Atlas of Injury Mortality

Among American Indian and Alaska Native Children and Youth, 1989–1998

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Contents

Foreword

I am pleased to present the *Atlas of Injury Mortality among American Indian and Alaska Native Children and Youth, 1989–1998*. Injury is the leading killer of American children and youth from ages 1–19 years**.** Each year in the United States, more than 17,000 children and youth die from preventable injuries and violence. About 70% of these deaths are caused by unintentional injury and 28% are violence related.

The burden of injury falls disproportionately on minority populations, compared to the U.S. as a whole, and this is particularly true for American Indians and Alaska Natives (also referred to as Native Americans). The *Atlas* examines the eight leading causes of injury death among Native American children and youth and the trends in racial disparity among Native Americans, blacks, and whites. For most causes, Native American children and youth had the highest injury mortality rates of all racial and ethnic groups. Although it is encouraging that injury mortality rates among Native Americans have declined for most causes (i.e., motor vehicle crashes, pedestrian related, drowning, fire, and suffocation), other causes have either increased (homicide, firearms) or remained unchanged (suicide) over the 10-year study period.

The *Atlas* should prove to be a valuable resource for tribes, Indian Health Service (IHS) public health staff, and decision makers interested in the health of Native American children and youth. The maps visually display the extent of the injury problem by region and offer a comparison with IHS and national rates.

The National Center for Injury Prevention and Control (NCIPC), the "Injury Center," and IHS have had a long-term partnership in an effort to reduce injuries among Native Americans. Hopefully, this information will encourage local, regional, and national decision makers to form new partnerships or enhance existing ones to further reduce the burden of injury among Native American people.

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Introduction

Injuries, from both unintentional and intentional causes, are third behind heart disease and cancer as the leading cause of death among all American Indians and Alaska Natives (Native Americans) .[1] Injuries are the leading cause of death among all children in the United States, but Native American children are disproportionately affected by injuries, with rates about 2.5 times the rate for all U.S. children.[2]

In 1993, the Centers for Disease Control and Prevention (CDC) and the Indian Health Service (IHS) published the *Injury Mortality Atlas of Indian Health Service Areas, 1979–1987,* which summarized the geographic distribution of injury mortality among Native Americans of all ages by IHS Area.[3] Although similar, the current *Atlas* focuses on the problem of injuries among Native American children and youth (ages 0–19 years) residing in IHS Areas. The purpose of the *Atlas* is to provide background information and data to public health practitioners and policy makers to help identify critical injury problems and set intervention priorities for intervention among this vulnerable population.

The *Atlas* contains composite maps of all IHS Area rates and individual Area maps for eight causes of injury death. It includes study results of Native American children and youth (0–19 years) who live in one of the twelve IHS Areas. The *Atlas* provides information on several causes of injury deaths: motor vehicle-related, pedestrian-related, firearm-related, suicide, homicide, drowning, fire, and suffocation.

The IHS has long recognized the high incidence of misclassification of Indian race on state death certificates, particularly in the California, Oklahoma, and Portland Areas.[4, 5] Research shows that all IHS Areas have this problem to some degree, but it ranges from as low as 1% for the Navajo Nation to a high of 30% for California.[4] The problem of misclassification is addressed in this report. Death rates presented are those that have been adjusted for misclassification. In *Regional Differences in Indian Health,* the IHS also presents death rates by Area that adjust for misclassification of American Indian race.[6]

The *Atlas* is intended for use as a reference tool for public health professionals and decision makers who are interested in reducing injuries among Native American children and youth. Its format allows one to visually recognize injury patterns across IHS Areas and to compare rates in IHS Areas with national rates. The *Atlas* is also intended to raise awareness of specific Areas or groups at elevated risk of injury death within the IHS and to help focus the issue of injuries as a public health problem among Native American children and youth.

Native American children and youth in the IHS Areas are at greater risk of preventable injury-related death than other children in the United States. The injury maps show how widely this risk varies by IHS Area. Although it is promising that death rates from motor vehicle crashes, pedestrian events, drowning, and fire decreased from 1989 to 1998, the overall injury disparity compared with rates for white children and youth persists.[7] During this period, rates increased for firearm-related death and homicide, but the rates remained unchanged for suicide. Given the variation in the injury problem and Native American tribal culture, interventions need to be tailored to local settings and problems. To ensure successful interventions, considerations of local practices and cultures should be addressed. Such efforts are needed to help reduce or eliminate the injury disparity gap between Native American children and other children in America.

Executive Summary

Unintentional and intentional injuries are the third leading cause of death just behind heart disease and cancer among American Indians and Alaska Natives (Native Americans); injuries are the leading cause of death in the United States among persons age 1 to 44 years.[1] This *Atlas* presents injury mortality data from 1989 through 1998 for Native American children and youth ages 0 to 19 years residing in the 12 Indian Health Service (IHS) Areas. Eight major causes of injury-related death are included: motor vehicle crashes, pedestrian-related, firearm-related, suicide, homicide, drowning, fire, and suffocation. For each cause of injury, composite maps of the IHS Area rates and individual maps are shown to allow for rate comparisons among Areas and with national rates for all races. In addition, trends in death rates by race, age-specific rates, and subtype distributions of cause are provided for each of the eight causes of injury.

From 1989 to 1998, eight major causes of injury resulted in the deaths of 3,718 (adjusted for racial misclassification) Native Americans age 0 through 19 years in the 12 specified IHS Areas. An analysis of these injury deaths revealed the following:

- Injuries are the leading killers of Native American children and youth, accounting for 75% of all deaths among 1 to 19 year olds.
- Native American males 15 to 19 years of age had the highest number of deaths for six causes of injury: motor vehicle-related, pedestrian-related, firearm-related, homicide, suicide, and drowning.
- The Alaska Area had the highest rates for four causes of injury death: firearm-related, suicide, drowning, and suffocation.
- Patterns and rates of injury death among Native Americans (0–19 years) differed significantly among the 12 IHS Areas.
- Motor vehicle-related death rates for 9 of the 12 Areas were equal to or greater than the top 5% (95th percentile) of state injury rates in the United States.

Racial Disparity

- Compared with blacks and whites age 19 or younger, Native Americans of the same age had the highest injury death rates for motor vehicle crashes, pedestrian-related deaths, and suicide.
- Blacks ages 19 or younger had the highest rates for homicide and firearms.
- Native Americans and blacks 19 or younger had similar rates for fire-related deaths and drowning.
- The death rates for Native Americans were higher than those of whites for all injury causes.

Motor Vehicle-Related Deaths

- Motor vehicle crashes were the leading cause of death among Native Americans 1 to 19 years of age. Motor vehicle crashes were also the leading cause of injury death in all IHS Areas—except Alaska—where firearm use was the leading cause.
- From 1989 to 1998, male death rates decreased 21%; female death rates decreased by 12%.
- In the Alaska, Navajo, and Tucson Areas, more than 25% of the children and youth (0–19 years) killed in motor vehicle crashes were pedestrians.

Pedestrian-Related Deaths

- Native American males were over two times more likely than black males and nearly four times more likely than white males to be killed as a pedestrian. Likewise, Native American female pedestrian death rates were higher than those for either black or white males.
- The majority (74%) of Native American pedestrian-related deaths occurred on public roads. However, over half the pedestrian-related deaths observed among 1- to 4-year-old children occurred in nontraffic locations, such as private driveways.
- Over the ten year period, pedestrian-related death rates declined by 56%.

Firearm-Related Deaths

- The majority (78%) of all firearm-related deaths among Native American children involved intentional use of the weapon. Only 18% of firearm-related deaths were recorded as unintentional.
- Firearm-related injury was the second leading cause of injury death in five Areas: California, Oklahoma, Phoenix, Portland, and Tucson. It was the primary cause of injury death in Alaska.
- From 1989 to 1998, firearm-related death rates among Native American males increased, while rates among females dropped. More recently (1997–1998), firearm-related death rates among males were over eight times greater than those of females.
- Suicides accounted for 46% of the firearm-related deaths.

Suicide

- Suicide rates were highest among those 15 to 19 years of age. From 1997 to 1998, Native American males had suicide rates almost five times higher than Native American females. Rates remained unchanged over the ten year period.
- Over half of Native American suicides were committed with a firearm, and more than one third were by hanging.

Homicide

- Forty percent of homicides among Native Americans age 19 or younger involved a firearm. Firearm use was the leading cause of homicide among ages 15 to 19 years (52%); child maltreatment was the leading cause of homicide among those age 0 to 4 years (34%).
- From 1989 to 1998, homicide rates increased for males, but remained unchanged for females. Increases in the rate of firearm-related homicide accounted for the overall increase in the total homicide rate.
- Homicide rates were highest among males 15 to 19 years of age, followed by children under 1 year of age. After suffocation and choking, homicide was the second leading cause of injury death among infants.

Drowning

- Drowning rates were similar among males and females age 1 to 4 years, but rates for males 15 to 19 years were eleven times greater than those for females of comparable age.
- The rate of drowning for Native American males declined by about 66% from 1989 to1998; in contrast, the rates for females doubled.
- More recently (1997–1998), Native American and black males had similar drowning rates. Rates for Native American males were two times greater than those for whites. Rates for Native American females were higher than black and white females.

Fire-Related Deaths

- Children age 0 to 4 years had the highest fire-related death rates.
- Fire-related death rates increased among males from 1989 to 1994, but decreased thereafter. Female rates followed a similar pattern.
- House fires accounted for 93% of fire-related deaths among Native Americans 19 or younger.

Suffocation

- Suffocation, choking, and strangulation were the leading causes of infant (less than 12 months of age) injury death. Over twice as many infants died from suffocation or choking as from motor vehicle crashes.
- About 58% of all Native American childhood suffocation or choking deaths occurred among infants.
- The highest rates of suffocation occurred in the Billings, Bemidji, Tucson, Navajo, Aberdeen, and Alaska Areas, with rates approximately three to five times greater than national rates.

Methods

Cause of Injuries

The causes of death included in this *Atlas* and the associated *International Classification of Diseases, Ninth Revision, External Cause Codes* (ICD9 E-Codes), are shown in Table 1.

Data Files

Data for the *Atlas* were drawn from two sources:

1. Detailed mortality data files prepared by CDC's National Center for Health Statistics (NCHS), based on data from state death certificates.

2. NCHS mortality data that Indian Health Service (IHS) has categorized by Area.

All data were restricted to children and youth 0–19 years of age. The data derived from these sources follows:

Source	Type of Data	Population
IHS	IHS death rates—Area Maps, age, and sex	Native Americans in IHS service Areas (1989–1998)
NCHS	Death rates—all other races	Entire United States (1989–1998)
NCHS	10 leading causes of death	All U.S. Native Americans (1999–2000)

Indian Health Service Injury Death Data

Each year, NCHS provides IHS with a multiple-cause-of-death mortality tape of all U.S. decedents. IHS categorizes these data by IHS area offices to create its own mortality data set. The IHS data include those Native Americans who lived within an IHS area at the time of death and were eligible for IHS services (IHS service population). The service population is estimated by counting those Native Americans (as identified during the census) who live in the geographic areas in which IHS has responsibilities ("on or near" reservations). Some individuals who are included in the IHS service population do not live on reservations. The IHS service population comprises about 60% of all Native Americans who live in the United States.[1] States that make up the service population have been grouped by IHS into twelve administrative Areas, or IHS Areas: Aberdeen, Alaska, Albuquerque, Bemidji, Billings, California, Nashville, Navajo, Oklahoma City, Phoenix, Portland, and Tucson.

Table 1. Underlying causes of death and associated ICD9 E-codes included in the *IHS Childhood Injury Mortality Atlas*

Cause of Death	ICD9 E-Code
Motor vehicle-related*	E810–E825
Pedestrian-related	E810–E825 (.7) **
Drowning	E830, E832, E910
Fire/burn-related	E890–E899, E924
Suffocation	E911–E913
Firearm-related*** (intentional, unintentional, and undetermined intent)	E922 E955.0–E955.4, E965.0–E965.4, E970 E985.0–E985.4
Suicide	E950–E959
Homicide	E960–E969

* Motor vehicle-related coding includes pedestrian-related injury deaths. Codes 810–819 indicate traffic-related injury deaths. Codes 820–825 indicate nontraffic-related injury deaths.

** This parenthetical notation implies that the decimal should be applied to each individual three-digit E-code in the grouping.

*** Firearm-related coding includes firearm-related deaths, homicide, suicide, and unintentional events.

Calculation of Rates and Leading Causes

Rates per 100,000 population were calculated using estimates of the IHS service population for 1989 to 1998, based on the revised 2000 census as denominators. At the time of this project, 1998 was the most recent year of data available through IHS. Data from 1981 to 1988 were used in conjunction with data from 1989 to 1998 for illustrating injury trends by race group and two-year periods. Calculations were based on injury deaths of children and youth (0–19 years of age). Native American deaths were adjusted using the IHS Area factors outlined in *Adjusting for Miscoding of Indian Race on State Death Certificates*.[4] These methods are similar to those used by IHS in *Regional Differences in Indian Health* (JoAnn Papalardo, IHS Program Statistics, personal communication 2004). All rates specific to IHS Areas, race, and sex were age-adjusted by the direct method using the projected 2000 U.S. population as the standard. Injury death rates based on a small number of deaths (< 20) may be unstable and should be interpreted with caution.

Data for the ten leading causes of death charts were taken from the compressed mortality file produced by NCHS and include the deaths of all U.S. Native Americans. Race-specific data presented for white and black children were also taken from the compressed mortality file produced by NCHS.

Both the U.S. national rate and the Area rates were used to calculate excess deaths due to injury by Area.

Description of Indian Health Service All-Area Maps

Each Indian Health Service (IHS) Area is listed with its age-adjusted mortality rate per 100,000 population by specific cause of injury. The colors of the maps correspond to where the Area rate would fall with relation to the national ranking of state rates for all racial groups combined from 1989 to 1998. The Areas colored red have the **highest** injury death rates and rank at or above the 95th percentile nationally—a ranking higher than 95% of all state rates. Areas colored blue are **second highest** and have rates that rank nationally between the 75th and 94th percentiles. Areas colored gray are the **third highest,** with rates that rank nationally between the 50th and 74th percentiles. Areas in white have the **lowest** rates and rank nationally below the 50th percentile. The rates for all U.S. races and combined IHS Areas are also listed on each map page.

Description of Indian Health Service Area-Specific Maps

The composite maps of the United States show all Indian Health Service (IHS) Areas and smaller cause-specific multiple maps for each Area. Color coding for individual Area maps is the same as for the composite maps. Below each Area map is the total of injury deaths by cause from 1989 to 1998, the age-adjusted rate for the Area and the United States, and the number of excess deaths for the Area. For each cause of injury, the total of excess deaths (1989–1998) is also estimated. Estimates of excess deaths were calculated by subtracting the combined Area rate from the national rate and multiplying the excess death rate by the Area's total population. Excess deaths in a specific Area can be interpreted as additional Native American deaths because the injury mortality rate is higher than the all-races rate for states in that Area. Since estimates of excess death depend on an Area's population, two IHS Areas with equal death rates could have different estimates of excess deaths.

Explanation of the Summary Sheet

Graphical summaries of information are presented for each cause of death. On each page, a summary of major findings is presented. In the **top left** corner of each summary page is a line graph of age-adjusted two-year death rates for the injury being highlighted, by race and the two-year period. These graphs show trends across an eighteen-year period (1981–1998). At the **bottom left** is a bar graph of American Indian age-specific rates that shows the age groups at highest risk of death from the highlighted injury. Any rate with an asterisk (*) is based on a small number of deaths (< 20) and should be interpreted with caution. The pie chart in the **bottom right** shows the percentage of total deaths attributable to subcategories of the cause of injury.

