1,439      | 16,041    | 114          | 605      | 40,690        | 291,021   | 42              | 0        |
| Nashville            | 14,790   | 90,746    | 12,995     | 77,910    | 1,795        | 12,836   | 0             | 0         | 0               | 0        |
| Navajo               | 57,228   | 376,867   | 57,218     | 376,816   | 10           | 51       | 0             | 0         | 0               | 0        |
| Oklahoma             | 67,351   | 419,679   | 29,546     | 200,301   | 0            | 0        | 37,805        | 219,378   | 0               | 0        |
| Phoenix              | 37,766   | 274,730   | 26,053     | 191,310   | 21           | 54       | 11,681        | 83,361    | 11              | 5        |
| Portland             | 40,923   | 252,909   | 15,719     | 111,182   | 69           | 359      | 25,097        | 141,307   | 38              | 61       |
| Tucson               | 5,776    | 41,079    | 4,882      | 37,836    | 1            | 14       | 87            | 217       | 806             | 3,012    |

The rate of new tuberculosis cases for the IHS in CY 2001 (13.2 per 100,000 population) is 2.4 times the rate as compared to the U.S. all-races (5.6). The Alaska Area rate (30.9) was 4.5 times the U.S. rate.

Chart 5.34

## New Tuberculosis Cases, CY 2001

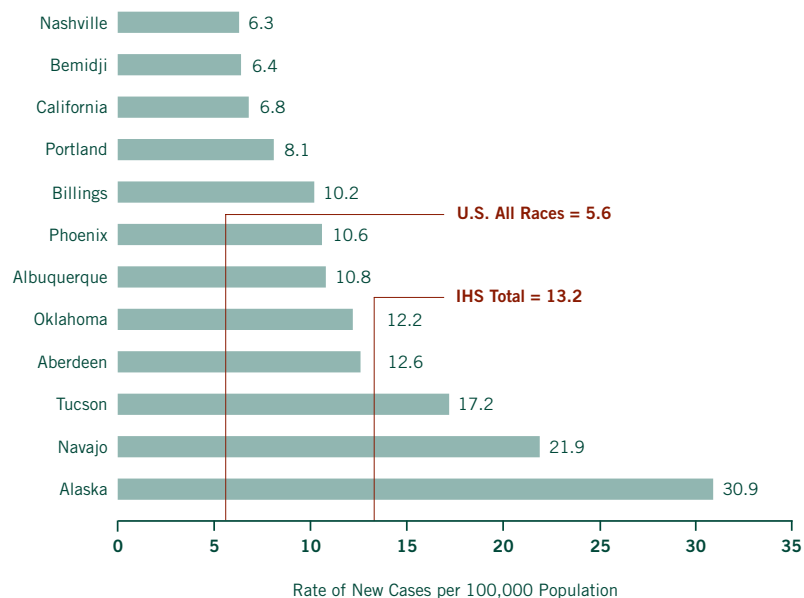


Table 5.34

## Number and Rate of New Tuberculosis Cases, CY 2001

|                       | Case Rate <sup>1</sup> | Number of Cases <sup>1</sup> |
|-----------------------|------------------------|------------------------------|
| <i>U.S. All Races</i> | 5.6                    | 15,989                       |
| <i>All IHS Areas</i>  | 13.2                   | 204                          |
| Aberdeen              | 12.6                   | 13                           |
| Alaska                | 30.9                   | 34                           |
| Albuquerque           | 10.8                   | 9                            |
| Bemidji               | 6.4                    | 6                            |
| Billings              | 10.2                   | 6                            |
| California            | 6.8                    | 9                            |
| Nashville             | 6.3                    | 5                            |
| Navajo                | 21.9                   | 49                           |
| Oklahoma              | 12.2                   | 39                           |
| Phoenix               | 10.6                   | 16                           |
| Portland              | 8.1                    | 13                           |
| Tucson                | 17.2                   | 5                            |

<sup>1</sup> Number of new cases per 100,000 service population.

Rates are based on a small number of new cases and should be interpreted with caution.

