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Technical Report

# Motor Vehicle Traffic Crashes as a Leading Cause of Death in the U. S., 1997

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## Highlights for 1997

- ! From the 1997 NCHS data, it was determined that motor vehicle traffic crashes ranked 8th behind heart disease, cancer and stroke as a leading cause of death in the United States, accounting for 42,340 lives or 1.8% of total deaths for the year. This was about 1 out of every 55 deaths that occurred. For males, traffic crashes were the 8th ranked cause of death accounting for 1 out of every 41 male deaths, or a total of 27,913 lives. For females they were the 10th ranked cause of death, claiming 14,427 lives, or 1 out of every 80 female deaths that occurred.
- ! While nontransport accidents (e.g. falling, poisoning, drowning, etc.) ranked first among both males and females as an external cause of death, traffic crashes still ranked a close second for both sexes, though accounting for different proportions of deaths in each case: almost 1 out of every 4 male deaths due to external causes, and about 1 out of every 3 such deaths for females. For both sexes combined, the likelihood of dying from a traffic crash was 38% as great as dying as a result of suicide, twice as great as dying from homicide, and 17.6 times as great as being killed in a crash involving some other mode of transport such as a railway train, aircraft or a boat.
- ! Traffic crashes caused almost one-half of all *accidental* deaths that occurred, about 45% of all such deaths for males and 42% for females. When comparing unintentional deaths in 1997 for both sexes combined, the likelihood of dying from a traffic crash was 4 times as great as dying from falling (generally the No. 2 cause of accidental death, regardless of year), 4.2 times dying from poisoning , 9.3 times dying from Accidental Suffocation and 12.2 times dying in a fire.
- ! For both sexes combined, traffic crashes were a major (i.e., ranked as 1, 2, 3, or 4) cause of death for all ages 1-43. They were the No. 1 cause for every age 6-33, and ranked 2-4 and 2-6 as a leading cause for ages 1-5 and 34-43, respectively. For males, they were also a major cause of death for ages 1-44. They were the No. 1 cause for every age 7-11, 13-31 and 33, and ranked 2-5 for ages 1-6, and 12 and ranked 2-6 for ages 32-43. For females, they were a major cause of death for ages 1-40; first ranked for every age 4-28; and ranked 2-5 for ages 1-3 and ranked 2-3 for ages 29-40.
- ! For the following ages, traffic crashes were the leading cause of death:
  - Ages 6-33 for both sexes combined* : there were 18,357 traffic deaths. This was 23.5% of the death total for the age group and 60.8% of all the traffic deaths that occurred.
  - Ages 7-11, 13-31 and 33 for males* : there were 12,146 traffic deaths. This was 26% of all the male deaths at these ages, 43.5% of the total for male traffic deaths.
  - Ages 4-28 for females* : there were 7,402 traffic deaths. This was 29.3% of the female death total

for the age group and 51% of the total for female traffic deaths.

- ! Fifty percent of all persons killed in traffic crashes were under the age of 36. For all males killed in traffic crashes, half were under 36 and for all females killed in traffic crashes half were under 39.
- ! For ages 1-40, where traffic crashes were a major cause of death for both sexes, 2.2 times as many males as females died as a result of traffic crashes (16,610 versus 7,402), and the male risk of traffic death was also about 2.2 times the female risk at these ages.
- ! For ages 45 and above, where traffic crashes were not a major cause of death for either sex, only 1.5 times as many males as females died in traffic crashes (9,557 versus 6,215), but the male risk of traffic death for these ages was still almost twice the female risk.
- ! For both sexes combined, ages 18-21 had the highest single-age incidence of traffic deaths, with a total of 4,663 victims for all four ages. This was 32.8% of all deaths at these ages, 54.3% more than from homicide, the second ranked cause at these ages, and 11.0% of total traffic deaths for all ages. For males, the highest incidence of traffic deaths occurred at ages 18-21, with 3,360 victims. For females, ages 16-19 experienced the highest incidence of traffic deaths, with 1,571 deaths for all five ages combined. The death rates for these ages for males and females were 44.5 and 21.2, respectively. This was double the average death rate due to traffic deaths for all ages (21.4 and 10.5).
- ! For males aged 11-19, there was a very high correlation between traffic crash deaths and homicides; for most ages of this interval, the death counts associated with each cause were generally in very close agreement. For the entire age interval, there were 3,872 male traffic deaths, which was 60% more than the 2,418 male homicide deaths. Homicide was the 2<sup>nd</sup> leading cause of male deaths for ages 16-19 and ranked 4-6 for male death for ages 11-15. For traffic crashes, it was the No.1 cause of male death for ages 11, 13-19 and the No.2 cause for age 12. For females, traffic crash deaths were relatively uncorrelated with homicide.
- ! Involvement in traffic crashes does not disappear with advancing age. For males aged 70 and over, there were 3,439 traffic deaths. While this was only 12.3% of total traffic deaths for males of all ages, the male risk of traffic deaths for these ages was 67% above the average risk of traffic death for males of all ages. For females aged 70 and over, there were 2,831 traffic deaths, or almost 19.6% of the female traffic death total for all ages, and the female risk of traffic death for these ages was 11.5% below the average for females of all ages.
- ! The average age of death from all causes was 71.1 years (67.1 for males and 75.2 for females), whereas the average age for those killed in motor vehicle traffic crashes was 39.9 years (38.6 for males and 42.4 for females).

- ! Deaths, percentages and age-adjusted death rates have been provided by the race and ethnicity of the deceased. The statistics for the 6 leading causes of death and/or motor vehicle traffic crashes have been compared for 4 races, namely White, African-American, Native American and Asian/Pacific-Islander as well as for people of Hispanic origin.
- ! For Whites, motor vehicle traffic crashes were ranked 7th for males and 10th for females accounting for 23,074 male and 12,043 female deaths in 1997. The corresponding age-adjusted death rates were 20.9 per 100,000 resident population and 10.1, respectively.
- ! For African-Americans, motor vehicle traffic crashes were ranked 10th for males and 14th for females accounting for 3,830 male and 1,45 female deaths in 1997. The corresponding age-adjusted death rates were 24.5 and 9.7, respectively.
- ! For Native Americans, motor vehicle traffic crashes were ranked 3rd for males and 5th for females accounting for 469 male and 233 female deaths in 1997. The corresponding age-adjusted death rates were 41.8 and 20.3, respectively. These rates were the highest among all the ethnic groups concerned, namely Whites, African-Americans, Native Americans and Asian/Pacific-Islander.
- ! For Asian/Pacific-Islander, motor vehicle traffic crashes were ranked 5th for males and 6th for females, accounting for 628 male and 406 female deaths in 1997. The corresponding age-adjusted death rates were 12.4 and 7.7, respectively. These rates were the lowest among all the ethnic and race groups concerned.
- ! For people of Hispanic Origin, motor vehicle traffic crashes were ranked 3<sup>rd</sup> for males and 6th for females accounting for 3,071 male and 1,157 female deaths in 1997. This was 5.7% of all male deaths and 2.8% of all female deaths. Traffic crashes were the No.1 cause of male death for ages 3-10, 12-14, 28, 31 and 33. For these ages, they were responsible for 384 deaths or 19.9% of all male deaths at these ages. For females, traffic crashes were the No.1 cause of death for ages 3-4, 6-10 and 14-28. For these ages, traffic crashes were responsible for 483 deaths or 27.9% of all the female deaths at these ages. The overall age-adjusted death rates due to motor vehicle traffic crashes was 21.0 for males and 8.4 for females, close to the age-adjusted death rates due to traffic crashes for people of all origin (21.1 and 10.0).
- ! In 1997, by the *State of Residence* of the deceased, 3,726 deaths related to traffic crashes occurred in the state of California, more than that for any other state. For both sexes, the highest death rate due to traffic crashes was in the state of Mississippi (31.6 versus a National Average of 15.8). The lowest death rate for both sexes was in Massachusetts (8.1). The highest rank as a cause of death due to motor vehicle crashes for both sexes was 6 for the states of Georgia, Mississippi and Montana. For males, the highest rank was 5 for Alabama, Georgia, Mississippi, South Carolina and Texas and for females, it was 6 for Nevada and Wyoming.

## 1. Introduction

This report examines the status of motor vehicle traffic crashes as a leading or major cause of death in the United States in 1997. It is based on a study, by age and sex, of the rank-ordering<sup>1</sup> of 64 causes of death which have been adopted by the National Center for Statistics and Analysis (NCSA) of the National Highway Traffic Safety Administration (NHTSA) to study the leading causes of death in the U.S. This study was originally prompted by a number of unanswered questions regarding adequate background material and appropriate information pertaining to the general concept of motor vehicle traffic crashes as a leading cause of death. The more important of these questions are the following:

1. The general statement “...traffic crashes are the 6th (or 7th or 8th, etc.) leading cause of death in the United States...” is frequently made without proper qualification and, as such, is not only unclear as to specific meaning but leaves a great deal to be desired in the way of adequate information about the topic. For example, to what extent is this statement true? For all ages combined, or only for certain specific ages? For both sexes separately, or only for both sexes combined? How do traffic crashes rate in rank-order as a cause of death relative to other-top ranked causes? That is, are traffic crashes a major or minor sixth or seventh-ranked cause? What are the top-ranked causes of death in the U.S. and does this ranking tend to be the same from one year to another?

2. A closely related statement “...traffic crashes are the leading cause of death between the ages of X and Y years...” can also prove misleading, if made without proper qualification, and leaves a number of questions unanswered. For example, is this statement true for every single age or just for all ages combined for the stated age interval? For what minimum age interval does the statement apply to every age of the interval? For what maximum age interval does the statement hold true for all ages combined? In either case, by what margin in number or percentage of deaths are traffic crashes the leading cause of death over lesser-ranked causes? Does the statement apply to each sex separately or only to both sexes combined?

3. What data are generally used for cause-of-death studies? The data used for this study<sup>2</sup> are based on complete mortality information for the United States for the year 1997, obtained from the National Center for Health Statistics (NCHS) of the U.S. Department of Health and Human Services. These data are compiled annually by the NCHS from a census of death records (certificates) furnished by the 50 states, the District of Columbia and the independent death registration areas representing the five boroughs of New York City. Although the United States death registration system also includes Puerto Rico, the Virgin Islands, Guam, American Samoa, and the Commonwealth of the Northern Marianas, the term “United States” in this report refers only to the aggregate of the 50 states (including New York City) and the District

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<sup>1</sup>Rank based on number of deaths.

<sup>2</sup>Obtained from public-use data files by the NCHS for computer usage. See Reference 1.

of Columbia<sup>3</sup>. Complete and fully edited mortality data are generally not available to the public until approximately 2 to 3 years after the calendar year of the data.

4. How are causes of death categorized? Any study of rank-orderings of data is ultimately dependent upon how the data in question is classified in the first place. The mortality data from NCHS are categorized as to cause of death according to the International Classification of Diseases (ICD)<sup>4</sup>, and the specific data used for this report reflect, for each death, a single underlying cause as opposed to multiple causes of death. This single underlying cause of death is defined to be:

- a. That disease or injury which initiated the train of events leading directly to death, or
- b. The circumstance of the crash or violence which produced the fatal injury.

Currently, 914 single underlying causes have been adopted by the ICD as basic (3-digit) death cause categories; 722 are classified on the basis of internal bodily disease or disorder, and the remaining 192 are classified on the basis of bodily injury arising from external factors such as crashes or acts of violence (e.g., homicide, suicide), adverse effects of surgical/medical care, legal interventions or operations of war. These 192 mortality categories do not include any of the injury and poisoning categories (the “N-codes”), but include only those that reflect externally-caused death. Based on these 914 single underlying causes, as categorized by the ICD, the NCSA has adopted a reduced listing comprising 64 causes of death<sup>5</sup> in order to more effectively study the leading causes of death, and the role of motor vehicle traffic crashes as a leading cause, in the United States. This 63-cause listing consists of 14 of the single underlying causes in addition to the 49 “aggregated” causes, which are the result of grouping together highly related causes from the remaining 900 single causes. The 14 underlying causes which have been retained, and not grouped with other possible related causes, consist of prominent related diseases or disorders such as septicaemia, diabetes mellitus, multiple sclerosis, etc., each of which take a significant toll of human life. The 49 aggregated, on the other hand, consist of groups of biologically related internal bodily disorders or logically related external causes which are better studied and more easily understood as grouped causes. For example, all diseases of the circulatory system which are heart-related are grouped together and considered under the comprehensive designation “Diseases of the Heart”. All of the many different and complex forms of malignancy are considered as “Malignant Neoplasms”. Similarly all of the many different kinds of

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<sup>3</sup>For additional details regarding sources, definitions and classifications of mortality data for the United States, see Reference 2.

<sup>4</sup>Ninth Revision, International Classification of Diseases, 1975. The ICD is regulated by the World Health Organization (WHO) and is currently supported by more than 60 member nations, including all the major world powers except India. Also currently not included are a number of African states and other small countries. For additional details regarding ICD, see Reference 3.

<sup>5</sup>See Table 1 of the Appendix to the Report.

crashes that do not involve transport vehicles or other transport conveyances in motion (e.g., falling, poisoning, drowning, etc.) are simply considered “Nontransport Accidents”.

