In 2010, the Office of Vital Records (OVR) of the Arizona Department of Health Services implemented the new (2003) Standard U.S. death certificate. The new certificate added several new questions: 1) whether tobacco use contributed to the death, and 2) whether, if the decedent was a female, the death was “pregnancy-associated” (defined as death from any cause during pregnancy or within one calendar year of delivery or pregnancy termination).

The death certificate now includes a new classification of the decedent’s racial/ethnic status, consistent with the revised federal standards for collecting and reporting racial and ethnic status. These standards were published in the Federal Register on October 30, 1997, as “Revisions to the Standards for the Classification of Federal Data on Race and Ethnicity.” The revised standards are available on the OMB (the Office of Management and Budget) web-site at: https://www.whitehouse.gov/omb.

There are now 15 racial categories (including Guamanian or Chamorro; Samoan or Native Hawaiian) to choose from. It is also permitted to indicate more than one race for a decedent. To create frequency counts of race and ethnicity that were adequate to compute statistically reliable mortality rates, race was “bridged”, or essentially collapsed into 5 categories; White non-Hispanic, Hispanic or Latino, Black or African American, Native American or Alaska Native, and Asian or Pacific Islander. When an individual was identified as both Hispanic and any other race, that person was added to the racial/ethnic group with the lowest population. For example, a person identified as both White and Hispanic would be coded as Hispanic, where a person identified as American Indian and Hispanic would be coded as American Indian. Please refer to the technical appendix for further explanation of the racial bridging used in this report.
B. LEADING CAUSES OF DEATH

Based on the number of deaths (but not age-adjusted mortality rate), the leading underlying cause of death to Arizona residents in 2017 was heart disease (12,285 or 21.5 percent of all deaths), closely followed by cancer, which accounted for 11,917 or 20.8 percent of deaths (Figure 2B-1A, Table 2B-1, Table 5E-14).

The third leading cause of death, accidents (unintentional injuries), accounted for 4,085 or 7.1 percent of total deaths. Deaths due to chronic lower respiratory diseases ranked fourth in 2017, with 3,779 resident deaths reported. Deaths due to Alzheimer’s disease ranked fifth in 2017, with 3,050 resident deaths reported. Together, these five causes accounted for 61.3 percent of total deaths in 2017. The fifteen leading causes accounted for 80.8 percent of all deaths among Arizona residents.

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 12,285 deaths that had diseases of the heart assigned as the underlying cause, another 12,165 deaths had diseases of the heart assigned as a secondary cause of death. The sum of these two counts (24,450, Figure 2B-1B) is the total number of deaths that had any mention of diseases of the heart on the 2017 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 hypertension ranked 10th as the underlying cause but ranked 3rd when any mention of it was counted.
It is important to note that (Figures 2B-2, 2B-3, 2B-4, and 2B-5) are based on the age-adjusted mortality rates and not on the number of deaths.

In 2017, diseases of the heart were the leading cause of death for all race/ethnic groups, except for Asian or Pacific Islanders. Cancer was the second leading cause of death for White non-Hispanics, Hispanic or Latinos, and Black or African Americans. Unintentional injury was among the third leading cause of death for White non-Hispanics, Hispanics, Blacks, and Asians or Pacific Islanders while it ranked second among American Indians. (Figure 2B-2, Table 2B-4).

In 2017, chronic lower respiratory diseases were the fourth leading cause of death specific to White non-Hispanics and Alzheimer’s disease was the fifth leading cause of death specific to this race/ethnic group. In parallel, chronic liver disease and cirrhosis ranked fifth among the leading causes of death for American Indians alone. (Table 2B-4).

Based on age-adjusted mortality rates, cancer was the leading cause of death among White non-Hispanic, Hispanic, and Asian females. Diseases of the heart were the leading cause of death specific to Black and American Indian females (Figure 2B-3, Table 2B-4).