**Source:** Centers for Disease Control and Prevention (data by State and County)

# Glossary of ICD-9 Codes


## *List of 72 Selected Causes of Death (1979-Present)*

| Cause of Death   | ICD-9 Codes  |
|--|--|
| Shigellosis and amebiasis  | .004,006   |
| Certain other intestinal infections  | .007-009   |
| Tuberculosis   | .010-018   |
| Tuberculosis of respiratory system   | .010-012   |
| Other tuberculosis   | .013-018   |
| Whooping cough   | .033   |
| Streptococcal sore throat, scarlatina, and erysipelas  | .034-035   |
| Meningococcal infection  | .036   |
| Septicemia   | .038   |
| Acute poliomyelitis  | .045   |
| Measles  | .055   |
| Viral hepatitis  | .070   |
| Syphilis   | .090-097   |
| All other infectious and parasitic diseases  | .001-003,005,020-032,037,039-041,*042-*044,046-054,056-066,071-088,098-139 |
| Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues                    | .140-208   |
| Malignant neoplasms of lip, oral cavity, and pharynx   | .140-149   |
| Malignant neoplasms of digestive organs and peritoneum   | .150-159   |
| Malignant neoplasms of respiratory and intrathoracic organs  | .160-165   |
| Malignant neoplasm of breast   | .174-175   |
| Malignant neoplasms of genital organs  | .179-187   |
| Malignant neoplasms of urinary organs  | .188-189   |
| Malignant neoplasms of all other and unspecified sites   | .170-173,190-199   |
| Leukemia   | .204-208   |
| Other malignant neoplasms of lymphatic and hematopoietic tissues                                   | .200-203   |
| Benign neoplasms, carcinoma in situ, and neoplasms of uncertain behavior and of unspecified nature | .210-239   |
| Diabetes mellitus  | .250   |
| Nutritional deficiencies   | .260-269   |
| Anemias  | .280-285   |
| Meningitis   | .320-322   |
| Major cardiovascular diseases  | .390-448   |
| Diseases of heart  | .390-398,402,404-429   |
| Rheumatic fever and rheumatic heart disease  | .390-398   |
| Hypertensive heart disease   | .402   |
| Hypertensive heart and renal disease   | .404   |
| Ischemic heart disease   | .410-414   |

## Cause of Death

## ICD-9 Codes

|  |                 |
|--|-----------------|
| Acute myocardial infarction . . . . .  | 410             |
| Other acute and subacute forms of ischemic heart disease . . . . .   | 411             |
| Angina pectoris . . . . .  | 413             |
| Old myocardial infarction and other forms of chronic ischemic heart disease . . . . .  | 412,414         |
| Other diseases of endocardium . . . . .  | 424             |
| All other forms of heart disease . . . . .   | 415-423,425-429 |
| Hypertension with or without renal disease . . . . .   | 401,403         |
| Cerebrovascular diseases . . . . .   | 430-438         |
| Intracerebral and other intracranial hemorrhage . . . . .  | 431-432         |
| Cerebral thrombosis and unspecified occlusion of cerebral arteries . . . . .   | 434.0,434.9     |
| Cerebral embolism . . . . .  | 434.1           |
| All other and late effects of cerebrovascular diseases . . . . .   | 430,433,435-438 |
| Atherosclerosis . . . . .  | 440             |
| Other diseases of arteries, arterioles, and capillaries . . . . .  | 441-448         |
| Acute bronchitis and bronchiolitis . . . . .   | 466             |
| Pneumonia and influenza . . . . .  | 480-487         |
| Pneumonia . . . . .  | 480-486         |
| Influenza . . . . .  | 487             |
| Chronic obstructive pulmonary diseases and allied conditions . . . . .   | 490-496         |
| Bronchitis, chronic and unspecified . . . . .  | 490-491         |
| Emphysema . . . . .  | 492             |
| Asthma . . . . .   | 493             |
| Other chronic obstructive pulmonary diseases and allied conditions . . . . .   | 494-496         |
| Ulcer of stomach and duodenum . . . . .  | 531-533         |
| Appendicitis . . . . .   | 540-543         |
| Hernia of abdominal cavity and intestinal obstruction without mention of hernia . . . . .  | 550-553,560     |
| Chronic liver disease and cirrhosis . . . . .  | 571             |
| Cholelithiasis and other disorders of gallbladder . . . . .  | 574-575         |
| Nephritis, nephrotic syndrome, and nephrosis . . . . .   | 580-589         |
| Acute glomerulonephritis and nephrotic syndrome . . . . .  | 580-581         |
| Chronic glomerulonephritis, nephritis and nephropathy, not specified as acute or chronic, and renal sclerosis, unspecified . . . . . | 582-583,587     |
| Renal failure, disorders resulting from impaired renal function, and small kidney of unknown cause . . . . .                         | 584-586,588-589 |
| Infections of kidney . . . . .   | 590             |
| Hyperplasia of prostate . . . . .  | 600             |
| Complications of pregnancy, childbirth, and the puerperium . . . . .   | 630-676         |
| Pregnancy with abortive outcome . . . . .  | 630-638         |
| Other complications of pregnancy, childbirth, and the puerperium . . . . .   | 640-676         |
| Congenital anomalies . . . . .   | 740-759         |
| Certain conditions originating in the perinatal period . . . . .   | 760-779         |
| Birth trauma, intrauterine hypoxia, birth asphyxia, and respiratory distress syndrome . . . . .                                      | 767-769         |
| Other conditions originating in the perinatal period . . . . .   | 760-766,770-779 |
| Symptoms, signs, and ill-defined conditions . . . . .  | 780-799         |



