INTRODUCTION

Reliable information on cause of death is essential to the development of policies and programs for prevention and control of disease and injury. This report provides information about the leading causes of Alaska Native mortality in the following sections: rank order of leading causes; age-specific mortality rates; excess death calculations; estimates of years of potential life lost; mortality rates by service regions; trends over time for Alaska Natives statewide; regional trends over time; and a section focusing on each of the ten age-adjusted leading causes of death.

Produced by the Alaska Native Epidemiology Center, this report provides information for health care planners, providers and other professionals throughout Alaska and elsewhere.

METHODS

Population
Alaska Native people are those inhabitants whose ancestors occupied the state of Alaska. The U.S. Bureau of the Census estimates that in the year 2010 there were 130,998 Alaska Native people residing in Alaska, 104,871 of whom checked only the American Indian/Alaska Native category for race among multiple options. For this report, bridged population estimates were used. The bridged estimate for the year 2010 Alaska Native population was 120,767, an intermediate value between the single race and multiple race estimates reported by the census. Estimates for year 2013 were generated by using a weighted average of the preceding years (50% for 2012, 25% for both 2011 and 2010). Population tables for 1980 to 2013 are presented in Appendix A.

Mortality Data
Mortality data for Alaska Native people who were resident in Alaska and died there were provided by the State of Alaska Bureau of Vital Statistics. Cases from this database listed race as Alaska

a Population bridging is a method used to make multiple-race and single-race data comparable enough for analysis. In population bridging, all single race respondents are counted in the race category (in this case, all 104,871 AN). Persons who reported multiple races (in this case, an additional 26,127 individuals) are assigned to a single race category based upon fairly complex mathematical models.
Native (85%), Eskimo (10%), Canadian Eskimo and Indian (3%), Aleut (1%), and Indian (1%).

For current estimates we calculated average annual mortality rates for Alaska Native people using only the underlying cause of death. Individuals with no underlying cause of death listed were excluded from the analysis. Because of small numbers, cases were aggregated for the five year time period, 2009-2013, and the bridged Alaska Native population estimate for this period was used as the denominator.\(^b\)

\(^b\) Population estimates for Alaska Native people for the years 1990-2013 are based on the NCHS postcensal series by year, census area, age, sex, bridged race, and Hispanic origin. Census areas were combined to form Service Regions as outlined in Appendix C.

Population counts for communities that received health services from regions other than those to which their census areas belonged were added or subtracted from the appropriate service region. Counts for Alaska Native people in these villages came from 2010 Census data. Changes in annual community estimates were calculated based on annual changes for the census area of the community. Data for 1990-2013 is available on the Internet at: http://www.cdc.gov/nchs/nvss/bridged_race.htm. as of September 1, 2013.


We only reported and calculated rates for those causes that had at least five deaths during the interval studied.

Race is assigned at time of death by either next of kin, or the coroner. There is often concern about under-reporting of minority groups on death certificate data, however, a 1996 study estimated that misclassification of Alaska Native people on death certificates is low (5%).\(^1\)

Alaska Native rates for 2009-2013 were compared to mortality rates for U.S. Whites for the time period, 2009-2013. U.S. Whites were chosen as a comparison group since they are frequently used as a standard population. These large numbers provide accurate estimates by age and gender with which to compare. U.S. White data for both numerators and denominators came from the CDC National Center for Health Statistics.\(^2\) Data for U.S. Whites are available for the years 1969-2013.

All mortality rates were age-adjusted to the 2000 standard population by the direct method. Rate ratios were created to compare Alaska Native to U.S. White rates and confidence intervals calculated
around these ratios. Alaska Native rates were considered significantly different if the 95% confidence interval did not contain one. Age-adjusted rates based on fewer than 20 occurrences are statistically unreliable and should be used with caution.