Chronic lower respiratory diseases were the third leading cause of death specific to White non-Hispanic females. Chronic liver disease and cirrhosis was unique to American Indian women and ranked fifth among the leading causes of death.
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, 2017

<table>
<thead>
<tr>
<th>Rank</th>
<th>White non-Hispanic</th>
<th>Hispanic or Latino</th>
<th>Black or African American</th>
<th>American Indian or Alaska Native</th>
<th>Asian or Pacific Islander</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Diseases of heart 183.4</td>
<td>Diseases of heart 144.9</td>
<td>Diseases of heart 210.0</td>
<td>Diseases of heart 217.2</td>
<td>Cancer 121.4</td>
</tr>
<tr>
<td>2</td>
<td>Cancer 167.7</td>
<td>Cancer 130.9</td>
<td>Cancer 164.8</td>
<td>Cancer 114.6</td>
<td>Diseases of heart 105.3</td>
</tr>
<tr>
<td>3</td>
<td>Unintentional injury 71.5</td>
<td>Unintentional injury 61.4</td>
<td>Unintentional injury 89.3</td>
<td>Unintentional injury 206.1</td>
<td>Unintentional injury 31.2</td>
</tr>
<tr>
<td>4</td>
<td>Chronic lower respiratory diseases 49.7</td>
<td>Diabetes 48.7</td>
<td>Diabetes 49.5</td>
<td>Diabetes 101.9</td>
<td>Chronic lower respiratory diseases 29.6</td>
</tr>
<tr>
<td>5</td>
<td>Intentional Self-harm Suicide 33.8</td>
<td>Stroke 38.1</td>
<td>Stroke 45.6</td>
<td>Chronic liver disease and cirrhosis 85.4</td>
<td>Stroke 26.2</td>
</tr>
</tbody>
</table>

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

Based on age-adjusted mortality rates, diseases of the heart followed by cancer were the two leading causes of death among males for all the race/ethnic groups except Asian or Pacific Islander males (Figure 2B-4; Table 2B-4). Unintentional injury ranked third position for all race/ethnic groups.

In 2017, based on the age-adjusted mortality rates, diabetes was among the fourth leading causes of death for Hispanic, Black, and American Indian males, while chronic lower respiratory diseases was the fourth for White non-Hispanic and Asian or Pacific Islander males.

In 2017, the profile of the leading causes of death differed by gender for 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 exceeded cancer as the leading causes of death among both rural males and females. Diseases of the heart were the leading cause of deaths for urban males while cancer was the top leading cause for rural males.

Alzheimer’s disease was the third leading cause of death among urban females but the fifth among rural females. Chronic lower respiratory diseases were the fourth leading cause of death in urban areas and among rural males, while it was the third among rural females. Among the fifth leading cause of death, diabetes was specific to urban males while suicide was specific to rural males.

Figure 2B-5
Age-adjusted Mortality Rates* for the Five Leading Causes of Death by Gender in Urban* and Rural Areas, Arizona, 2017

<table>
<thead>
<tr>
<th>Rank</th>
<th>Urban male</th>
<th>Urban female</th>
<th>Rural male</th>
<th>Rural female</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Diseases of heart 169.7</td>
<td>Cancer 115.3</td>
<td>Diseases of heart 212.0</td>
<td>Diseases of heart 121.2</td>
</tr>
<tr>
<td>2</td>
<td>Cancer 156.6</td>
<td>Diseases of heart 106.4</td>
<td>Cancer 174.2</td>
<td>Cancer 121.0</td>
</tr>
<tr>
<td>3</td>
<td>Unintentional injury 66.4</td>
<td>Alzheimer’s disease 40.3</td>
<td>Unintentional injury 99.0</td>
<td>Chronic lower respiratory diseases 49.5</td>
</tr>
<tr>
<td>4</td>
<td>Chronic lower respiratory diseases 41.7</td>
<td>Chronic lower respiratory diseases 39.0</td>
<td>Chronic lower respiratory diseases 58.7</td>
<td>Unintentional injury 49.3</td>
</tr>
<tr>
<td>5</td>
<td>Diabetes 29.8</td>
<td>Unintentional injury 34.3</td>
<td>Intentional Self-harm (suicide) 47.1</td>
<td>Alzheimer’s disease 36.2</td>
</tr>
</tbody>
</table>