| Cause of Death                          | ICD-9 Codes          |
|---|----------------------|
| All other diseases                      | .Residual            |
| Accidents and adverse effects           | .E800-E949           |
| Motor vehicle accidents                 | .E810-E825           |
| All other accidents and adverse effects | .E800-E807,E826-E949 |
| Suicide                                 | .E950-E959           |
| Homicide and legal intervention         | .E960-E978           |
| All other external causes               | .E980-E999           |

*List of 61 Selected Causes of Infant Death (1979-Present)*

| Cause of Death   | ICD-9 Codes  |
|--|--|
| Certain intestinal infections  | .008-009   |
| Whooping cough   | .033   |
| Meningococcal infection  | .036   |
| Septicemia   | .038   |
| Viral diseases   | .045-079   |
| Congenital syphilis  | .090   |
| Remainder of infectious and parasitic diseases   | .001,007,010-032,034-035,037,039-041,*042-*044,080-088,091-139 |
| Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues                    | .140-208   |
| Benign neoplasms, carcinoma in situ, and neoplasms of uncertain behavior and of unspecified nature | .210-239   |
| Diseases of thymus gland   | .254   |
| Cystic fibrosis  | .277.0   |
| Diseases of blood and blood-forming organs   | .280-289   |
| Meningitis   | .320-322   |
| Other diseases of nervous system and sense organs  | .323-389   |
| Acute upper respiratory infections   | .460-465   |
| Bronchitis and bronchiolitis   | .466,490-491   |
| Pneumonia and influenza  | .480-487   |
| Pneumonia  | .480-486   |
| Influenza  | .487   |
| Remainder of diseases of respiratory system  | .470-478,492-519   |
| Hernia of abdominal cavity and intestinal obstruction without mention of hernia                    | .550-553,560   |
| Gastritis, duodenitis, and noninfective enteritis and colitis                                      | .535,555-558   |
| Remainder of diseases of digestive system  | .520-534,536-543,562-579                                       |
| Congenital anomalies   | .740-759   |
| Anencephalus and similar anomalies   | .740   |
| Spina bifida   | .741   |
| Congenital hydrocephalus   | .742.3   |
| Other congenital anomalies of central nervous system and eye                                       | .742.0-742.2,742.4-742.9,743                                   |