The NCSA-adopted listing of 64 causes of death is comprehensive in that all 914 underlying causes are represented. Fifty-six of these 64 adopted causes reflect the 722 underlying causes based on internal morbid bodily conditions, while the remaining 7 NCSA-adopted causes reflect the 192 underlying causes based on external factors such as crashes and acts of violence. This 63-cause listing is also not an arbitrary listing, but is generally in close agreement with a special listing of death causes used by the NCHS to report on leading causes of death in the United States<sup>6</sup>. The latter differs from the NCSA listing primarily in causal areas related to infectious diseases that currently result in only small numbers of deaths (e.g., whooping cough, measles, syphilis, etc.), but are of continuing interest as a public health concern, and, secondarily, in those areas relating to accidental death. For example, the NCHS listing of the leading causes of death shows only two breakdowns for accidental death, namely, total motor vehicle crashes and all other crashes/adverse effects, neither of which is included, per se, in the ranking process. The NCSA listing, on the other hand, provides for a rank-ordered breakdown of accidental death into 4 basic categories of obvious importance to NHTSA: motor vehicle traffic, motor vehicle nontraffic, other transport and nontransport accidents. In general, however, leading causes that are responsible for large number of deaths such as heart disease, cancer, stroke, chronic pulmonary diseases, etc. are virtually identical in both listings.

5. Finally, there may be some confusion regarding the distinction between “leading cause” and “major cause” of death. For this study, a “leading cause” of death for any population grouping is considered to be any one of the 10-15 top ranked causes for that grouping. A “major cause” of death is merely an abbreviation for “major leading cause” of death and is generally considered to be among the three or four top-ranked causes. When not first-ranked, the importance of a death cause relative to other death causes, in terms of number of resulting deaths, is determined by the evaluation of associated raw death counts or scores initially expressed as “standard scores”. This is a statistical scoring procedure widely used in educational and psychological testing<sup>7</sup>.

Using a valid classification of causes of death, the primary purpose of this report then, is to provide clear and concise information on traffic crashes as the leading causes of death in the United States, in relation to basic population demographics (age and sex), and in relation to other leading causes. This is the fourth in the series of such reports. The first report on this topic examined deaths occurring during calendar year 1979. This was the first year of implementation of revised cause-of-death classifications under the 9th

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<sup>6</sup>NCHS cause-of-death rankings are based on the 73 Selected Causes of Death and the categories of Human Immunodeficiency Virus (HIV) Infection and Alzheimer’s Disease. See discussion of NCHS procedure for cause-of-death rankings on page 11 of Section 7 (Technical Appendix) of reference 2, and refer to Table 2 of the Appendix to this report for the NCHS-adopted listing of 39 death causes for ranking purposes.

<sup>7</sup>Reference 4.

Revision of the ICD and, as a consequence, 1979 provides a convenient base year for data comparisons with subsequent years. The results of this initial study were presented in a technical report dated February, 1997, which reviews the U.S. mortality experience for calendar year 1992. A following technical report dated March 1998 reviewed the U.S. mortality experience for calendar year 1994.

The population data used to compute the death rates shown in this report are the latest estimated resident population of the United States as of July 1, 1997, as determined by the Bureau of the Census<sup>8</sup>. All deaths and death rates shown reflect U.S. resident data only. Nonresident deaths in the U.S. are fully recorded, but nonresident population figures are generally not available due to the difficulty of estimating the number of nonresidents living or traveling in the U.S. during any given year. Consequently, all death rates are computed only with fully compatible (i.e., resident) data in both numerator and denominator. All mortality statistics, then, reflect only resident data.

Unless otherwise specified, all death rates shown are “crude” death rates, that is, they represent the actual death rates prevailing in the U.S. for 1997, by stated cause of death, for each specific population subgroup. They are the number of annual deaths resulting from each stated cause for any subgroup, divided by the estimated mid-1997 population for that subgroup, multiplied by 100,000. Some death rates shown, however, are “age-adjusted”. These represent the average of crude death rates for specific population subgroups which have been adjusted to eliminate differences in the age composition of the U.S. population for 1997, as compared to that of a “standard” population for the United States. To date, the total resident population of the U.S. as enumerated in 1940 is usually selected as the standard population; this practice has generally been followed in this report. When the death rates are age-adjusted according to a different standard population, this is indicated in the text. Age-adjusted death rates show what the level of mortality would be if there were no changes in the age composition of U.S. population from one year to the next, or from one subgroup (e.g., sex, race etc.) To another, for any given year. They are better indicators than unadjusted (crude) death rates for showing changes in death rates over a period of time when the age distribution of the population is changing. They are also better indicators for comparisons of mortality between subgroups of the population (e.g., race, sex) with different age distributions<sup>9</sup>.

It is also important to point out that the annual traffic crash death counts obtained by NCHS mortality data are approximately 2% as great as those obtained from NHTSA’s Fatality Analysis Reporting System (FARS). The primary reason for the discrepancy between the two data sources lies in reporting differences. FARS reports on fatal traffic crashes occurring during the calendar year, but includes only those in which death occurs within 30 days of the crash. On the other hand, the NCHS data include all traffic deaths occurring during the calendar year, even if the crash took occurred during the previous year.

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<sup>8</sup>Reference 7.

<sup>9</sup>For additional details regarding crude death rates, age-adjusted according to NCHS procedures, see Reference 2. For additional details regarding general standardization procedures for crude death rates, see Reference 8 or 9.

However, all deaths from motor vehicle crashes that occur more than one year after the crash are categorized as due to “late effects of motor vehicle crash”. Since no other crash information is provided (e.g., traffic or nontraffic occurrence, occupant of vehicle or pedestrian, etc.), these deaths are usually excluded from the annual NCHS summaries of deaths from motor vehicle crashes. There are very few of these, generally about 300-400 per year.

Section 2 of this report examines motor vehicle traffic crashes and the other three major leading causes of death, for all ages combined. Section 3 presents an overview of major leading causes of death at different levels, while Section 4 analyzes traffic crashes as a leading cause at these ages. Section 5 examines deaths and death rates from traffic crashes among older persons.

## **2. Major Leading Causes of Death for All Ages Combined**

In 1997, a total of 2,314,245 deaths occurred among the residents of the United States; 445 less than in 1996 and 2,113 more than in 1995. The age-adjusted death rate<sup>10</sup> for 1997 was 601.9 per 100,000 (U.S. Standard Million) population, and life expectancy at birth for the total population was 76.5 years, an increase of 0.7 years compared with the life expectancy in 1996, with females expected to outlive males by an average of 5.2 years (79.9 years for females vs. 74.7 years for males). Nearly 0.5 percent more females than males died during the year (1,154,039 males and 1,160,206). The age-adjusted death rate for males was 60 percent as great as that for females (601.9 versus 374.8).

Exhibits 1 and 2 present data on the 15 leading causes of death in 1997 for males and females of all ages, respectively while Exhibit 3 presents similar data for both sexes combined. These 15 leading causes accounted for approximately 86% of the total deaths for each sex. The first 3 leading causes for both sexes and all ages in 1997 were: (1) diseases of the heart; (2) malignant neoplasms (cancer); and (3) cerebrovascular diseases (stroke). These three causes have remained unchanged in order of ranking as the first 3 leading causes of death for both sexes for many years. Motor vehicle traffic crashes on the other hand, while ranking 8th as a cause of death for males and ranked 10th for females and both sexes combined.

### ***Diseases of the Heart***

In 1997, this No. 1 cause of death in the United States was responsible for 356,598 male and 370,376 female deaths (726,974 total) or approximately 3 out of every 10 deaths of persons of either sex, about 31% of the male deaths and 32% of the female deaths. The resulting age-adjusted death rate for both sexes combined of 130.1 deaths per 100,000 population was somewhat lower than that for 1995 (138.3 deaths per 100,000 population) and consistent with the general downward trend for heart disease since 1950. In 1997, the age-adjusted death rate from heart disease for males was almost twice the rate for females (172.7 versus 95.1, per 100,000 resident population).

### ***Malignant Neoplasms (Cancer)***

It was the nineteenth consecutive year since 1979 in which cancer, the second-ranked cause of death in the U.S. accounted for more than 500,000 deaths for the year (281,110 male and 258,467 female). This amounted to more than 2 out of every 10 male or female deaths that occurred (about 24% and 22% of the total male and female deaths, respectively). The total age-adjusted death rate from cancer decreased slightly between 1995 and 1997 (from 130.0 to 125.4), in contrast to the general upward trend that has

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<sup>10</sup>All crude population death rates in this document are deaths per 100,000 resident population. All death rates designated as “age-adjusted” in this section have been age-adjusted according to NCHS procedures. For additional details, see Reference 2.

prevailed since 1950. In 1997, the age-adjusted male death rate due to cancer was 1.4 times the rate for females (150.1 versus 107.1).

### ***Cerebrovascular Diseases (Stroke)***

Stroke was the No. 3 killer in 1997 and accounted for 62,564 male and 97,227 female deaths, for a total of 159,791 deaths for the year, or about 1 out of every 15 deaths for males and females combined (6.9% of the total). The age-adjusted death rate from stroke for both-sexes combined was 25.8 deaths per 100,000 population, slightly lower than the rate for 1995 (26.7). The age-adjusted male death rate due to stroke was almost 1.1 times the female rate (27.8 versus 24.1).

### ***Motor Vehicle Traffic Crashes***

In 1997, traffic crashes resulted in 42,340 total male and female deaths compared with 42,331 in 1995. The total age-adjusted death rate of 15.5 deaths per 100,000 population shows a slight decrease from the rate for 1995 (15.9) and 1994 (15.7). While ranking 8th as a cause of death for males in 1997 and accounting for 27,913 or 2.4% of all male deaths, traffic crashes ranked only 10th for females, accounting for 14,427 or 1.2% of total female deaths. Thus, nearly twice as many males as females died in traffic crashes in 1995. The age-adjusted male death rate from traffic crashes was 21.1 compared to 10.0 for females. That is, the actual risk of male death from traffic crashes was 2.1 times the female risk.

In recent years, males compared to females have accounted for 67% - 70% of all deaths due to traffic crashes. The ratio of males to females in the total population is approximately 1.0 (actually slightly less than 1.0, or 0.95 to be exact). However, more males than females die in traffic crashes because males are exposed to the risk of a motor vehicle crash in greater numbers than females. In addition, males are generally at greater personal risk than females as a result of more aggressive overall behavior, especially as young drivers, night drivers and alcohol-involved drivers at all ages.

The above-mentioned ranking of traffic crashes as a leading cause of death in 1997 (8th for males and 10th for females) reflects the rank-ordering of all 64 NCSA-adopted death causes. Reviewing briefly, there are two basic types of underlying causes: *internal* causes, or those attributable to some type of internal bodily disease or disorder which results in death (e.g., cholera, diabetes, emphysema, etc.), and *external* causes, or those attributable to external factors, which produce a fatal injury or have a fatal effect, such as crashes, poisoning or acts of violence<sup>11</sup>. As a result of this basic distinction between underlying causes, 57 of the 64 NCSA-adopted causes are internal causes while the remaining 7 are external causes, and motor vehicle traffic crashes are among the major external causes of death in the United States compared to, say, suicide,

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<sup>11</sup>See Reference 2 for additional information regarding the medical classification of mortality data.

homicide or other transport crashes<sup>12</sup>. If traffic crashes are ranked only in relation to *external* causes of death, then, for all ages combined in 1997, traffic crashes ranked a close second to nontransport accidents, among both males and females, though accounting for different proportions of victims in each case; almost 1 out of every 4 deaths due to external factors for males, and about every 3 such deaths for females. As indicated above, nontransport accidents were the first ranked external cause of death for both males and females in 1997. Table 2 depicts additional data on the 5 major external causes of death in 1997.

In a rank-order analysis of the prime cause of *accidental* death, nontransport accidents are further subdivided into the underlying cause of death like accidental falling, poisoning, drowning, fires etc. Fatalities due to motor vehicle crashes are then ranked as a leading cause of accidental deaths with respect to this new separated causes of accidental deaths. As a major external cause, traffic crashes are the prime cause of *accidental* death in the United States, and this has been true for many years. Thus, for persons of all ages, traffic crashes alone in 1997 caused almost one-half of all accidental deaths that occurred, about 45% for males and somewhat less, about 42%, for females. When compared with other unintentional causes, traffic crashes accounted for 4.0 times as many male deaths and twice as many female deaths as falling, which is generally the No. 2 cause of accidental death, regardless of year. Exhibit 5 presents additional information on the leading causes of accidental death in 1997. For the purposes of this comparison, nontransport accidents are desegregated and shown as separate causes of death.

Exhibit 1 presents statistics on the deaths caused by the 15 leading causes for both sexes in the United States for 1997. Exhibits 2 and 3 present the same data for males and females respectively.

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<sup>12</sup>Crashes involving other modes of transport such as railway, aerospace or water transport conveyances.