Notes: * 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 rural areas.
The age-adjusted mortality rate for diseases of the heart decreased by 36.0 percent from 221.6 deaths per 100,000 population in 1997 to 141.9/100,000 in 2017 (Figure 2B-6). The age-adjusted mortality rate for cancer declined less, by 23.6 percent, from 1997-2017. In Arizona, the relative risk of death from heart disease versus cancer changed from 23.9 percent greater in 1997 to 3.9 percent less in 2017.

In 2007, 192 more Arizonans died from diseases of the heart than cancer (Table 2B-1). In 2017, the number of deaths due to the diseases of heart exceeded by 368 cases (Table 2B-4).

For the past several years, cancer has 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 2017, 2,392 more Arizonans 0-84 years old died from cancer (9,908) than heart disease (7,516).
2B. LEADING CAUSES OF DEATH
Diseases of heart and malignant neoplasm (cancer)

Figure 2B-8
Deaths from Heart Disease and Cancer among Arizonans 85+, 2007-2017

Among Arizonans age 85 and over, heart disease is the number one leading cause of death by a wide margin. In 2017, adults aged 85 and over accounted for 16.9 percent of all deaths from cancer but 38.8 percent of all deaths from heart disease. In 2017, the median age at death for heart disease was 80 years (Table 2D-3); and a minority of deaths (44.6 percent, Table 2D-4) were premature, i.e., before reaching the expected years of life at birth for all U.S. residents (78.8 years).

However, from 2007 to 2017, the number of deaths from cancer increased by 33.6 percent among Arizonans 85 years or older, more than the increase observed in diseases of the heart (31.0 percent increase).

Figure 2B-9
Age-adjusted Mortality Rates* for Heart Disease and Cancer by Race/Ethnicity, Arizona, 2017

In Arizona, Black or African Americans were 1.9 times more likely to die from diseases of the heart and 1.6 times more likely to die from malignant neoplasms in 2017 than Asians, the group with the lowest risk of each respective cause of death (Figure 2B-9, Table 2B-4). Compared to Asians, White non-Hispanic Arizonans were 1.7 times more likely to die of heart disease and 1.4 times more likely to die of cancer.

In 2017, the relative risk of death from heart disease exceeded cancer mortality risk (Table 2B-3) for all the racial/ethnic groups, except for Asians.

Note: * Number of deaths per 100,000 population age-adjusted to the 2000 U.S. standard.
2B. LEADING CAUSES OF DEATH
Accidents (unintentional injury)

The number of deaths from unintentional injuries increased by 14.6 percent from 3,403 in 2015 to 3,899 in 2016 (Table 2B-1). In 2017, based on age-adjusted mortality rates, accidents ranked third as a leading cause of death for males and fifth for females (Table 2B-4). From 2016 to 2017, the age-adjusted mortality rate for accidents increased 0.9 percent for males compared to 6.02 percent for females (Figure 2B-10).

In 2017, 979 deaths were caused by motor vehicle accidents, an increase of 1.2 percent from 2016. Heat induced mortality has seen a 9.1 percent spike from 2016 to 2017. Deaths due to accidental drowning and submersion increased slightly by 0.9 percent over this period. Additionally, Arizonans experienced a 15.9 percent increase in the number of accidental poisonings due to drugs and/or medicaments from 2016 (1,095) to 2017 (1,269); Table 2B-9.

The American Indian death rate for unintentional injuries (142.0/100,000) was 5.8 times greater than the rate for Asians 24.3/100,000), the group at the lowest risk of unintentional injury death among racial/ethnic groups in the State (Figure 2B-11, Table 2B-4).