## Cause of Death

## ICD-9 Codes

|  |                       |
|--|-----------------------|
| Congenital anomalies of heart  | 745-746               |
| Other congenital anomalies of circulatory system   | 747                   |
| Congenital anomalies of respiratory system   | 748                   |
| Congenital anomalies of digestive system   | 749-751               |
| Congenital anomalies of genitourinary system   | 752-753               |
| Congenital anomalies of musculoskeletal system   | 754-756               |
| Down's syndrome  | 758.0                 |
| Other chromosomal anomalies  | 758.1-758.9           |
| All other and unspecified congenital anomalies   | 744,757,759           |
| Certain conditions originating in the perinatal period   | 760-779               |
| Newborn affected by maternal conditions which may be unrelated to present pregnancy                      | 760                   |
| Newborn affected by maternal complications of pregnancy  | 761                   |
| Newborn affected by complications of placenta, cord, and membranes                                       | 762                   |
| Newborn affected by other complications of labor and delivery  | 763                   |
| Slow fetal growth and fetal malnutrition   | 764                   |
| Disorders relating to short gestation and unspecified low birthweight                                    | 765                   |
| Disorders relating to long gestation and high birthweight  | 766                   |
| Birth trauma   | 767                   |
| Intrauterine hypoxia and birth asphyxia  | 768                   |
| Fetal distress in liveborn infant  | 768.2-768.4           |
| Birth asphyxia   | 768.5-768.9           |
| Respiratory distress syndrome  | 769                   |
| Other respiratory conditions of newborn  | 770                   |
| Infections specific to the perinatal period  | 771                   |
| Neonatal hemorrhage  | 772                   |
| Hemolytic disease of newborn, due to isoimmunization, and other perinatal jaundice                       | 773-774               |
| Syndrome of infant of a diabetic mother and neonatal diabetes mellitus                                   | 775.0-775.1           |
| Hemorrhagic disease of newborn   | 776.0                 |
| All other and ill-defined conditions originating in the perinatal period                                 | 775.2-775.9,776.1-779 |
| Symptoms, signs, and ill-defined conditions  | 780-799               |
| Sudden infant death syndrome   | 798.0                 |
| Symptoms, signs, and all other ill-defined conditions  | 780-797,798.1-799     |
| Accidents and adverse effects  | E800-E949             |
| Inhalation and ingestion of food or other object causing obstruction of respiratory tract or suffocation | E911-E912             |
| Accidental mechanical suffocation  | E913                  |
| Other accidental causes and adverse effects  | E800-E910,E914-E949   |
| Homicide   | E960-E969             |
| Child battering and other maltreatment   | E967                  |
| Other homicide   | E960-E966,E968-E969   |
| All other causes   | Residual              |

## *Additional Causes of Death and their Corresponding ICD-9 Codes Which May be Found in this Publication*

(These categories are not included as part of the 72 cause of death or 61 cause of infant death lists.  
They are independent of these two lists but are valid cause of death codes to use for the causes indicated)

| <b>Cause of Death</b>                                  | <b>ICD-9 Codes</b>  |
|--|---|
| Alcohol-related deaths . . . . .                       | .291,303,305.0,357.5,425.5,535.3,571.0-571.3,790.3,E860               |
| Breast cancer (females) . . . . .                      | .174  |
| Cervical cancer . . . . .                              | .180  |
| Colon-rectal cancer . . . . .                          | .153.0-154.3,154.8,159.0  |
| Drug-related deaths . . . . .                          | .292,304,305.2-305.9,E850-E858,E950.0-E950.5,E962.0,E980.0-E980.5     |
| Gastroenteric deaths . . . . .                         | .004,006-009,535,555-556,558,562                                      |
| Human immunodeficiency virus (HIV) infection . . . . . | .042-044  |
| Firearm deaths . . . . .                               | E922,E955.0-E955.4,E965.0-E965.4,E970,E985.0-E985.4                   |
| Injury and poisoning . . . . .                         | E800-E807,E810-E825,E826-E949,E950-E959,E960-E978,E980-E989,E990-E999 |
| Other injuries . . . . .                               | E980-E989,E990-E999   |
| Lung cancer . . . . .                                  | .162.2-162.9  |
| Maternal deaths . . . . .                              | .630-676  |
| Prostate cancer . . . . .                              | .185  |

## *List of ICD-9-CM Codes Used in Patient Care Charts and Tables*

| <b>Condition Codes</b>   | <b>ICD-9-CM</b> |
|--|-----------------|
| Infectious and parasitic diseases . . . . .  | .001-139        |
| Neoplasms . . . . .  | .140-239        |
| Endocrine, nutritional, and metabolic diseases and immunity disorders . . . . .  | .240-279        |
| Diseases of the blood and blood-forming organs . . . . .   | .280-289        |
| Mental disorders . . . . .   | .290-319        |
| Diseases of the nervous system and sense organs . . . . .  | .320-389        |
| Diseases of the circulatory system . . . . .   | .390-459        |
| Diseases of the respiratory system . . . . .   | .460-519        |
| Diseases of the digestive system . . . . .   | .520-579        |
| Diseases of the genitourinary system . . . . .   | .580-629        |
| Complications of pregnancy, childbirth, and the puerperium . . . . .   | .630-677        |
| Diseases of the skin and subcutaneous tissue . . . . .   | .680-709        |
| Diseases of the musculoskeletal system and connective tissue . . . . .   | .710-739        |
| Congenital anomalies . . . . .   | .740-759        |
| Certain conditions originating in the perinatal period . . . . .   | .760-779        |
| Symptoms, signs, and ill-defined conditions . . . . .  | .780-799        |
| Injury and poisoning . . . . .   | .800-999        |
| Supplementary classification (classification of factors influencing health status and contact with health service) . . . . . | V01-V82         |

