

## 2B.

### LEADING CAUSES OF DEATH

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Beginning with the 2000 data year in Arizona (1999 nationally) two major changes have occurred that affect the computation of mortality rates, tabulation of leading causes of death and analyses of mortality data over time. First, a new revision of the International Classification of Diseases (ICD), used to classify causes of death, was implemented. The Tenth Revision (ICD-10) has replaced the Ninth Revision (ICD-9), which was in effect since 1979. Second, a new population standard for the age adjustment of mortality rates has replaced the standard based on the 1940 population and used since 1943. The new set of age-adjustment weights uses the year 2000 estimated U.S. population as a standard.

Both changes have profound effects on the comparability of mortality data and continuity in statistical trends. Age-adjusted rates can only be compared to other age-adjusted rates that use the same population standard. In this report, ALL age-adjusted mortality rates (including those for 1980, 1990, and 1996-2006) are based on the (new) 2000 standard, and they CANNOT BE compared to rates using the 1940 standard population. This is because the age structures of the 1940 and year 2000 populations differ. From 1940 to 2000 the U.S. population "aged" considerably. The age-adjusted rates based on the year 2000 standard are different because the year 2000 population standard, which has an older age structure, gives more weight than the 1940 standard to death rates at older ages where mortality is higher. More than 1,800 age-adjusted mortality rates in this report were recomputed for the new population standard so that mortality rates can be compared over time.

Breaks in comparability of mortality statistics effective with deaths occurring in 2000 also result from the implementation of ICD-10. ICD-10 is far more detailed than ICD-9, with about 8,000 categories compared with about 5,000 categories. Some of the coding rules and rules for selecting the underlying cause of death have been changed. Moreover, cause-of-death titles have been changed and the cause-of-death categories regrouped.

The new population standard and the revision of the ICD are not the only factors affecting the comparability of cause of death and the continuity of statistical trends in mortality. The mortality data for Arizona residents for 1999-2006 are not quite as complete as they used to be. There seems to be a problem with the out-of-State deaths of the residents of Arizona: their records (copies of death certificates from other states) are not always sent to the Office of Vital Records of the Arizona Department of Health Services:

| Data year   | 1996  | 1997  | 1998  | 1999 | 2000 | 2001  | 2002 | 2003 | 2004 | 2005 | 2006 |
|---|-------|-------|-------|------|------|-------|------|------|------|------|------|
| <b>Reported out-of-State deaths of AZ residents</b> | 1,608 | 1,431 | 1,569 | 792  | 844  | 1,009 | 678  | 640  | 714  | 553  | 493  |

Since mortality rates express the likelihood (or risk) of death in a specified population (i.e., all Arizona residents) regardless of the place of occurrence, missing data about the number of events in the numerator (i.e., resident deaths occurring out-of-State) continue to contribute to misrepresentation of mortality risks for Arizonans.

In particular, mortality rates for 1999-2006 were understated because the numerators used to calculate them were too small.

Another disturbing peculiarity of the mortality data collection in 2000 – 2005, are records where cause of death is missing. The majority of those records are, again, for Arizonans who died outside Arizona. Unfortunately, missing cause of death accounted for 970 records in 2001, almost as many as diabetes (1,040 deaths), and the eight leading cause of death in 2001.

| Data year                     | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 |
|-------------------------------|------|------|------|------|------|------|------|------|------|------|------|
| <b>Missing cause of death</b> | 16   | 30   | 12   | 11   | 197  | 970  | 704  | 532  | 118  | 37   | 0    |

As a result, the cause-of-death-specific numbers and rates for 2000-2005 also have been understated.

Last but not least, before data for 2000, mortality medical information was based on manual coding of an underlying death for each certificate in accordance with WHO rules, and done locally by the Office of Vital Records. Effective with the 2000 data year, cause-of-death data presented in this publication were coded by the National Center for Health Statistics, using computerized procedures of SuperMICAR (Mortality Medical Indexing and Retrieval) and ACME (Automated Classification of Medical Entities) systems.

The conversion to computerized coding contributed to at least some of the breaks in comparability over time of cause-of-death statistics for *drug-induced deaths*, *intentional self-harm (suicide)*, *firearm-suicide*, and *accidental discharge of firearms*:

| Data year                               | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 |
|---|------|------|------|------|------|------|------|------|
| <b>Drug-induced deaths</b>              | 543  | 331  | 577  | 645  | 646  | 745  | 799  | 903  |
| <b>Suicide</b>                          | 773  | 737  | 600  | 855  | 807  | 854  | 915  | 948  |
| <b>Suicide by firearms</b>              | 495  | 486  | 358  | 544  | 476  | 498  | 507  | 554  |
| <b>Accidental discharge of firearms</b> | 7    | 11   | 114  | 26   | 13   | 13   | 15   | 9    |

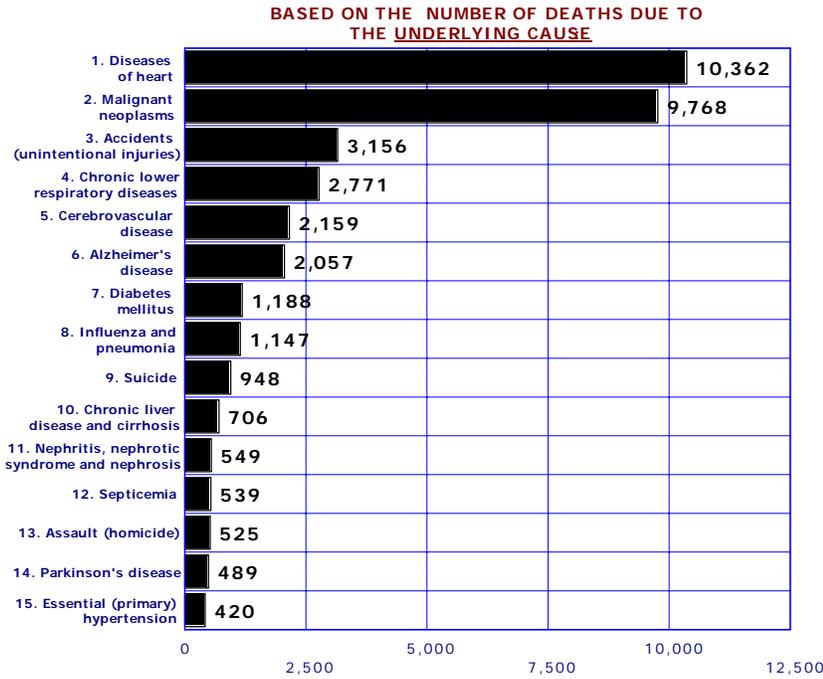
Unprecedented decline in 2001 in the number of suicides and the equally unprecedented increase in the number of firearm deaths classified as accidental are obviously associated. Approximately 100 firearm fatalities, that would have been classified as suicides had the manual coding system been in place, were classified as accidents in 2001 because the "manner of death" was not indicated and the automated coding system defaulted to accidental injury.

Coding of "non-alcoholic" conditions as "alcoholic" is the newly discovered (June 2007) and now corrected problem with SuperMICAR.

Some experience is usually necessary before the data is collected and coded as accurately and completely as possible in changed circumstances. Data in future years will indicate if this assumption is reasonable.