10 Leading Causes of Death, by Age Group
American Indians and Alaska Natives, 1999-2000

Rank	Age Groups										
	<1	1-4	5-9	10-14	15-24	25-34	35-44	45-54	55-64	65+	Total
1	Congenital Anomalies 135	**Unintentional Injury 76**	**Unintentional Injury 56**	**Unintentional Injury 65**	**Unintentional Injury 588**	**Unintentional Injury 489**	**Unintentional Injury 508**	Heart Disease 480	Malignant Neoplasms 823	Heart Disease 3,233	Heart Disease 4,821
2	SIDS 95	**Homicide 14**	Malignant Neoplasms 7	**Suicide 8**	**Suicide 184**	**Suicide 169**	Liver Disease 272	Malignant Neoplasms 437	Heart Disease 779	Malignant Neoplasms 2,198	Malignant Neoplasms 3,750
3	Short Gestation 72	Congenital Anomalies 9	Congenital Anomalies 6	Heart Disease 7	**Homicide 111**	**Homicide 132**	Heart Disease 228	**Unintentional Injury 360**	Diabetes Mellitus 299	Cerebro-vascular 813	**Unintentional Injury 2,680**
4	**Unintentional Injury 33**	Malignant Neoplasms 7	**Homicide 6**	Malignant Neoplasms 7	Malignant Neoplasms 26	Liver Disease 60	Malignant Neoplasms 190	Liver Disease 305	Liver Disease 246	Diabetes Mellitus 809	Diabetes Mellitus 1,341
5	Maternal Pregnancy Comp. 20	Heart Disease 6	Influenza & Pneumonia 3	**Homicide 4**	Heart Disease 20	Heart Disease 54	**Suicide 116**	Diabetes Mellitus 162	**Unintentional Injury 199**	Chronic Lower Respiratory Disease 632	Cerebro-vascular 1,118
6	Placenta Cord Membranes 20	Septicemia 4	Septicemia 3	Congenital Anomalies 3	Congenital Anomalies 10	Malignant Neoplasms 52	**Homicide 90**	Cerebro-vascular 87	Cerebro-vascular 142	Influenza & Pneumonia 415	Liver Disease 1,047
7	Five Tied 15	Influenza & Pneumonia 3	Perinatal Period 2	Influenza & Pneumonia 3	Influenza & Pneumonia 7	HIV 25	HIV 58	**Suicide 62**	Chronic Lower Respiratory Disease 134	**Unintentional Injury 305**	Chronic Lower Respiratory Disease 835
8	Five Tied 15	Acute Bronchititis 2	Six Tied 1	Cerebro-vascular 2	Septicemia 6	Cerebro-vascular 16	Cerebro-vascular 52	**Homicide 51**	Nephritis 75	Nephritis 267	Influenza & Pneumonia 604
9	Five Tied 15	Chronic Lower Respiratory Disease 2	Six Tied 1	Three Tied 1	Benign Neoplasms 5	Diabetes Mellitus 15	Diabetes Mellitus 52	Influenza & Pneumonia 47	Septicemia 58	Septicemia 177	**Suicide 588**
10	Five Tied 15	Perinatal Period 2	Six Tied 1	Three Tied 1	Complicated Pregnancy 5	Influenza & Pneumonia 9	Influenza & Pneumonia 48	Septicemia 47	Influenza & Pneumonia 54	Alzheimer's Disease 175	**Homicide 456**

Number of deaths during the 2 year period for each cause is shown in the appropriate box.
Includes all American Indians and Alaska Natives in the United States.
Source: National Center for Health Statistics, 2002
Chart developed by the National Center for Injury Prevention and Control

Leading Causes of Death
Native Americans, Ages 1-19, 1997-1998

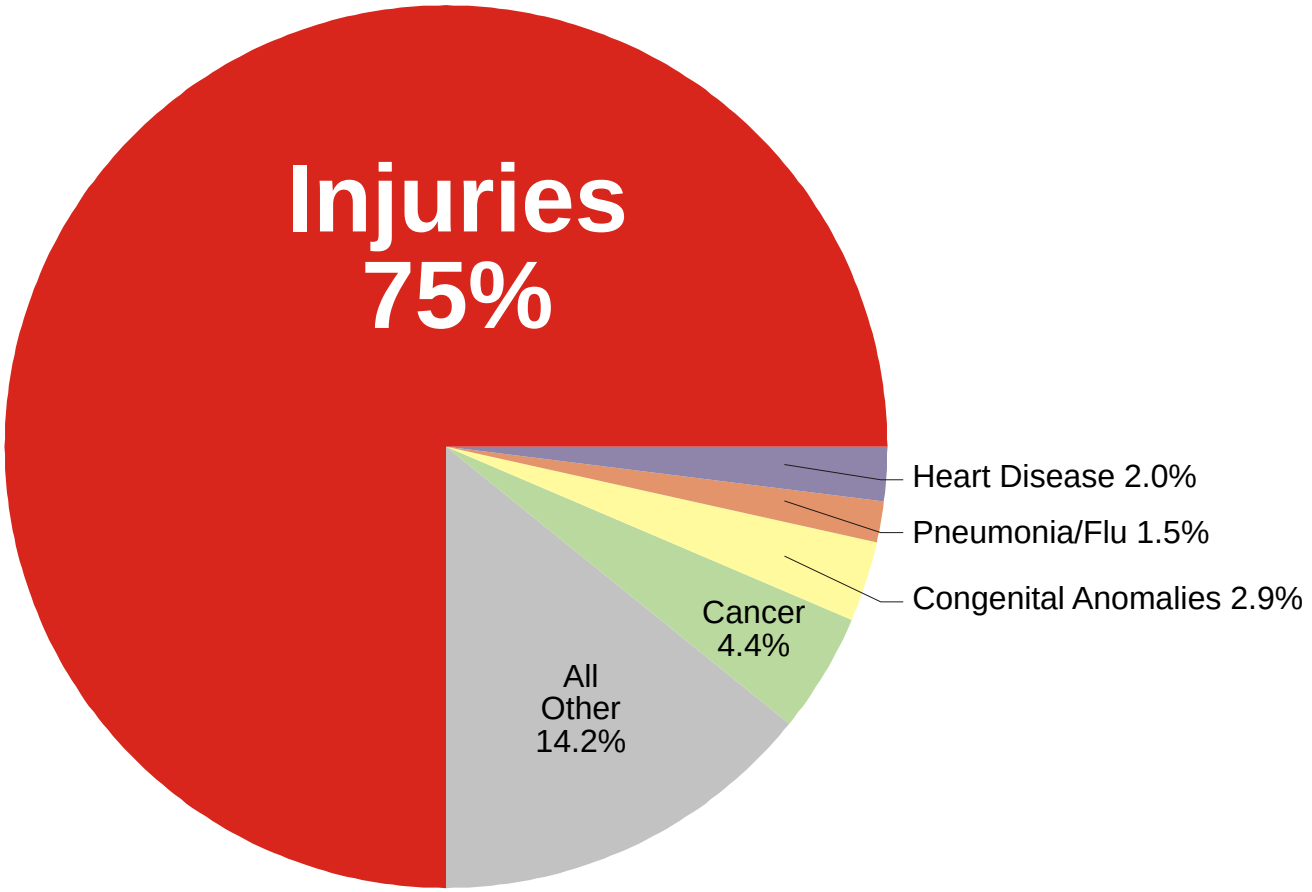


Figure 1.

Indian Health Service Areas

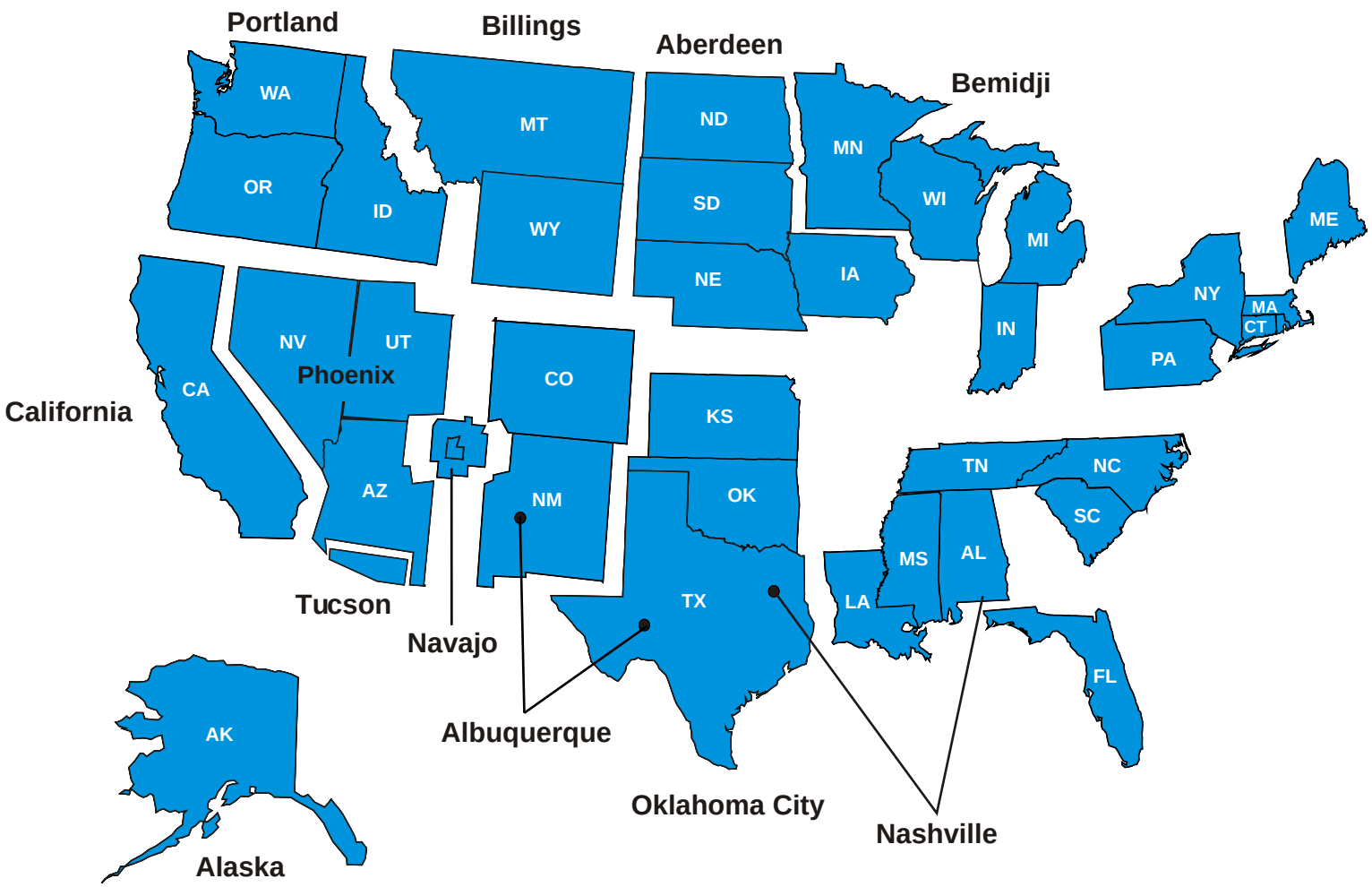


Figure 2.

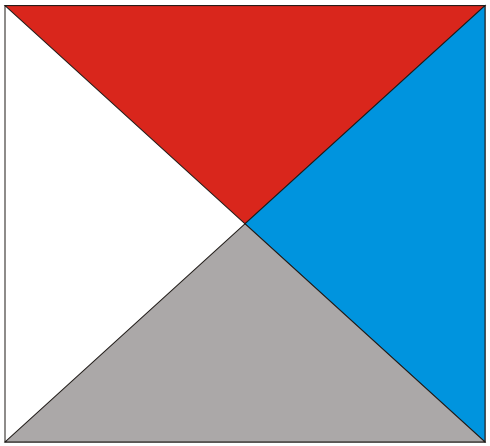
American Indians and Alaskan Natives Injury Deaths per 100,000 Population for a Hypothetical IHS Area, Ages 0–19 Years, 1989–1998

IHS Areas colored RED have injury mortality rates at or above the 95th NATIONAL percentile of all U.S. races.

IHS Areas colored BLUE have injury mortality rates at or above the 75th but less than the 95th NATIONAL percentile.

IHS Areas Colored GRAY have the injury mortality rates greater than the 50th percentile but less than the 75th NATIONAL percentile.

IHS Areas colored WHITE have injury mortality rates below the 50th NATIONAL percentile.



Motor Vehicle

28 Deaths ❶

U.S. 11.5
Area Rate 33.7 ❷

Excess Deaths **70** ❸

❶ A total of 28 persons died because of motor vehicle-related injuries from 1989 through 1998.

❷ The national motor vehicle-related mortality rate for the U.S. was 11.5 deaths/100,000 population, whereas the rate in the Area over the same period was 33.7 American Indian deaths/100,000 population.

❸ This IHS Area had a total of 70 deaths more than would be expected if the Area had experienced the national motor vehicle-related death rate. Because excess death estimates depend on the Area's population, two Areas with equal mortality rates could have different estimates for excess deaths. The dependence on population size should be considered when excess deaths are compared among Areas.

Prevention Implications and Priorities

Despite decreases in Native American child and youth death rates for motor vehicle crashes, pedestrian events, drowning, and fire, the disparity in injury rates between Native Americans and whites persists. Native American children and youth have not benefited to the same degree as white children in many areas of injury prevention practice (i.e., traffic safety, water safety, and residential fire safety). However, there are several proven and promising injury interventions that could be tailored to local tribal settings. Additional information on the circumstances of these injuries is needed to effectively target prevention efforts. Some of these approaches are discussed below.

Motor Vehicle-Related

Traffic safety can be improved in Native American communities where there is a need for increased use of child restraints and seat belts and for reductions in alcohol-impaired driving.[8] Primary enforcement (stopping a driver solely for restraint violation) of seat belt laws combined with active enforcement and public awareness are the most effective strategies for increasing seat belt use.[9] Most Native American tribes are considered sovereign nations, which pass and enforce their own traffic safety laws. Several tribes have passed seat belt laws; however, enforcement of these laws is often challenging for tribal police departments.[8]

Native Americans have the highest alcohol-related motor vehicle death rates of all racial groups,[10] putting their children and youth at an elevated risk when they ride with an impaired driver. Researchers estimate that in states with American Indian and Alaska Native reservations, 65% of motor vehicle-related deaths among Native Americans involve alcohol.[11] Young drivers are at particular risk because of inexperience, nighttime driving, too many passengers in the car, and patterns of alcohol use. Many tribes have the authority to restrict driving privileges on the reservations, conduct sobriety checkpoints, and set curfew ordinances to help reduce deaths related to motor vehicle crashes among teens.[8]

The highest rates of pedestrian-related death occurred in two age groups: 1 to 4 years and 15 to 19 years. Most deaths occurred on public roadways, but over half of the 1 to 4 year olds who were killed as pedestrians were killed in nontraffic settings, such as private driveways. More information is needed about the circumstances of these pedestrian-related deaths, but many involve young children being backed over by large vehicles such as pick-up trucks (Nancy Bill, IHS Headquarters, personal communication, 2004). Parents and caregivers of young children should be aware of the risk that children face when playing around vehicles.[12,13,14] Prevention strategies might involve working with local housing authorities to install circular driveways in new homes to reduce the need to back up, installing fencing to separate play areas from vehicle driveways, and increasing the use of audible back-up warning systems.[14]

Violence

Suicide rates for Native American youth and children did not decline over the 10-year period and were especially high in Alaska, Aberdeen, and Tucson IHS Areas. Additional research is needed to determine the risk factors and reasons for the substantially higher rates in the Alaska, Aberdeen, and Tucson Areas and for the protective factors in other IHS Areas with lower rates. Native Americans 15 to 19 years of age have the highest suicide rates of any racial group in the United States. Preliminary work shows many risks and protective factors related to suicide in this population,[15] including access to firearms and alcohol.[16,17]

The IHS provides technical assistance to suicide prevention programs and alcohol- and substance-abuse treatment centers.[18] Individual tribes have launched a number of suicide prevention programs that stress cultural relevance and the need for community involvement,[19] but none have been rigorously evaluated. The American Indian and Alaska Native Community Suicide Prevention Center and Network in New Mexico has shown promising results in the past in reducing Native American youth

suicide; the organization uses a community-based approach involving school-based youth, mental health referral assistance, and family outreach. [20]

Native American children and youth have somewhat lower homicide than suicide rates, and their rates are well below those for blacks. However, in terms of nonfatal violence, results from the National Crime Victimization Surveys from 1993 to 1998 indicated that Native Americans 12 to 19 years old are assaulted at rates well above those for any other minority.[21] Programs that show promise at preventing youth violence have been recently summarized[22] and include specific violence-prevention practices in four key areas: parents and families, home visitation, social and conflict resolution skills, and mentoring.

Homicide among Native American children (0–4 years) is also an important Native American issue. Such homicides are typically perpetrated by family members[23]. One intervention that has shown effectiveness in preventing child maltreatment is the home visitation program conducted by nurses or other health professionals.[24]

Firearms

Over 500 Native American children and youth died from firearm-related injuries from 1989 to 1998, including 52% of suicides and 40% of homicides. Firearms were also involved in 115 unintentional deaths. Some proposed measures to reduce the risk of a firearm-related death or injury in the home are behavior oriented (e.g., education about safe storage and handling of guns or counseling).[25,26] Other measures are product oriented (e.g., changing firearms design or personalization to make firearms more difficult to use unintentionally or intentionally if stolen or obtained illegally).[27] There have also been legislative efforts to reduce the potential for firearm-related violence (e.g., licensing requirements, gun storage laws).[28, 29, 30] Most of these measures have not been adequately evaluated making it difficult to determine which measures are effective in reducing firearm-related deaths or injuries.[31] Two Alaska Native villages have piloted a program to provide free gun safes to their residents to promote safe firearm storage.[32]

Fire

Residential fires account for the majority of fire-related deaths (93%) among Native American children and youth in our study. Fire death rates were highest for Native American children under five years of age. Dramatic improvements have been made in reducing fire-related death among Native American children and youth, with rates decreasing 64% from 1981 to 1998. Despite this decrease, the Aberdeen, Bemidji, and Alaska Areas had substantially higher fire-related death rates than all other IHS Areas, with rates more than five times the U.S. national rate. Having a working smoke alarm in the home is proven to reduce the risk of death from a house fire by as much as 71%.[33] Some studies find that up to half the smoke alarms in Native American homes are inoperable and are often disconnected due to nuisance alarms.[34] To help prevent such alarms, Kuklinski and others recommend installing photoelectric alarms in place of ionization alarms.[34] One promising intervention program is Sleep Safe, which is a smoke alarm distribution and education program targeting children and families in Native American Headstart Schools. Sleep Safe, supported by the IHS and the U.S. Fire Administration, has funded programs in 55 Headstart schools and distributed over 11,000 smoke alarms to Native American families (Harold Cully, Oklahoma City Area IHS, personal communication, 2003).

Drowning

Drowning rates were highest among Native Americans 1–4 years of age and those 15–19 years. Child and youth drowning rates for Native Americans decreased 62% from 1981 to 1998. Although this trend is encouraging, Native American drowning rates are still high compared to rates for whites. The Alaska IHS area had the highest drowning rate and was seven times greater than the U.S. national rate. The Phoenix, Billings, Navajo, and Bemidji areas also had high drowning rates and were at least two times greater than the U.S. national rate. Just under half of the Native American drowning occurred in swimming pools or quenching tanks, 5% occurred in bath tubs, and 28% were related to recreation or water craft.