**Rank Order**

In order for the data in this report to be comparable to other studies, mortality rates for the 10 leading causes of death for Alaska Native people statewide were calculated from a standardized list of 50 leading causes of death as defined by the National Center for Health Statistics (NCHS) with the exception of alcohol abuse (F10). Deaths due to Alcohol Abuse (F10) do not appear on the NCHS list of leading causes because of its low rate of occurrence nationwide. It does, however, rank in the top 10 leading causes of death among Alaska Native people, and was included in this report. A list of ICD-9 and ICD-10 code groupings used is included in the Appendix B.

Throughout this document, certain conditions originating in the perinatal period are listed as *perinatal conditions*; chronic liver disease and cirrhosis are referred to as *chronic liver disease*; chronic obstructive pulmonary disease is listed as *COPD*; congenital malformations, deformations and chromosomal abnormalities are listed as *congenital abnormalities*; diseases of heart are listed as *heart disease*; essential (primary) hypertension and hypertensive renal disease are listed as *hypertension*; homicide and legal intervention is listed as *homicide*; nephritis, nephrotic syndrome and nephrosis are listed as *nephritis*, and mental and behavioral disorders due to alcohol abuse are listed as *alcohol abuse*; diabetes mellitus are listed as *diabetes*.

**Age-Specific Rates**

This section examines causes of death for each age group. For the most recent time period, 2009-2013, age-specific rates for Alaska Native people were compared with age-specific U.S. White rates. Age-specific rates are not age-adjusted.

**Excess Deaths**

This section examines the ten leading causes of excess deaths among Alaska
Native people. Alaska Native deaths are considered excess if the numbers for a particular cause were greater than what would have occurred in a similarly sized U.S. White population.

Excess deaths were calculated by multiplying the age-specific and cause-specific death rates for U.S. Whites by the Alaska Native population for each age group to determine the expected number of deaths. The difference between the expected and the observed number of Alaska Native deaths was considered excess.\(^4\)

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

YPLL is an estimate of the average years a person would have lived if he or she had not died prematurely. It is an alternative to death rates that gives more weight to deaths that occur among younger people. This section lists the ten leading causes of years of potential life lost among Alaska Native people.

If the average life span for the population is 75 years, the number of years of potential life lost is calculated by subtracting the age at death for each individual from 75. Only those people who died before 75 years of age are included in the calculation.

**Service Regions**

Alaska has been divided into twelve service regions for the purpose of reporting health data. The twelve service regions are:

1) Aleutians & Pribilofs
2) Anchorage/MatSu
3) Arctic Slope
4) Bristol Bay
5) Copper River/Prince William Sound
6) Interior
7) Kenai Peninsula
8) Kodiak Area
9) Northwest Arctic
10) Norton Sound
11) Southeast
12) Yukon-Kuskokwim

In addition, the rural regions of Aleutians & Pribilofs, Copper River/Prince William Sound (Copper River/PWS), Kenai Peninsula and Kodiak Area are aggregated under the title Anchorage Service Unit-Combined Rural service region (ASU-Combined Rural service region).
Deaths were assigned to the service region in which the person was resident, regardless of place of death in Alaska. This report does not include deaths of Alaska residents who died outside of Alaska.

This section examines the ten leading causes of death for each region. More than ten causes were included if candidates for the tenth position had the same number of cases. Fewer causes were reported if causes had fewer than five cases. Causes of death with fewer than 5 cases were recorded as <5.

Appendix C contains the service regions and their corresponding Indian Health Service (IHS) service units, tribal health organizations and communities.

**Trends Over Time**

Changes in mortality rates over the period, 1980 to 2013, were analyzed for the leading causes of death among Alaska Native people statewide.

Mantel-Haenszel Chi-square tests for trend stratified by age group were used to test for a significant trend over time for each age-adjusted time period.5

Percentage change over time was calculated by subtracting the rate for the first time period from the rate for the most recent time period and dividing by the rate for the first time period.

Appendix D contains the number of deaths for Alaska Native people from each leading cause for the years 1980-2013 by time period.

**Regional Trends Over Time**

This section examines the current leading causes of death for each service region and the five preceding time periods, 1980-2013.

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1 Indian Health Service. Adjusting for Miscoding of Indian Race on State Death Certificates. Washington DC: Department of Health and Human Services, Indian Health Services;1996.