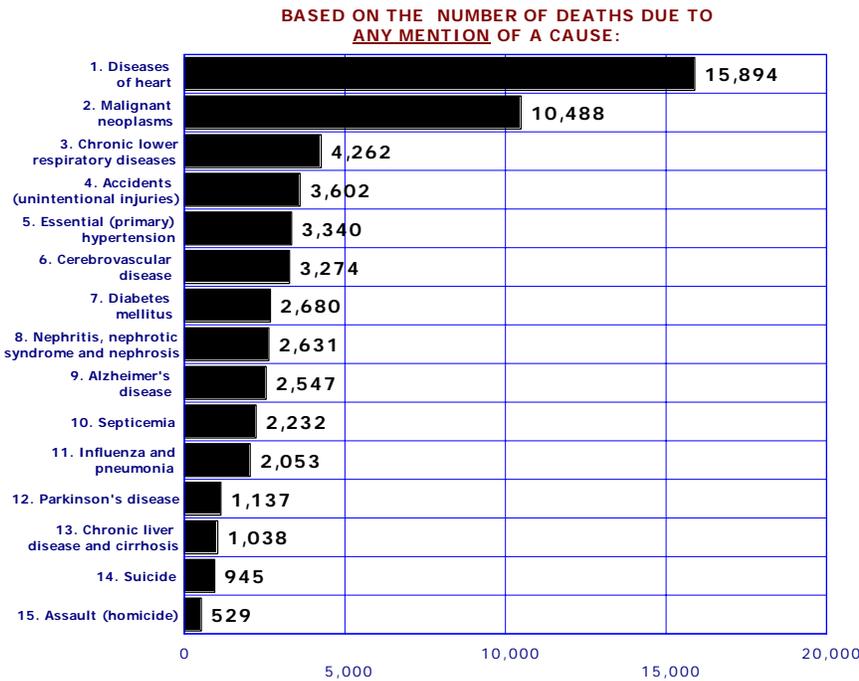
2B. LEADING CAUSES OF DEATH

**Figure 2B-1A**  
**Leading Causes of Death Among Arizona Residents**  
**in 2006**



The leading underlying cause of death to Arizona residents in 2006 continued to be *heart disease*, which accounted for 10,362 or 22.8 percent of all deaths (**Figure 2B-1A, Table 2B-1, Table 5E-14**). *Cancer* remained the second most frequent cause of death to residents of the state, being responsible for 21.5 percent of all deaths in 2006. Deaths due to *accidents (unintentional injuries)* ranked third in 2006, with 3,156 resident deaths reported. The fourth leading cause of death, *chronic lower respiratory diseases* (a title change from ICD-9 title *chronic obstructive pulmonary disease*) accounted for 2,771 or 6.1 percent of total deaths. Deaths due to *cerebrovascular disease* ranked fifth in 2006, with 2,159 resident deaths reported. In 2006, *cerebrovascular disease* accounted for 4.8 percent of all deaths. Together, these five causes accounted for 62.1 percent of total deaths in 2006. The fifteen leading causes accounted for 81 percent of all deaths among Arizona residents.

**Figure 2B-1B**  
**Leading Causes of Death Among Arizona Residents**  
**in 2006**



For the purpose of mortality statistics, every death is attributed to one underlying condition or underlying cause of death. The underlying cause is defined as the disease or injury that initiated the chain of events leading directly to death. It is selected from up to 20 causes and conditions entered by the physician on the death certificate. The totality of all these conditions is known as multiple cause of death.

In addition to 10,362 deaths that had diseases of the heart assigned as the underlying cause, another 5,532 deaths had diseases of the heart assigned as the other than underlying cause. The sum of these two counts (15,894, **Figure 2B-1B**) is the total number of deaths that had any mention of diseases of the heart on the 2006 death certificates. The ranking based on any mention of the 15 diagnostic categories is different from ranking of the leading causes of death based on the underlying cause. In particular, essential (primary) hypertension ranked 15<sup>th</sup> as the underlying cause but ranked 5<sup>th</sup> when any mention of it is counted.

## 2B. LEADING CAUSES OF DEATH Five Leading Causes by Gender

In 2006, diseases of the heart were the leading cause of death for each of the five race/ethnic groups in Arizona (**Figure 2B-2, Table 2B-4**). Cancer was the second leading cause among Asians, Black or African Americans, Hispanic or Latino and White non-Hispanics. Among American Indians, the second leading cause was unintentional injury. The third leading cause among Asians and Hispanics was unintentional injury; among American Indians cancer; among Blacks stroke; and among White non-Hispanics chronic lower respiratory diseases. Diabetes was among the top five causes of death among American Indians, Blacks and Hispanics. For both Asians and White non-Hispanics, diabetes was the 8<sup>th</sup> leading cause of death in 2006 (**Table 2B-4**).

Alzheimer's disease was the fifth leading cause of death only among White non-Hispanics. Chronic liver disease and cirrhosis was the fifth leading cause of death specific to American Indians. Stroke was the fifth leading cause of death among both Hispanic or Latino and Asian or Pacific Islanders.

**Figure 2B-2**  
Age-Adjusted\* Mortality Rates for the Five Leading Causes of Death for Both Genders by Race/Ethnicity, Arizona, 2006

| Rank | Asian or Pacific Islander     | American Indian or Alaska Native            | Black or African American    | Hispanic or Latino           | White non-Hispanic                         |
|------|-------------------------------|---|------------------------------|------------------------------|--|
| 1    | Diseases of heart<br>94.7     | Diseases of heart<br>129.4                  | Diseases of heart<br>231.9   | Diseases of heart<br>149.8   | Diseases of heart<br>168.8                 |
| 2    | Cancer<br>82.0                | Unintentional injury<br>97.2                | Cancer<br>163.5              | Cancer<br>124.7              | Cancer<br>162.8                            |
| 3    | Unintentional injury<br>19.8  | Cancer<br>83.1                              | Stroke<br>58.2               | Unintentional injury<br>52.4 | Chronic lower respiratory diseases<br>49.2 |
| 4    | Influenza & pneumonia<br>21.7 | Diabetes<br>43.9                            | Unintentional injury<br>54.8 | Diabetes<br>40.4             | Unintentional injury<br>48.7               |
| 5    | Stroke<br>18.4                | Chronic liver disease and cirrhosis<br>43.6 | Diabetes<br>43.9             | Stroke<br>37.3               | Alzheimer's disease<br>34.7                |

\*Number of deaths per 100,000 population age-adjusted to the 2000 U.S. standard.

**Figure 2B-3**  
Age-Adjusted\* Mortality Rates for the Five Leading Causes of Death by Race/Ethnicity among Females, Arizona, 2006

Cancer, not diseases of the heart, was the number one cause of death among White non-Hispanic females (**Figure 2B-3, Table 2B-4**). Diseases of the heart followed by cancer were the two top causes of female mortality among Asians, American Indians, Blacks and Hispanics. Unintentional injury was the third leading causes of death among American Indian females. It was the fourth leading cause of death among both Asian and Hispanic females.

| Rank | Asian or Pacific Islander     | American Indian or Alaska Native            | Black or African American   | Hispanic or Latino           | White non-Hispanic                         |
|------|-------------------------------|---|-----------------------------|------------------------------|--|
| 1    | Diseases of heart<br>80.2     | Diseases of heart<br>98.1                   | Diseases of heart<br>153.5  | Diseases of heart<br>124.0   | Cancer<br>138.4                            |
| 2    | Cancer<br>64.1                | Cancer<br>79.5                              | Cancer<br>127.7             | Cancer<br>98.7               | Diseases of heart<br>133.9                 |
| 3    | Stroke<br>25.9                | Unintentional injury<br>58.6                | Diabetes<br>42.3            | Diabetes<br>35.3             | Chronic lower respiratory diseases<br>44.7 |
| 4    | Unintentional injury<br>19.8  | Diabetes<br>39.5                            | Stroke<br>41.1              | Unintentional injury<br>32.2 | Alzheimer's disease<br>39.0                |
| 5    | Influenza & pneumonia<br>19.0 | Chronic liver disease and cirrhosis<br>32.7 | Alzheimer's disease<br>36.5 | Stroke<br>32.1               | Stroke<br>35.5                             |

\*Number of deaths per 100,000 population age-adjusted to the 2000 U.S. standard.

## 2B. LEADING CAUSES OF DEATH Five Leading Causes by Gender

**Figure 2B-4**  
Age-Adjusted\* Mortality Rates for the Five Leading Causes of Death by Race/Ethnicity among Males, Arizona, 2006

| Rank | Asian or Pacific Islander                  | American Indian or Alaska Native            | Black or African American    | Hispanic or Latino           | White non-Hispanic                        |
|------|--|---|------------------------------|------------------------------|---|
| 1    | Diseases of heart<br>118.5                 | Diseases of heart<br>165.1                  | Diseases of heart<br>328.6   | Diseases of heart<br>181.1   | Diseases of heart<br>210.6                |
| 2    | Cancer<br>113.2                            | Unintentional injury<br>139.8               | Cancer<br>216.0              | Cancer<br>160.9              | Cancer<br>195.5                           |
| 3    | Chronic lower respiratory diseases<br>26.2 | Cancer<br>93.9                              | Stroke<br>86.0               | Unintentional injury<br>72.9 | Unintentional injury<br>64.5              |
| 4    | Influenza & pneumonia<br>25.6              | Chronic liver disease and cirrhosis<br>54.3 | Unintentional injury<br>73.0 | Diabetes<br>46.1             | Chronic lower respiratory disease<br>55.5 |
| 5    | Essential (primary) hypertension<br>24.0   | Diabetes<br>49.3                            | Diabetes<br>49.7             | Stroke<br>43.9               | Stroke<br>27.7                            |

\*Number of deaths per 100,000 population age-adjusted to the 2000 U.S. standard.