Four-sided isolation fencing around swimming pools has

proven to be effective at preventing drowning among young children. In-ground pools with four-sided fencing had 60% fewer incidents of drowning compared with pools without four-sided isolation fencing (www.CPSC.gov). Three Tragic Seconds is a multimedia drowning prevention education program aimed at parents and caregivers of young children. CDC is working with the Children's Hospital of Orange County, California, and the National SAFE KIDS Campaign to implement the Three Tragic Seconds program in two communities in Arizona and Florida (www.cdc.gov/ncipc/factsheets/drown-activities.htm). Once a child is in the water, it is very important that a parent or guardian provide supervision. Swimmers can further reduce their risk by choosing swimming pools with lifeguard services, although this may not be feasible around natural bodies of water.[35] Proper swimming instruction and water-safety training can prepare a participant to deal with potentially hazardous aquatic environments such as strong currents, waves, and riverbed rocks. Environmental modifications can also be made to prevent drowning in natural bodies of water (i.e. lakefront slope gradients to prevent sudden, unseen water drop-offs).[35]

Older children and teenagers are more likely to drown in natural bodies of water than in swimming pools. Alcohol is a risk factor for drowning and is involved in 25% to 50% of drowning incidents among teenage boys (www.cdc.gov/ncipc/factsheets/drown.htm). In indigenous communities in Canada, alcohol is a factor in half of all drowning related to boat travel. In Canada, only about 10% of victims of boating drowning were wearing a personal flotation device (PFD).[36]

Distribution of PFDs and programs to education and distribute float coats have been used to increase boaters' safety in Alaska Native villages (Ron Perkins, Alaska Injury Prevention Center, personal communication, 2003). These programs involve a public awareness campaign combined with sales of low-cost float coats. Another promising program being supported by the U.S. Coast Guard in Alaska is the Kids Don't Float Program. This is a PFD loaner program at village community beaches and boat launching areas combined with an educational component for children and teenagers (www.chems.alaska.gov/Injury_Prevention/KidsDontFloat.htm).

Suffocation and Choking

Most suffocation deaths among Native Americans occurred among infants due to mechanical airway obstruction rather than aspiration of food or other small objects. It is now accepted that infants can suffocate if put to sleep on their faces, especially if placed on soft surfaces or loose bedding[37]. Recent survey data[38] indicate that Native Americans are usually less likely than whites to put their infants to sleep on their backs. Bed sharing is another possible risk factor for infant suffocation.[39] The National Infant Sleep Position Study found that parents of other races were more likely than white parents to share their beds with infants[40]. There is anecdotal evidence that in some Native American infant suffocation deaths, alcohol intoxication of parents or caregivers while sleeping with their infant was a factor (Dr. David Grossman, Harborview Injury Prevention Research Center, personal communication, 2003). Parental education about safe sleep practices for their infants is recommended. The Portland Area Indian Health Service initiated such a program in 1993.[41]

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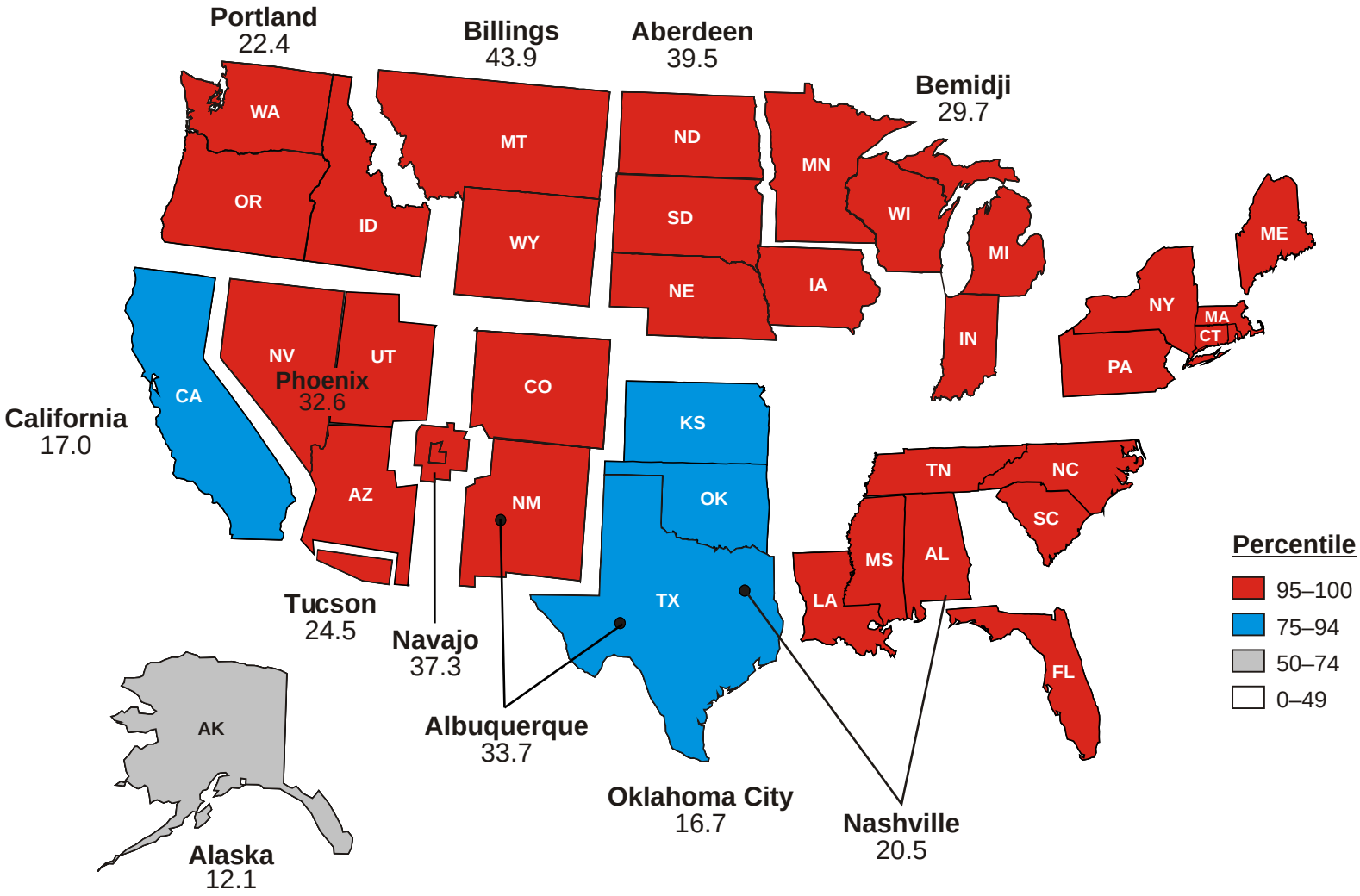
All IHS Service Area Maps

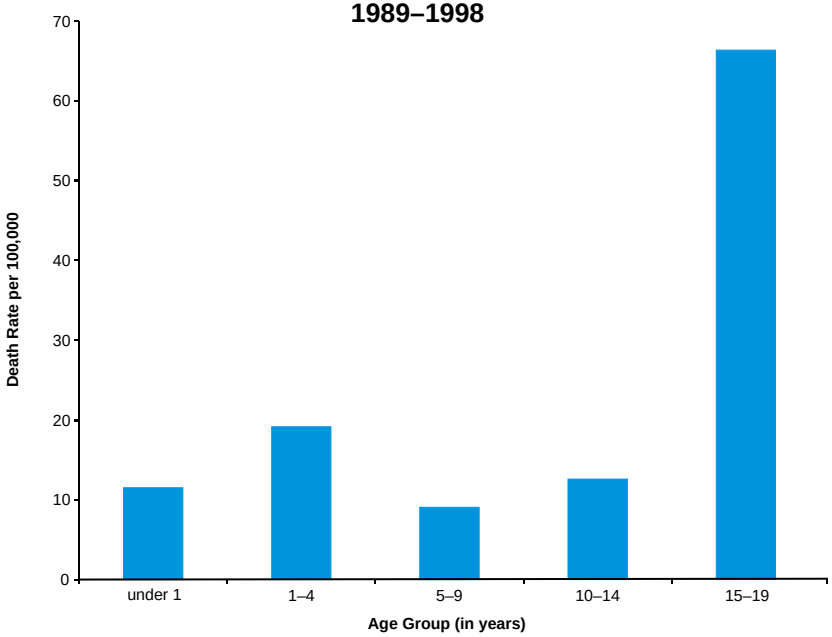
Motor Vehicle-Related Deaths per 100,000 Population, Native Americans, Ages 0–19, IHS Areas, 1989–1998



All IHS Areas Rate—26.4

United States Rate—11.5

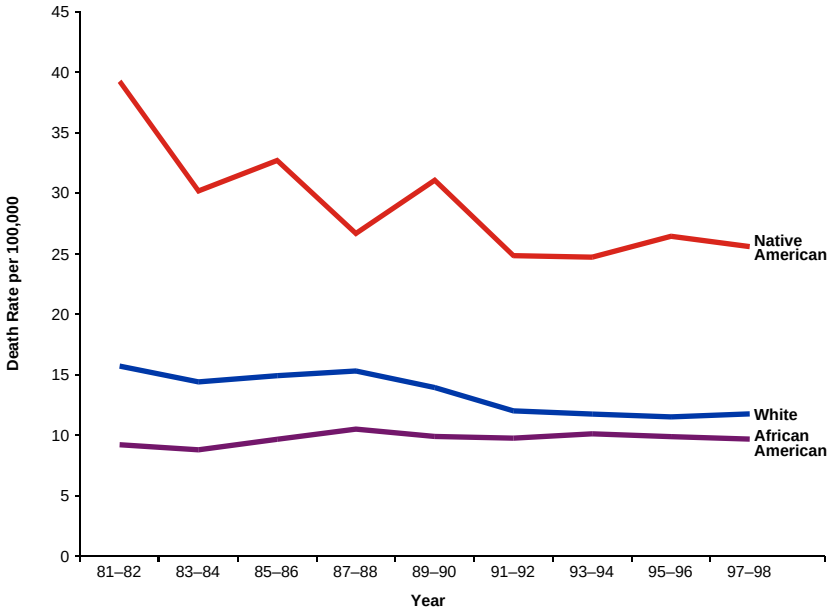
Motor Vehicle Age-Specific Death Rates 1989–1998



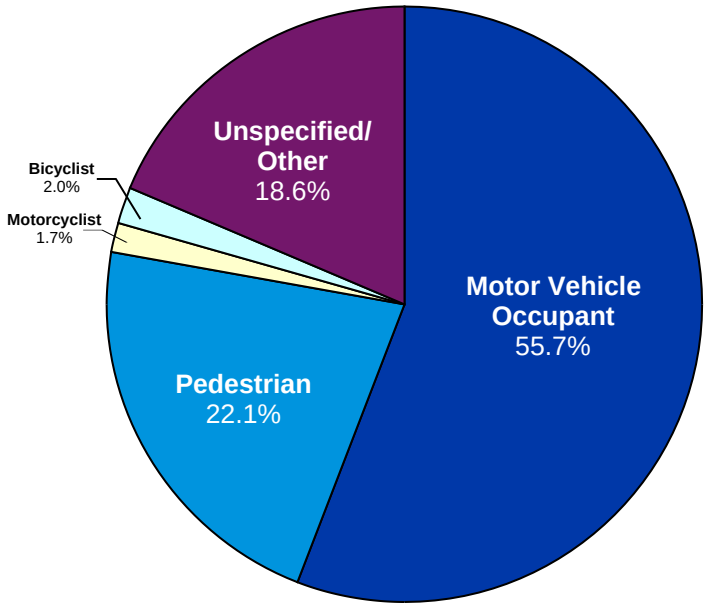
SUMMARY

- Motor vehicle crashes caused the deaths of 1,414 Native American children and youth during 1989 to 1998.
- All Indian Health Service (IHS) Areas except Alaska had motor vehicle-related death rates higher than the U.S. national rate; nine Areas had rates higher than 95% of all state rates.
- Rates were highest among those 15 to 19 or under 5 years of age.
- Among Native Americans, 56% of the fatalities were motor vehicle occupants; 22% were pedestrians.
- Infants died as occupants in 3% of all Native American motor vehicle crashes.
- During the most recent period, 1997–1998, Native American males died in motor vehicle crashes at rates 2.5 times greater than those of black or white males. The death rates for Native American females were actually higher than rates for black or white males. Native American females were 2.8 times more likely to die from motor vehicle injuries than black females and 2 times more likely than white females.
- From 1989 to 1998, motor vehicle-related death rates for Native Americans declined by 18%.

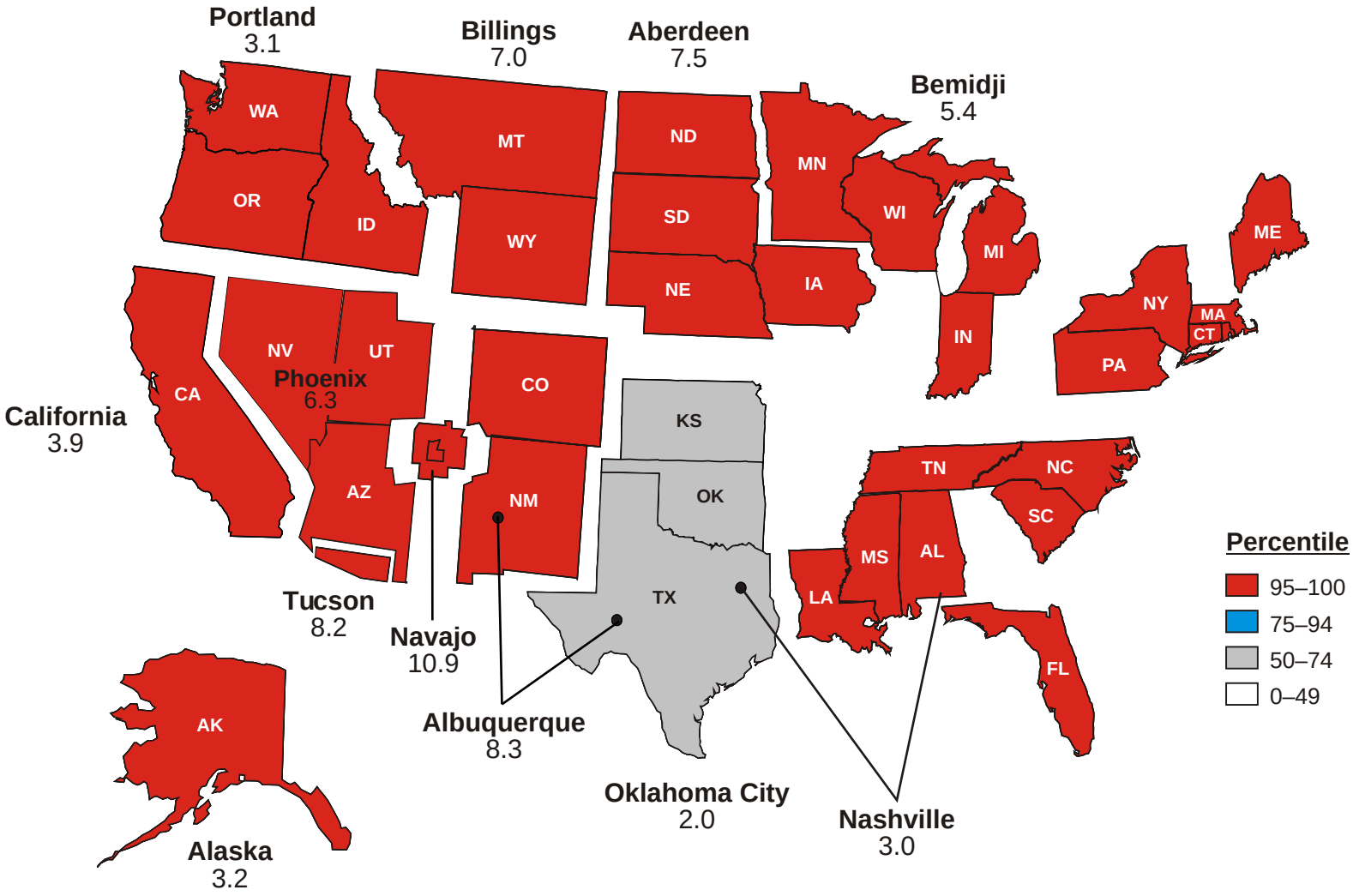
Motor Vehicle-Related Death Rates per 100,000 Population 1981–1998



Type of Person Killed in Motor Vehicle Crash 1989–1998



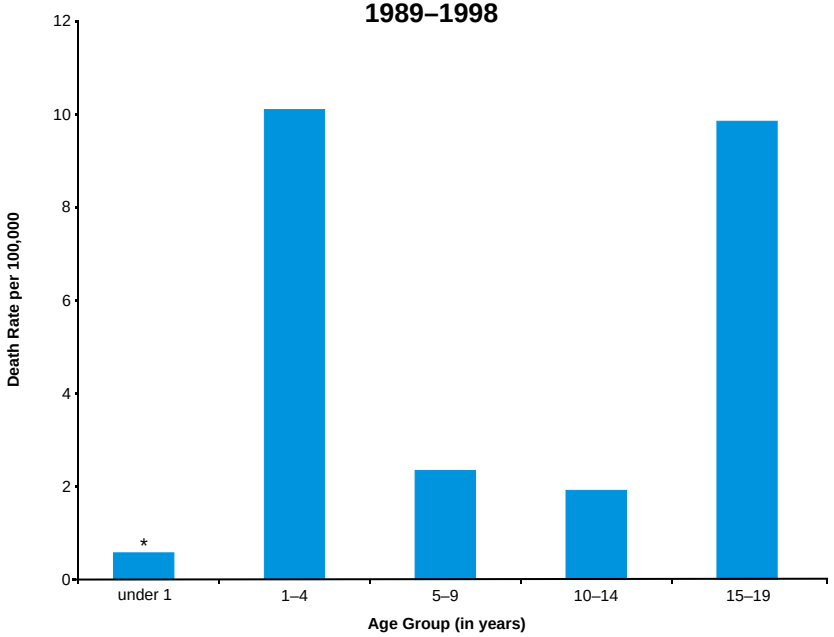
Pedestrian-Related Deaths per 100,000 Population, Native Americans, Ages 0–19, IHS Areas, 1989–1998



All IHS Areas Rate—5.5

United States Rate—1.5

Pedestrian-Related Age-Specific Death Rates 1989–1998

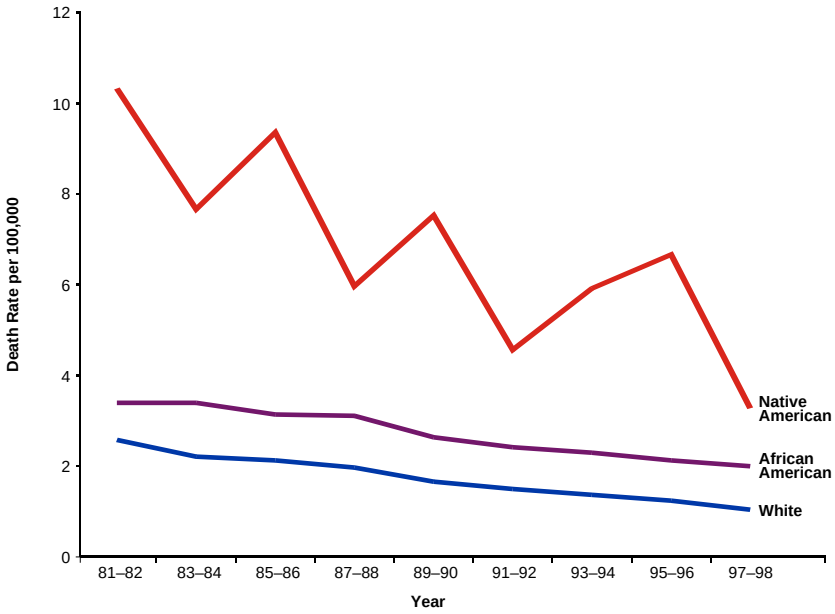


* Rates are based on fewer than 20 deaths and should be interpreted with caution.