**Exhibit 1 : Deaths, Percents of Total Deaths and Death Rates for the 15 Leading Causes of Death for Persons of All Ages, by Sex, United States, 1997**

**Male Deaths**

Cause of Death <sup>1</sup>	Rank <sup>2</sup> Order	Number of Deaths <sup>3</sup>	% of Total Deaths	Age-Adjusted Death Rates <sup>4</sup>
All Causes		1,154,039	100.0	601.9
Diseases of the Heart	1	356,598	30.9	172.7
Malignant Neoplasms (Cancer)	2	281,110	24.3	150.1
Cerebrovascular Diseases (Stroke)	3	62,564	5.4	27.8
Chronic Obstructive Pulmonary Diseases	4	55,984	4.8	26.0
Pneumonia	5	39,013	3.4	16.0
Nontransport Accidents	6	31,213	2.7	19.8
Diabetes Mellitus	7	28,187	2.4	14.8
Motor Vehicle Traffic Crashes	8	27,913	2.4	21.1
Suicide	9	24,492	2.1	17.4
Chronic Liver Disease and Cirrhosis	10	16,260	1.4	10.5
Homicide and Legal Intervention	11	15,449	1.3	12.6
Symptoms, Signs and Ill-Defined Conditions	12	13,065	1.1	7.9
Human Immunodeficiency Virus (HIV) Infection	13	12,892	1.1	9.2
Nephritis, Nephrotic Syndrome and Nephrosis	14	12,140	1.0	5.4

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<sup>1</sup>Ninth Revision, International Classification of Diseases, 1975.

<sup>2</sup>Rank based on number of deaths in specified group.

<sup>3</sup>Residents of the U.S. only (50 states and the District of Columbia).

<sup>4</sup>Rate per 100,000 population in specified group.

Psychoses and Mental Retardation	15	11,602	1.0	4.2
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**Exhibit 2 : Deaths, Percents of Total Deaths and Death Rates for the 15 Leading Causes of Death for Persons of All Ages, by Sex, United States, 1997**  
**Female Deaths**

Cause of Death <sup>1</sup>	Rank <sup>2</sup> Order	Number of Deaths <sup>3</sup>	% of Total Deaths	Age-Adjusted Death Rates <sup>4</sup>
All Causes		1,160,206	100.0	374.8
Diseases of the Heart	1	370,376	31.9	95.1
Malignant Neoplasms (Cancer)	2	258,467	22.3	107.1
Cerebrovascular Diseases (Stroke)	3	97,227	8.4	24.1
Chronic Obstructive Pulmonary Diseases	4	53,045	4.6	17.7
Pneumonia	5	46,716	4.0	10.4
Diabetes Mellitus	6	34,449	3.0	12.4
Psychoses and Mental Retardation	7	24,496	2.1	4.0
Nontransport Accidents	8	18,633	1.6	7.3
Alzheimer's Disease	9	15,437	1.3	2.8
Motor Vehicle Traffic Crashes	10	14,427	1.2	10.0
Nephritis, Nephrotic Syndrome and Nephrosis	11	13,191	1.1	3.7
Septicaemia	12	12,741	1.1	3.8
Symptoms, Signs and Ill-defined Conditions	13	12,687	1.1	4.8

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<sup>1</sup>Ninth Revision, International Classification of Diseases, 1975.

<sup>2</sup>Rank based on number of deaths in specified group.

<sup>3</sup>Residents of the U.S. only (50 states and the District of Columbia).

<sup>4</sup>Rate per 100,000 population in specified group.

Other Diseases of the Urinary System	14	12,022	1.0	2.9
Other Digestive Diseases	15	11,963	1.0	3.8

**Exhibit 3 : Deaths, Percents of Total Deaths and Death Rates for the 15 Leading Causes of Death for Persons of All Ages, by Sex, United States, 1997, Both Sexes**

Cause of Death	Rank <sup>1</sup> Order	Number of Deaths <sup>2</sup>	% of Total Deaths	Age-Adjusted Death Rates <sup>3</sup>
All Causes		2,314,245	100.0	478.2
Diseases of the Heart	1	726,974	31.4	130.1
Malignant Neoplasms (Cancer)	2	539,577	23.3	125.4
Cerebrovascular Diseases (Stroke)	3	159,791	6.9	25.8
Chronic Obstructive Pulmonary Diseases	4	109,029	4.7	21.1
Pneumonia	5	85,729	3.7	12.7
Diabetes Mellitus	6	62,636	2.7	13.5
Nontransport Accidents	7	49,846	2.2	13.4
Motor Vehicle Traffic Crashes	8	42,340	1.8	15.5
Psychoses and Mental Retardation	9	36,098	1.6	4.2
Suicide	10	30,535	1.3	10.6
Symptom, Signs and Ill-Defined Conditions	11	25,752	1.1	6.4
Nephritis, Nephrotic Syndrome and Nephrosis	12	25,331	1.1	4.4
Chronic Liver Disease and Cirrhosis	13	25,175	1.1	7.3
Other Digestive Diseases	14	22,614	1.0	4.6

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<sup>1</sup>Rank based on number of deaths in specified group.

<sup>2</sup>Residents of the U.S. only (50 states and the District of Columbia).

<sup>3</sup>Rate per 100,000 population in specified group.

Alzheimer's Disease	15	22,475	1.0	2.7
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**Exhibit 4 : Deaths, Percents of Total Deaths and Death Rates for the Five External Causes of Death for Persons of All Ages, by Sex, United States, 1997**

Cause of Death <sup>1</sup>	Rank <sup>2</sup> Order	Number of Deaths <sup>3</sup>	% of Total Deaths	Age-Adjusted Death Rates <sup>4</sup>
<b>Males</b>				
Nontransport Accidents	1	31,213	2.7	19.8
Motor Vehicle Traffic Crashes	2	27,913	2.4	21.1
Suicide	3	24,492	2.1	17.4
Homicide and Legal Intervention	4	15,449	1.3	12.6
Other Transport Crashes	5	1,980	0.2	1.5
<b>Females</b>				
Nontransport Accidents	1	18,633	1.6	7.3
Motor Vehicle Traffic Crashes	2	14,427	1.2	10.0
Suicide	3	6,043	0.5	4.1
Homicide and Legal Intervention	4	4,397	0.4	3.3
Other Transport Crashes	5	360	0.0	0.2
<b>Both Sexes</b>				
Nontransport Accidents	1	49,846	2.2	13.4
Motor Vehicle Traffic Crashes	2	42,340	1.8	15.5
Suicide	3	30,535	1.3	10.6
Homicide and Legal Intervention	4	19,846	0.9	7.9

<sup>1</sup>Ninth Revision, International Classification of Diseases, 1975.

<sup>2</sup>Rank based on number of deaths in specified group.

<sup>3</sup>Residents of the U.S. only (50 states and the District of Columbia).

<sup>4</sup>Rate per 100,000 population in specified group.

Other Transport Crashes	5	2,340	0.1	0.8
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**Exhibit 5 : Deaths, Percents of Total Deaths and Death Rates for the Five Leading Accidental Causes of Death for Persons of All Ages, by Sex, United States, 1997**

Cause of Death	Rank <sup>1</sup> Order	Number of Deaths <sup>2</sup>	% of Total Deaths	Age-Adjusted Death Rates <sup>3</sup>
<b>Males</b>				
Motor Vehicle Traffic Crashes	1	27,913	45.2	21.1
Falls	2	7,705	12.5	3.7
Poisoning	3	7,622	12.4	5.5
Other & Unspecified Acc. Causes	4	3,330	5.4	2.1
Drowning and Submersion	5	2,800	4.5	2.2
Total		61,963	100.0	
<b>Females</b>				
Motor Vehicle Traffic Crashes	1	14,127	41.9	10.0
Falls	2	7,742	23.0	1.8
Poisoning	3	2,541	7.5	1.7
Accidental Suffocation	4	1,939	5.8	0.7
Other and Unspecified Acc. Causes	5	1,877	5.6	0.8
Total		33,681	100.0	
<b>Both Sexes</b>				
Motor Vehicle Traffic Crashes	1	42,340	44.3	15.5
Falls	2	15,477	16.2	2.7
Poisoning	3	10,163	10.6	3.6
Other and Unspecified Causes	4	5,207	5.4	1.4

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<sup>1</sup>Rank based on number of deaths in specified group.

<sup>2</sup>Residents of the U.S. only (50 states and the District of Columbia).

<sup>3</sup>Rate per 100,000 population in specified group.

Accidental Suffocation	5	4,420	4.6	1.1
Total		95,644	100.0	

### 3. Major Leading Causes of Death at Different Ages

The breakdown of the cause of death data by sex, as shown in Exhibits 1 and 2, though somewhat more descriptive than the mortality data presented for both sexes combined in Exhibit 3, is still only partially informative in that it does not shed light on the causes of death at different ages. Exhibits 6-8 present a brief summary of the age-occurrence of death in 1997 due to 8 major causes, at the most critical ages for each cause. These 8 causes include the following 7 which were leading or top-ranked cause of death at various ages (for males and/or females or both sexes combined) in 1997:

- # Certain Conditions Originating in the Perinatal Period
- # Nontransport Accidents
- # Motor Vehicle Traffic Crashes
- # Homicide and Legal Intervention
- # HIV Infection
- # Malignant Neoplasms
- # Diseases of the Heart

These 7 were the only causes of death in 1997 whereby, at any age, more persons died of one of these causes than of any other. Cerebrovascular diseases, though never the No. 1 cause of death at any age in 1997, are included in Exhibits 6-8 because of their impact on older persons, making them the third -ranked cause of death for persons of all ages. It is to be noted that the rankings shown in Exhibits 6-8 apply to each specific age of the indicated age interval.

Exhibits 6-8 show that, in general, major causes of death have different rankings at different ages and that, between the sexes, there are differences as well as similarities in the ranking and overall impact of these major causes at corresponding ages. For example, in regard to strict similarities between males and females for the same cause, in 1997, perinatal conditions were, as expected, the leading cause of death for both male and female infants less than 1 year of age. They accounted for 12,935 of the total of 28,045 infant deaths for the year, or almost one-half (46%) of total deaths for both males and females at this age. Virtually all deaths due to perinatal conditions (99%) occurred before the age of 1 for both sexes.

#### *Nontransport Accidents*

Nontransport accidents were the leading cause of death for males 1-6 years of age, and responsible for 993 or 25% of the male deaths at these ages as shown in Exhibit 6. For females, they were the leading cause for ages 1-3 and were responsible for 395 or 20% of the female deaths at these ages. Thus, as a first-ranked cause of death in 1997, nontransport accidents claimed the lives of very young children of both sexes. However, relative to the total deaths at these ages, the numbers of male and female victims were

significantly different.

### ***Motor Vehicle Traffic Crashes***

Motor vehicle traffic crashes were the No. 1 cause of death for males for every age 7-11, 13-31 and 33 and for females every age 4-28 (Exhibits 6 and 7). They caused 12,146 male and 4,760 female deaths in corresponding age groups, approximately 24% of the male deaths and 29% of the female deaths in each, and are discussed in detail by age and sex in Section 4 of the report. Attention in Section 4, however, is focused not only on those ages for which traffic crashes in 1997 were a major cause of death, but also on those ages for which they are not.

### ***HIV Infection***

Human Immunodeficiency Virus (HIV) Infection was the No. 1 cause of male deaths for ages 35-36, and the No. 2 cause for ages 34 and 37-38 as depicted in Exhibit 6. For females, HIV was not a leading cause of death at any age.

### ***Malignant Neoplasms***

For males in 1997, cancer was either the first or second-ranked cause of death for every age 7 and 39-96, causing 274,316 or 27% of all male deaths for the age interval. For females, cancer was either the first or second-ranked for all ages 5-9, 11-15, and 25-88, and responsible for 238,243 or 29% of all female deaths at these ages. Thus, for those male and female ages in 1997 where cancer was either the first or second ranked cause of death, the proportions of total age-group deaths due to cancer were almost the same.

### ***Diseases of the Heart***

For males in 1997, heart disease was either the leading or second leading cause of death after age 37, and responsible for 352,048 or 33% of the total male deaths in the age group. For females, heart diseases were either the first-ranked or second ranked cause of death after age 36 accounting for 368,084 or 34% of the female deaths in the age group.

### ***Cerebrovascular Diseases***

Once again, as in prior years, stroke was not the leading cause of death at any age for either sex in 1997. For males, stroke was either the third or fourth ranked cause of death for every age over 51. For females, there was a somewhat similar age-wise ranking for stroke with minor differences: second ranked for ages 89 and over and ranked 3-5 for ages 42-88. For males, 5.9% of all deaths for ages over 51 were due to stroke and 97.6% of stroke-related deaths occurred in this age group. For females, corresponding percentages for ages 42 and over were 8.9% of total deaths and 96.5% of all stroke related deaths.

For some causes of death, the ages for which the rankings are the highest correspond reasonably well with the typical ages at death (average, median, etc.) for that cause. For example, from Exhibit 8, we note that, for both sexes combined in 1997, heart disease was the leading cause of death for every age above 74 years. The average age for those who died of heart disease was 76.3 years and the median age at death was 79.5 years. Also, for this same group in 1997, motor vehicle traffic crashes were the 1st, 2nd or 3rd leading cause of death for every age 2-34; the average age at death in a traffic crash was 39.9 years and the median age at death was 36.5 years. For other causes of death, however, there may be little or no correspondence between the highest ranking by age as a cause of death and typical ages at death. Nontransport accidents are a case in point. Though a high-ranked cause of death at very young ages, considerably more deaths from these accidents occur among older age groups, both in absolute numbers and relative to total populations involved, ages at which the cause-of-death ranking for nontransport accidents, relative to other causes, is much less. Thus, for nontransport accidents, the typical ages at death (average of 56.9 and median of 58.5 for both sexes combined) do not correspond with the high-order rankings by age. These rankings and typical ages at death for these 8 major causes have been fairly consistent in recent years, and are indicative of the following:

- # With the single exception of perinatal conditions which generally affect only infants under 1 year of age, motor vehicle traffic crashes are the only cause of death responsible for so many deaths among younger age groups. Except as noted, no cause of death is even a close second.
  