Diseases of the heart followed by cancer were the two leading causes of death among Asian, Black, Hispanic and White non-Hispanic males (**Figure 2B-4; Table 2B-4**). Unintentional injury was the second leading cause of death among American Indian males, followed by cancer.

In 2006, the age-adjusted mortality rates for diabetes were essentially identical for American Indian, Black and Hispanic males (just under 50 deaths per 100,000 persons).

**Figure 2B-5**  
Age-Adjusted\* Mortality Rates for the Five Leading Causes of Death by Gender in Urban\*\* and Rural Areas, Arizona, 2006

| Rank | Urban male                                 | Urban female                               | Rural male                                 | Rural female                               |
|------|--|--|--|--|
| 1    | Diseases of heart<br>204.2                 | Diseases of heart<br>130.2                 | Diseases of heart<br>220.6                 | Cancer<br>142.1                            |
| 2    | Cancer<br>184.3                            | Cancer<br>128.2                            | Cancer<br>196.9                            | Diseases of heart<br>137.4                 |
| 3    | Unintentional injury<br>65.0               | Chronic lower respiratory diseases<br>40.8 | Unintentional injury<br>88.2               | Unintentional injury<br>40.0               |
| 4    | Chronic lower respiratory diseases<br>48.1 | Alzheimer's disease<br>38.3                | Chronic lower respiratory diseases<br>58.4 | Chronic lower respiratory diseases<br>37.2 |
| 5    | Stroke<br>33.7                             | Stroke<br>35.1                             | Suicide<br>35.6                            | Stroke<br>35.7                             |

\*Number of deaths per 100,000 population age-adjusted to the 2000 U.S. standard.

\*\*Urban = Maricopa, Pima, Pinal and Yuma counties. The remaining counties comprise Arizona's r

In 2006, the profile of the leading causes of death was essentially similar for the residents of the urban (Maricopa, Pima, Pinal and Yuma counties) and rural (all the remaining counties) areas of the State (**Figure 2B-5, Table 2B-5**). Diseases of the heart were the leading cause of death with cancer, unintentional injuries, chronic lower respiratory diseases and stroke, in second, third, fourth and fifth positions respectively. There were, however, three exceptions to the above pattern. Cancer exceeded diseases of the heart as the leading cause of death among rural females. Suicide, not stroke, was the fifth leading cause of death among rural males. Alzheimer's disease was the fourth leading cause of death among urban females.

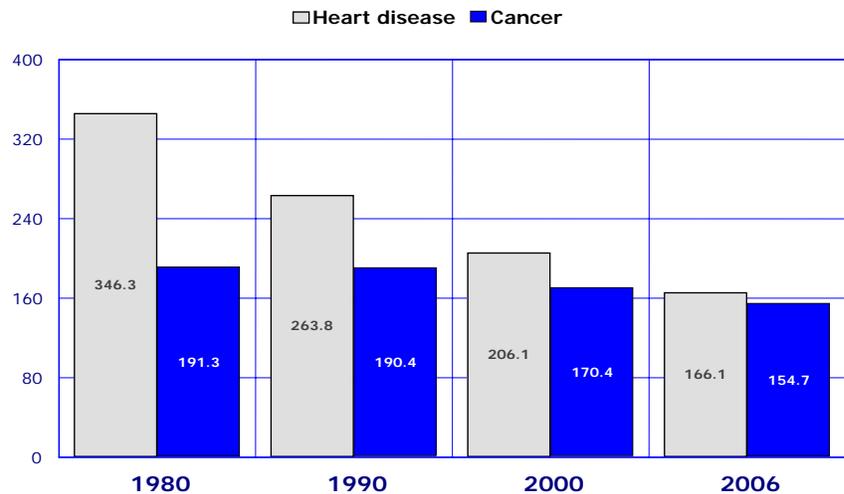
2B. LEADING CAUSES OF DEATH  
**Diseases of heart and malignant neoplasms (cancer)**

The age-adjusted mortality rate for diseases of the heart decreased by 52 percent from 346.3 deaths per 100,000 population in 1980 to 166.1/100,000 in 2006 (**Figure 2B-6**). The age-adjusted mortality rate for cancer declined substantially less by 19.1 percent during 1980-2006. In Arizona, the relative risk of death from the two leading causes narrowed from 81 percent greater for heart disease in 1980 to 7.4 percent greater in 2006. Nationally, the relative risk of death narrowed from 98 percent greater for diseases of the heart in 1980 to 17.7 percent greater in 2004 (the latest year for which the U.S. data are available).

In 2000, 1,436 more Arizonans died from diseases of the heart than cancer (**Table 2B-1**). In 2006, the number of deaths from heart disease exceeded the number of cancer deaths by 594.

The unintended consequence of the reduction in heart disease mortality is that cancer, in the near future, will replace diseases of the heart as the leading cause of death.

**Figure 2B-6**  
**Comparison of Age-Adjusted\* Mortality Rates for Diseases of Heart and Cancer (Malignant Neoplasms), Arizona, 1980, 1990, 2000 and 2006**

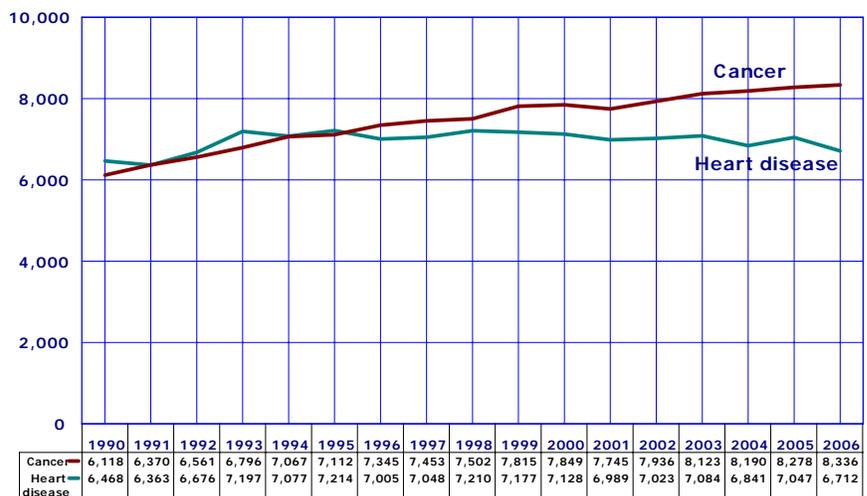


\*Adjusted to the 2000 standard U.S. population.

**Figure 2B-7**  
**Number of Deaths from Heart Disease and Cancer Among Arizonans 0-84 Years Old, 1990-2006**

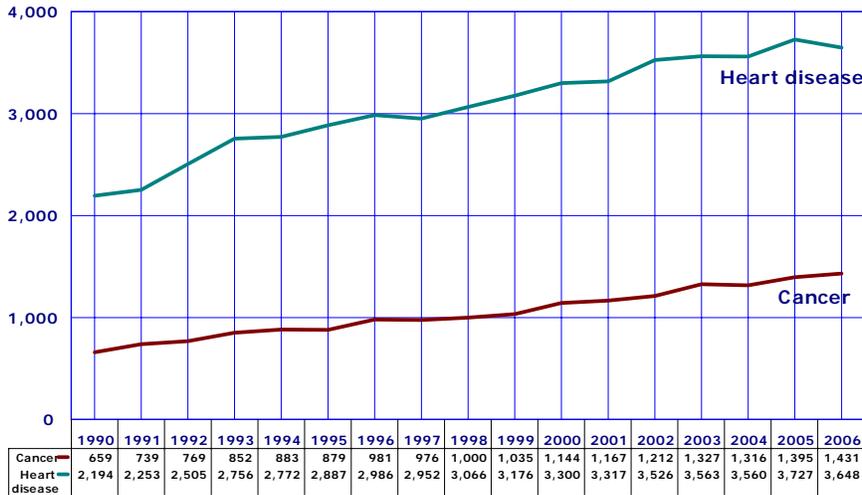
The prediction, that "in the early 21<sup>st</sup> century cancer will displace heart disease as the leading cause of death", was originally published in the 1990 edition of the *Arizona Health Status and Vital Statistics* report (p.90).

In fact, for the past ten years cancer has already been the number one cause of death among Arizonans aged 0-84 years (**Figure 2B-7**). Beginning in 1996, the annual number of cancer deaths exceeded the number of deaths from heart disease. In 2006, 1,624 more Arizonans 0-84 years old died from cancer (8,336) than heart disease (6,712).



