



Regional *Differences* ***in* Indian Health**

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Preface

Since 1955, the Indian Health Service (IHS) has had the responsibility for providing comprehensive health services to American Indian and Alaska Native people in order to elevate their health status to the highest possible level. The mission of the IHS is to provide a comprehensive health services delivery system for American Indians and Alaska Natives with opportunity for maximum Tribal involvement in developing and managing programs to meet their health needs.

This publication presents tables and charts that describe the IHS program, and the health status of American Indians and Alaska Natives. Information pertaining to the IHS structure, and American Indian and Alaska Native demography and patient care are included. Current regional differences are presented, and comparisons to the general population are made, when appropriate.

A handwritten signature in black ink, reading "Michael H. Trujillo, M.D., M.P.H., M.S." in a cursive style.

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Overview of the Indian Health Service Program

The Indian Health Service (IHS), an agency within the Department of Health and Human Services (DHHS), is responsible for providing federal health services to American Indians and Alaska Natives. 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 DHHS 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 principle federal health care provider and health advocate for Indian people, and its goal is to raise their health status to the highest possible level. The mission is to provide a comprehensive health services delivery system for American Indians and Alaska Natives with opportunity for maximum Tribal involvement in developing and managing programs to meet their health needs. It is also the responsibility of the IHS to work with the people involved in the health delivery programs so that they can be cognizant of entitlements of Indian 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 American Indian and Alaska Native 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 manning 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 American Indians and Alaska Natives 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 which are administered by Area Offices.





Purpose and Description of Regional Differences in Indian Health

The IHS *Regional Differences in Indian Health* attempts to fulfill the basic statistical information requirements of parties that are interested in the IHS, and its relationship with the American Indian and Alaska Native people. The tables and charts contained in the IHS *Regional Differences in Indian Health* describe the IHS program, and the health status of American Indians and Alaska Natives 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 60 percent of all Indians residing in the U.S. Information pertaining to the IHS structure, and American Indian and Alaska Native demography and patient care are included. Current regional differences are depicted, and comparisons to the general population are made, when appropriate. Historical trend information can be found in the IHS companion publication called *Trends in Indian Health*.

The tables and charts are grouped into five major categories: 1) IHS Structure, 2) Population Statistics, 3) Natality and Infant/Maternal Mortality Statistics, 4) General Mortality Statistics, and 5) Patient Care Statistics. The tables provide detailed data, while the charts show significant relationships. A table and its corresponding chart appear next to each other. However, some charts that are self-explanatory do not have a corresponding table. Also, a table may have more than one chart associated with it.





Summary of Data Shown

Indian Health Service Structure

The IHS is comprised of 12 regional administrative units called Area Offices. They are listed below.

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

As of October 1, 1996, the Area Offices consisted of 150 basic administrative units called service units. Of the 150 service units, 84 were operated by Tribes. The number of service units ranged from 2 in Tucson to 26 in California.

The IHS operated 37 hospitals, 61 health centers, 4 school health centers, and 48 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 (Title III). A distinction is made in this publication regarding these two Tribal modes of operation, i.e., Title I and Title III. Tribes operated 12 hospitals (Title I, 3 hospitals and Title III, 9 hospitals), 134 health centers (Title I, 90 and Title III, 44), 4 school health centers (Title I, 2 and Title III, 2), 73 health stations (Title I, 60 and Title III, 13), and 168 Alaska village clinics (Title I, 16 and Title III, 152). Both California and Portland had no hospitals while Aberdeen and Phoenix had 8 hospitals each. Tucson had the fewest health centers with 3, and Oklahoma the most with 35.

Population Statistics

In fiscal year (FY) 1995, the IHS user population (count of those American Indians and Alaska Natives who used IHS services at least once during the last 3-year period) was approaching 1.3 million. Tucson (21,930) and Nashville (41,644) had the smallest user populations while Oklahoma (269,401) and Navajo (233,094) had the largest user populations.