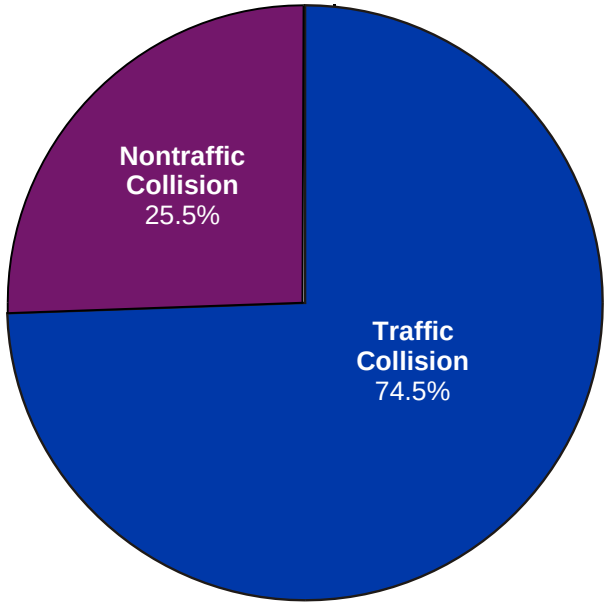
SUMMARY

- During 1989 to 1998, 312 Native American children and youth were killed in pedestrian-related motor vehicle crashes.
- Among Native American pedestrian-related deaths, 94% occurred on public roads; however, 54% of 1 to 4 year olds were killed in nontraffic locations, such as private driveways.
- During the most recent period, 1997–1998, Native American males were 2.9 times as likely as white males to die from being struck by a motor vehicle. Rates for Native American females were 2 and 3.6 times greater than rates for black and white females, respectively.
- Two infants died from pedestrian-related, nontraffic events during the ten year period.
- From 1989 to 1998, Native American pedestrian death rates decreased by 56%.
- Pedestrian death rates in the Aberdeen, Tucson, Albuquerque, and Navajo IHS Areas ranged from 5 to 7 times greater than U.S. national rates.

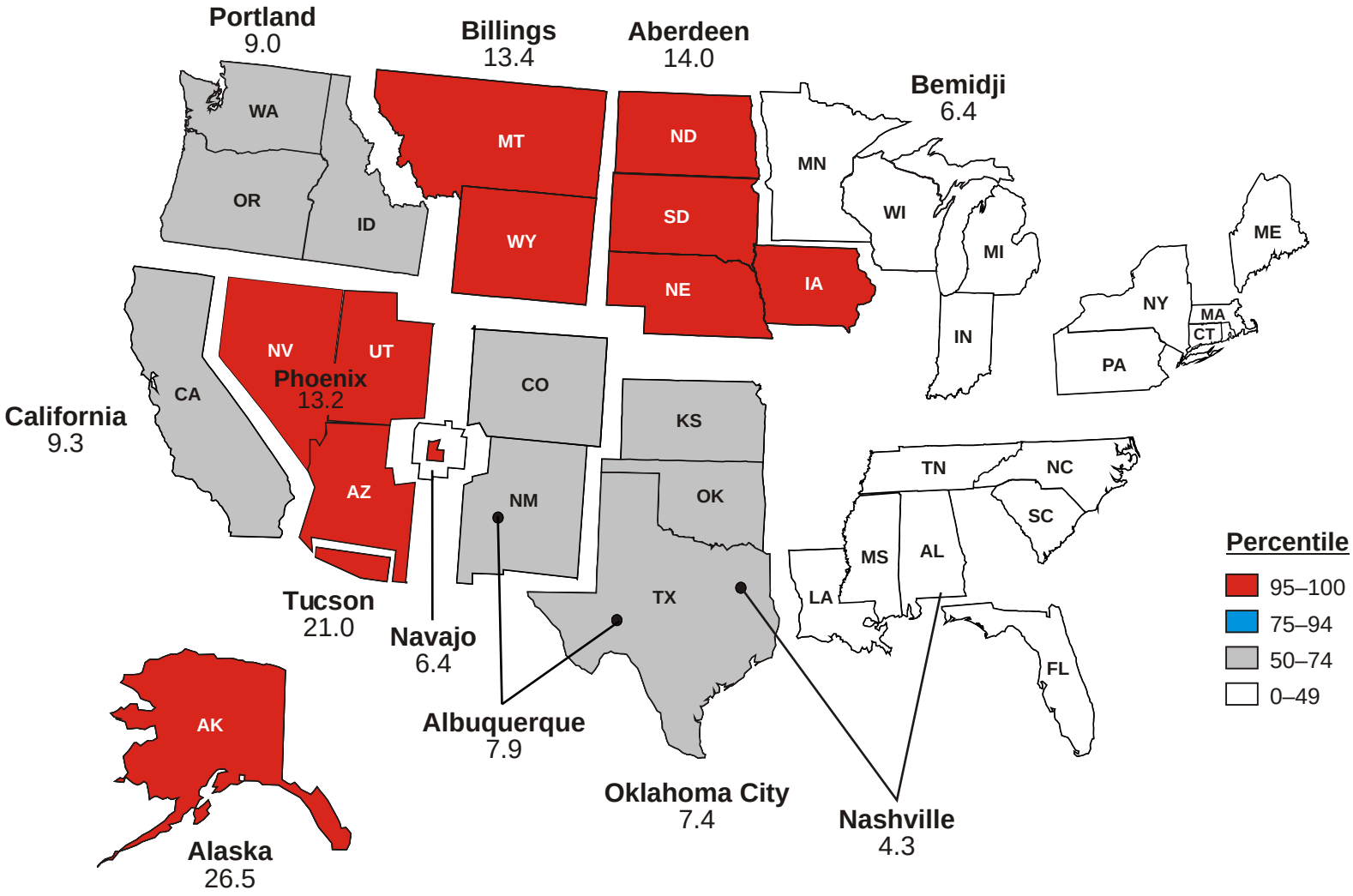
Pedestrian-Related Death Rates per 100,000 Population 1981-1998



Pedestrian-Related Death by Type 1989–1998



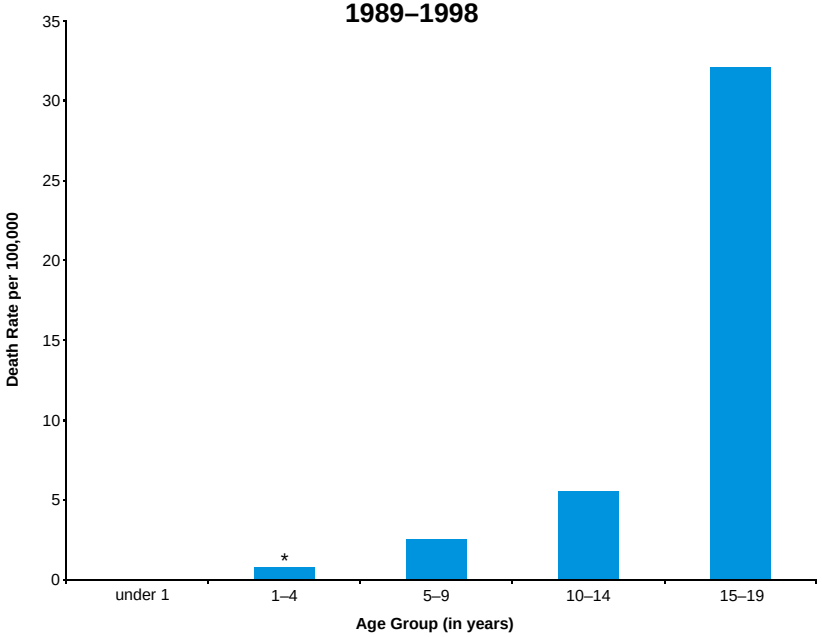
Firearm-Related Deaths per 100,000 Population, Native Americans, Ages 0–19, IHS Areas, 1989–1998



All IHS Areas Rate—10.3

United States Rate—6.9

Firearm-Related Age-Specific Death Rates 1989–1998

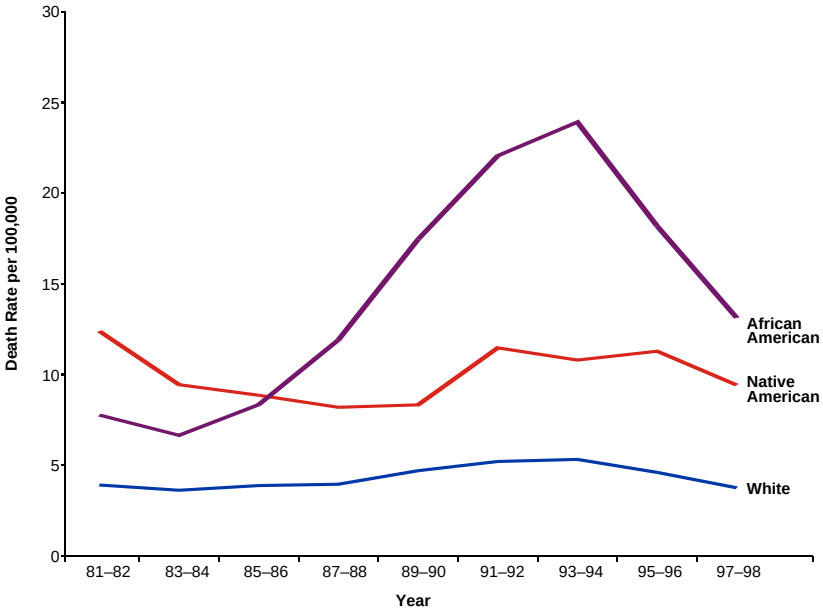


* Rates are based on fewer than 20 deaths and should be interpreted with caution.

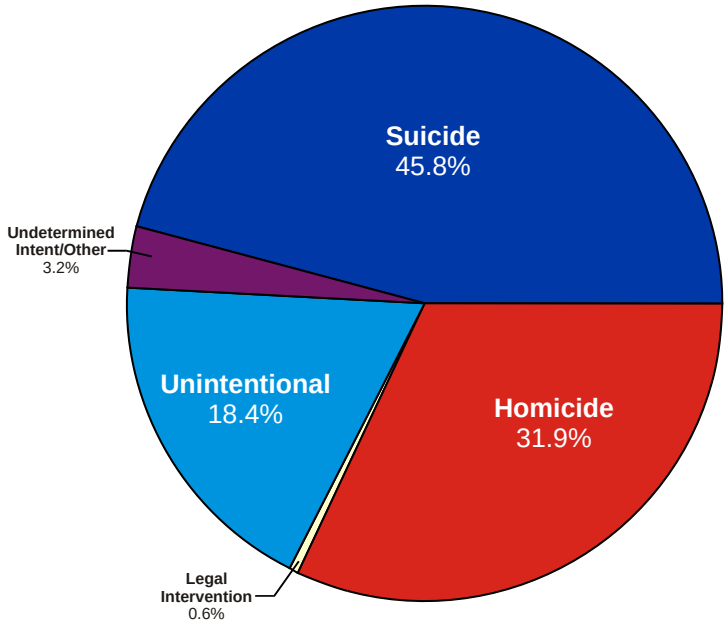
SUMMARY

- Firearm-related injuries caused the death of 524 Native American children and youth from 1989 to 1998.
- Death rates were highest among teens 15 to 19 years of age.
- Seventy-eight percent of all firearm-related deaths involved intentional use of the weapon.
- Suicides accounted for 46% of the firearm-related deaths among Native American children and youth.
- During the most recent period, 1997–1998, firearm-related death rates for black males were 1.5 times greater than rates for Native American males. Rates for Native American males were 2.7 times greater than rates for white males. Black females were 1.5 times more likely to die from firearm-related deaths than Native American females. Native American females rates were 1.6 greater than white female rates.
- From 1989 to 1998, Native American firearm-related death rates increased by 13%.
- The highest rate of firearm-related deaths among Native Americans occurred in the Alaska Area; the lowest occurred in Nashville.

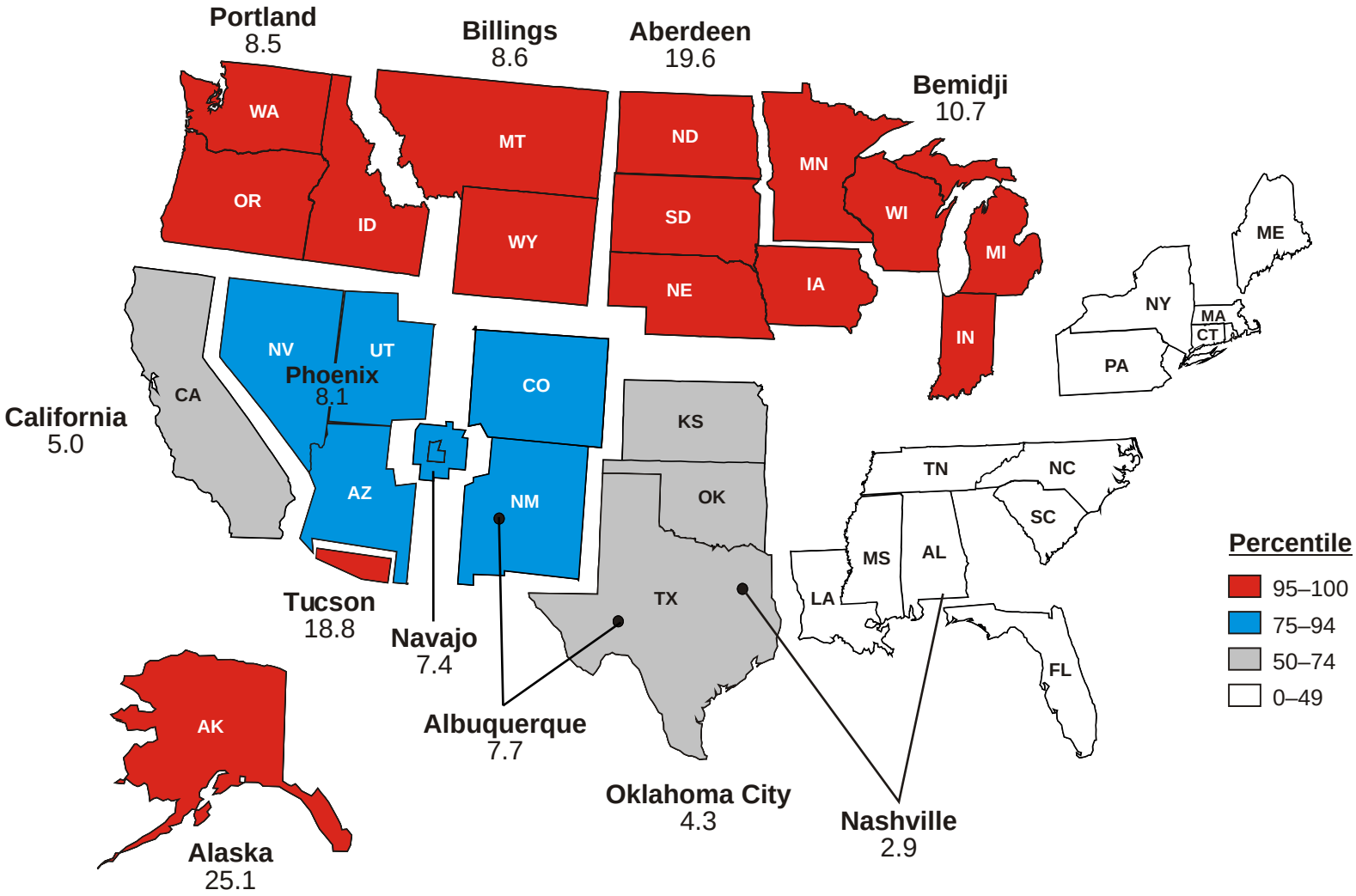
Firearm-Related Death Rates per 100,000 Population 1981–1998