- # In general, younger persons succumb more to *external* rather than *internal* causes of death, with the reverse being true for older persons. Space does not permit a detailed comparison of deaths from external versus internal deaths at different ages, but there are two notable exceptions to this generalization, both of which have already been noted: (1) Nontransport accidents, a major external cause of death, result in many more deaths among older persons, and (2) Perinatal conditions, a major internal cause of death, generally affect only infants less than 1 year of age.

Exhibits 9-11 are a comparison by sex of the ranking of traffic crashes as a cause of death with the rankings for heart disease, cancer, HIV infection, homicide and nontransport accidents at every age in 1997. For each age, the ranking for each cause is expressed as the percent of total deaths from all causes for that age. Exhibits 12-14 show the population death rates for these 6 major causes, by sex, for each age since 1997. Exhibits 12-14 clearly indicates that in 1997, the risk of death from traffic crashes, relative to that from other causes, decreased to a significantly lower level beginning around age 28 for both males and females.

For additional information regarding major causes of death at different age levels, refer to Exhibit A3 of the Appendix to this report which presents a tabulation of the first 6-9 leading causes of death in 1997, by 5-year age intervals up to 84, by sex. Motor vehicle traffic crashes are included with each age grouping, even if they were not a major cause of death for certain ages, to show their ranking relative to the major causes at different ages.

**Exhibit 6: Deaths, Percents of Total Deaths, Death Rates and Typical Ages at Death for 8 Major Causes of Death, by Age Group and Rank Order for Specified Ages, United States, 1997, Males**

Major Cause of Death	Rank <sup>1</sup>	Age Group	Number of Deaths <sup>2</sup>	% of Total for Age Group	% of Total for Cause	Death Rate <sup>3</sup>	Average Age at Death	Median Age at Death
Perinatal Conditions	1	Under 1	7,308	46.3	98.8	378.8	0.7	0.5
Nontransport Accidents	1	1-6	993	24.6	3.2	9.0	50.9	47.5
M.V. Traffic Crashes	1	7-11, 13-31, 33	12,146	24.0	43.5	25.4	38.6	33.5
	2	2-6, 12, 32	1,038	15.0	3.7	7.4		
Homicide	2	16-27	6,647	21.8	43.0	29.7	31.2	27.5
HIV Infection	1	35-36	1,136	12.2	8.8	25.2	40.0	40.5
	2	34, 37-38	1,743	12.0	13.5	26.3		
Malignant Neoplasms	1	55, 57-71	101,770	34.2	36.2	665.8	68.2	72.5
	2	7, 39-54, 56, 72-96	172,546	23.0	61.4	425.5		
Diseases of the Heart	1	37-54, 56, 72 and above	255,847	33.3	71.7	596.3	72.0	75.5
	2	55, 57-71	96,201	32.3	26.9	629.4		
Stroke	3-4	51-100+	58,728	6.1	93.8	196.3	75.0	78.5

<sup>1</sup>Rank based on number of deaths for each age of specified age-sex group.

<sup>2</sup>Residents of the U.S. only (50 states and the District of Columbia)

<sup>3</sup>Crude Death Rate per 100,000 population in specified age-sex group.

**Exhibit 7: Deaths, Percents of Total Deaths, Death Rates and Typical Ages at Death for 8 Major Causes of Death, by Age Group and Rank Order for Specified Ages, United States, 1997**  
**Females**

Major Cause of Death	Rank <sup>1</sup>	Age Group	Number of Deaths <sup>2</sup>	% of Total for Age Group	% of Total for Cause	Death Rate <sup>3</sup>	Average Age at Death	Median Age at Death
Perinatal Conditions	1	Under 1	5,627	45.9		304.5	0.7	0.5
Suicide	2	16	72	9.0		3.9	44.9	43.5
M.V. Traffic Crashes	1	4-28	4,760	29.3		10.3	42.4	39.5
	2	2-3, 29-35	395	19.8		7.1		
Homicide	2	17-24	741	10.7		5.2	34.9	32.5
Nontransport Accidents	1	1-3	395	19.8		7.1	66.9	77.5
	2	4, 10	112	16.6		2.9		
Malignant Neoplasms	1	29-74	142,457	36.7		194.0	69.3	73.5
	2	5-9, 11-15, 25-28, 75-88	95,786	19.1		273.8		
Diseases of the Heart	1	75 and above	280,353	37.8		2835.6	80.5	83.5

<sup>1</sup>Rank based on number of deaths for each age of specified age-sex group.

<sup>2</sup>Residents of the U.S. only (50 states and the District of Columbia)

<sup>3</sup>Crude Death Rate per 100,000 population in specified age-sex group.

	2	36-74	87,731	23.3		149.4		
Stroke	2	89-100	27,668	11.2		2058.6	80.9	84.5

**Exhibit 8: Deaths, Percents of Total Deaths, Death Rates and Typical Ages at Death for 8 Major Causes of Death, by Age Group and Rank Order for Specified Ages, United States, 1995  
Both Sexes**

Major Cause of Death	Rank <sup>1</sup>	Age Group	Number of Deaths <sup>2</sup>	% of Total for Age Group	% of Total for Cause	Death Rate <sup>3</sup>	Average Age at Death	Median Age at Death
Perinatal Conditions	1	Under 1	12,935	46.1		342.5	0.7	0.5
Nontransport Accidents	1	1-5	1,420	22.2		7.3	56.9	58.5
	2	6, 8-14	1,011	15.6		3.3		
Suicide	2	15, 27-31	2,882	12.8		12.5	44.2	42.5
M.V. Traffic Crashes	1	6-33	18,357	23.5		17.2	39.9	36.5
	2	2-5, 34	1,399	13.2		7.0		
Homicide	2	16-26	7,168	19.2		17.8	32.0	28.5
HIV Infection	2	32, 35	1,342	11.1		15.4	39.5	40.5
Malignant Neoplasms	1	34-73	288,619	32.9		238.8	68.8	72.5
	2	33, 74-90	225,151	20.6		1101.6		

<sup>1</sup>Rank based on number of deaths for each age of specified age-sex group.

<sup>2</sup>Residents of the U.S. only (50 states and the District of Columbia)

<sup>3</sup>Crude Death Rate per 100,000 population in specified age-sex group.

Diseases of the Heart	1	74 and above	485,958	36.7		2810.5	76.3	79.5
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**Exhibit 9 : Deaths from Six Leading Causes of Death as Percent of Total Deaths for Each Age, Ages 0-50, Males, 1997**

Image Not Available

**Exhibit 9 (Continued): Deaths from Six Leading Causes of Death as Percents of Total Deaths for  
Each Age, Ages 51-100+, Males, 1997**

Image Not  
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**Exhibit 10 : Deaths from Six Leading Causes of Death as Percents of Total Deaths for  
Each Age, Ages 0-50, Females, 1997**

Image Not  
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**Exhibit 10 (Continued) : Deaths from Six Leading Causes of Death as Percents of Total Deaths for Each Age  
Females, Ages 51-100+, 1997**

Image Not  
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**Exhibit 11 : Deaths from Six Leading Causes of Death as Percents of Total Deaths for Each Age  
Both Sexes, Ages 0-50, 1997**

Image Not  
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**Exhibit 11 (Continued) : Deaths from Six Leading Causes of Death as Percents of Total Deaths for Each Age  
Both Sexes, Ages 51-100+, 1997.**

Image Not  
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**Exhibit 12 : Population Death Rates by Age for Six Leading Causes of Death, Males, 1997**

Image Not  
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**Exhibit 13 : Population Death rates by Age for Six Leading Causes of Death, Females 1997**

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**Exhibit 14 : Population Death Rates by Age for Six Leading Causes of Death  
Both Sexes, 1997**

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#### 4. Motor Vehicle Traffic Crashes as a Major Cause of Death at Different Ages

##### *Males*

In 1997, motor vehicle traffic crashes were a major leading cause<sup>4</sup> of male death for *every* age 1-44. For these ages, they accounted for 18,256 male victims or about 65% of all male traffic deaths that occurred. The associated death rate was 21 traffic deaths for every 100,000 males ages 1-44 in the population.

They were the No. 1 cause of male death for *each* age 7-11, 13-31 and 33. For these ages, traffic crashes were responsible for 12,146 or 24% of the total male deaths. The male risk at these ages was 25.4 traffic deaths for every 100,000 males in the population as shown in Exhibit 6. This death rate was more than the average risk of death from traffic crashes for males of all ages (25.4 versus 21.4). For males, 43.5% of all traffic deaths occurred in this age group.

For every other age between 1-44 where traffic crashes were not the No.1 cause of male death, they nonetheless were a major cause of death for males with the following rankings: rank 5 for age 1, 2 for ages 2-6, 12 and 32, 3-5 for ages 34-36, ranked 6th for ages 37-43 and 7<sup>th</sup> for age 44. For these ages, the male risk of traffic death was 15.3 and 6,110 additional males died in these crashes. This was about 21.9% of all the male traffic deaths for the year.

The incidence of male deaths from traffic crashes was greatest for ages 18-21, with a total of 3,360 victims that ranged from a low of 790 for age 20 to a high of 887 for age 21, for an average of approximately 840 deaths at each age. The male risk of traffic deaths for this age group was 44.5. This was twice the average risk of 21.4 for males of all ages. The highest male risk was 49.5 for age 21 and the lowest was 41.3 for age 20. For these ages (18-21), traffic crashes accounted for 31% of male deaths from all causes, and 27% more deaths than homicide (the No. 2 male cause for ages 18-21). For males, 12.0% of deaths from traffic crashes occurred in this age group. These data for male ages 18-21 are not shown per se in any of the tables in this report.

In 1997, for males aged 11-19, there was a high correlation between traffic deaths and deaths due to homicides; for most ages of this interval, the death counts associated with each cause were generally in very close agreement as shown in Exhibit 9. Homicide was ranked 4-6 for ages 11-15 and was the second leading cause of male deaths for ages 16-19. For traffic crashes, it was the reverse; the No. 1 cause of male death for ages 11 and 13-19 and the No.2 cause for age 12.

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<sup>4</sup>When not first-ranked, the importance of traffic crashes as a major leading cause of death relative to other causes has been determined by the evaluation of raw death counts or scores initially expressed as "Standard Scores". This is a statistical scoring procedure widely used in educational and psychological testing (Reference 4).



## ***Females***

In 1997, motor vehicle traffic crashes were a major leading cause of female death for *every* age 1-40. For these ages, they accounted for 7,402 female victims or almost 51% of all female traffic deaths that occurred. The associated death rate was 9.5 traffic deaths for every 100,000 females ages 1-40 in the population.

They were the No. 1 cause of female death for *each* ages 4-28. For these ages, traffic crashes were responsible for 4760 or 29.3% of the total female deaths, and 3.3 times as many deaths as the second leading cause (homicide) as shown in Exhibit 16. The female risk at these ages was 10.3 traffic deaths for every 100,000 females in the population as shown in Exhibit 7. This death rate is only slightly greater than the average of 10.1 traffic deaths per 100,000 population for females of all ages. For females, 33.0% of all traffic deaths occurred in this age group.

For every other age between 1-40 where traffic crashes were not the No.1 cause of female death, they nonetheless were a major cause of death for females with the following rankings: 5<sup>th</sup> for age 1 and ranks 2-3 for ages 2-3 and 29-40. They were a major cause of death at each of these ages, accounting for 2,642 female victims or about 18.3% of the total female traffic deaths for the year. The female risk of traffic death for these ages was 8.4 deaths per 100,000 females in the population.

Ages 16-19 had the highest incidence of female traffic deaths, 1,571 deaths for all four ages or exactly 2.0 times the average risk (21.2 and 10.5). This ranged from a low of 329 at age 19 to a high of 429 at age 17, for an average of approximately 393 traffic deaths for each age. Age 19 had the lowest risk, 17.8, while age 18 had the highest risk, 23.6. For this age group, traffic crashes accounted for 4.5 times as many female deaths as homicide (the No. 2 cause), 45.2% of the female deaths, and 10.9% of the female traffic deaths for all ages.

In 1997, Homicide was the second-ranked cause of female deaths for every age 17-24, accounting for 741 deaths (Exhibit 7). For the same age interval, however, traffic crashes as the No.1 cause accounted for 2,421 female deaths or nearly 3.2 times as many deaths as homicide (Exhibit 16).

## ***Both Sexes Combined***

In 1997, for both sexes combined and similar to males, traffic crashes were a major leading cause of death for every age 1-43. For this age group, they not only claimed a total of 25,828 victims, with an overall risk of 15.2 deaths per 100,000 persons aged 1-43 in the population, but also accounted for nearly 61% of all traffic deaths that occurred.