The Indian population is younger, less educated and poorer than the U.S. All Races population. For the IHS user population in FY 1995, 11.3 percent of the persons were under age 5 compared to 7.7 percent for the U.S. All Races population (calendar (CY) 1995). There was considerable variation by Area with Nashville at 9.4 percent and Alaska at 12.5 percent. According to the 1990 Census, 65.3 percent of Indians (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. For 3 IHS Areas (Tucson, Navajo, and Phoenix), the percentage was less than 60.0 (based on State-level Indian data). The 1990 Census also indicated that the median household income in 1989 for Indians residing in the current Reservation States was \$19,897, while for the U.S. All Races it was \$30,056. Aberdeen had the lowest median household income at \$12,310, and California the highest at \$28,029 (based on State-level Indian data).

Natality and Infant/Maternal Mortality Statistics

The birth rate for American Indians and Alaska Natives residing in the IHS service area was 25.7 (rate per 1,000 population) in 1992-1994. It is 1.7 times the 1993 birth rate of 15.5 for the U.S. All Races population. For the period 1992-1994, there were 4 maternal deaths in the IHS service area population. No IHS Area had more than 1 maternal death.

The infant mortality rate for American Indians and Alaska Natives residing in the IHS service area was 10.9 (rate per 1,000 live births) in 1992-1994 compared to 8.4 for the U.S. All Races population in 1993. This is the rate adjusted for miscoding of Indian race on death certificates. The Indian rate is 30 percent higher than the U.S. rate. The infant mortality rate varied considerably among the IHS Areas, ranging from 8.0 in Oklahoma to 15.6 in Aberdeen.

General Mortality Statistics

In 1992-1994, the age-adjusted death rate (all causes) for American Indians and Alaska Natives residing in the IHS service area was 690.4 (rate per 100,000 population) compared to 513.3 for the U.S. All Races population in 1993. This is the rate adjusted for miscoding of Indian race on death certificates. The Indian rate is 35 percent greater than the U.S. rate. The rates for the Aberdeen and Bemidji Areas both exceed 1,000.0.

The 2 leading causes of death for the IHS service area population in 1992-1994 were diseases of the heart and malignant neoplasms, the same as the



U.S. All Races in 1993. However, 5 IHS Areas (Alaska, Albuquerque, 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.

For most of the specific causes of death identified in this publication, the 1992-1994 Indian age-adjusted death rate (the rate adjusted for miscoding of Indian race on death certificates) was greater than the 1993 U.S. All Races rate. There was also considerable variation in the rates among the IHS Areas. However, some of the Area rates need to be interpreted with caution because of the small number of deaths involved. Following is a comparison of the Indian rate (the rate adjusted for miscoding of Indian race on death certificates) to the U.S. rate where there are significant differences.

- 1) alcoholism—579 percent greater
- 2) tuberculosis—475 percent greater
- 3) diabetes mellitus—231 percent greater
- 4) accidents—212 percent greater
- 5) suicide—70 percent greater
- 6) homicide—41 percent greater
- 7) malignant neoplasms—15 percent less
- 8) human immunodeficiency virus (HIV) infection—72 percent less

Patient Care Statistics

In FY 1995, there were about 89,000 admissions to IHS and Tribal direct and contract general hospitals. The number of admissions ranged from 401 in California to 20,276 in Navajo. The leading cause of hospitalization in IHS and Tribal direct and contract general hospitals was obstetric deliveries and complications of pregnancy. However, there were 9 IHS Areas with a different leading cause; Aberdeen, Billings, and Phoenix (respiratory system diseases), Albuquerque and California (FY 1994) (digestive system diseases), Bemidji and Portland (circulatory system diseases), Nashville (mental disorders), and Tucson (diseases of the skin and subcutaneous tissue).