In 2017, Apache (142.7/100,000) and Navajo (105.2/100,000) counties had the two highest age-adjusted mortality rates for unintentional injuries (Table 5E-11).
In 2017, chronic lower respiratory diseases (bronchitis, emphysema, asthma) were the 4th leading cause of death among Arizona residents (Table 2B-1). From 2016 to 2017, the mortality rate for chronic lower respiratory diseases decreased almost at the same rate for both males and females (Figure 2B-12, Table 2B-2).

Urban females had the lowest mortality rate for chronic lower respiratory diseases (39.0/100,000) among the genders and by regional group (Table 2B-5). Rural males were the group with the highest mortality risk for chronic lower respiratory diseases (58.7/100,000), followed by rural females (49.5/100,000) and urban males (41.7 deaths per 100,000).

Mortality rates for emphysema, chronic bronchitis, asthma, and other lower respiratory disorders were substantially higher among White non-Hispanics (48.0 deaths per 100,000) than any other race/ethnic groups. Hispanics recorded the lowest rate at 19.9 deaths per 100,000 population (Figure 2B-13, Table 2B-4).
2B. LEADING CAUSES OF DEATH

Cerebrovascular diseases

Diseases of the heart and cerebrovascular diseases 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 cerebrovascular diseases increased by 0.15 percent from 30.6 deaths per 100,000 population in 2007 to 30.7/100,000 in 2017 (Table 2B-3).

With some exceptions, the risk of dying from cerebrovascular diseases was generally higher among females than males for the period 2007-2017. In 2012, the age-adjusted mortality rate for cerebrovascular diseases was greater among males than females, with male risk being slightly higher than female risk (Figure 2B-14). In 2015, as in 2017, males experienced a higher risk of dying from cerebrovascular diseases than females. (Figure 2B-14, Table 2B-2).

Compared to Arizona’s overall rate, Black or African Americans were 60.2 percent more likely to die from cerebrovascular diseases in 2017 (Figure 2B-15, Table 2B-4). The 2017 mortality rate for cerebrovascular diseases among Asians (23.6/100,000) was the lowest among racial/ethnic groups.
2B. LEADING CAUSES OF DEATH

Alzheimer’s disease

Based on the number of deaths in 2017, Alzheimer’s disease was the 4th leading cause of death for females and 7th leading cause for males (Table 2B-4).

From 2016 to 2017, the age-adjusted mortality rate for Alzheimer’s disease decreased for both genders, at 39.5/100,000 for females and 29.2/100,000 for males (Figure 2B-16).

The age-adjusted mortality rates for Alzheimer’s disease in 2017 were higher among Black or African Americans (39.5/100,000), White non-Hispanics (36.1/100,000), and Hispanics (33.6/100,000) than among Asian residents of Arizona (16.9/100,000) or American Indian (12.7/100,000) (Figure 2B-17, Table 2B-4).

White non-Hispanic residents of Arizona disproportionately contributed to mortality from Alzheimer’s disease. In 2017, White non-Hispanics accounted for 56.4 percent (Table 10C-1) of the State’s population, but 85.4 percent of all deaths from Alzheimer’s disease (2,604 out of 3,050; Table 2B-4).

In 2017, the median age at death from Alzheimer’s disease was 88 for females and 86 for males (Table 2D-3).
2B. LEADING CAUSES OF DEATH

Diabetes

In 2017, mortality rates for diabetes decreased for both genders, and to a greater extent among males than females (Figure 2B-18).

In addition to 2,037 deaths that had diabetes assigned as the underlying cause in 2017, another 3,409 deaths had diabetes assigned as a contributing factor. The diabetes-related death rate of 64.7/100,000 (Table 6A-6) was 2.7 times greater than the rate for diabetes as an underlying cause (23.8/100,000; 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.

In 2017, compared to Arizona’s rate, American Indians were 3.4 times more likely to die from diabetes (81.6 deaths per 100,000; Figure 2B-19, Table 2B-4). The rate of 18.1 deaths per 100,000 among White non-Hispanics was the lowest rate among all racial/ethnic groups in the State.