Firearm-Related Death by Type 1989–1998



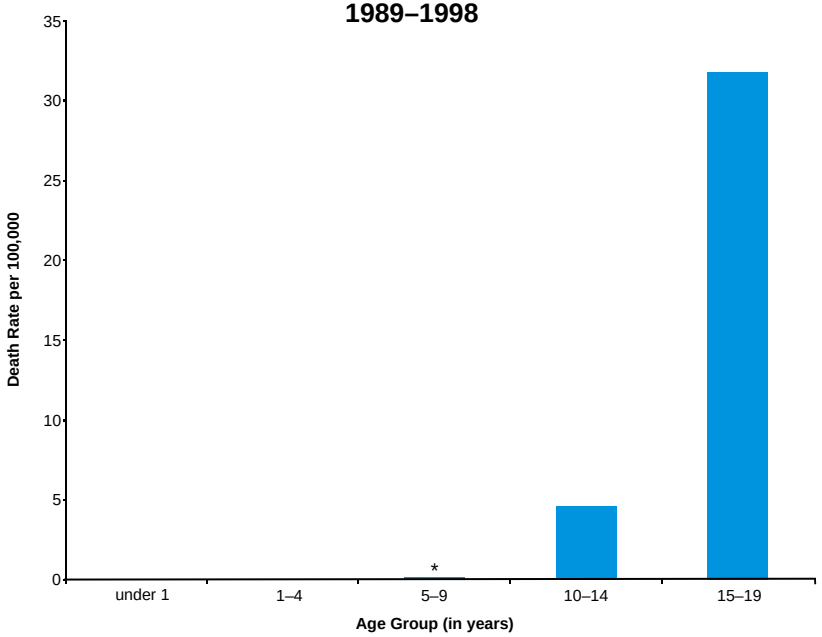
Suicides per 100,000 Population, Native Americans, Ages 0–19, IHS Areas, 1989–1998



All IHS Areas Rate—9.2

United States Rate—3.0

Suicide Age-Specific Rates 1989–1998

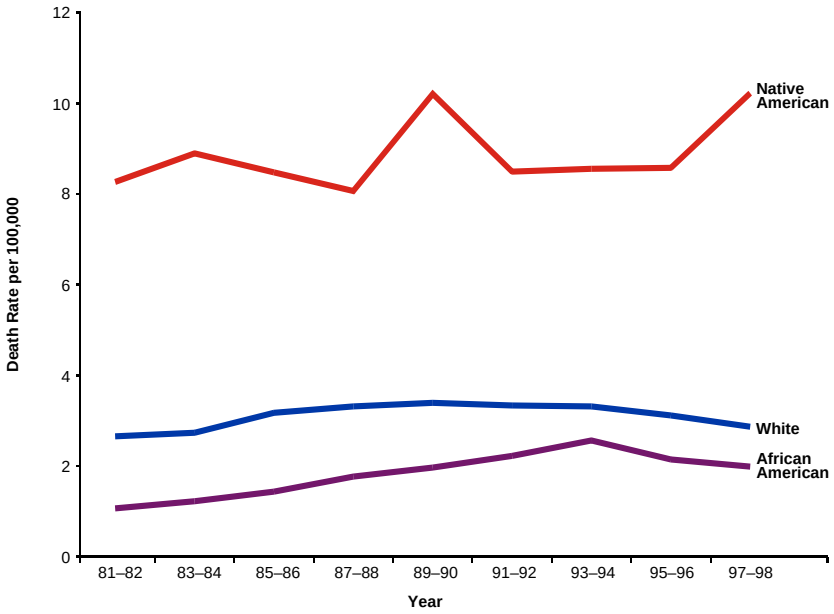


* Rates are based on fewer than 20 deaths and should be interpreted with caution.

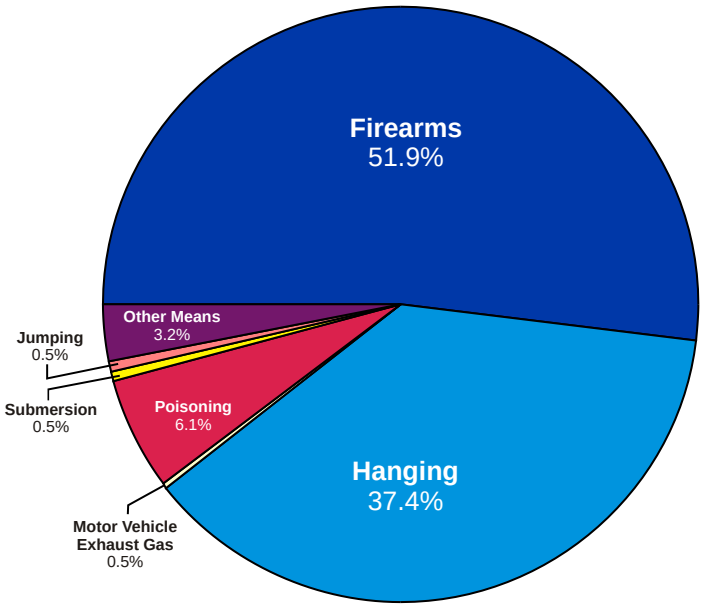
SUMMARY

- Between 1989 and 1998, 462 Native American children and youth committed suicide.
- Suicide rates were highest among those age 15 to 19 years.
- Among Native American youth who committed suicide, 52% of suicides were committed with a firearm, and more than one third were by hanging/suffocation.
- During the most recent period, 1997–1998, suicide rates for Native American males were 5.2 times greater than rates for black males and 3.6 times greater than white males. The suicide rate for Native American females was 4.7 times greater than black females and 3.4 times greater than white females.
- Suicide rates for Native American males and females remained unchanged from 1989 to 1998.
- The highest rates of youth suicide occurred in the Tucson, Aberdeen, and Alaska IHS Areas. These Areas had rates that were 6 to 8 times greater than U.S. national rates.

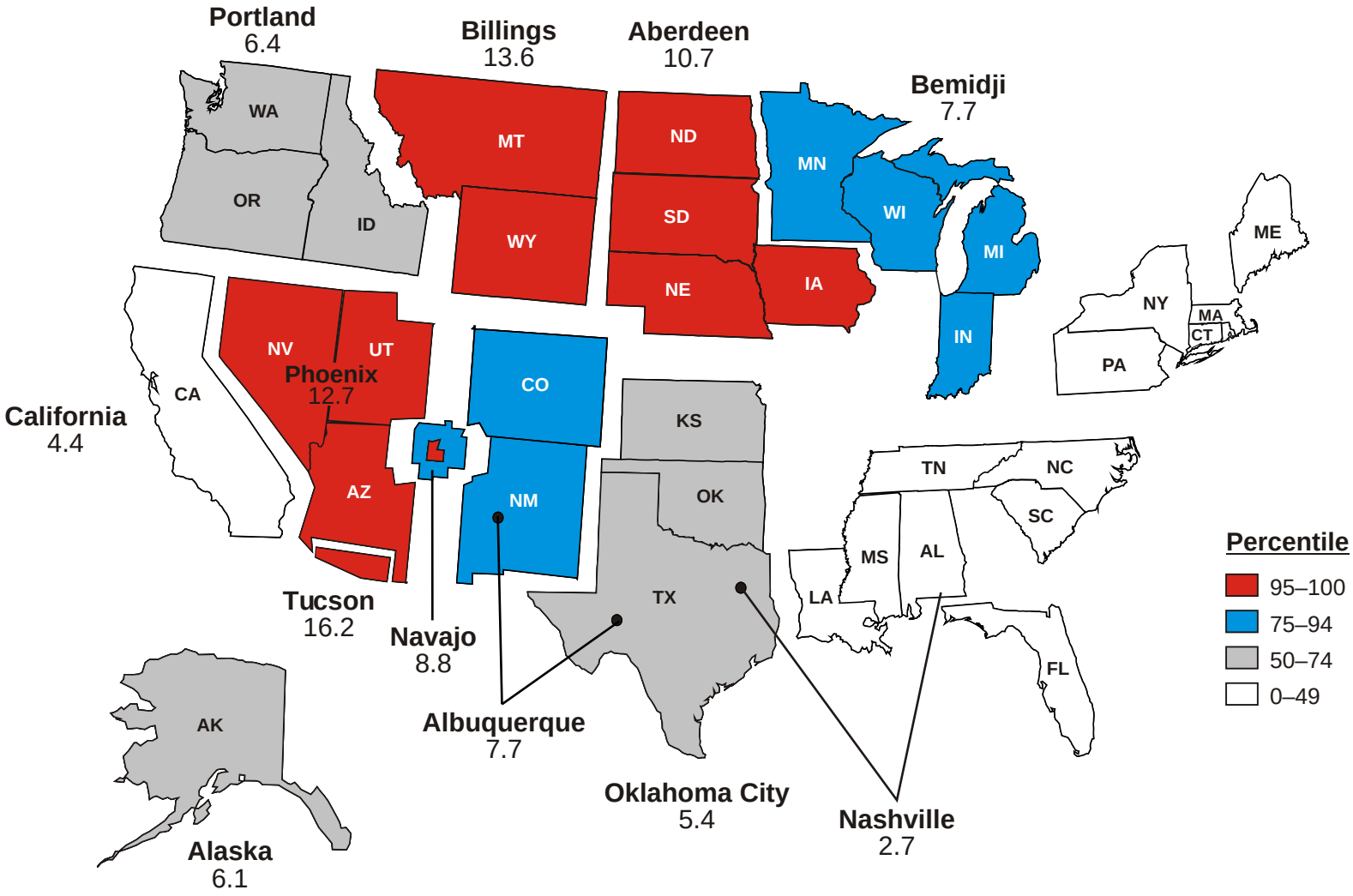
Suicide Rate per 100,000 Population 1981–1998



Suicide by Method Used 1989–1998



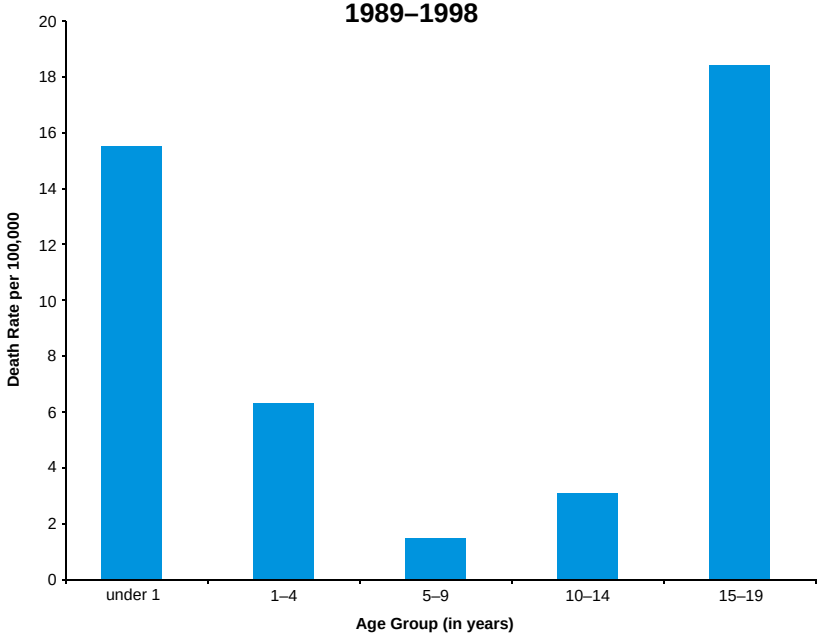
Homicides per 100,000 Population, Native Americans, Ages 0–19, IHS Areas, 1989–1998



All IHS Areas Rate—7.8

United States Rate—5.9

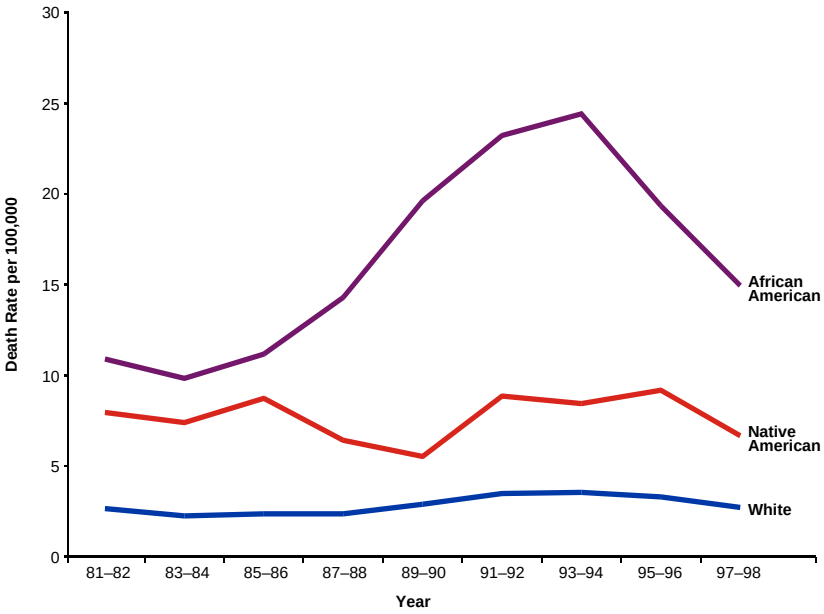
Homicide Age-Specific Rates
1989–1998



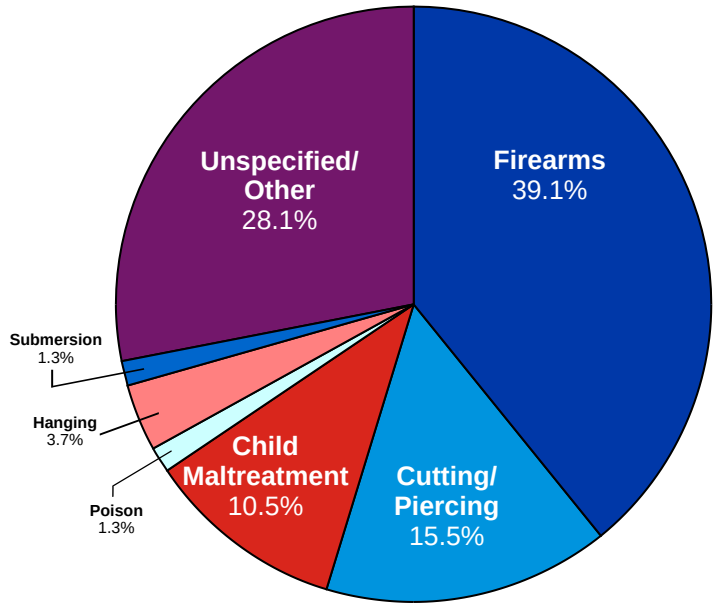
SUMMARY

- From 1989 to 1998, 427 American Indian and Alaska Native children and youth were homicide victims.
- Death rates were highest among those age 15 to 19 years, but infant homicide rates were almost as high.
- Forty percent of Native American homicides involved a firearm.
- Thirteen percent of all homicides occurred among Native American infants. Homicide was the second leading cause of injury death among this group.
- During the most recent period, 1997–1998, homicide rates among black males were 2.5 times greater than rates for Native American males. Rates for Native American males were 2.5 times greater than rates for white males. Native American females rates were almost as high as white males. The rates for black females were 1.6 times greater than those for Native American females. Native American females were 2.3 times more likely to die than white females.
- From 1989 to 1998, homicide rates for Native American males increased 33%, while the rates for females remained unchanged.

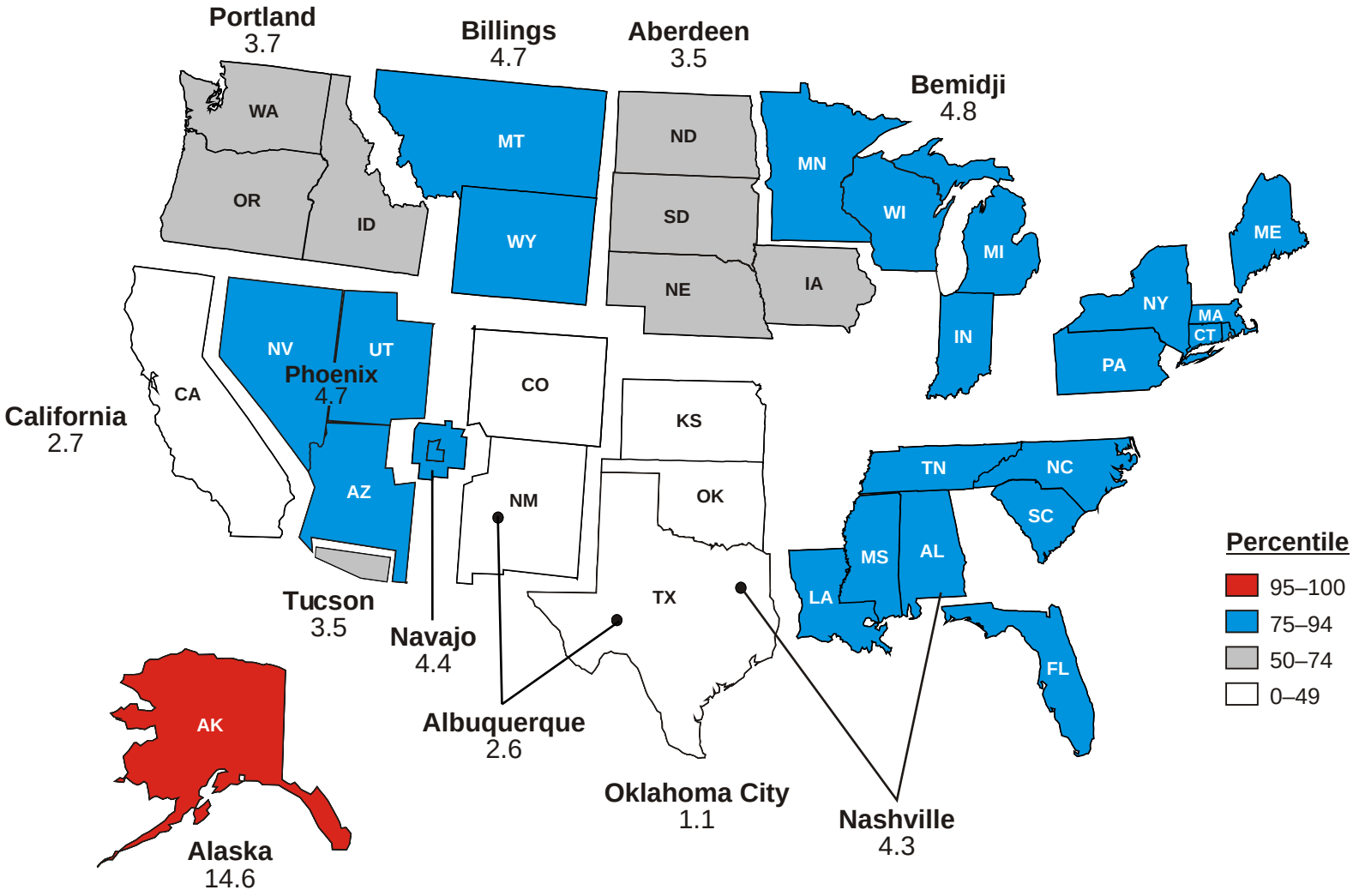
Homicide Rates per 100,000 Population
1981–1998