2B. LEADING CAUSES OF DEATH  
Diseases of heart and malignant neoplasms (cancer)

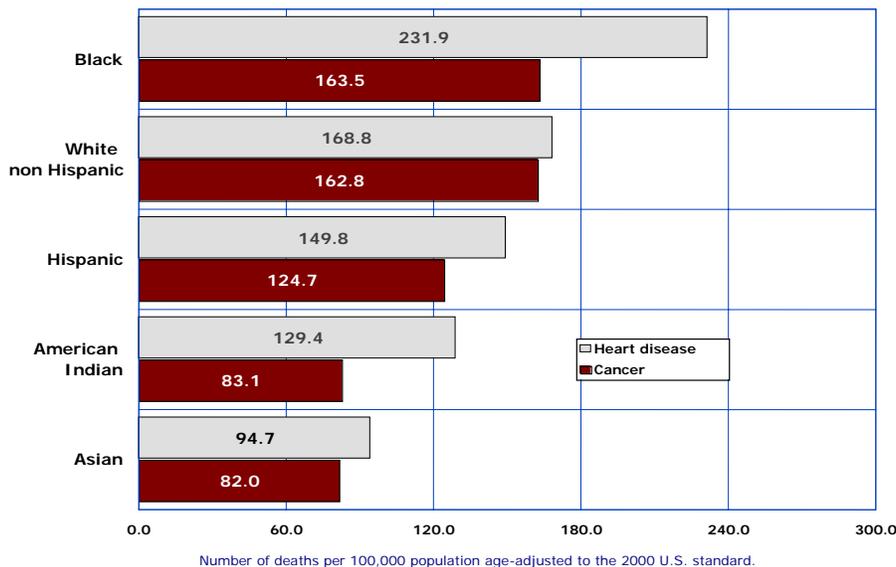
Figure 2B-8  
Deaths from Heart Disease and Cancer among Arizonans  
85+, 1990-2006



It is only among the oldest, those aged 85 years or older, that heart disease continues to be the number one cause of death (Figure 2B-8). In 2006, the elderly aged 85 years or older accounted for 14.6 percent of all deaths from cancer but 35.2 percent of all deaths from heart disease. In 2006, the median age at death from heart disease was 80 years (Table 2D-3) and only a minority of deaths (42.4 percent, Table 2D-4) was premature, i.e., before reaching the expected years of life at birth for all U.S. residents (77.9 years in 2004). Seventy percent of females who died from diseases of the heart were at least 78 years old or older in 2006.

From 1990 to 2006, the number of deaths from cancer more than doubled (an increase of 117.1 percent) among Arizonans 85 years or older, a 2 times greater rise than the one seen for diseases of the heart (a 66.2 percent increase).

Figure 2B-9  
Age-Adjusted Mortality Rates for Diseases of Heart  
and Cancer by Race/Ethnic Group, Arizona, 2006



Arizona's Blacks were 2.4 times more likely to die from diseases of the heart and 2 times more likely to die from malignant neoplasms in 2006 than Asians, the group at the lowest risk of heart disease and the 2<sup>nd</sup> lowest risk of cancer death among race/ethnic groups (Figure 2B-9, Table 2B-4).

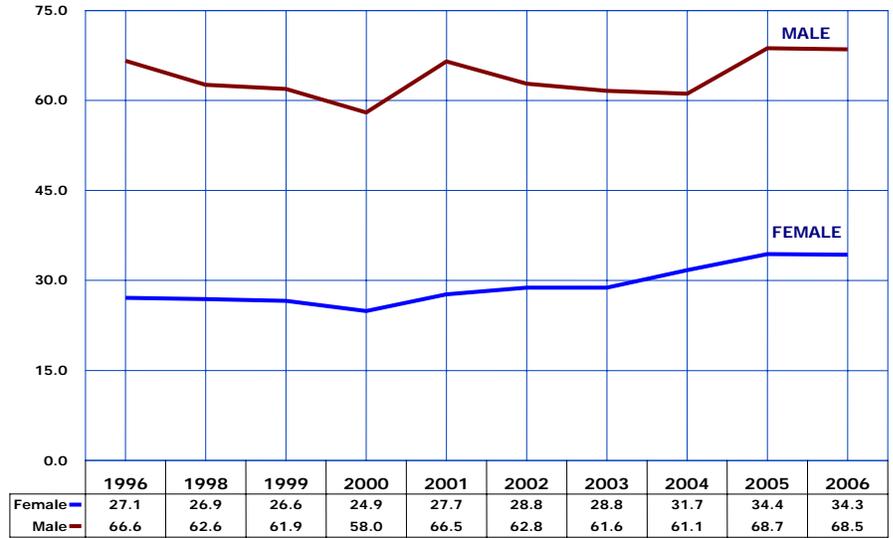
Among White non-Hispanics, the relative risk of death from the two leading causes was only 3.7 percent greater for heart disease in 2006, compared to 80 percent greater in 1980 (Table 2B-3).

2B. LEADING CAUSES OF DEATH  
**Accidents (unintentional injury)**

**Figure 2B-10**  
**Age-Adjusted Mortality Rates for Accidents (unintentional injuries) by Gender and Year, Arizona, 1996-2006**

The number of deaths from unintentional injuries increased by 50.9 percent from 2,091 in 1996 to 3,156 in 2006 (Table 2B-1). The total number of deaths from all causes increased by only 24.2 percent during that time. In 2006, accidents ranked third in leading cause of death for males and sixth for females. The mortality rates for unintentional injuries remained virtually unchanged from 2005 to 2006 for both males and females (Figure 2B-10).

Both males and females experienced particularly large increases from 1996 to 2006 in the number of accidental drug overdoses and fatal fall-related injuries. Among females, the number of drug poisoning deaths increased 4.3 times from 48 in 1996 to 205 in 2006. The number of drug overdoses doubled among males from 220 in 1996 to 441 in 2006. For both genders, the number of deaths from falls increased 2.5 times from 286 in 1996 to 702 in 2006 (Table 2B-9).

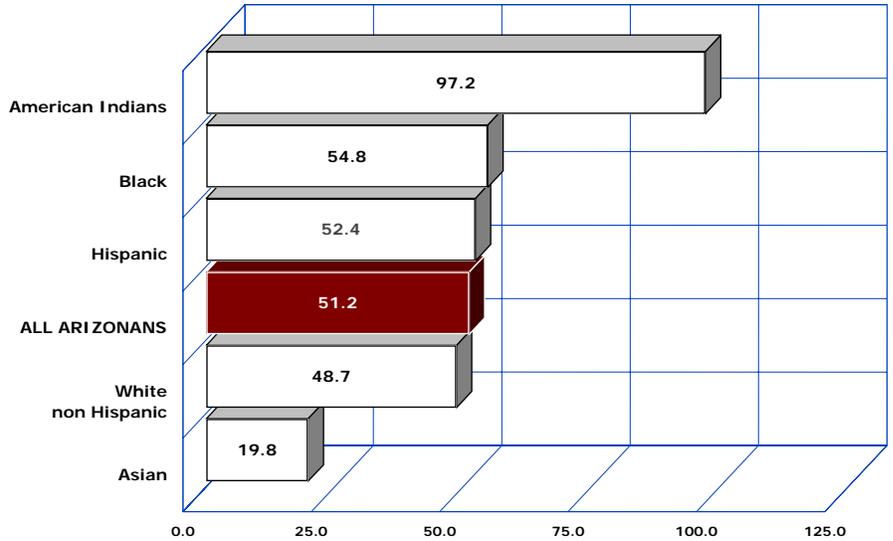


Number of deaths per 100,000 population age-adjusted to the 2000 U.S. standard.

**Figure 2B-11**  
**Age-Adjusted Mortality Rates for Accidents (unintentional injuries) by Race/Ethnic Group, Arizona, 2006**

The American Indian death rate for unintentional injuries (97.2/100,000) was 4.9 times higher than the rate for Asians (19.8/100,000), the group at the lowest risk of unintentional injury death among race/ethnic groups in the State (Figure 2B-11, Table 2B-4).