# Index to Charts and Tables

*(Numbers refer to chart and table numbers)*

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| Acquired Immune Deficiency Syndrome . . . . .          | 4.36            | 4.36            |
| Alcohol . . . . .                                      | 3.5, 4.23       | 3.5, 4.23       |
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| Area offices . . . . .                                 | 1.1             |                 |
| Asthma . . . . .                                       | 5.31            | 5.31            |
| <b>B</b>   |                 |                 |
| Births . . . . .                                       | 3.1-3.9         | 3.1-3.9         |
| <b>C</b>   |                 |                 |
| Cancer, all sites . . . . .                            | 4.30            | 4.30            |
| Cancer, breast . . . . .                               | 4.32            | 4.32            |
| Cancer, cervical . . . . .                             | 4.33            | 4.33            |
| Cancer, colon-rectal . . . . .                         | 4.34            | 4.34            |
| Cancer, lung . . . . .                                 | 4.31            | 4.31            |
| Cancer, prostate . . . . .                             | 4.35            | 4.35            |
| Cerebrovascular diseases . . . . .                     | 4.29            | 4.29            |
| <b>D</b>   |                 |                 |
| Dental . . . . .                                       | 5.33            | 5.33            |
| Diabetes . . . . .                                     | 4.24            | 4.24            |
| <b>E</b>   |                 |                 |
| Education . . . . .                                    | 2.5, 2.6        |                 |
| <b>F</b>   |                 |                 |
| Facilities . . . . .                                   | 1.2-1.14        |                 |
| Firearm injuries . . . . .                             | 4.21            | 4.21            |
| <b>G</b>   |                 |                 |
| Gastrointestinal diseases . . . . .                    | 4.27            | 4.27            |
| <b>H</b>   |                 |                 |
| Homicide . . . . .                                     | 4.20            | 4.20            |
| Heart disease . . . . .                                | 4.28            | 4.28            |
| Hospital admissions . . . . .                          | 5.1-5.2         | 5.1             |
| Hospital days . . . . .                                | 5.3             | 5.3             |
| Hospitalization, leading causes . . . . .              | 5.4-5.16        |                 |
| Human immunodeficiency virus . . . . .                 | 4.36            | 4.36            |
| <b>I</b>   |                 |                 |
| Immunizations . . . . .                                | 5.32            |                 |
| Income . . . . .                                       | 2.9, 2.10       |                 |
| Infant mortality, rates . . . . .                      | 3.11-3.13, 3.28 | 3.11-3.13, 3.28 |
| Infant mortality, leading causes . . . . .             | 3.14-3.27       |                 |
| Injury and poisoning . . . . .                         | 4.17-4.22       | 4.17-4.22       |
| Inpatient admissions . . . . .                         | 5.1-5.2         | 5.1             |
| Inpatient days . . . . .                               | 5.3             | 5.3             |
| Inpatient, leading causes . . . . .                    | 5.4-5.16        |                 |
| <b>L</b>   |                 |                 |
| Life expectancy at birth . . . . .                     | 4.37-4.39       |                 |
| <b>M</b>   |                 |                 |
| Malignant neoplasms, all sites . . . . .               | 4.30            | 4.30            |
| Malignant neoplasms, breast . . . . .                  | 4.32            | 4.32            |
| Malignant neoplasms, cervical . . . . .                | 4.33            | 4.33            |
| Malignant neoplasms, colon-rectal . . . . .            | 4.34            | 4.34            |
| Malignant neoplasms, lung . . . . .                    | 4.31            | 4.31            |
| Malignant neoplasms, prostate . . . . .                | 4.35            | 4.35            |
| Map of Area Offices . . . . .                          | 1.1             |                 |
| Maternal deaths . . . . .                              | 3.10            |                 |
| Mortality rates, all causes . . . . .                  | 4.1             | 4.1             |
| Mortality rates, specific causes (see cause name)      |                 |                 |
| Mortality, leading causes . . . . .                    | 4.3-4.16        |                 |
| <b>N</b>   |                 |                 |
| Neonatal mortality . . . . .                           | 3.12            | 3.12            |
| <b>O</b>   |                 |                 |
| Outpatient visits . . . . .                            | 5.17            | 5.17            |
| Outpatient visits, leading causes . . . . .            | 5.18-5.30       |                 |
| <b>P</b>   |                 |                 |
| Pneumonia and influenza . . . . .                      | 4.25            | 4.25            |
| Population, user . . . . .                             | 2.1-2.4         |                 |
| Postneonatal mortality . . . . .                       | 3.13            | 3.13            |
| Poverty level . . . . .                                | 2.10            |                 |
| Prenatal care . . . . .                                | 3.4             | 3.4             |
| <b>S</b>   |                 |                 |
| Service units . . . . .                                | 1.2-1.14        |                 |
| Socioeconomic factors . . . . .                        | 2.1-2.10        |                 |
| Sudden Infant Death Syndrome . . . . .                 | 3.28            | 3.28            |
| Suicide . . . . .                                      | 4.19            | 4.19            |
| <b>T</b>   |                 |                 |
| Tuberculosis . . . . .                                 | 4.26, 5.34      | 4.26, 5.34      |
| <b>U</b>   |                 |                 |
| Unemployment . . . . .                                 | 2.7, 2.8        |                 |
| Unintentional injuries . . . . .                       | 4.18            | 4.18            |
| <b>Y</b>   |                 |                 |
| Years of Potential Life . . . . .                      | 4.2             | 4.2             |