For both sexes combined, traffic crashes were the leading cause of death for *every* age 6-33 and claimed 18,357 lives for the age group. This was 23.5% of all the deaths occurring at these ages and 43.3% of total traffic deaths for the year as shown in Exhibit 8. The risk of traffic deaths for this age group was 17.2

deaths per 100,000 population, which is almost 8.9% as great as the average risk of traffic deaths for persons of all ages ( 17.2 versus 15.8). Second-ranked causes for ages 6-33 were nontransport accidents for ages 6 and 8-14, suicide for age 15 and 27-31, homicide for ages 16-26, HIV for age 32 and cancer for ages 7 and 33 as shown in Exhibit 17.

Ages 18-21 had the highest incidence of traffic deaths (4,663 victims), for an average of approximately 1,166 deaths at each age. This ranged from a low of 1,076 at age 20 to a high of 1,254 at age 18. The traffic crash death rates for these four ages averaged 31.6, or twice the average risk (15.8), with a high of 34.0 for age 18 and a low of 28.8 for age 20. For this age-group, traffic crashes claimed 54.3% more victims than homicide (the No.2 cause), 32.8% of all deaths and 11% of the traffic death total for the year.

## **5. Traffic Crashes not a Major Cause of Death**

### ***Infants Under 1***

In 1997, for this age group, traffic crashes ranked 16<sup>th</sup> as a cause of death for both sexes combined (16<sup>th</sup> for males and 14<sup>th</sup> for females) and were responsible for only 160 deaths, 82 male and 78 female, or 0.6% of all infant deaths at this age as depicted in Exhibit 17. They were not a major cause of death of infants under 1 year of age in 1997. This is generally true for any given calendar year.

As expected, conditions connected with birth or pre-birth which have a later fatal effect were by far the leading cause of death. These perinatal conditions accounted for 12,935 out of a total of 28,045 infant deaths for the year, or about 46% of all male and female deaths at this age, and caused an average of 342 infant deaths (379 male and 305 female) for every 100,000 births occurring during the year<sup>5</sup>.

### ***Males aged 45 and above***

Traffic crashes were not a major cause of death for males at any age above 44 in 1997. By age 45, they ranked a distant seventh to diseases of the heart, the leading male cause at this age that claimed 4.3 times as many lives. In general, traffic crashes ranked 6-13 as a cause of male death for ages 45-66; they ranked 15-42 for ages 67 and above. Even though 9,557 male traffic deaths, or 34.2% of the total male traffic deaths, occurred after age 44, this was less than 1% (0.94%) of all male deaths at these ages. As previously indicated, either heart disease or cancer was the top-ranked cause of male death for all ages 45 and above.

### ***Females aged 41 and above***

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<sup>5</sup>Because death from perinatal conditions occur mainly among infants under 1 year of age (96.0%) occurrence in 1995, mortality from this cause is measured by number of deaths per 100,000 births.

Traffic crashes did not rank as a major cause of female death at any age above 40 in 1997. By age 41, they ranked a distant third to cancer, the leading female cause at this age that claimed 6.0 times as many lives. In general, traffic crashes ranked 3-9 for ages 41-62 and they ranked 10-55 for ages 63 and above. Even though 6,943 female traffic deaths, or 48.1% of the total, occurred after age 40, this was only 0.6% of all female deaths for the age group. As indicated earlier, cancer was the first ranked cause of female death for ages 41-74 and heart disease was the leading cause of death for all ages above 74.

### ***Ages 44 and above for Both Sexes Combined***

In 1997, traffic crashes were not a major cause of death at any age above 43 for both the sexes combined. At age 44, cancer, the leading cause, claimed about 4.7 times as many victims as traffic crashes. In general, for both sexes combined in 1997, traffic crashes ranked 6-16 for ages 44-71 and they ranked 17-48 for ages 72 and above. Even though 16,330 traffic deaths, or 38% of the total for all ages, occurred above the age of 43, this was less than 1% (0.8%) of all deaths for this age group. The leading causes of death for these ages were: cancer for ages 44-73 and heart diseases for all ages above 73.

## **6. Comparison of Traffic Crashes as a Cause of Death for Males and Females at the Same Age at Different Age Levels**

A comparison of traffic deaths and death rates for males and females of all ages in 1997 has been presented in section 2 of this report. A generally similar comparison is presented below for different age levels, and it seems appropriate to make this comparison for the exact same ages in 1997 where, for both sexes, traffic crashes were a major or minor cause of death. As shown above, for ages 1-40, traffic crashes were a major cause of death for both sexes and, for ages 45 and over, a minor cause. Therefore, ages 41-44 are excluded from the following analysis as they are ages where traffic crashes were neither a major nor a minor cause of death. In addition, since the effect of traffic crashes on infants less than 1 year of age is essentially the same and relatively minor for both males and females, regardless of the calendar year, this group is also excluded.

### ***Ages 1-40***

In 1997, traffic crashes were a major leading cause of male and female deaths for each age 1-40, accounting for 16,610 and 7,402 deaths, respectively, in this age group. This represents about 17% of all deaths for each sex at these ages, and 60% and 51%, respectively of all male and female traffic deaths that occurred. The corresponding male and female traffic crash death rates were 20.9 and 9.5, respectively. Therefore, in 1997, for ages 1-40, 2.2 times as many males as females were killed in traffic crashes and, in view of the generally similar age composition<sup>6</sup> of the male and female populations at these ages, the male

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<sup>6</sup>Population size and proportion of total population for each specific age or subgroup of the age interval.

risk of traffic death was also about 2.2 times the female risk (20.9 versus 9.5).

### ***Ages 45 and above***

In 1997, traffic crashes were a minor cause of death for both sexes aged 45 and above. For these ages, they caused 9,557 or 1.0% of all male and 6,215 or 0.6% of all female deaths that occurred. Corresponding male and female traffic death rates were 23.4 and 12.7, respectively. Therefore, for ages 45 and above, relatively few persons died as a result of traffic crashes compared to the number dying from major causes such as heart disease, cancer and stroke. Also, only 54% more males than females died in traffic crashes. Nonetheless, the traffic death tolls for these ages represent 24% and 43%, respectively, of all male and female traffic deaths that occurred, and the male risk (death rate per 100,000 resident population) of traffic death was still almost twice the female risk (23.4 versus 12.7).

Comparing the overall results of traffic crashes in 1997 for males and females in these two age groups (1-40, and 45 and above), the following should be noted:

- # There were significantly fewer traffic deaths after age 41 for both sexes, but the decrease was greater for males, 42.4% compared to only 16.0% for females. Thus, the ratio of male to female traffic deaths declined by 31.3% after age 40 (2.24 for ages 1-40 to 1.54 for the older age group).
- # While the male risk of traffic death increased by about 11.9%, from 20.9 for ages 1-40 to 23.4 after age 41 the female risk actually increased by 33.7% (from 9.5 to 12.7).
- # The male risk of traffic death relative to the female risk declined only 16%, from 2.2 for ages 1-40 to 1.8 after age 41, and this was mostly due to significant increase in the female risk after age 41.

In the U.S., in recent years, age 29, 30 or 31 has been the pivotal age for differences in the composition of the male and female populations. Prior to this age, there are somewhat fewer females than males alive in the U.S., though the ratio is rarely less than 0.95 to one. Women, however, tend to live longer than men (refer to discussion of life expectancies). So, after this pivotal age, the female population begins to slowly outstrip the males until, by age 91-93, the ratio of females to males in the population generally exceeds three to one.

In view of these current population differences between males and females, it is entirely reasonable to ask if such differences could have contributed to the significant differences noted above in the risk of death due to crashes. One approach to this problem is to apply the death rate obtained for each age or age interval of the male population to the corresponding age or age interval of the female population, and obtain an age-adjusted or *standardized* average male death rate in the female population, now considered as the *standard* population. This procedure controls for differences in population composition between males and females relative to age, and produces an age-adjusted or age-standardized average male death rate which is directly comparable to the average female death rate for the age group in question. Application

of this procedure to the traffic mortality and population data for 1997 indicates the following:

- ! For ages 1-40, the differences in the standard (female) versus the actual (male) population were only slight: a total of 16,318 vs. 16,610 deaths, respectively, with an associated age-adjusted traffic crash death rate of 20.5 vs. an unadjusted rate of 20.9.
- ! For ages 45 and above, the differences for males in the standard versus the actual population were significant: a total of 12,284 vs. 9,557 traffic deaths, respectively, with an associated age-adjusted risk of traffic death of 30.0 vs. an unadjusted risk of 23.4.
- ! Therefore for ages 45 and above as compared to ages 1-40 in the standard population, the following differences in male traffic crash deaths and death rate that would have occurred in 1997:
  - (a) A 25% decrease in deaths (from 16,318 to 12,284), rather than the 42% decrease (from 16,610 to 9,557) that actually did occur.
  - (b) A 46% increase in the risk of traffic death (from 20.5 to 30.0), rather than the 12% increase (from 20.9 to 23.4) that actually did occur.
- ! It should also be noted that increased longevity for both sexes could result in significant increases in traffic deaths for older persons. This is based on the assumption that death occurrence rates for older persons involved in traffic crashes will not change appreciably with increased longevity. As indicated above, if in the U.S, in 1997, men lived as long as women, this could have resulted in about 12,284 male traffic deaths for ages 45 and above. This represents a 28% increase over the 9,557 male traffic deaths which actually did occur at these ages, with an associated 46% increase in the male risk of traffic death from 20.5 to 30.0 deaths per 100,000 males in the population.

**Exhibit 15 : Deaths, Percents of Total Deaths and Death Rates for Motor Vehicle Traffic Crashes by Specific Ages and Sex.  
Comparison with Leading or Second Leading Cause of Death for Each Age Group, United States, 1997, Males**

Age Group (1)	Rank Order (2)	Number of Deaths (3)	% of Total for Age-Group (4)	% of Total for Traffic crashes (5)	Death Rate (6)	Cause of Death (7)	Rank Order (8)	Number of Deaths (9)	Ratio (3) / (9)
Motor Vehicle Traffic Crashes					Leading or 2nd Leading Cause of Death				
Under 1	16	82	0.5	0.3	4.3	Perinatal Conditions	1	7,308	0.01
1-6	2-5	544	13.5	1.9	4.5	Nontransport Accidents	1	993	0.55
7	1	102	26.2	0.4	4.9	Cancer	2	69	1.48
8-11	1	355	23.4	1.3	4.5	Nontransport Accidents	2	264	1.34
12	2	104	20.8	0.4	5.3	Nontransport Accidents	1	108	0.96
13-15	1	622	24.3	2.2	10.6	Nontransport Accidents	2	403	1.54
16-27	1	8,550	28.0	30.6	38.2	Homicide	2	6,647	1.29
28-31	1	1,998	17.1	7.2	26.4	Suicide	2	1,715	1.17
32	2	473	13.3	1.7	23.0	Suicide	1	488	0.97
33	1	519	13.4	1.9	24.5	Suicide	2	500	1.04
34	3	494	11.5	1.8	21.9	Suicide	1	568	0.87
35-36	4-5	965	10.4	3.5	21.4	HIV	1	1,136	0.85
37-54	6-8	6,707	4.8	24.0	19.9	Heart Disease	1	34,489	0.19
55	9	246	2.3	0.9	20.2	Cancer	1	3,451	0.07
56	9	208	1.9	0.7	17.8	Heart Disease	1	3,638	0.06
57-71	8-16	2,891	1.0	10.4	20.5	Cancer	1	98,319	0.03
72-100+	17-42	3,035	0.5	10.9	38.0	Heart Disease	1	217,720	0.01

**Exhibit 16 : Deaths, Percents of Total Deaths and Death Rates for Motor Vehicle Traffic Crashes by Specific Ages and Sex. Comparison with Leading or Second Leading Cause of Death for Each Age Group, United States, 1997, Females**

Age Group (1)	Rank Order (2)	Number of Deaths (3)	% of Total for Age-Group (4)	% of Total for Traffic crashes (5)	Death Rate <sup>1</sup> (6)	Cause of Death (7)	Rank Order (8)	Number of Deaths (9)	Ratio (3) / (9)
Motor Vehicle Traffic Crashes						Leading or 2nd Leading Cause of Death			
Under 1	14	78	0.6	0.5	4.2	Perinatal Conditions	1	5,627	0.01
1-3	2-5	212	10.6	1.5	3.8	Nontransport Accidents	1	395	0.54
4	1	89	23.2	0.6	4.6	Nontransport Accidents	2	62	1.44
5-9	1	352	22.0	2.4	3.7	Cancer	2	257	1.37
10	1	66	22.6	0.5	3.5	Nontransport Accidents	2	50	1.32
11-15	1	580	30.0	4.0	6.2	Cancer	2	238	2.44
16	1	390	48.7	2.7	21.0	Suicide	2	72	5.42
17-24	1	2,421	35.1	16.8	17.1	Homicide	2	741	3.27
25-28	1	862	19.9	6.0	11.5	Cancer	2	563	1.53
29-74	2-21	7,275	1.9	50.4	9.9	Cancer	1	142,457	0.05
75-100+	22-55	2,098	0.3	14.5	21.2	Heart Diseases	1	280,353	0.01

<sup>1</sup>Crude death rate per 100,000 population in age-sex group.