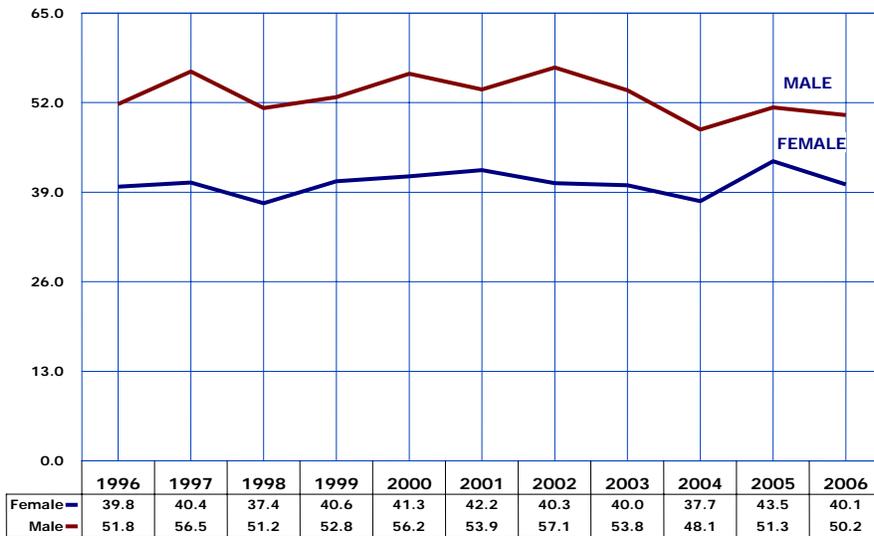
In 2006, Apache (119.8/100,000) and Navajo (96.8/100,000) counties had the two highest age-adjusted mortality rates for unintentional injuries (Table 5E-11).



Number of deaths per 100,000 population age-adjusted to the 2000 U.S. standard.

2B. LEADING CAUSES OF DEATH  
Chronic lower respiratory diseases

**Figure 2B-12**  
Age-Adjusted Mortality Rates for Chronic Lower\*  
Respiratory Diseases by Gender and Year,  
Arizona, 1996-2006

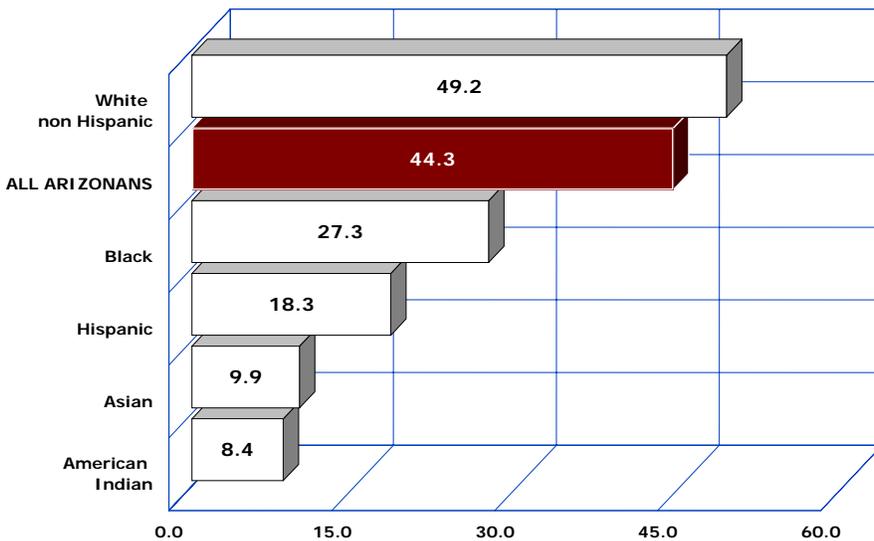


Number of deaths per 100,000 population age-adjusted to the 2000 U.S. standard.  
\* This ICD-10 title corresponds to Chronic Obstructive Pulmonary Disease (ICD-9 title).

In 2006, chronic lower respiratory diseases (bronchitis, emphysema, asthma) were the 4<sup>th</sup> leading cause of death among Arizona residents (Table 2B-1). From 2005 to 2006, the mortality rates for chronic lower respiratory diseases (CLRD) decreased for both genders (Figure 2B-12, Table 2B-2). The gender gap in CLRD mortality narrowed from 30.2 percent greater risk for males than females in 1996, to a 25.2 percent greater risk in 2006.

Rural females had the lowest mortality rate for CLRD (37.2/100,000) among the gender by region groups (Table 2B-5). Rural males, the group at the highest mortality risk for CLRD (58.4/100,000), were 57 percent more likely in 2006 to die from this cause than rural females.

**Figure 2B-13**  
Age-Adjusted Mortality Rates for Chronic Lower  
Respiratory Diseases by Race/Ethnic Group, Arizona, 2006



Number of deaths per 100,000 population age-adjusted to the 2000 U.S. standard.

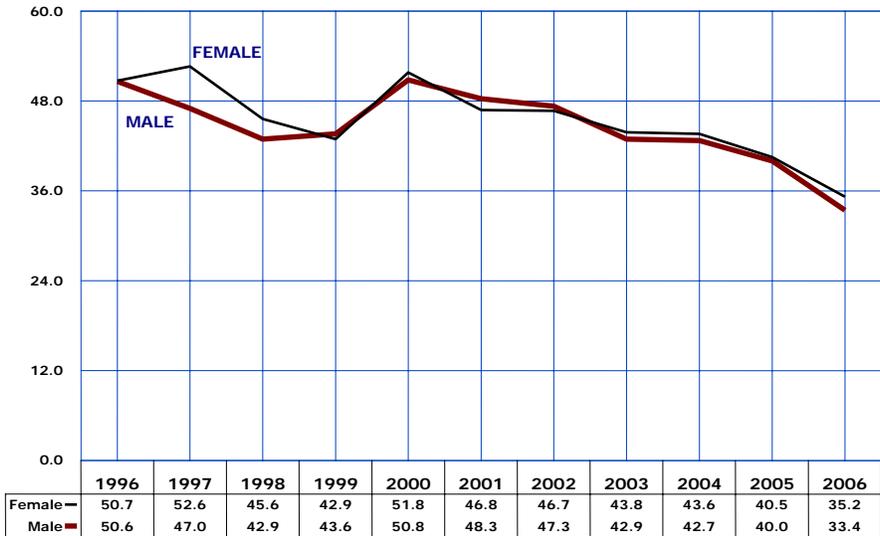
Death rates for emphysema, chronic bronchitis, asthma and other lower respiratory disorders were substantially higher among White non-Hispanics (49.2 deaths per 100,000) than they were among Blacks (27.3/100,000), Hispanics (18.3/100,000), Asians (9.9/100,000), and American Indians (8.4/1000; Figure 2B-13, Table 2B-4).

2B. LEADING CAUSES OF DEATH  
Cerebrovascular disease

**Figure 2B-14**  
Age-Adjusted Mortality Rates for Cerebrovascular  
by Gender and Year, Arizona, 1996-2006

Cerebrovascular disease and diseases of the heart are two of the leading causes of death that share many risk factors such as hypertension, smoking, obesity and high levels of cholesterol. The age-adjusted mortality rate for stroke decreased by 53.5 percent from 74.9 deaths per 100,000 population in 1980 to 34.8/100,000 in 2006 (**Figure 2B-3**).

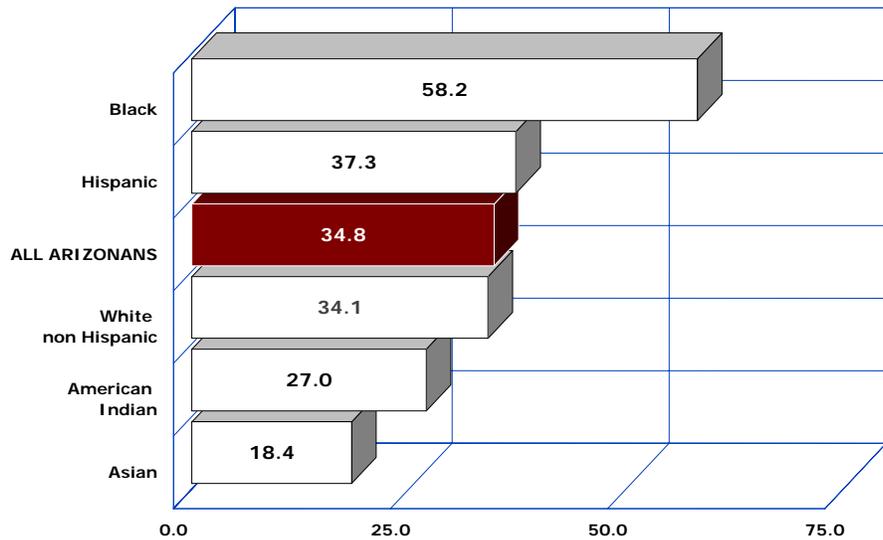
In 2006, the number of deaths from cerebrovascular disease was greater among females (1,288) than males (871, **Table 2B-4**). However, the gender differential, i.e. the ratio of female to male mortality rates was miniscule. The 2006 female mortality risk for a stroke death (35.2/100,000) exceeded the male risk of 33.4/100,000 by a mere 5 percent (**Figure 2B-14**, **Table 2B-2**).