The total number of ambulatory medical visits (IHS and Tribal direct and contract facilities) was over 6.5 million in FY 1995. Tucson had the fewest ambulatory medical visits with 85,573 and Oklahoma had the most with 1,121,262. The leading cause of ambulatory medical visits in IHS and Tribal direct and contract facilities was supplementary classifications. All IHS Areas had this same leading cause except for Aberdeen and Tucson;



respiratory system diseases was their leading cause. The supplementary classifications category includes such clinical impressions as other preventive health services, well child care, physical examination, tests only (lab, x-ray, screening), and hospital, medical, or surgical follow-up.

In FY 1996, there were over 2.3 million dental services provided at IHS and Tribal direct and contract facilities. Two IHS Areas provided over 28 percent of the dental services, Navajo (334,812) and Oklahoma (328,922).





Sources and Limitations of Data

Population Statistics

IHS user population estimates are based on data from the IHS Patient Registration System. Patients who receive direct or contract health services from IHS or Tribally-operated programs are registered in the Patient Registration System. Those registered Indian patients that had at least one direct or contract inpatient stay, outpatient visit, or dental visit during the last 3 years are defined as users. The Patient Registration System was first implemented in 1984, and by now is considered to be fairly complete and accurate. It is possible for patients to register at more than one site, but the IHS central computer is programmed to unduplicate registration records within an Area. Those cases that are not clear are sent to the IHS Area Offices as possible duplicates for resolution.

The IHS user population estimates, which are shown in this publication, need to 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. These are self-identified Indians who may or may not use IHS services. IHS service populations between Census years (e.g., 1980 and 1990) are estimated by 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 American Indians and Alaska Natives. IHS service populations beyond the latest Census year (1990) are projected through linear regression techniques, using the most current 10 years of Indian birth and death data provided by the National Center for Health Statistics.

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 Indian vital event rates for the IHS service area.

The social and economic data contained in this publication are from the 1990 Census. They reflect the characteristics of persons that self-identified as Indian during the Census.



Vital Event Statistics

American Indian and Alaska Native vital event statistics are derived from data furnished annually to the IHS by the National Center for Health Statistics (NCHS). Vital event statistics for the U.S. population were derived from data in various NCHS publications, as well as from some unpublished data from NCHS. NCHS obtains birth and death records for all U.S. residents from the State departments of health, based on information reported on official State birth and death certificates. The records NCHS provides 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 data are subject to the degree of accuracy of reporting by the States to NCHS. NCHS does perform numerous edit checks, and imputes values for non-responses.

It is known that there is miscoding of Indian race on State death certificates, especially in areas distant from traditional Indian reservations. In order to determine the degree and scope of the miscoding, 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. The study revealed that on 10.9 percent of the matched IHS-NDI records, the race reported for the decedent was other than American Indian or Alaska Native. The percentage of records with inconsistent classification of race ranged from 1.2 percent in the Navajo Area to 28.0 and 30.4 percents 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 years beyond 1988, 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 10 percent, than 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, IHS felt that it was necessary to adjust all of the death rates in



this publication to provide a meaningful and comprehensive look at health status. IHS also believes that they are reasonable adjustments.

These NDI adjustments are used for the first time in this edition. Both unadjusted and adjusted information is shown, as applicable. The adjustments were applied to the results obtained from using an unadjusted death file. In the meantime, an approach that would add records to the unadjusted death file based on the study findings is being investigated.

IHS has more specific adjustment factors for the age group under 1 year. These are derived from the linked birth/infant death data sets produced by the NCHS. IHS now has copies of this data set for data years 1983-91. Starting with this edition, unadjusted and adjusted infant mortality rates will be shown. IHS is assuming that data years 1992-94 can be adjusted based on the results from prior years of the linked data sets, which is not statistically sound but reasonable. These adjustments for 1992-94 take precedent over the NDI adjustments for the under 1 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 Indian vital event statistics in this publication pertain only to American Indians and Alaska Natives residing in the counties that make up the IHS service area. This contrasts with earlier editions of the *Trends in Indian Health* publication which showed vital event statistics for all American Indians and Alaska Natives 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 total Reservation State data are available, Reservation State data need to be used to show trends going back to 1955, the inception of the IHS. However, now that there are sufficient vital event data 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. The reason for this is that IHS service area data are more indicative of the health status of the Indians that IHS serves.