**Exhibit 17 : Deaths, Percents of Total Deaths and Death Rates for Motor Vehicle Traffic Crashes by Specific Ages and Sex. Comparison with Leading or Second Leading Cause of Death for Each Age Group, United States, 1997, Both Sexes**

Age Group (1)	Rank Order (2)	Number of Deaths (3)	% of Total for Age-Group (4)	% of Total for Traffic crashes (5)	Death Rate (6)	Cause of Death (7)	Rank Order (8)	Number of Deaths (9)	Ratio (2) / (8)
Motor Vehicle Traffic Crashes						Leading or 2nd Leading Cause of Death			
Under 1	16	960	0.6	2.3	4.2	Perinatal Conditions	1	12,935	0.07
1-5	2-4	826	12.9	2.0	4.3	Nontransport Accidents	1	1,420	0.58
6	1	166	22.2	0.4	4.1	Nontransport Accidents	2	146	1.14
7	1	183	25.5	0.4	4.5	Cancer	2	110	1.66
8-14	1	1,346	23.6	3.2	5.0	Nontransport Accidents	2	865	1.56
15	1	505	30.8	1.2	13.0	Suicide	2	223	2.26
16-26	1	11,266	30.1	26.6	28.0	Homicide	2	7,168	1.57
27-31	1	3,505	16.9	8.3	18.3	Suicide	2	2,659	1.32
32	1	656	12.6	1.5	15.8	HIV	2	604	1.09
33	1	730	12.7	1.7	17.0	Cancer	2	693	1.05
34-73	2-18	18,079	2.1	42.7	15.0	Cancer	1	288,619	0.06
74-100+	19-48	4,896	0.4	11.6	28.3	Heart Diseases	1	485,958	0.01

## 7. Traffic Crash Deaths and Death Rates for Older Persons

Even though traffic crashes, when compared to other causes of death in 1997, were not a major factor for males and females above the ages of 44 and 40 respectively, it is interesting to note that involvement in traffic crashes does not disappear with advancing age. This is a trend for females, as evidenced by the 1997 mortality experience. Thus, while less than 1% of all deaths occurring above these ages were due to traffic crashes, nonetheless the additional 9,557 male and 6,943 female traffic deaths that did occur amounted to 34% and 48%, respectively, of all male and female victims of these crashes (Exhibits 6 and 7). For males, 60% of these additional traffic deaths occurred with a generally uniform distribution of death rates between the ages of 46 and 69. For females, 59% of the additional deaths occurred, also with a fairly uniform risk, between the ages of 41 and 69.

The above figures, however, can easily be misinterpreted in that they give no indication that the risk of death from traffic crashes, while decreasing as expected for middle-aged persons, actually *increases* for older-aged persons. Exhibits 18 and 19, which list population death rates and other mortality statistics related to traffic crashes in 1997 by 5-year age groups for males and females, respectively, show this rate increase for persons aged 70 and above. Exhibit 20 presents similar data for both sexes combined. This pattern of above average risk in traffic crashes for older persons is also clearly evident from Exhibit 21, which presents the same risk data as Exhibits 18-20, but for each specific age in 1997.

The increased death rates for older persons generally occur for any given year. For males 70 and above in 1997, the traffic crash death rate was 35.8, or 67% above the average for males of all ages (35.8 versus 21.4). It is to be noted that for males aged 45-69, on the other hand, the death rate was 19.5 or about 12.2% below average. For females aged 70 and above in 1995, the death rate was 19.1, or almost 82% above the average for females of all ages (19.1 versus 10.5). For females aged 41-69, the risk was only 9.7 or about 11.5% below average.

The above average risk of death from traffic crashes for older persons undoubtedly reflects to a great extent both the disproportionate increase in pedestrian deaths for these ages and the fact that older compared to younger persons are physically less able to withstand the trauma resulting from involving in motor vehicle traffic crashes. Thus, severe injuries sustained in these crashes by older and younger persons are much more likely to prove fatal for the older person. It is estimated that while this increased risk or *age-related* trauma may account for nearly one-half of all traffic deaths at these older ages, this is only a very small portion of the traffic deaths that occur.

**Exhibit 18 : Deaths, Percents of Total Deaths and Death Rates for Motor Vehicle Traffic Crashes, by 5-Year Age Group and Sex, United States, 1997, Males**

<b>Age Group</b>	<b>Rank Order</b>	<b>Number of Deaths<sup>1</sup></b>	<b>% of Total for age group</b>	<b>% of total for MVTA</b>	<b>Death Rate<sup>2</sup></b>
All Ages	8	27,913	2.4	100.0	21.4
Under 1	16	82	0.5	0.3	4.3
1-4	2	356	11.4	1.3	4.5
5-9	1	456	22.3	1.6	4.5
10-14	1	615	22.6	2.2	6.3
15-19	1	3,357	32.7	12.0	34.1
20-24	1	3,654	28.0	13.1	41.1
25-29	1	2,846	20.7	10.2	30.4
30-34	1	2,477	13.8	8.9	24.1
35-39	6	2,389	9.5	8.6	21.2
40-44	6	2,106	6.4	7.5	19.9
45-49	7	1,747	4.2	6.3	19.3
50-54	8	1,430	2.9	5.1	19.4
55-59	9	1,093	1.9	3.9	19.4
60-64	10	938	1.2	3.4	19.8
65-69	15	910	0.8	3.3	20.4
70-74	16	1,003	0.7	3.6	26.3
75-79	22	976	0.6	3.5	33.4
80-84	24	804	0.5	2.9	46.8

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<sup>1</sup>Residents of the U.S. only (50 states and the District of Columbia).

<sup>2</sup>Crude Rate per 100,000 population in age-sex group.

85 & Over	27	656	0.3	2.4	58.0
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**Exhibit 19 : Deaths, Percents of Total Deaths and Death Rates for Motor Vehicle Traffic Crashes, by 5-Year Age Group and Sex, United States, 1997, Females**

<b>Age Group</b>	<b>Rank Order</b>	<b>Number of Deaths<sup>1</sup></b>	<b>% of Total for age group</b>	<b>% of total for MVTA</b>	<b>Death Rate<sup>2</sup></b>
All Ages	10	14,427	1.2	100.0	10.5
Under 1	14	78	0.6	0.5	4.2
1-4	2	301	12.7	2.1	4.0
5-9	1	352	22.0	2.4	3.7
10-14	1	441	26.0	3.1	4.7
15-19	1	1,776	44.3	12.3	19.1
20-24	1	1,240	29.4	8.6	14.4
25-29	1	1,029	18.7	7.1	10.9
30-34	2	999	12.0	6.9	9.6
35-39	3	1,047	8.0	7.3	9.2
40-44	3	945	5.2	6.6	8.8
45-49	4	827	3.5	5.7	8.8
50-54	7	685	2.2	4.7	8.8
55-59	7	638	1.6	4.4	10.4
60-64	8	576	1.1	4.0	10.8
65-69	14	658	0.8	4.6	12.4
70-74	22	733	0.6	5.1	14.9
75-79	25	822	0.5	5.7	19.8
80-84	27	700	0.4	4.9	23.8

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<sup>1</sup>Residents of the U.S. only (50 states and the District of Columbia).

<sup>2</sup>Crude Rate per 100,000 population in age-sex group.

85 & Over	39	576	0.1	4.0	20.7
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**Exhibit 20 : Deaths, Percents of Total Deaths and Death Rates for Motor Vehicle Traffic Crashes, by 5-Year Age Group and Sex, United States, 1997, Both Sexes**

<b>Age Group</b>	<b>Rank Order</b>	<b>Number of Deaths<sup>1</sup></b>	<b>% of Total for age group</b>	<b>% of total for MVTA</b>	<b>Death Rate<sup>2</sup></b>
All Ages	8	42,340	1.8	100.0	15.8
Under 1	16	160	0.6	0.4	4.2
1-4	2	657	11.9	1.6	4.3
5-9	1	808	22.2	1.9	4.1
10-14	1	1,056	23.9	2.5	5.5
15-19	1	5,133	36.0	12.1	26.8
20-24	1	4,894	28.3	11.6	28.0
25-29	1	3,875	20.1	9.2	20.6
30-34	1	3,476	13.2	8.2	16.8
35-39	5	3,436	9.0	8.1	15.2
40-44	6	3,051	6.0	7.2	14.3
45-49	6	2,574	4.0	6.1	13.9
50-54	8	2,115	2.7	5.0	14.0
55-59	8	1,731	1.8	4.1	14.7
60-64	9	1,514	1.1	3.6	15.1
65-69	15	1,568	0.8	3.7	16.0
70-74	17	1,736	0.6	4.1	19.8
75-79	24	1,798	0.6	4.2	25.4
80-84	25	1,504	0.4	3.6	32.3

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<sup>1</sup>Residents of the U.S. only (50 states and the District of Columbia).

<sup>2</sup>Crude Rate per 100,000 population in age-sex group.

85 & Over	34	1,232	0.2	2.9	31.5
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**Exhibit 21 : Population Death Rates for Motor Vehicle Traffic Crashes by Specific Age and Sex, 1997.**

Image Not Available

## **8. Motor Vehicle Traffic Crashes as a Major Cause of Death at Different Ages, by Race and Ethnic Origin**

This section presents 1997 data on U.S. deaths for the 6 leading causes of death and/or the deaths due to motor vehicle traffic crashes according to the demographical characteristics of race and Hispanic origin. Beginning with the 1992 data, the National Center for Health Statistics (NCHS) started reporting Asian/Pacific Islander codes for the race of the deceased in addition to the race codes for Whites, African Americans and Native Americans. The code for Native Americans includes Eskimos and Aleuts. This race code has been used to derive the statistics presented along race characteristics in the following sections.

### ***Whites***

In 1997, there were 23,074 male deaths and 12,043 female deaths due to motor vehicle traffic crashes for people classified as whites. This was 2.3% and 1.2% of all the male and female white deaths, respectively. The corresponding crude death rates per 100,000 resident white population was 21.2 for males and 10.7 for females.

Motor vehicle traffic crashes were the No. 1 cause of white male deaths for each age 6-31. For these ages, traffic crashes were responsible for 9,643 deaths or 28.6% of all male deaths at these ages. This was 66% more than the number of victims due to the No. 2 cause (suicide) at these ages.

They were the No. 1 cause of female white deaths for each age 4 and 6-29. For these ages, traffic crashes were responsible for 3,982 deaths or 32.5% of all female deaths at these ages. This was 176% more than the number of victims due to the No. 2 cause (cancer) at these ages.

For both sexes combined, they were the No.1 cause of white deaths for each age 4-31 and 33. For these ages, traffic crashes were responsible for 14,715 deaths or 27.8% of all deaths in both sexes at these ages. This was 97% more than the number of victims due to the No.2 cause (Suicide) at these ages.

Exhibits 22-24 present statistics on the deaths caused by the 6 leading causes of death for white males, females and both sexes for 1997. The age-adjusted death rates of 20.9 and 10.1 due to motor vehicle traffic crashes for males and females, respectively, were close to age-adjusted death rates for all victims (all races) due to motor vehicle traffic crashes (21.1 and 10.0). Overall, among victims of white race, they were the 7th leading cause of death for males and 10th for females of all ages.

**Exhibit 22: Deaths, Percents of Total Deaths and Death Rates for the 6 Leading Causes of Death for Persons All Ages, by Sex, United States, 1997**

**WHITE Male Deaths**

Cause of Death	Rank Order	Number of Deaths	% of Total Deaths	Age-Adjusted Death Rates
All Causes		986,884	99.0	572.8
Diseases of the Heart	1	313,316	31.7	168.1
Malignant Neoplasms (Cancer)	2	243,192	24.6	145.6
Stroke	3	53,158	5.4	25.6
Chronic Obstructive Pulmonary Disease	4	51,184	5.2	26.4
Pneumonia	5	34,135	3.5	15.3
Nontransport Accidents	6	25,862	2.6	19.0
Motor Vehicle Traffic Crashes	7	23,074	2.3	20.9

**Exhibit 23 : Deaths, Percents of Total Deaths and Death Rates for the 6 Leading Causes of Death for Persons of All Ages, by Sex, United States, 1997**

**WHITE Female Deaths**

Cause of Death	Rank Order	Number of Deaths	% of Total Deaths	Age-Adjusted Death Rates
All Causes		990,160	100.0	357.0
Diseases of the Heart	1	325,909	32.3	90.1
Malignant Neoplasms (Cancer)	2	225,329	22.3	105.8
Stroke	3	85,166	8.4	22.4
Chronic Obstructive Pulmonary Diseases	4	49,586	4.9	18.4
Pneumonia	5	42,059	4.2	10.1
Diabetes	6	26,882	2.7	10.6
Motor Vehicle Traffic Crashes	10	12,043	1.2	10.1

**Exhibit 24 : Deaths, Percents of Total Deaths and Death Rates for the 6 Leading Causes of Death for Persons of All Ages, by Sex, United States, 1997**  
**WHITE Deaths (Both Sexes)**

Cause of Death	Rank Order	Number of Deaths	% of Total Deaths	Age-Adjusted Death Rates
All Causes		1,996,393	100.5	455.6
Diseases of the Heart	1	639,225	32.0	125.5
Malignant Neoplasms (Cancer)	2	468,521	23.5	122.7
Stroke	3	138,324	6.9	23.9
Chronic Obstructive Pulmonary Disease	4	100,770	5.0	21.7
Pneumonia	5	76,194	3.8	12.2
Diabetes	6	49,850	2.5	11.8
Motor Vehicle Traffic Crashes	8	35,117	1.8	15.5

***African-Americans***

In 1997, there were 3,830 male deaths and 1,745 female deaths due to motor vehicle traffic crashes for people of African-American race. This was 2.7% and 1.3% of all the male and female African-American deaths, respectively. The corresponding crude death rates per 100,000 resident African-American population was 23.8 for males and 9.8 for females.