Number of deaths per 100,000 population age-adjusted to the 2000 U.S. standard.

**Figure 2B-15**  
Age-Adjusted Mortality Rates for Cerebrovascular  
Disease by Race/Ethnic Group, Arizona, 2006

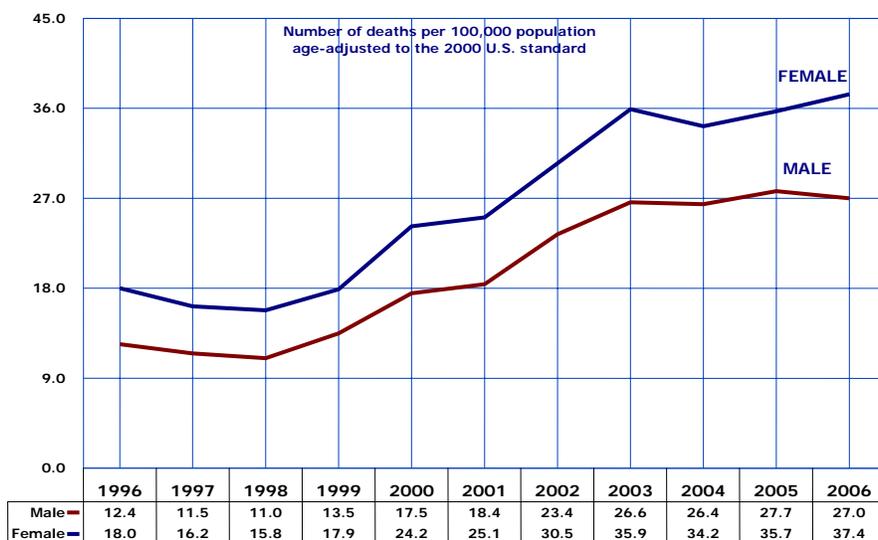
Compared to Arizona's rate, Blacks or African Americans were 67.2 percent more likely to die from cerebrovascular disease in 2006 (**Figure 2B-15**, **Table 2B-4**). The 2006 mortality rate for cerebrovascular disease among Asians (18.4/100,000) was the lowest among race/ethnic groups. American Indian males had the lowest mortality rate for cerebrovascular disease among gender by race subgroups (6.8 deaths per 100,000, **Figure 2B-4**), while Black or African American males had the highest rate of 86.0/100,000.



Number of deaths per 100,000 population age-adjusted to the 2000 U.S. standard.

2B. LEADING CAUSES OF DEATH  
Alzheimer's disease

Figure 2B-16  
Age-Adjusted Mortality Rates for Alzheimer's Disease by Gender and Year, Arizona, 1996-2006



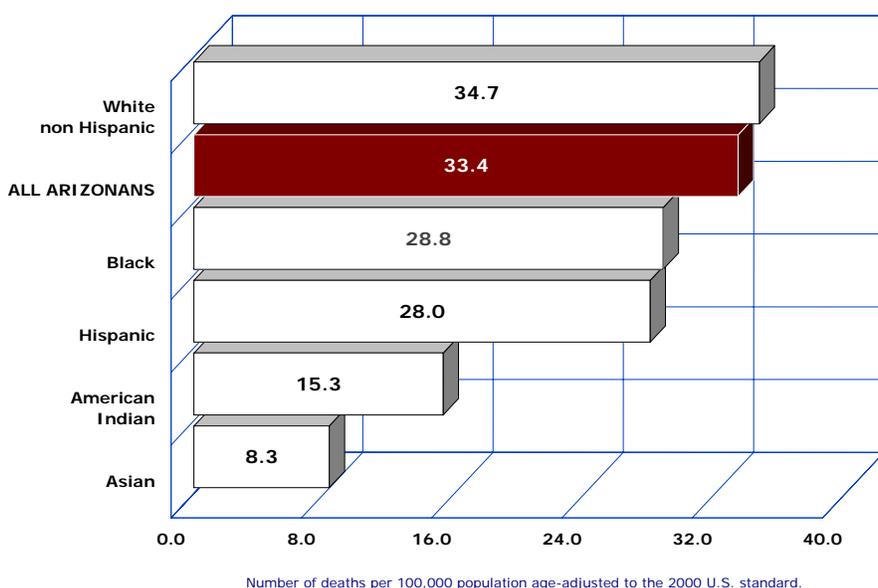
Note: The rates for 1996-1999 are comparability-modified.

Based on the number of deaths in 2006, Alzheimer's disease was the 4<sup>th</sup> leading cause of death for females and 7<sup>th</sup> leading cause for males (Table 2B-4).

The age-adjusted mortality rate for Alzheimer's disease among females increased by 4.8 percent from 35.7/100,000 in 2005 to 37.4/100,000 in 2006 (Figure 2B-16). In contrast, the age-adjusted mortality rate for Alzheimer's disease decreased for males by 2.5 percent during that time.

In 2006, the age-adjusted death rate for Alzheimer's disease was 38.5 percent higher for females than for males.

Figure 2B-17  
Age-Adjusted Mortality Rates for Alzheimer's Disease by Race/Ethnic Group, Arizona, 2006



The age-adjusted mortality rates for Alzheimer's disease in 2006 were higher among White non-Hispanic (34.7 deaths per 100,000) than they were among Black (28.8 deaths per 100,000), Hispanic (28.0/100,000), American Indian (15.3/100,000) or Asian residents of Arizona (8.3/100,000; Figure 2B-17, Table 2B-4).

White non-Hispanic residents of Arizona disproportionately contributed to mortality from Alzheimer's disease. In 2006, White non-Hispanics accounted for 60.9 percent (Table 10C-1) of the State's population, but 90.9 percent of all deaths from Alzheimer's disease (1,869 out of 2,057; Table 2B-4).

In 2006, the median age at death from Alzheimer's disease was 87 for females and 85 for males (Table 2D-3).

2B. LEADING CAUSES OF DEATH  
Diabetes

In 2006, diabetes was the 7<sup>th</sup> leading cause of death among Arizona residents. Both men and women experienced a decline in mortality rates for diabetes from 2005 to 2006 (Figure 2B-18).

In 2006, in addition to 1,188 deaths that had diabetes assigned as the underlying cause, another 1,492 deaths had diabetes assigned as a contributing factor (Figure 2B-1B). The diabetes-related death rate of 45.4/100,000 (Table 6A-6) was 2.4 times greater than the rate for diabetes as underlying cause (18.9/100,000, Table 2B-2).

The diabetes-related death rate includes all mentions of diabetes on the death certificate as the underlying or other than underlying cause.

Figure 2B-18  
Age-Adjusted Mortality Rates for Diabetes  
by Gender and Year, Arizona, 1996-2006

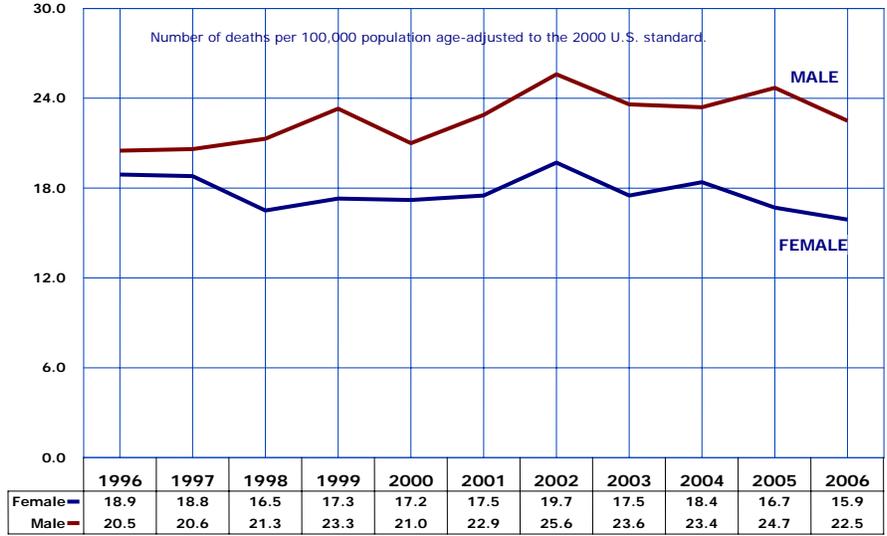
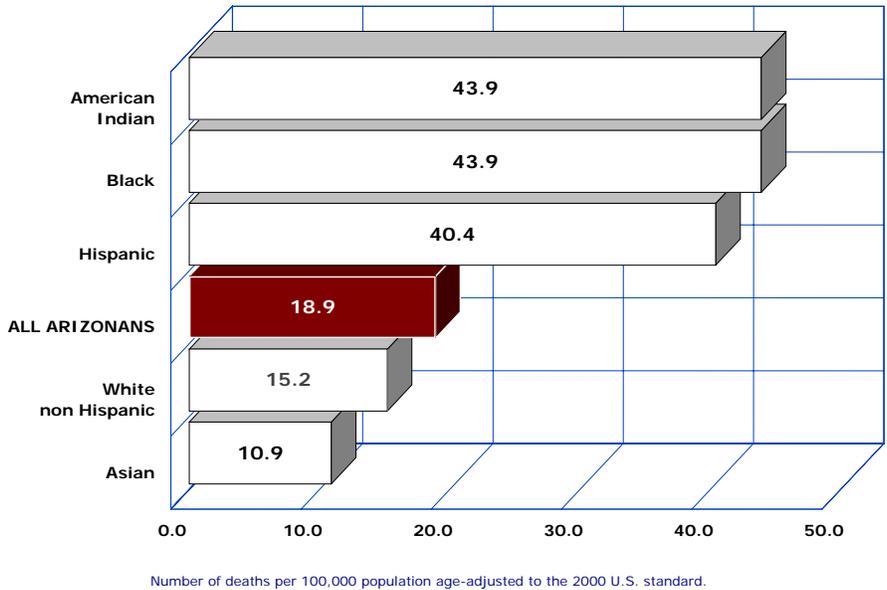