The Indian population is considerably younger than the U.S. All Races population. Therefore, the death rates presented in this publication have



been age-adjusted, 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.

The age-adjusted death rates presented in this publication were computed by the direct method, that is, by applying the age-specific death rate for a given cause of death to the standard population distributed by age. The total population as enumerated in 1940 was selected as the standard to be consistent with NCHS. The rates for the total population and for each race-sex group were adjusted separately, by using the same standard population. The age-adjusted rates were based on 10-year age groups. An age-adjusted rate that was calculated based upon a small number of deaths should be interpreted with caution since the observed rate may be very different from the true underlying rate. This occasionally occurred when an Area rate was calculated for a specific cause of death, e.g., tuberculosis.

Prior to the 1993 edition of this publication, alcoholism 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 "new" categories were used for the first time in the 1993 edition. They 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. This expanded definition results in about a 25 percent increase in the number of alcoholism deaths identified in comparison to the previous 3-group definition. NCHS is now publishing alcoholism 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 includes all of the code groups previously used by IHS plus these new codes. This NCHS definition of alcoholism deaths is now used in all IHS publications, including *Trends in Indian Health*.



NCHS is also now publishing 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. To be consistent with NCHS, this additional code is now used by IHS starting with the 1996 edition. The NCHS definition includes all of the code groups previously used by IHS plus these two codes. This 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 IHS reporting systems. There are four main patient care reporting systems. The Monthly Inpatient Services Report is a patient census report which is prepared by each IHS hospital. It indicates the number of discharges and days by type of service (e.g., adult, pediatric, obstetric, newborn), and is used for the direct inpatient workload statistics. The Inpatient Care System is the source of IHS hospital inpatient data pertaining to various patient characteristics (age, sex, principal diagnoses, other diagnoses, community of residence, etc.). The data are collected daily, one record per discharge. The Contract Care System is the source of similar contract hospital inpatient data.

The Ambulatory Patient Care System is 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. The Contract Care System is the source of similar contract ambulatory medical visit data.

The data from the automated systems are subject to recording, inputting, and transmitting errors. However, the IHS Program Statistics Team monitors the reporting systems, and each one has a computer edit. In these ways, errors are kept to an acceptable level.

The Dental Data System is the source for dental services data. The system is monitored by IHS Headquarters Dental personnel. The tuberculosis data are based on cases reported to the Centers for Disease Control and Prevention.



Glossary

Age-Adjustment	The application of the age-specific rates in a population of interest to a standardized age distribution in order to eliminate the 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.
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 death statistics, every death is attributed to one underlying condition, based on information reported on the death certificate and utilizing the international rules for selecting the underlying cause of death from the reported conditions.
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 40 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 40 hours a week.
High Birthweight	Birthweight of 4,000 grams or more.
Infant Mortality	Death of live-born children who have not reached their first birthday expressed as a rate (i.e., the number of infant deaths during a year per 1,000 live births reported in the year).
Life Expectancy	The average number of years 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.



Live Birth	A live birth is the complete expulsion or extraction from its mother of a product of conception irrespective of the duration of pregnancy, which after such separation, breathes or shows any other evidence of life, such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles.
Low Birthweight	Birthweight of less than five pounds, eight ounces or 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, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes.
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	On death certificates, race is usually recorded by the funeral director who may or not query the family members of the decedent. The race of a newborn does not appear on the birth certificate. In this report if either the mother, or the father, or both parents were recorded as American Indian or Alaska Native on the birth certificate, the birth is considered as an American Indian or Alaska Native 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 person to whom 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	American Indians and Alaska Natives identified to be eligible for IHS services.
Service Unit	The local administrative unit of IHS.
User Population	American Indians and Alaska Natives who have used IHS services at least once during the last 3-year period.
Years of Potential Life Lost (YPLL)	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.



Sources of Additional Information

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

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