Homicide by Method Used
1989–1998



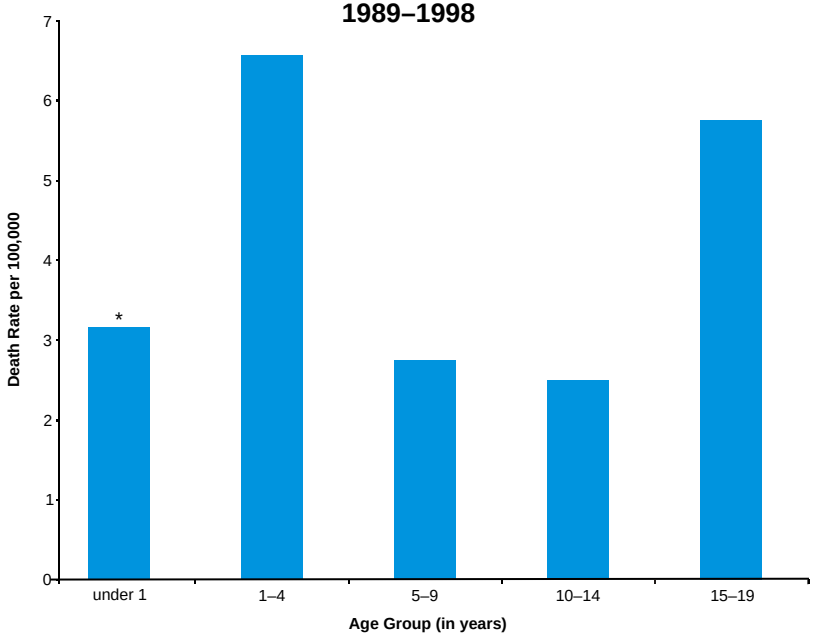
Drowning per 100,000 Population, Native Americans, Ages 0–19, IHS Areas, 1989–1998



All IHS Areas Rate—4.2

United States Rate—2.0

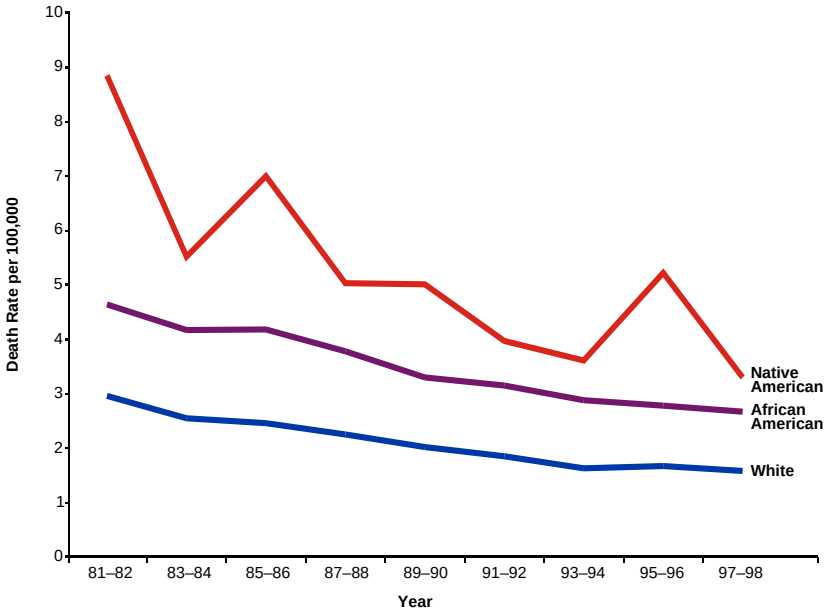
Drowning Age-Specific Rates 1989–1998



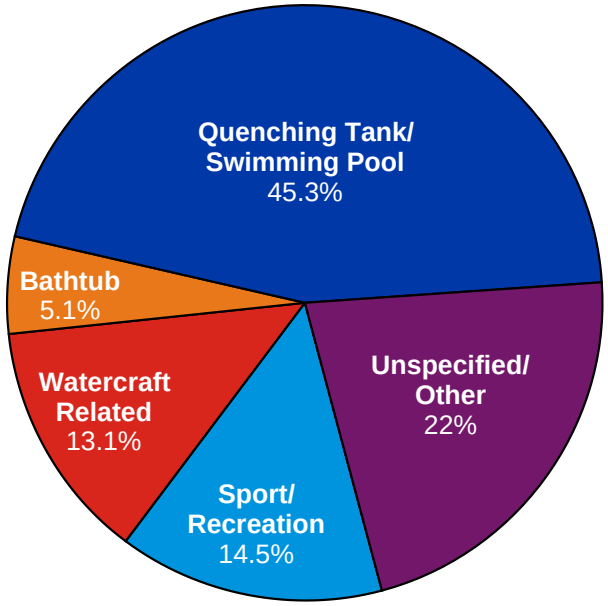
SUMMARY

- There were 240 Native American children and youth who drowned between 1989 and 1998.
- Males in age group 1 to 4 years and 15 to 19 years had the highest rates of drowning
- Five percent of Native American drowning occurred among infants.
- About half of all drowning occurred in swimming pools or quenching tanks.
- During the most recent period, 1997–1998, drowning rates were similar for Native American and black males. But these drowning rates were 2 times greater than for whites. Drowning rates for Native American females were 2 times greater than black females and 2.7 times greater than white females.
- From 1989 to 1998, drowning rates for Native Americans decreased by 34%.
- The Alaska IHS Area had the highest drowning rate of all IHS Areas. The drowning rate for Alaska Native children and youth was 7 times greater than the U.S. national rate.

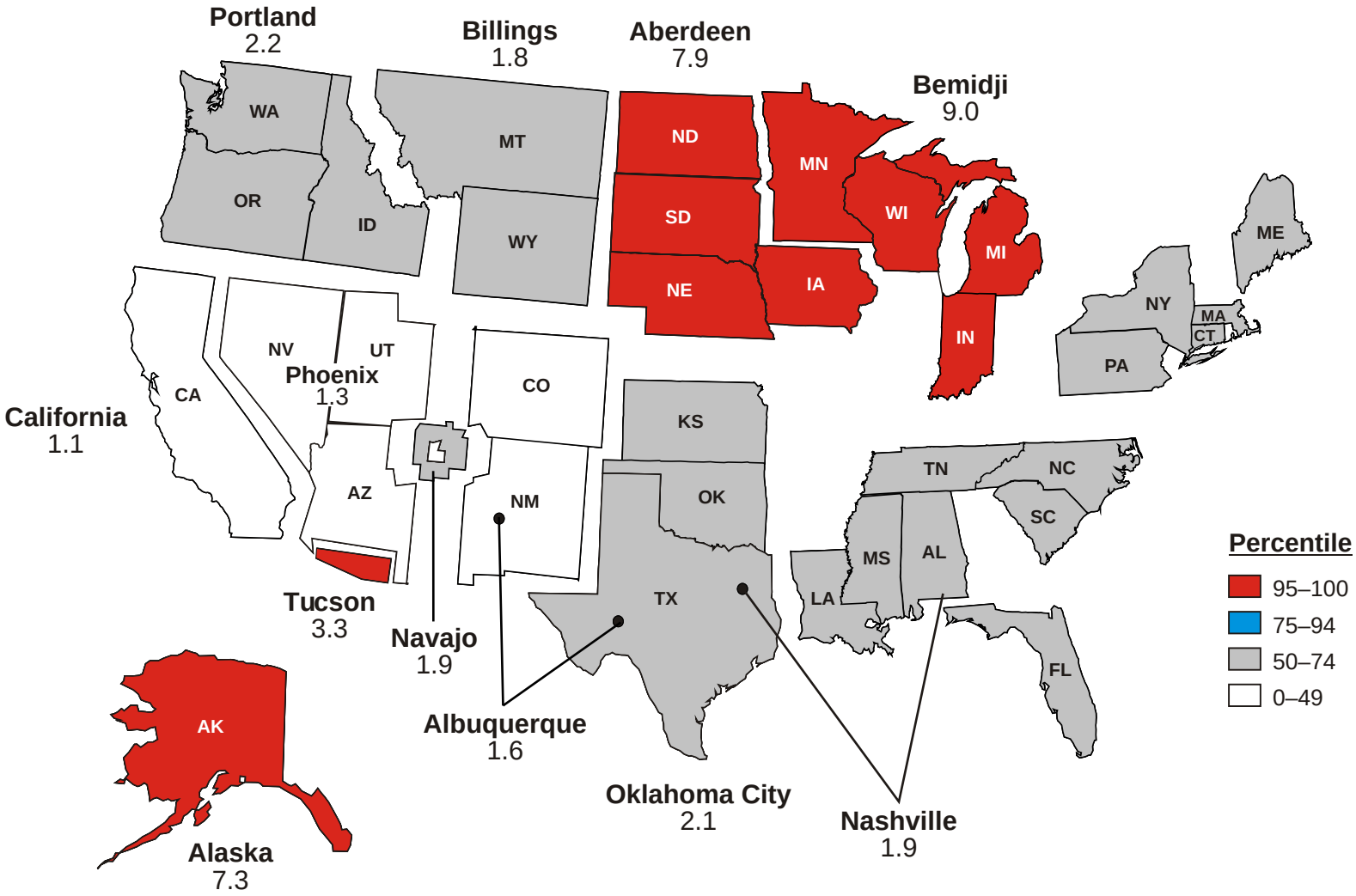
Drowning Rates per 100,000 Population 1981–1998



Drowning by Type 1989–1998



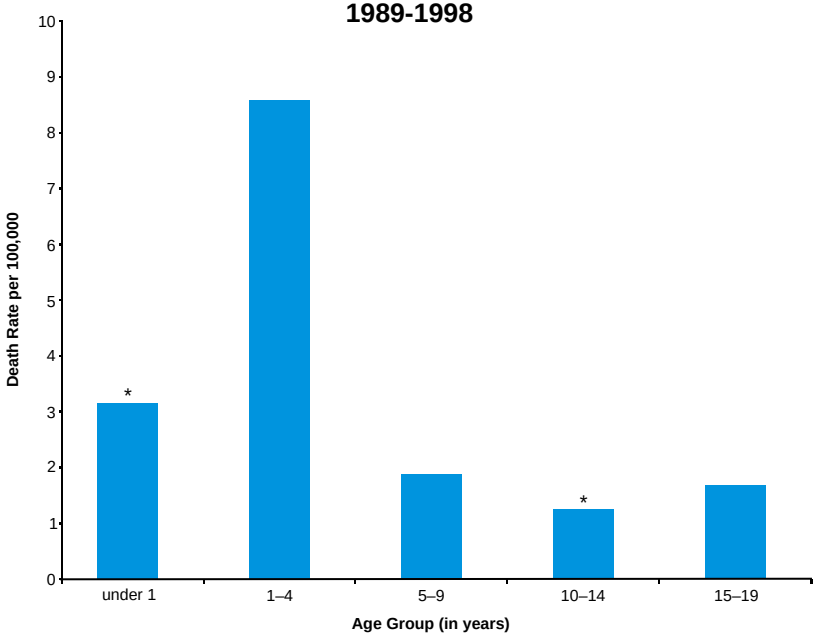
Fire- and Burn-Related Deaths per 100,000 Population, Native Americans, Ages 0–19, IHS Areas, 1989–1998



All IHS Areas Rate—3.0

United States Rate—1.3

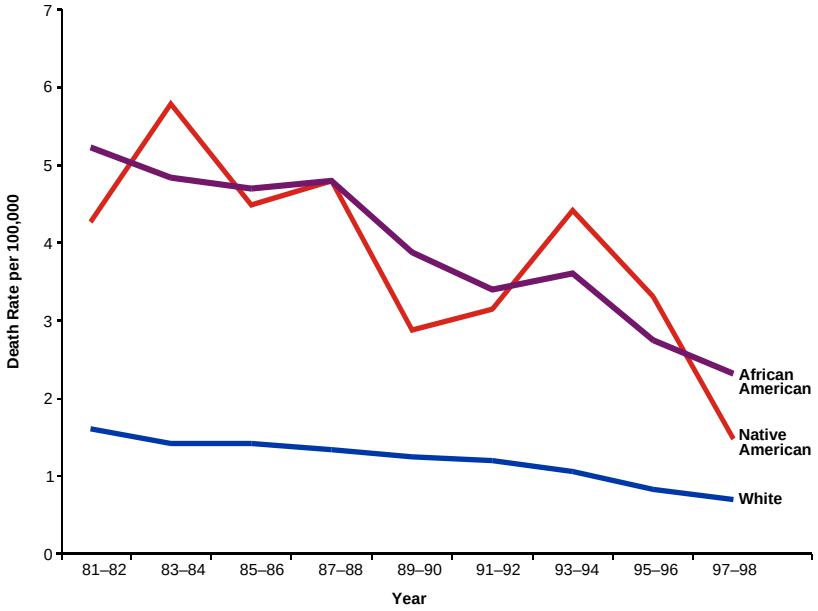
Fire and Burn Age-Specific Death Rates 1989-1998



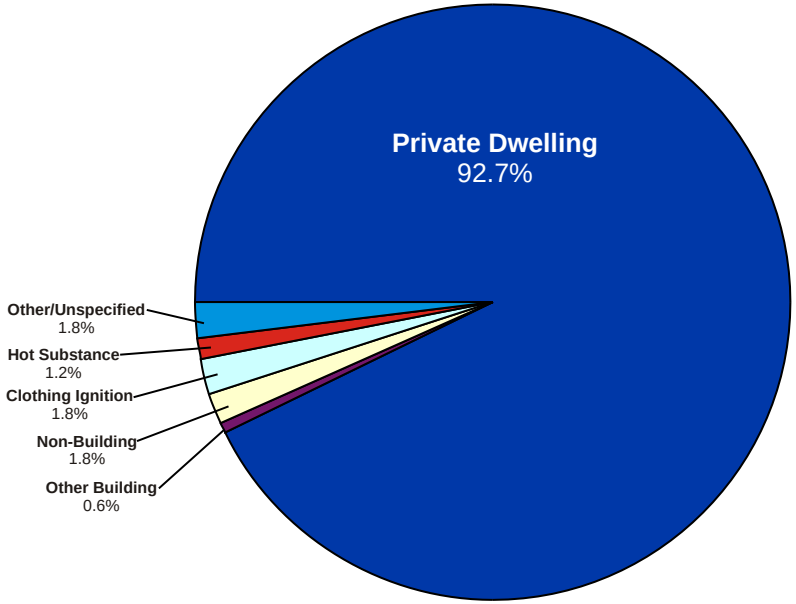
SUMMARY

- From 1989 to 1998, 184 Native American children and youth died from fire-related injuries.
- The highest rates occurred among 0 to 4 year olds.
- Ninety-three percent of fire-related deaths among Native American children and youth were associated with house fires.
- Eleven Native American infants died in house fire-related incidents.
- During the most recent period, 1997–1998, rates among blacks were 1.3 times greater than those for Native Americans; rates for Native Americans were 2.1 greater than for whites.
- From 1989 to 1998, Native American fire-related death rates decreased by 49% among children and youth.
- Fire-related death rates were highest in the Bemidji, Aberdeen, and Alaska IHS Areas. These three Areas had rates 6 times greater than U.S. national rates.