Figure 2B-19  
Age-Adjusted Mortality Rates for Diabetes  
by Race/Ethnic Group, Arizona, 2006

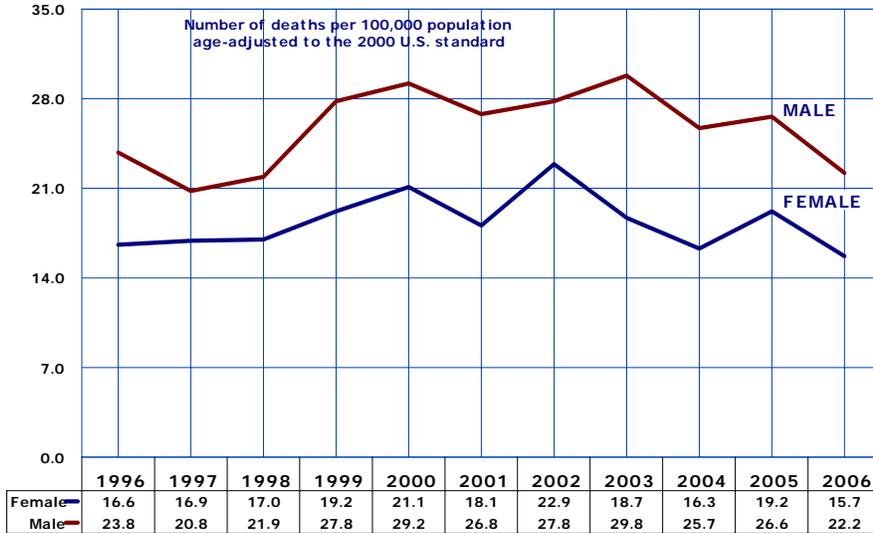
In 2006, the age-adjusted mortality rates for diabetes were equally high among Blacks and American Indians (43.9 deaths per 100,000) (Figure 2B-19, Table 2B-4). The rate of 10.9 deaths per 100,000 among Asians was the lowest rate among race/ethnic groups in the State.

Among the 15 Arizona counties, in 2006 Gila (35.9/100,000), Mohave (32.7/100,000) and Apache (32.0/100,000) had the highest mortality rates for diabetes (Table 5E-11).



2B. LEADING CAUSES OF DEATH  
**Influenza and pneumonia**

**Figure 2B-20**  
**Age-Adjusted Mortality Rates for Influenza and Pneumonia**  
**by Gender and Year, Arizona, 1996-2006**



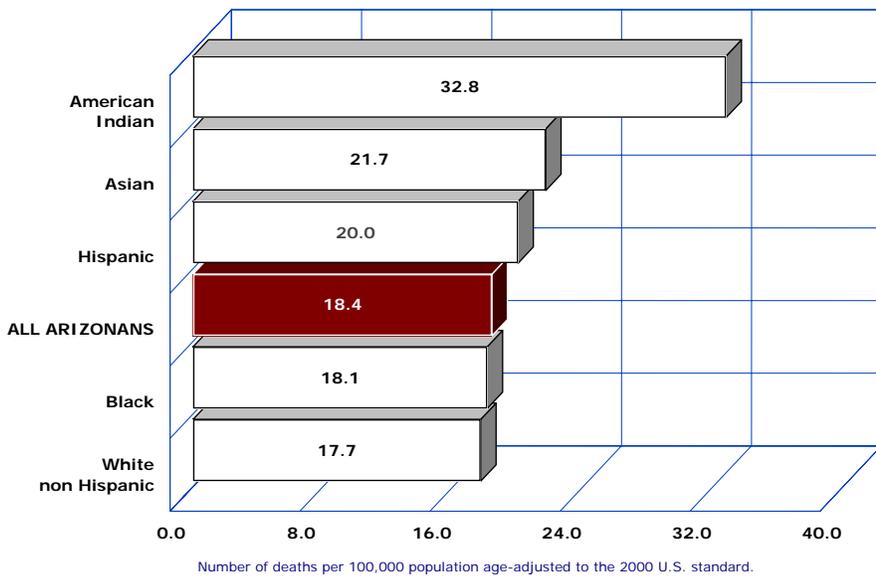
Note: The rates for 1996-1999 are based on the number of deaths according to ICD-9. The rates for 2000 and beyond are based on the number of deaths according to ICD-10. For comparability, the rates for 1996-1999 are adjusted using the preliminary comparability ratio of 0.6982 from NCHS. Comparability ratio of 1.0 indicates that the same number of deaths was assigned to a cause of death whether ICD-9 or ICD-10 was used.

In 2006, influenza and pneumonia were ranked the 7<sup>th</sup> leading cause of death for both males and females. Among the 1,147 deaths, influenza was identified as the underlying cause for 18 of them, while pneumonia was listed as the underlying cause on 1,129 death certificates (Table 2B-6).

The mortality rate for influenza and pneumonia decreased for females from 19.2 deaths per 100,000 in 2005 to 15.7 deaths in 2006 (Figure 2B-20, Table 2B-2). The mortality rate for influenza and pneumonia also decreased for males from 26.6 deaths per 100,000 in 2005 to 22.2/100,000 in 2006.

In 2006, Arizona males were 41.4 percent more likely to die from influenza and pneumonia than females.

**Figure 2B-21**  
**Age-Adjusted Mortality Rates for Influenza and Pneumonia**  
**by Race/Ethnic Group, Arizona, 2006**



In 2006, American Indian residents of Arizona had the highest mortality rate for influenza and pneumonia (32.8 deaths per 100,000) among the race/ethnic groups. The age-adjusted mortality of 17.7/100,000 among White non-Hispanics was the lowest rate among race/ethnic groups in the State (Figure 2B-21, Table 2B-4).

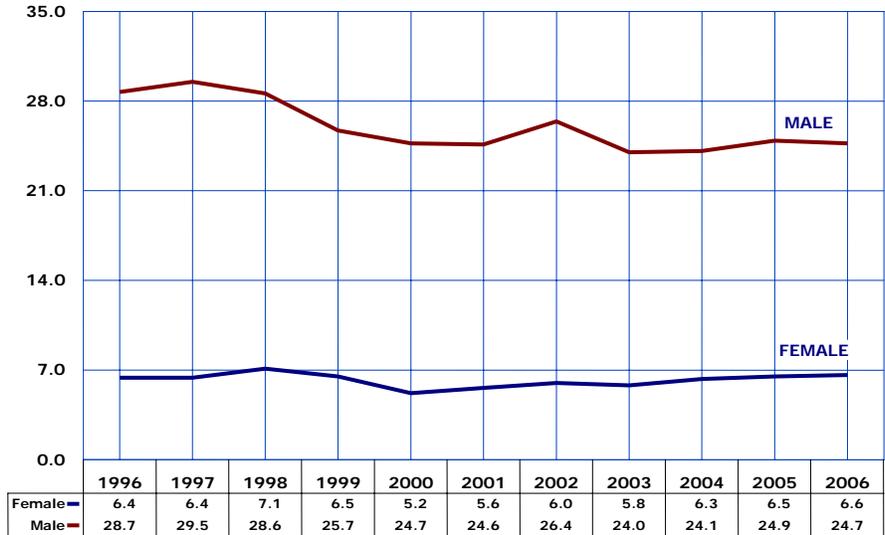
Compared to the State death rate for influenza and pneumonia, Apache County's rate was 1.8 times greater (33.8/100,000), and Navajo County's 1.6 times greater (29.8/100,000; Table 5E-11).