## References

- <sup>1</sup> Indian Health Service, Department of Health and Human Services, Adjusting for Miscoding of Indian Race on State Death Certificates. November 1996.
- <sup>2</sup> Anderson RN. United States life tables, 1998. National Vital Statistics Reports; vol 48 no. 18. Hyattsville, Maryland: National Center for Health Statistics. 2001.
- <sup>3</sup> Murphy SL. Deaths: Final Data for 1998. National Vital Statistics Reports; vol 48 no. 11. Hyattsville, Maryland: National Center for Health Statistics. 2000.
- <sup>4</sup> Ventura SJ, Martin JA, Curtin SC, Mathews TJ, Park MM. Births: Final data for 1998. National Vital Statistics Reports; vol 48 no. 3. Hyattsville, Maryland: National Center for Health Statistics. 2000.
- <sup>5</sup> Centers for Disease Control and Prevention, National Center for Health Statistics. National Vital Statistics System, unpublished data. 2001.
- <sup>6</sup> Anderson RN. United States life tables, 1998. National Vital Statistics Reports; vol 48 no. 18. Hyattsville, Maryland: National Center for Health Statistics. 2001.
- <sup>7</sup> Indian Health Service, Department of Health and Human Services, Adjusting for Miscoding of Indian Race on State Death Certificates. November 1996.
- <sup>7</sup> <http://www.cdc.gov/nchs/dataawh/nchsdefs/ageadjustment.htm#aarates>
- <sup>8</sup> <http://www.cdc.gov/nchs/dataawh/nchsdefs/cod.htm>
- <sup>9</sup> <http://www.cdc.gov/nchs/dataawh/nchsdefs/infantdeath.htm>
- <sup>10</sup> <http://www.cdc.gov/nchs/dataawh/nchsdefs/lifeexpectancy.htm>
- <sup>11</sup> <http://www.cdc.gov/nchs/dataawh/nchsdefs/livebirth.htm>
- <sup>12</sup> <http://www.cdc.gov/nchs/dataawh/nchsdefs/rates.htm#maternaldeath>
- <sup>13</sup> <http://www.cdc.gov/nchs/dataawh/nchsdefs/Race.htm>
- <sup>14</sup> Centers for Disease Control. Office on Smoking and Health. Reducing the health consequences of smoking: 25 years of progress. A report of the Surgeon General. Washington: U.S. Department of Health and Human Services. 1989.
- <sup>15</sup> Kleinman JC, Madans JH. The effects of maternal smoking, physical stature, and educational attainment on the incidence of low birth weight. Am J Epidemiol 121(6):843-55. 1985.