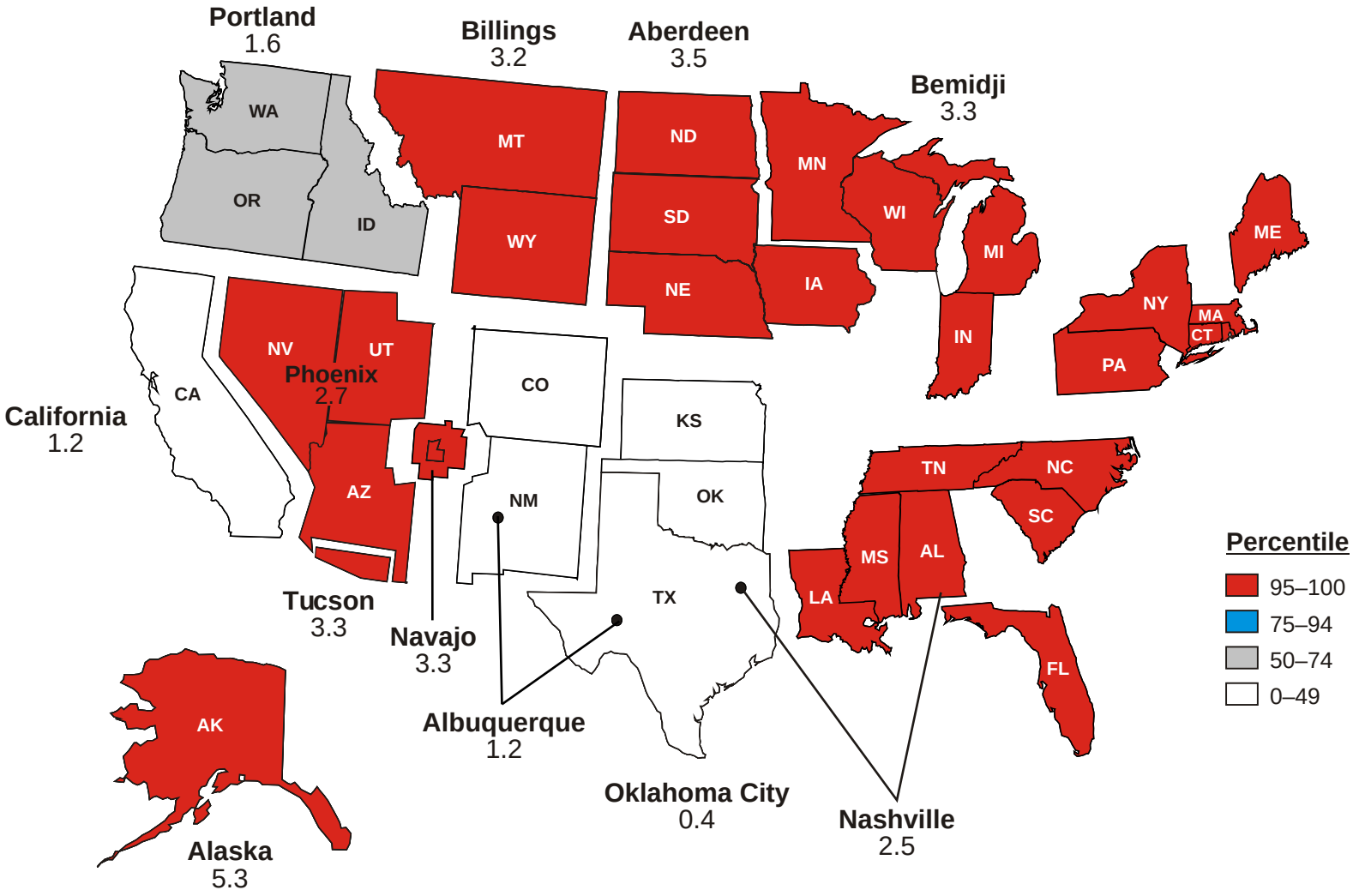
Fire- and Burn-Related Death Rates per 100,000 Population 1981–1998



Sources/Locations of Fire 1989–1998



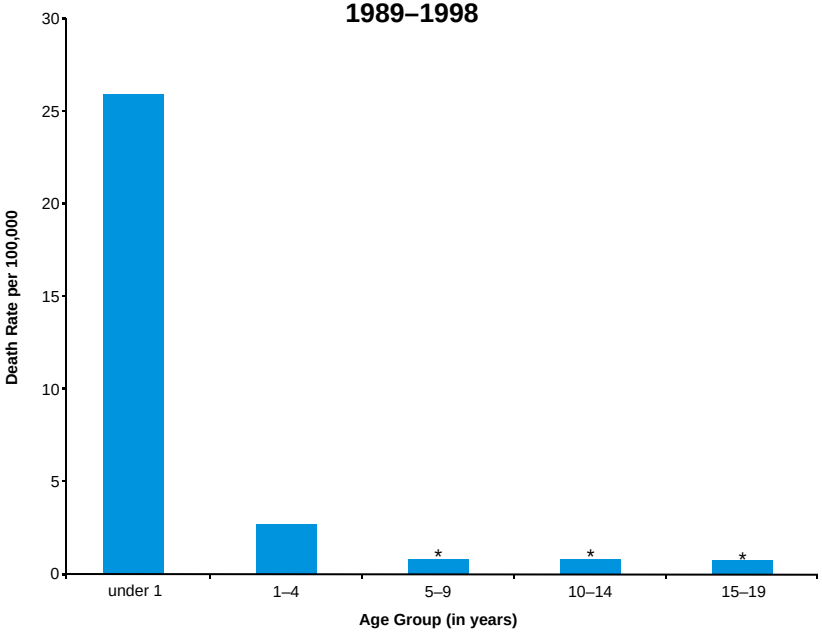
Suffocations per 100,000 Population, Native Americans, Ages 0–19, IHS Areas, 1989–1998



All IHS Areas Rate—2.4

United States Rate—1.0

Suffocation Age-Specific Rates 1989–1998

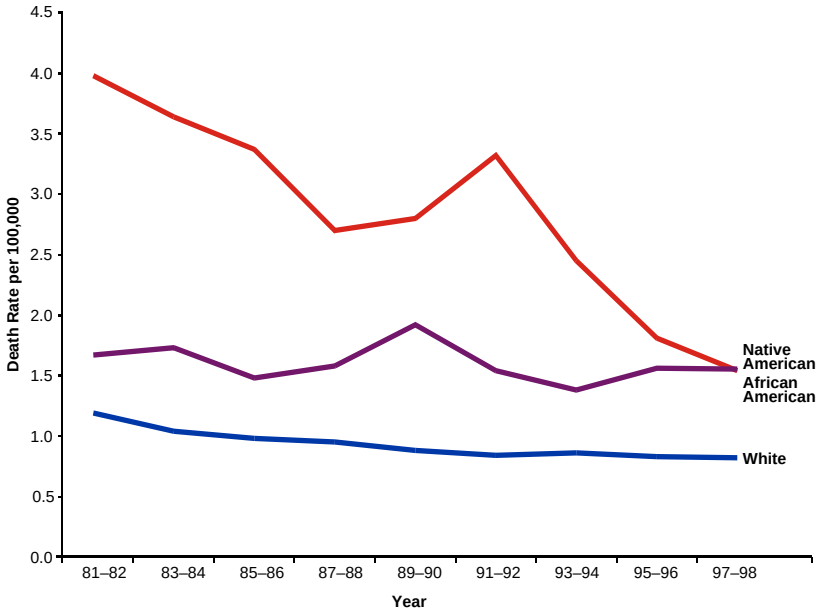


* Rates are based on fewer than 20 deaths and should be interpreted with caution.

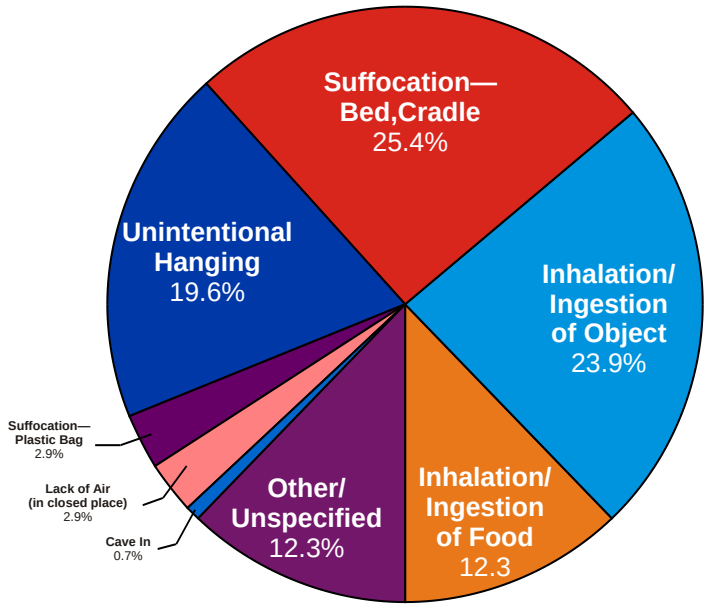
SUMMARY

- From 1989 to 1998, 155 Native American children and youth died from unintentional suffocation, choking, or strangulation.
- Suffocation was the leading cause of injury death among Native American infants.
- Inhalation or ingestion of food or other objects accounted for 24% of the choking and suffocation deaths. Twenty-five percent of children suffocated while in a bed or cradle.
- Fifty-eight percent of suffocation deaths occurred among infants. Forty percent of these infants suffocated in a bed or cradle.
- Suffocation rates were highest in the Alaska Area.

Suffocation Rates per 100,000 Population 1981–1998

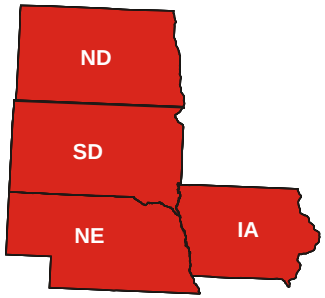


Type/Location of Suffocation 1989–1998

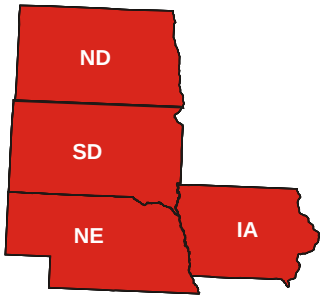


IHS Area Specific Maps

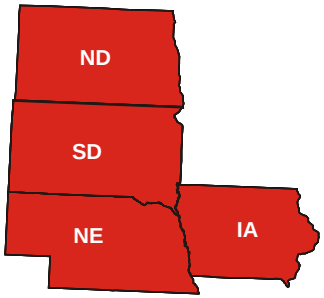
Aberdeen Area



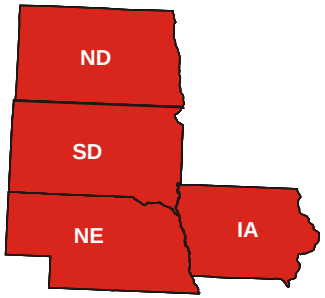
Motor Vehicle
137 Deaths
U.S. 11.5
Aberdeen 39.5
Excess Deaths **104**



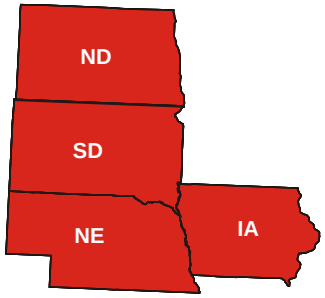
Pedestrian
28 Deaths
U.S. 1.5
Aberdeen 7.5
Excess Deaths **22**



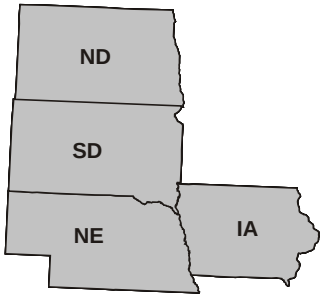
Firearm
46 Deaths
U.S. 6.9
Aberdeen 14.0
Excess Deaths **26**



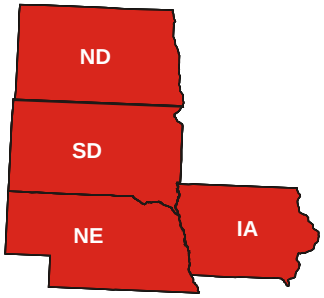
Suicide
64 Deaths
U.S. 3.0
Aberdeen 19.6
Excess Deaths **61**



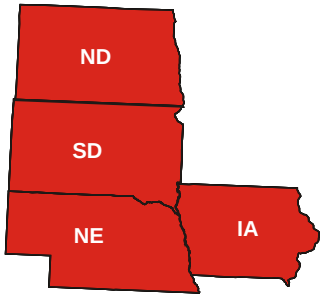
Homicide
42 Deaths
U.S. 5.9
Aberdeen 10.7
Excess Deaths **18**



Drowning
13 Deaths
U.S. 2.0
Aberdeen 3.5
Excess Deaths **6**



Fire/Burn
32 Deaths
U.S. 1.3
Aberdeen 7.9
Excess Deaths **24**



Suffocation
14 Deaths
U.S. 1.0
Aberdeen 3.5
Excess Deaths **9**

Percentile	95–100	75–94	50–74	0–49

Alaska Area

Motor Vehicle
49 Deaths
U.S. 11.5
Alaska 12.1
Excess Deaths **2**

Pedestrian
14 Deaths
U.S. 1.5
Alaska 3.2
Excess Deaths **7**

Firearm
96 Deaths
U.S. 6.9
Alaska 26.5
Excess Deaths **80**

Suicide
90 Deaths
U.S. 3.0
Alaska 25.1
Excess Deaths **90**

Homicide
24 Deaths
U.S. 5.9
Alaska 6.1
Excess Deaths **1**

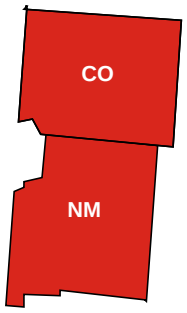
Drowning
56 Deaths
U.S. 2.0
Alaska 14.6
Excess Deaths **51**

Fire/Burn
33 Deaths
U.S. 1.3
Alaska 7.3
Excess Deaths **24**

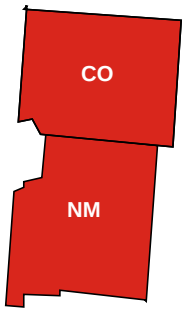
Suffocation
25 Deaths
U.S. 1.0
Alaska 5.3
Excess Deaths **18**

Percentile	95–100	75–94	50–74	0–49

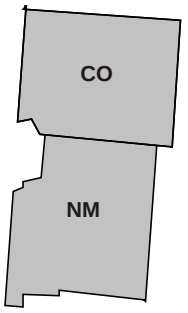
Albuquerque Area



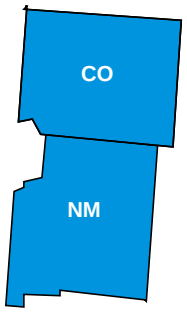
Motor Vehicle
98 Deaths
U.S. 11.5
Albuquerque 33.7
Excess Deaths **70**



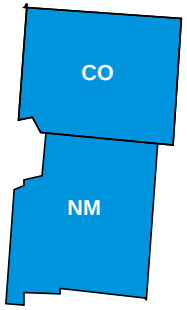
Pedestrian
24 Deaths
U.S. 1.5
Albuquerque 8.3
Excess Deaths **21**



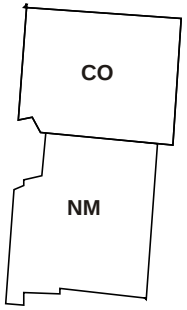
Firearm
22 Deaths
U.S. 6.9
Albuquerque 7.9
Excess Deaths **3**



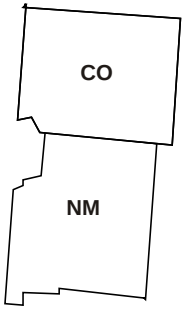
Suicide
21 Deaths
U.S. 3.0
Albuquerque 7.7
Excess Deaths **14**



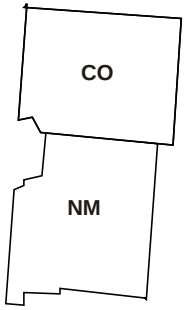
Homicide
23 Deaths
U.S. 5.9
Albuquerque 7.7
Excess Deaths **6**



Drowning
8 Deaths
U.S. 2.0
Albuquerque 2.6
Excess Deaths **2**



Fire/Burn
5 Deaths
U.S. 1.3
Albuquerque 1.6
Excess Deaths **1**



Suffocation
4 Deaths
U.S. 1.0
Albuquerque 1.2
Excess Deaths **1**

Percentile	95–100	75–94	50–74	0–49

Bemidji Area

Motor Vehicle

83 Deaths
U.S. 11.5
Bemidji 29.7
Excess Deaths **55**

Pedestrian

15 Deaths
U.S. 1.5
Bemidji 5.4
Excess Deaths **12**

Firearm

18 Deaths
U.S. 6.9
Bemidji 6.4

Suicide

29 Deaths
U.S. 3.0
Bemidji 10.7
Excess Deaths **23**

Homicide

23 Deaths
U.S. 5.9
Bemidji 7.7
Excess Deaths **5**

Drowning

14 Deaths
U.S. 2.0
Bemidji 4.8
Excess Deaths **9**

Fire/Burn

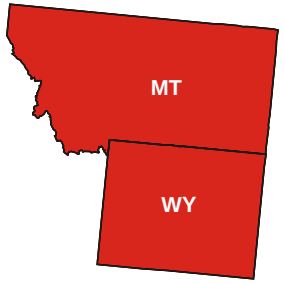
29 Deaths
U.S. 1.3
Bemidji 9.0
Excess Deaths **23**

Suffocation

12 Deaths
U.S. 1.0
Bemidji 3.3
Excess Deaths **7**

Percentile	95–100	75–94	50–74	0–49

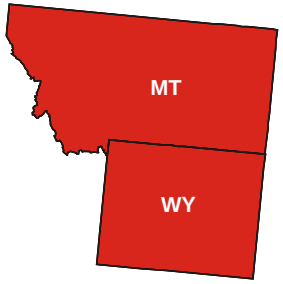
Billings Area



Motor Vehicle

90 Deaths

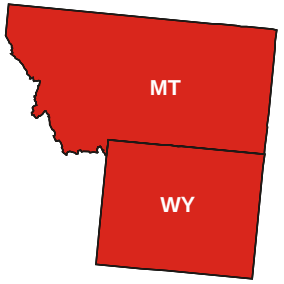
U.S.	11.5
Billings	43.9
Excess Deaths	**71**



Pedestrian

15 Deaths

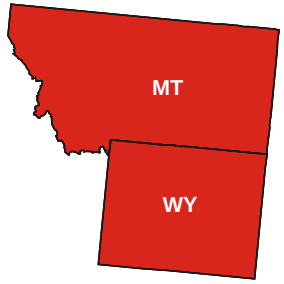
U.S.	1.5
Billings	7.0
Excess Deaths	**12**



Firearm

27 Deaths

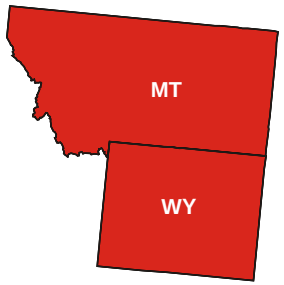
U.S.	6.9
Billings	13.4
Excess Deaths	**14**



Suicide

17 Deaths

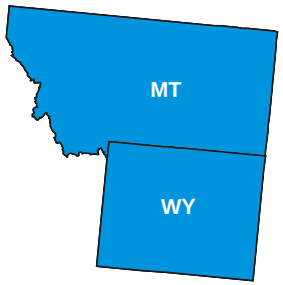
U.S.	3.0
Billings	8.6
Excess Deaths	**12**