2B. LEADING CAUSES OF DEATH  
Suicide

Figure 2B-22  
Age-Adjusted Mortality Rates for Suicide by Gender  
and Year, Arizona, 1996-2006

In 2006, suicide was the 6<sup>th</sup> leading cause of death among males. It was not ranked among the top ten causes of mortality for females. The age-adjusted suicide rate increased for the second consecutive year for females from 6.3 suicides per 100,000 in 2004 to 6.5 in 2005 and 6.6/100,000 in 2006 (Figure 2B-22, Table 2B-3). In contrast, the 2006 male mortality risk for intentional self-harm (24.7/100,000) slightly decreased by 0.8 percent from the 2005 rate of 24.9 suicides per 100,000 males.

In 2006, suicide posed a 3.7 times greater mortality risk for males (24.7/100,000) than females (6.6/100,000).

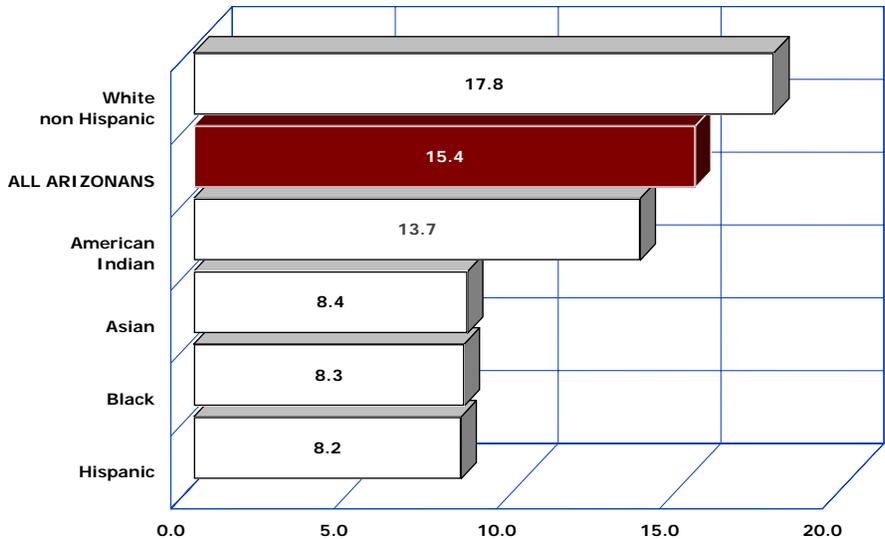


Number of deaths per 100,000 population age-adjusted to the 2000 U.S. standard.

Figure 2B-23  
Age-Adjusted Mortality Rates for Suicide by Race/Ethnic Group,  
Arizona, 2006

Suicide rates in 2006 were substantially higher among White non-Hispanics (17.8 suicides per 100,000), than they were among American Indians (13.7/100,000) Asians (8.4/100,000), Blacks (8.3/100,000), and Hispanics (8.2/100,000; Figure 2B-23, Table 2B-4).

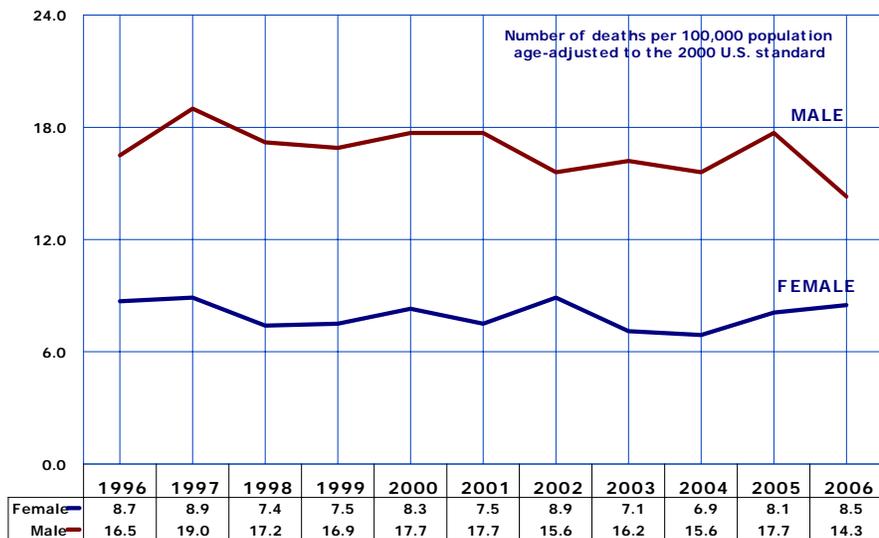
The age-adjusted mortality rates varied in Arizona in 2006 from 8.1 suicides per 100,000 residents of La Paz to 26.1 suicides per 100,000 residents of Navajo County (Table 5E-11).



Number of deaths per 100,000 population age-adjusted to the 2000 U.S. standard.

2B. LEADING CAUSES OF DEATH  
**Chronic liver disease and cirrhosis**

**Figure 2B-24**  
**Age-Adjusted Mortality Rates for Chronic Liver Disease and Cirrhosis by Gender and Year, Arizona, 1996-2006**

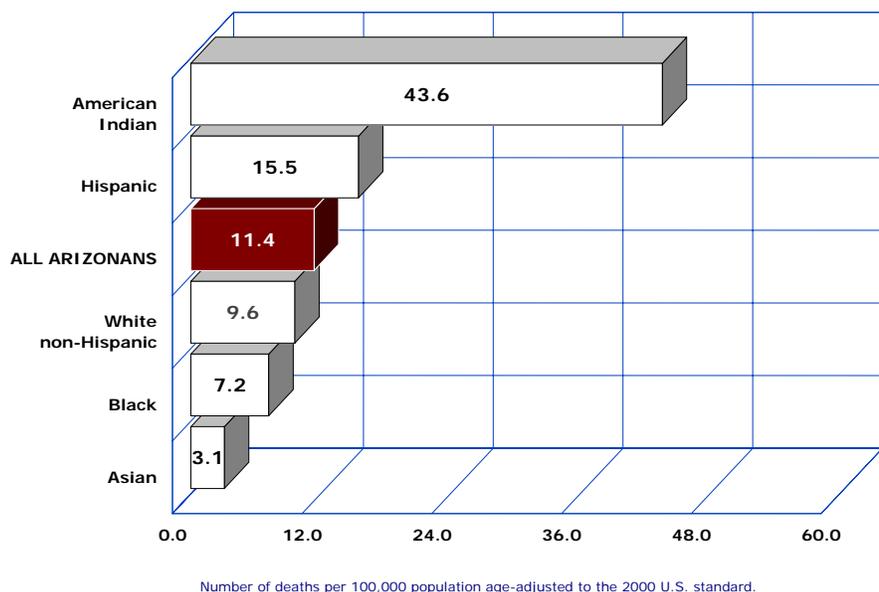


Chronic liver disease and cirrhosis was the 10<sup>th</sup> leading cause of death in Arizona in 2005 (**Figure 2B-1, Table 2B-1**). Among the 706 deaths due to chronic liver disease and cirrhosis, 426 (60.3 percent) were males (**Table 2B-4**).

The temporal changes from 2005 to 2006 in mortality from chronic liver disease and cirrhosis differed by gender, increasing by 4.9 percent for females and decreasing by 19.2 percent for males (**Figure 2B-24, Table 2B-3**).

In 2006, Graham, Gila and Navajo counties had the highest mortality rates for chronic liver disease and cirrhosis (**Table 5E-11**)

**Figure 2B-25**  
**Age-Adjusted Mortality Rates for Chronic Liver Disease and Cirrhosis by Race/Ethnic Group, Arizona, 2006**



The 2006 death rate for chronic liver disease and cirrhosis among American Indians (43.6 deaths per 100,000) was 14.1 times greater than the rate among Asians (3.1/100,000) (**Figure 2B-25, Table 2B-4**). The rate for Hispanics (15.5 deaths per 100,000 population) was the second highest among racial/ethnic groups in the State.

Compared to the median age at death from all causes (76 years), those who died from chronic liver disease and cirrhosis were 18 years younger (58 years, **Table 2D-3**).