Among the 15 Arizona counties, in 2017, Apache (55.4/100,000), Graham (60.2/100,000) and Greenlee (37.5/100,000) counties had the highest mortality rates for diabetes (Table 5E-11).
2B. LEADING CAUSES OF DEATH
Influenza and pneumonia

The number of deaths from influenza and pneumonia decreased by 2.6 percent from 875 in 2007 to 852 in 2017. (Table 2B-1). Among the 852 deaths, influenza was identified as the underlying cause for 118 of them, while pneumonia was listed as the underlying cause on 734 death certificates (Table 2B-6).

The mortality rate for influenza and pneumonia decreased for females from 9.4 deaths per 100,000 in 2016 to 8.9 deaths in 2017 (Figure 2B-20, Table 2B-2). The mortality rate for influenza and pneumonia also decreased for males from 11.8 deaths per 100,000 in 2016 to 11.1/100,000 in 2017.

In 2017, the age-adjusted mortality rate for Arizona males was 24.7 percent greater than that of Arizona females.

In 2017, American Indian residents of Arizona had the highest mortality rate for influenza and pneumonia (25.0 deaths per 100,000) among the racial/ethnic groups. The age-adjusted mortality of 9.3/100,000 among White non-Hispanics and Blacks was the lowest rate among racial/ethnic groups in the State (Figure 2B-21, Table 2B-4).

Compared to the State death rate for influenza and pneumonia, Greenlee County’s rate was 4.1 times greater (40.7/100,000). The mortality rate was also higher in Apache, Graham, and Yuma Counties (Table 5E-11).
In 2017, based on age-adjusted mortality rates, suicide was the 8th leading cause of death among males. It ranked as the 11th cause of mortality for females. The age-adjusted suicide rate increased from 17.7 suicides per 100,000 in 2016 to 18.0 in 2017 (Table 2B-4).

From 2016 to 2017, the suicide rate increased for both genders, but more so among females than males (Figure 2B-22, Table 2B-4). In 2017, suicide posed a 3.3 times greater mortality risk for males (28.1/100,000) than for females (8.4/100,000).

In 2017, American Indians had the highest age-adjusted suicide rate (26.2 suicides per 100,000) among racial/ethnic groups, followed by White non-Hispanics (22.1/100,000), while Hispanics recorded the lowest age-adjusted suicide rate (8.5/100,000; Figure 2B-23, Table 2B-4).

The age-adjusted mortality rates for suicide varied in Arizona in 2017 from a low rate of 4.3 suicides per 100,000 residents in Santa Cruz County to a high of 46.2 suicides per 100,000 residents of La Paz County (Table 5E-11).
Chronic liver disease and cirrhosis was the 9th leading cause of death in Arizona in 2017 (Figure 2B-1, Table 2B-1). Among the 1,122 deaths due to chronic liver disease and cirrhosis, 690 (61.5 percent) were males (Table 2B-4).

Among females, the age-adjusted mortality rate for chronic liver disease and cirrhosis decreased 0.5 percent from 2016 to 2017. Among males, the mortality rate decreased 8.9 percent from 19.8/100,000 in 2016 to 18.0/100,000 in 2017 (Figure 2B-24, Table 2B-3).

In 2017, Apache, Gila, Navajo, and La Paz counties had the highest mortality rates for chronic liver disease and cirrhosis (Table 5E-11).

The 2017 death rate for chronic liver disease and cirrhosis among American Indians (74.0 deaths per 100,000) was 5.2 times greater than the state average (14.2/100,000; Figure 2B-25, Table 2B-4). The rate for Blacks (4.6 deaths per 100,000 population) was the lowest among all 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 on average 17 years younger (59 years, Table 2D-3). In 2017, the median age at death of American Indians who died from chronic liver disease and cirrhosis was 51 years, which was on average 10 years younger than all the other race/ethnic groups (Table 2D-3).