Motor vehicle traffic crashes were the No. 1 cause of African-American male deaths for each age 7, 9-10 and 13. For these ages, traffic crashes were responsible for 81 deaths or 20.7% of all male deaths at these ages. This was 28% more than the number of victims due to the No. 2 cause (Nontransport Accidents) at these ages.

They were the No. 1 cause of female African-American deaths for each ages 6-7, 9-12, 14-16, 18 and 25. For these ages, traffic crashes were responsible for 249 deaths or 29% of all female deaths at these ages. This was 55.6% more than the number of victims due to the No.2 cause (Nontransport Accidents) at these ages.

For both sexes combined, they were the No. 1 cause of African-American deaths for each ages 7 and 9-11. For these ages, traffic crashes were responsible for 139 deaths or 22% of all deaths in both sexes at

these ages. This was 40.4% more than the number of victims due to the No. 2 cause (Nontransport Accidents) at these ages.

Exhibits 25-27 present statistics on the deaths caused by the 6 leading causes of death for African-American males, females and both sexes for 1997. The age-adjusted death rates of 24.5 and 9.7 due to motor vehicle traffic crashes for males and females, respectively, were different from the age-adjusted death rates for all victims (all races) due to motor vehicle traffic crashes (21.1 and 10.0). Overall, among African-American victims, they were the 10th leading cause of death for males and 14th for females of all ages.

**Exhibit 25 : Deaths, Percents of Total Deaths and Death Rates for the 6 Leading Causes of Death for Persons All Ages, by Sex, United States, 1997**  
**African-American Male Deaths**

Cause of Death	Rank Order	Number of Deaths	% of Total Deaths	Age-Adjusted Death Rates
All Causes		144,110	93.5	910.8
Diseases of the Heart	1	37,212	25.8	235.9
Malignant Neoplasms (Cancer)	2	32,719	22.7	214.6
Stroke	3	7,794	5.4	48.6
Homicide and Legal Intervention	4	7,601	5.3	48.3
HIV	5	6,078	4.2	38.6
Nontransport Accidents	6	4,486	3.1	28.0
Motor Vehicle Traffic Crashes	10	3,830	2.7	24.5

**Exhibit 26 : Deaths, Percents of Total Deaths and Death Rates for the 6 Leading Causes of Death for Persons of All Ages, by Sex, United States, 1997  
African-American Female Deaths**

Cause of Death	Rank Order	Number of Deaths	% of Total Deaths	Age-Adjusted Death Rates
All Causes		132,410	100.1	544.2
Diseases of the Heart	1	39,962	30.2	147.3
Malignant Neoplasms (Cancer)	2	28,614	21.6	131.0
Stroke	3	10,337	7.8	48.6
Homicide	4	6,690	5.1	9.3
Pneumonia	5	3,929	3.0	13.1
Chronic Obstructive Pulmonary Disease	6	2,942	2.2	12.7
Motor Vehicle Traffic Crashes	14	1,745	1.3	9.7

**Exhibit 27 : Deaths, Percents of Total Deaths and Death Rates for the 6 Leading Causes of Death for Persons of All Ages, by Sex, United States, 1997  
African-American Deaths (Both Sexes)**

Cause of Death	Rank Order	Number of Deaths	% of Total Deaths	Age-Adjusted Death Rates
All Causes		276,520	96.6	704.1
Diseases of the Heart	1	77,174	27.9	185.4
Malignant Neoplasms (Cancer)	2	61,333	22.2	165.0
Stroke	3	18,131	6.6	42.5
Diabetes	4	11,130	4.0	28.9
Homicide and Legal Intervention	5	9,253	3.3	28.1
HIV	6	8,525	3.1	24.9
Motor Vehicle Traffic Crashes	10	5,575	2.0	16.6

### *Native Americans*

In 1997, there were 469 male deaths and 233 female deaths due to motor vehicle traffic crashes for Native Americans. This was 7.8% and 5.1% of all the male and female Native American deaths, respectively. The corresponding crude death rates per 100,000 resident Native American population was 41.0 for males and 19.9 for females.

Motor vehicle traffic crashes were the No. 1 cause of Native American male deaths for each age 2, 4, 6-8, 14-22, 24-30, 32-34 and 37-39. For these ages, traffic crashes were responsible for 289 deaths or 28.8% of all male deaths at these ages. This was 99.3% more than the number of victims due to the No.2 cause (Suicide) at these ages.

They were the No. 1 cause of female Native American deaths for each age 2-4, 6, 8-10, 12-15, 17-28, 30-33 and 36. For these ages, traffic crashes were responsible for 113 deaths or 30.9% of all female deaths at these ages. This was 4.4 times the number of victims due to the No. 2 cause (Nontransport Accidents) at these ages.

For both sexes combined, they were the No. 1 cause of Native American deaths for each age 2, 4, 6-9, 12-34, 36, 38-39, 41. For these ages, traffic crashes were responsible for 457 deaths or 26.9% of all deaths in both sexes at these ages. This was 1.2 times the number of victims due to the No. 2 cause (Nontransport Accidents) at these ages.

Exhibits 28-30 present statistics on the deaths caused by the 6 leading causes of death for Native American males, females and both sexes for 1997. The age-adjusted death rates of 41.8 and 20.3 due to motor vehicle traffic crashes for males and females, respectively, were significantly higher than the age-adjusted death rates for all victims (all races) due to motor vehicle traffic crashes (21.1 and 10.0). Overall, among Native American victims, they were the 3rd leading cause of death for males and 5th for females of all ages.

**Exhibit 28 : Deaths, Percents of Total Deaths and Death Rates for the 6 Leading Causes of Death for Persons All Ages, by Sex, United States, 1997**  
**NATIVE AMERICAN Male Deaths**

Cause of Death	Rank Order	Number of Deaths	% of Total Deaths	Age-Adjusted Death Rates
All Causes		5,985	107.4	583.2
Diseases of the Heart	1	1,347	22.5	136.1
Cancer	2	977	16.3	103.5
Motor Vehicle Traffic Crashes	3	469	7.8	41.8
Nontransport Accidents	4	398	6.7	37.0
Diabetes	5	291	4.9	31.4
Chronic Liver Disease and Cirrhosis	6	244	4.1	24.7

**Exhibit 29 : Deaths, Percents of Total Deaths and Death Rates for the 6 Leading Causes of Death for Persons of All Ages, by Sex, United States, 1997**  
**NATIVE AMERICAN Female Deaths**

Cause of Death	Rank Order	Number of Deaths	% of Total Deaths	Age-Adjusted Death Rates
All Causes		4,591	103.8	358.1
Diseases of the Heart	1	1,036	22.6	73.5
Malignant Neoplasms (Cancer)	2	840	18.3	72.3
Diabetes	3	354	<b>7.7</b>	29.1
Stroke	4	284	6.2	19.8
Motor Vehicle Traffic Crashes	5	233	5.1	20.3
Chronic Liver Disease and Cirrhosis	6	182	4.0	16.8

**Exhibit 30 : Deaths, Percents of Total Deaths and Death Rates for the 6 Leading Causes of Death for Persons of All Ages, by Sex, United States, 1997  
NATIVE AMERICAN Deaths (Both Sexes)**

Cause of Death	Rank Order	Number of Deaths	% of Total Deaths	Age-Adjusted Death Rates
All Causes		10,576	106.5	463.6
Diseases of the Heart	1	2,383	22.5	102.1
Malignant Neoplasms (Cancer)	2	1,817	17.2	86.1
Motor Vehicle Traffic Crashes	3	702	6.6	31.1
Diabetes	4	645	6.1	30.2
Nontransport Accidents	5	539	5.1	23.5
Stroke	6	497	4.7	19.8

***Asian/Pacific Islander***

In 1997, there were 628 male deaths and 406 female deaths due to motor vehicle traffic crashes for Asian/Pacific-Islanders. This was 3.7% and 3.0% of all the male and female Asian/Pacific-Islander deaths, respectively. The corresponding crude death rates per 100,000 resident Asian/Pacific-Islander population was 11.1 for males and 7.7 for females.

Motor vehicle traffic crashes were the No. 1 cause of Asian/Pacific-Islander male deaths for each age 3, 11, 16, 18, 20-21, 23, 25-26, 28-30, 32 and 34. For these ages, traffic crashes were responsible for 180 deaths or 25.0% of all male deaths at these ages. This was 59% more than the victims due to the No. 2 cause (suicide) at these ages.

They were the No. 1 cause of female Asian/Pacific-Islander deaths for each age 5-6, 8, 11-20, 22-28 and 30. For these ages, traffic crashes were responsible for 136 deaths or 30.8% of all female deaths at these ages. This was 1.6 times the number of victims due to the No. 2 cause (Suicide) at these ages.

For both sexes combined, they were the No. 1 cause of Asian/Pacific-Islander deaths for each age 8, 11-14, 16-26, 28, 30 and 32. For these ages, traffic crashes were responsible for 336 deaths or 25.9% of all deaths in both sexes at these ages. This was 76% more than the number of victims due to the No. 2 cause (suicide) at these ages.

Exhibits 31-33 present statistics on the deaths caused by the 6 leading causes of death for Asian/Pacific-Islander males, females and both sexes for 1997. The age-adjusted death rates of 12.4 and 7.7 due to motor vehicle traffic crashes for males and females, respectively, were lower than the age-adjusted death rates for all victims (all races) due to motor vehicle traffic crashes (21.1 and 10.0). Overall, among Asian/Pacific-Islander victims, they were the 5th leading cause of death for males and 6th for females of all ages.

**Exhibit 31 : Deaths, Percents of Total Deaths and Death Rates for the 6 Leading Causes of Death for Persons All Ages, by Sex, United States, 1997**  
**ASIAN/PACIFIC ISLANDER Male Deaths**

Cause of Death	Rank Order	Number of Deaths	% of Total Deaths	Age-Adjusted Death Rates
All Causes		17,060	107.1	344.9
Diseases of the Heart	1	4,723	27.7	94.2
Malignant Neoplasms (Cancer)	2	4,222	24.7	90.4
Stroke	3	1,399	8.2	27.7
Pneumonia	4	729	4.3	13.2
Chronic Obstructive Pulmonary Conds.	5	628	3.7	12.4
Motor Vehicle Traffic Crashes	6	540	3.2	11.3

**Exhibit 32 : Deaths, Percents of Total Deaths and Death Rates for the 6 Leading Causes of Death for Persons of All Ages, by Sex, United States, 1997**  
**ASIAN/PACIFIC ISLANDER Female Deaths**

Cause of Death	Rank Order	Number of Deaths	% of Total Deaths	Age-Adjusted Death Rates
All Causes		13,696	110.8	213.2
Cancer	1	3,684	26.9	62.5
Diseases of the Heart	2	3,469	25.3	49.0
Stroke	3	1,440	10.5	21.2
Pneumonia	4	562	4.1	7.3

Diabetes	5	523	3.8	8.4
Motor Vehicle Traffic Crashes	6	406	3.0	7.7

**Exhibit 33 : Deaths, Percents of Total Deaths and Death Rates for the 6 Leading Causes of Death for Persons of All Ages, by Sex, United States, 1997  
ASIAN/PACIFIC ISLANDER Deaths (Both Sexes)**

Cause of Death	Rank Order	Number of Deaths	% of Total Deaths	Age-Adjusted Death Rates
All Causes		30,756	108.7	271.8
Diseases of the Heart	1	8,192	29.0	69.0
Malignant Neoplasms (Cancer)	2	7,906	27.9	74.6
Stroke	3	2,839	10.0	24.1
Pneumonia	4	1,291	4.6	9.8
Diabetes	5	1,011	3.6	9.2
Chronic Obstructive Pulmonary Diseases	6	1,002	3.5	8.5
Motor Vehicle Traffic Crashes	7	946	3.1	9.4

***People of Hispanic Origin***

In 1997, there were 3,071 male and 1,157 female victims of Hispanic Origin due to motor vehicle traffic crashes. This was approximately 5.7% and 2.8%, of all the male and female deaths, respectively. The corresponding crude death rates per 100,000 resident Hispanic population was 20.3 for males and 8.1 for females.

They were the No. 1 cause of male, Hispanic death for each age 3-10, 12-14, 28, 31 and 33. For these ages, traffic crashes were responsible for 384 deaths or 19.9% of all male deaths at these ages. This was 31% more than the number of victims due to the No. 2 cause (Nontransport Accidents) at these ages.

They were the No. 1 cause of female deaths for each age 3-4, 6-10 and 14-28. For these ages, traffic crashes were responsible for 483 deaths. For these ages, traffic crashes were responsible for 483 deaths or 27.9% of all female deaths at these ages. This was 2.8 times the number of victims due to the No. 2 cause (Homicide and Legal Intervention) at these ages.