Homicide

29 Deaths

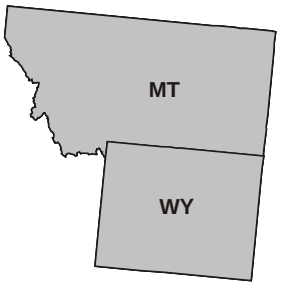
U.S.	5.9
Billings	13.6
Excess Deaths	**17**



Drowning

11 Deaths

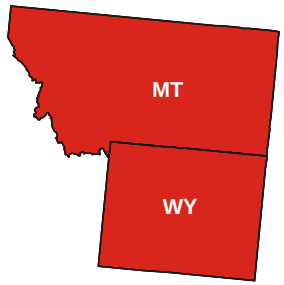
U.S.	2.0
Billings	4.7
Excess Deaths	**6**



Fire/Burn

4 Deaths

U.S.	1.3
Billings	1.8
Excess Deaths	**1**



Suffocation

9 Deaths

U.S.	1.0
Billings	3.2
Excess Deaths	**5**

Percentile	95–100	75–94	50–74	0–49

California Area

Motor Vehicle

78 Deaths

U.S.	11.5
California	17.0
Excess Deaths	**27**

Pedestrian

19 Deaths

U.S.	1.5
California	3.9
Excess Deaths	**12**

Firearm

40 Deaths

U.S.	6.9
California	9.3
Excess Deaths	**12**

Suicide

22 Deaths

U.S.	3.0
California	5.0
Excess Deaths	**10**

Homicide

20 Deaths

U.S.	5.9
California	4.4

Drowning

14 Deaths

U.S.	2.0
California	2.7
Excess Deaths	**4**

Fire/Burn

6 Deaths

U.S.	1.3
California	1.1

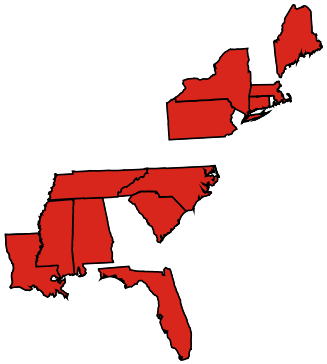
Suffocation

7 Deaths

U.S.	1.0
California	1.2
Excess Deaths	**1**

Percentile	95–100	75–94	50–74	0–49

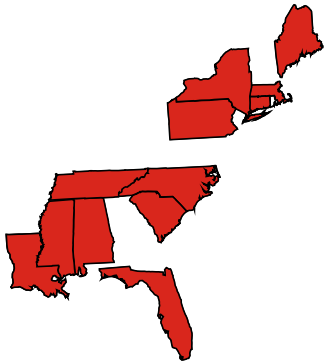
Nashville Area



Motor Vehicle

52 Deaths

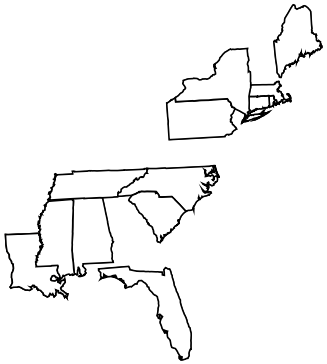
U.S.	11.5
Nashville	20.5
Excess Deaths	**24**



Pedestrian

8 Deaths

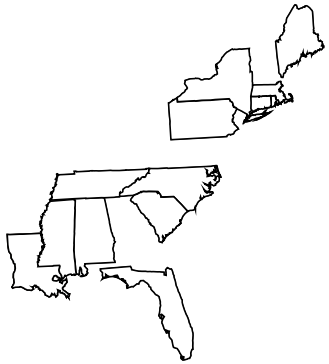
U.S.	1.5
Nashville	3.0
Excess Deaths	**4**



Firearm

10 Deaths

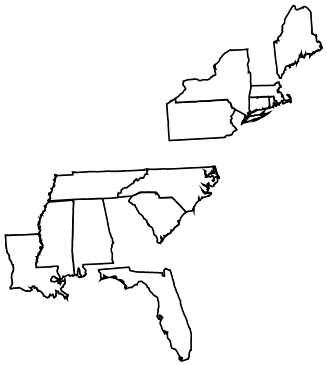
U.S.	6.9
Nashville	4.3



Suicide

7 Deaths

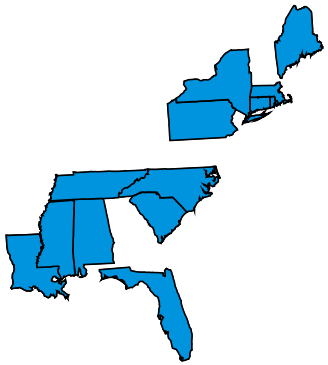
U.S.	3.0
Nashville	2.9
Excess Deaths	**0**



Homicide

7 Deaths

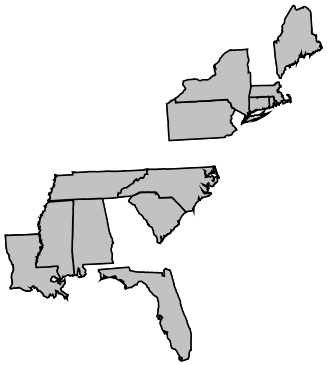
U.S.	5.9
Nashville	2.7



Drowning

11 Deaths

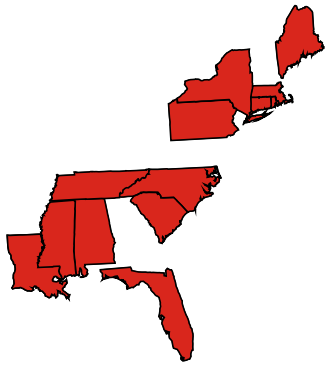
U.S.	2.0
Nashville	4.3
Excess Deaths	**6**



Fire/Burn

6 Deaths

U.S.	1.3
Nashville	1.9
Excess Deaths	**2**



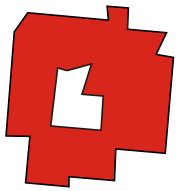
Suffocation

8 Deaths

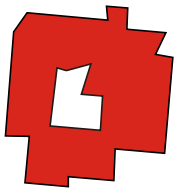
U.S.	1.0
Nashville	2.5
Excess Deaths	**4**

Percentile	95–100	75–94	50–74	0–49

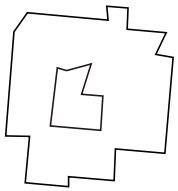
Navajo Area



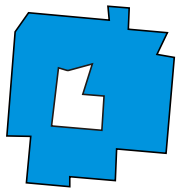
Motor Vehicle
302 Deaths
U.S. 11.5
Navajo 37.3
Excess Deaths **218**



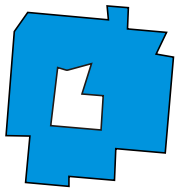
Pedestrian
92 Deaths
U.S. 1.5
Navajo 10.9
Excess Deaths **80**



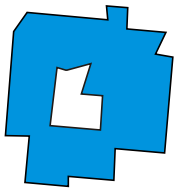
Firearm
50 Deaths
U.S. 6.9
Navajo 6.4



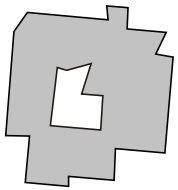
Suicide
56 Deaths
U.S. 3.0
Navajo 7.4
Excess Deaths **37**



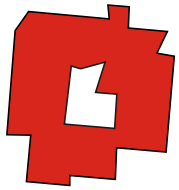
Homicide
72 Deaths
U.S. 5.9
Navajo 8.8
Excess Deaths **25**



Drowning
37 Deaths
U.S. 2.0
Navajo 4.4
Excess Deaths **20**



Fire/Burn
17 Deaths
U.S. 1.3
Navajo 1.9
Excess Deaths **5**



Suffocation
31 Deaths
U.S. 1.0
Navajo 3.3
Excess Deaths **20**

Percentile	95–100	75–94	50–74	0–49

Oklahoma City Area

Motor Vehicle
185 Deaths
U.S. 11.5
Oklahoma 16.7
Excess Deaths **63**

Pedestrian
24 Deaths
U.S. 1.5
Oklahoma 2.0
Excess Deaths **6**

Firearm
79 Deaths
U.S. 6.9
Oklahoma 7.4
Excess Deaths **6**

Suicide
46 Deaths
U.S. 3.0
Oklahoma 4.3
Excess Deaths **15**

Homicide
63 Deaths
U.S. 5.9
Oklahoma 5.4

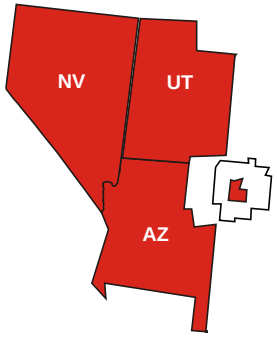
Drowning
14 Deaths
U.S. 2.0
Oklahoma 1.1

Fire/Burn
28 Deaths
U.S. 1.3
Oklahoma 2.1
Excess Deaths **9**

Suffocation
6 Deaths
U.S. 1.0
Oklahoma 0.4

Percentile	95–100	75–94	50–74	0–49

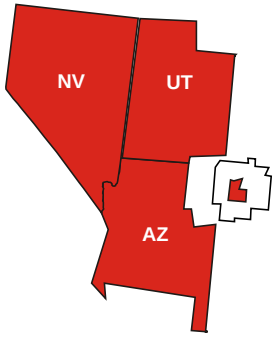
Phoenix Area



Motor Vehicle

173 Deaths

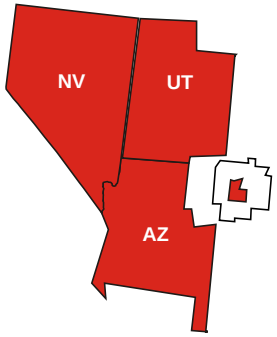
U.S.	11.5
Phoenix	32.6
Excess Deaths	**119**



Pedestrian

37 Deaths

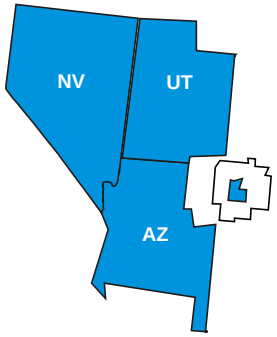
U.S.	1.5
Phoenix	6.3
Excess Deaths	**27**



Firearm

66 Deaths

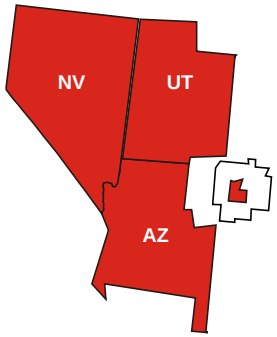
U.S.	6.9
Phoenix	13.2
Excess Deaths	**35**



Suicide

40 Deaths

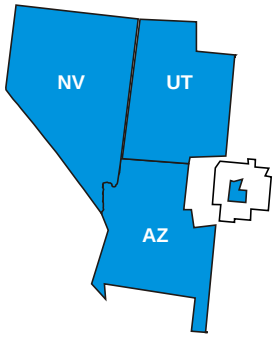
U.S.	3.0
Phoenix	8.1
Excess Deaths	**28**



Homicide

67 Deaths

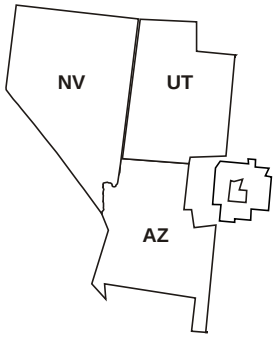
U.S.	5.9
Phoenix	12.7
Excess Deaths	**38**



Drowning

27 Deaths

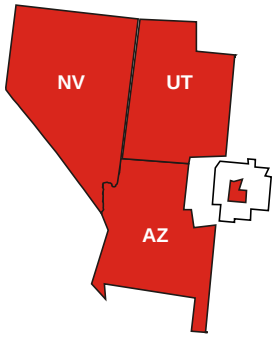
U.S.	2.0
Phoenix	4.7
Excess Deaths	**15**



Fire/Burn

7 Deaths

U.S.	1.3
Phoenix	1.3
Excess Deaths	**0**



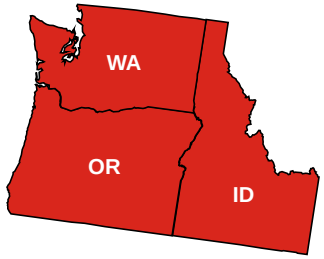
Suffocation

18 Deaths

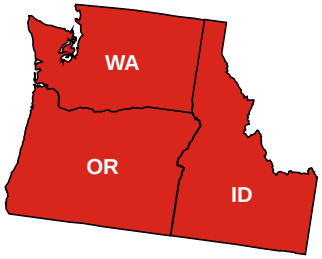
U.S.	1.0
Phoenix	2.7
Excess Deaths	**10**

Percentile	95–100	75–94	50–74	0–49

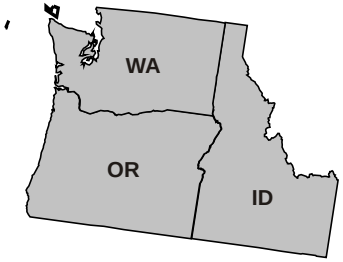
Portland Area



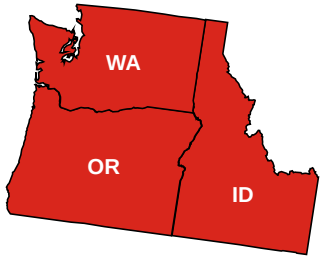
Motor Vehicle
122 Deaths
U.S. 11.5
Portland 22.4
Excess Deaths **65**



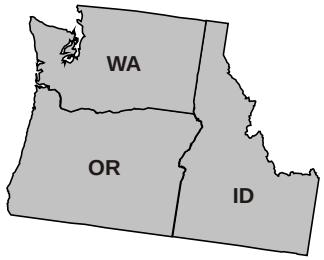
Pedestrian
18 Deaths
U.S. 1.5
Portland 3.1
Excess Deaths **9**



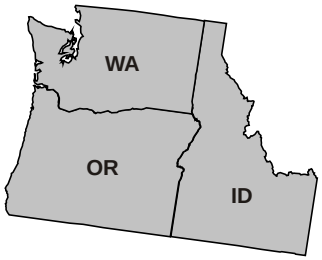
Firearm
47 Deaths
U.S. 6.9
Portland 9.0
Excess Deaths **13**



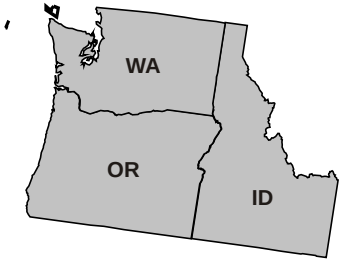
Suicide
44 Deaths
U.S. 3.0
Portland 8.5
Excess Deaths **32**



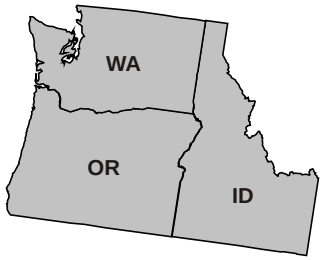
Homicide
35 Deaths
U.S. 5.9
Portland 6.4
Excess Deaths **3**



Drowning
23 Deaths
U.S. 2.0
Portland 3.7
Excess Deaths **10**



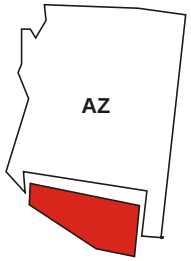
Fire/Burn
13 Deaths
U.S. 1.3
Portland 2.2
Excess Deaths **5**



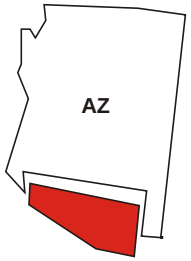
Suffocation
11 Deaths
U.S. 1.0
Portland 1.6
Excess Deaths **4**

Percentile	95–100	75–94	50–74	0–49

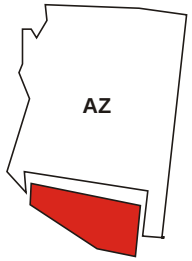
Tucson Area



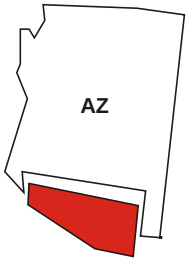
Motor Vehicle
27 Deaths
U.S. 11.5
Tucson 24.5
Excess Deaths **15**



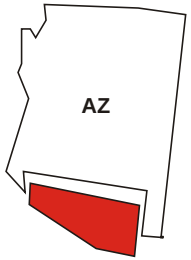
Pedestrian
9 Deaths
U.S. 1.5
Tucson 8.2
Excess Deaths **7**



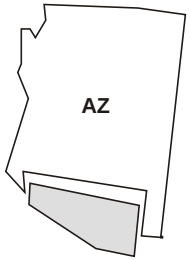
Firearm
22 Deaths
U.S. 6.9
Tucson 21.0
Excess Deaths **16**



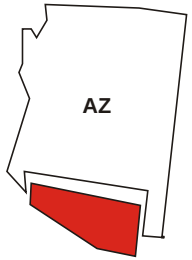
Suicide
18 Deaths
U.S. 3.0
Tucson 18.8
Excess Deaths **18**



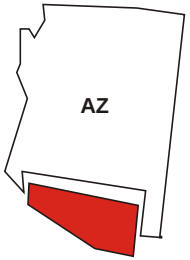
Homicide
17 Deaths
U.S. 5.9
Tucson 16.2
Excess Deaths **12**



Drowning
4 Deaths
U.S. 2.0
Tucson 3.5
Excess Deaths **2**



Fire/Burn
4 Deaths
U.S. 1.3
Tucson 3.3
Excess Deaths **2**



Suffocation
4 Deaths
U.S. 1.0
Tucson 3.3
Excess Deaths **3**

Percentile	95–100	75–94	50–74	0–49

Additional Sources of Information

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The American Academy of Pediatric Committee on Native American Child Health: www.aap.org.

HRSA Office of Maternal and Child Health: www.hrsa.gov.