The incidence of males deaths from traffic crashes was greatest for ages 19-23, with a total of 616 deaths that ranged from a low of 110 for age 22 to a high of 160 for age 20. 20.0% of the male traffic deaths occurred in this age group. For these ages, traffic crashes also accounted for 28.7% of male deaths from all causes, and 10% lesser deaths than the No. 1 cause (Homicide).

The incidence of female deaths from traffic crashes was greatest for ages 17-21, with a total of 176 deaths that ranged from a low of 21 for age 19 to a high of 51 for age 17. 15.2% of the female traffic deaths occurred in this age group. For these ages, traffic crashes also accounted for 37% of the female deaths from all causes, and almost 2.8 times the number of deaths due to the No.2 cause (Homicide).

Exhibits 34 and 35 present statistics on the deaths caused by the 6 leading causes of death for males, females and both sexes of people of Hispanic Origin for 1997. The age-adjusted death rates of 21.0 and 8.4 due to motor vehicle traffic crashes for males and females, respectively, were close to age-adjusted death rates for all victims (Hispanic and Nonhispanic) due to motor vehicle traffic crashes (21.1 and 10.0). Overall, among victims of Hispanic Origin, they were the 3rd leading cause of death for males and 6th for females of all ages.

**Exhibit 34 : Deaths, Percents of Total Deaths and Death Rates for the 6 Leading Causes of Death for Persons of HISPANIC ORIGIN of All Ages, by Sex, United States, 1997**

**Male Deaths**

Cause of Death	Rank Order	Number of Deaths	% of Total Deaths	Age-Adjusted Death Rates
All Causes		54,348	96.7	447.7
Diseases of the Heart	1	12,654	23.3	113.4
Malignant Neoplasms (Cancer)	2	9,865	18.2	91.4
Motor Vehicle Traffic Crashes	3	3,071	5.7	21.0
Homicide and Legal Intervention	4	2,800	5.2	18.2
Nontransport Accidents	5	2,702	5.0	18.9
Cerebrovascular Diseases (Stroke)	6	2,510	4.6	22.1

**Exhibit 35 : Deaths, Percents of Total Deaths and Death Rates for the 6 Leading Causes of Death for Persons of HISPANIC ORIGIN of All Ages, by Sex, United States, 1997**  
**Female Deaths**

Cause of Death	Rank Order	Number of Deaths	% of Total Deaths	Age-Adjusted Death Rates
All Causes		41,112	106.5	263.4
Diseases of the Heart	1	11,170	27.2	64.7
Malignant Neoplasms (Cancer)	2	8,770	21.3	65.5
Stroke	3	2,796	6.8	17.0
Diabetes	4	2,455	6.0	17.7
Pneumonia	5	1,493	3.6	7.4
Motor Vehicle Traffic Crashes	6	1,157	2.8	8.4

## **9. Motor Vehicle Traffic Crashes as a Leading Cause of Death by the State of Residence**

Exhibit 36 presents the deaths, percentage of deaths due to all causes and rank-order by the State of Residence of the victims due to motor vehicle traffic crashes in 1997. The death rate in Exhibit 36 is the crude death rate for both sexes combined. The rank in Exhibit 36 denotes the rank of motor vehicle traffic crashes as a cause of death for the fatalities associated with that particular state.

The highest rank as a cause of death due to motor vehicle traffic crashes for both sexes was 6 for the States of Georgia, Mississippi and Montana. For males, the highest rank as a cause of death was 5 for the States of Nevada, Texas and Wyoming. For females, the highest rank of 6 was attained for Georgia, Mississippi and Montana.

The highest death rate due to motor vehicle traffic crashes was 31.6 for both sexes in the State of Mississippi. The lowest death rate of 8.1 was for the State of Massachusetts.

The States of New Mexico and Mississippi, traffic crashes accounted for 4.1% of all male deaths, the highest percentage for any State. The corresponding percentage for female deaths was 2.6% for the State of Wyoming. For both sexes combined, the State of New Mexico, where traffic crashes were responsible for 3.3% of all deaths in 1995.

**Exhibit 36 : Deaths, Percentage of Total Deaths and Rank-Order of Deaths due to Motor Vehicle Traffic Crashes by the State of Residence of Victims, 1997, Males**

State	Male			Female			Both Sexes			Death Rate
	Rank	Deaths	%	Rank	Deaths	%	Rank	Death	%	
AL	5	846	3.9	9	385	1.8	7	1,231	2.9	28.5
AK	7	53	3.4	9	22	2.1	8	75	2.9	12.3
AZ	6	637	3.3	10	286	1.6	8	923	2.5	20.3
AR	6	460	3.3	8	250	1.8	7	710	2.6	28.1
CA	9	2,485	2.2	11	1,241	1.1	8	3,726	1.7	11.6
CO	7	401	3.1	12	212	1.7	7	613	2.4	15.8
CT	8	221	1.6	14	138	0.9	10	359	1.2	11.0
DE	7	80	2.5	8	58	1.8	8	138	2.1	18.8
DC	16	35	1.1	28	17	0.6	20	52	0.9	9.8
FL	7	1,798	2.3	10	917	1.2	7	2,715	1.8	18.5
GA	5	1,036	3.5	9	525	1.8	6	1,561	2.6	20.9
HI	9	83	1.8	9	52	1.5	9	135	1.7	11.4
ID	8	147	3.1	8	91	2.2	8	238	2.7	19.7
IL	10	925	1.8	15	478	0.9	10	1,403	1.4	11.7
IN	6	661	2.5	14	294	1.1	8	955	1.8	16.3
IA	7	310	2.3	11	171	1.2	9	481	1.7	16.9
KS	6	333	2.8	10	175	1.5	7	508	2.1	19.4
KY	6	571	3.0	11	260	1.4	8	831	2.2	21.3
LA	6	610	3.0	9	301	1.5	7	911	2.3	20.9
ME	10	100	1.7	11	78	1.3	9	178	1.5	14.3
MD	11	408	2.0	14	231	1.1	10	639	1.5	12.5

State	Male			Female			Both Sexes			Death Rate
	Rank	Deaths	%	Rank	Deaths	%	Rank	Death	%	
MA	11	330	1.3	24	167	0.6	15	497	0.9	8.1
MI	7	942	2.3	10	558	1.3	8	1,500	1.8	15.3
MN	11	345	1.9	12	224	1.2	10	569	1.5	12.1
MS	5	570	4.1	7	294	2.2	6	864	3.1	31.6
MO	6	729	2.8	9	407	1.5	8	1,136	2.1	21.0
MT	6	146	3.6	8	83	2.2	6	229	3.0	26.1
NE	8	184	2.5	12	109	1.4	9	293	1.9	17.7
NV	6	232	3.1	6	113	1.9	7	345	2.6	20.6
NH	9	91	2.0	21	33	0.7	11	124	1.3	10.6
NJ	9	535	1.5	17	291	0.8	11	826	1.2	10.3
NM	6	277	4.1	9	144	2.5	7	421	3.3	24.4
NY	9	1,163	1.5	14	626	0.8	9	1,789	1.1	9.9
NC	9	986	3.0	8	540	1.7	7	1,526	2.3	20.5
ND	9	61	2.0	12	40	1.4	9	101	1.7	15.8
OH	9	947	1.8	17	457	0.9	10	1,404	1.3	12.5
OK	6	546	3.2	8	298	1.8	7	844	2.5	25.5
OR	8	364	2.6	11	163	1.1	11	527	1.8	16.2
PA	9	1,087	1.8	16	525	0.8	12	1,612	1.3	13.4
RI	9	69	1.5	21	30	0.6	11	99	1.0	10.0
SC	5	602	3.5	8	294	1.8	7	896	2.7	23.6
SD	8	90	2.5	8	53	1.6	9	143	2.1	19.6
TN	6	826	3.1	10	392	1.5	8	1,218	2.3	22.6
TX	5	2,449	3.4	6	1,235	1.8	7	3,684	2.6	19.0
UT	7	222	3.8	8	140	2.5	7	362	3.1	17.5

VT	9	45	1.9	15	25	1.0	10	70	1.4	11.9
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State	Male			Female			Both Sexes			Death Rate
	Rank	Deaths	%	Rank	Deaths	%	Rank	Death	%	
VA	7	634	2.4	14	310	1.1	8	944	1.8	14.0
WA	9	453	2.2	10	279	1.4	9	732	1.8	13.1
WV	8	239	2.3	11	132	1.2	8	371	1.8	20.4
WI	8	477	2.2	13	238	1.0	9	715	1.6	13.7
WY	7	72	3.4	6	45	2.6	7	117	3.1	24.4
Total	8	27,913	2.4	10	14,427	1.2	8	42,340	1.8	15.8

## References

1. National Center for Health Statistics. "Vital Statistics Mortality Data, Multiple Cause of Death Detail, 1997". NCHS Public-Use Data Tapes available from the National Technical Information Service, Springfield, Va.
2. National Center for Health Statistics: Technical procedures. "Vital Statistics of the United States, 1997.
3. World Health Organization: "Manual of the International Statistical Classification of Diseases, Injuries and Cause of Death", Based on the Recommendations of the Ninth Revision Conference, 1975. Geneva: World Health Organization, 1977.
4. "Principles of Educational and Psychological Testing", by Frederick G. Brown, Iowa State University. The Dryden Press Inc., Hinsdale, Illinois, 1970, pp. 158-197.
5. NHTSA Technical Report. "Motor Vehicle Traffic Crashes as a Leading Cause of Death in the United States during 1992", by Henri A. Richardson, February 1997.
5. NHTSA Technical Report. "Motor Vehicle Traffic Crashes as a Leading Cause of Death in the United States during 1994", by Rajesh Subramanian, March 1998.
7. U.S. Bureau of the Census: Standardized Death Rates. "The Methods and Materials of Demography", by Henry S. Shryock, Jacob S. Siegel, and Associates. U.S. Government Printing Office, Washington, D.C., 1971, Vol. 2, pp. 418-424.
8. Evelyn M. Kitagawa, "Standardized Comparisons in Population Research", *Demography*, Vol. I, No.1 (1964), pp. 296-315.
9. National Center for Health Statistics: Deaths: Final Data for 1997. "National Vital Statistics Reports", Vol. 47, No. 19, Supplement. Public Health Service, Hyattsville, MD, June 1999.

**Appendix 1: List of 64 Single and Aggregated Cause of Death Adopted by NCSA for Cause of Death Ranking**

<b>Code</b>	<b>Cause of Death</b>	<b>ICD Codes</b>
1	Intestinal Infectious Diseases	001-009
2	Tuberculosis, all forms	010-018, 137
3	Septicaemia	38
4	Human Immunodeficiency Virus (HIV) Infection	042-044
5	Other Viral Diseases	045-079, 138
6	Other Infectious and parasitic Diseases	020-037, 039-041, 080-136, 139
7	Malignant Neoplasms (Cancer)	140-208
8	Benign Neoplasms (Including Carcinoma in-situ)	210-234
9	Neoplasms of Uncertain Behavior and Unspecified	235-239
10	Diabetes Mellitus	250-250
11	Diseases of Thyroid and other Endocrine Glands	240-246, 251-259
12	Nutritional Deficiencies	260-269
13	Other metabolic and Immunity Disorders	270-279
14	Anaemia	280-285
15	Other Diseases of blood and blood forming organs	286-289
16	Alcohol Dependence	303-303
17	Other Neuroses	300-302, 304-316
18	Psychoses and mental Retardation	290-299, 317-319
19	Meningitis	320-322
20	Parkinson's Diseases	332
21	Multiple Sclerosis	340
22	Epilepsy	345
23	Alzheimer's Disease	331.0
24	Other Diseases of Nervous System and Sense Organs	323-330.9, 331.1-331.9, 333-337, 341-344, 346-
25	Diseases of the Heart	390-398, 402, 404-429
26	Hypertension, with or without Renal Disease	401, 403
27	Cerebro Vascular Diseases (Stroke)	430-438
28	Atherosclerosis	440
29	Aortic Aneurysm	441
30	Other Diseases of Arteries, Arterioles and Capillaries	442-448
31	Diseases of Veins and Lymphatics	451-459
32	Acute Bronchitis and Bronchiolitis	466
33	Other Diseases of Upper Respiratory Tract	460-465, 470-478
34	Pneumonia	480-486

35	Influenza	487
<b>Code</b>	<b>Cause of Death</b>	<b>ICD Codes</b>
36	Chronic Obstructive Pulmonary Diseases	490-496
37	Pneumoconioses and Other Lung Diseases due to	500-508
38	Other Diseases of the Respiratory System	510-519
39	Ulcer of Stomach and Duodenum	531-533
40	Hernia and Intestinal Obstruction without mention of	550-553, 560
41	Noninfective Enteritis and Colitis	555-558
42	Diverticula of Intestine	562
43	Chronic Liver Disease and Cirrhosis	571
44	Cholelithiasis and Other Diseases of Gallbladder	574-575
45	Diseases of Pancreas	577
46	Other Digestive Diseases	520-530, 534-543, 564-570, 572-573, 576, 578-
47	Nephritis, Nephrotic Syndrome and Nephrosis	580-589
48	Infections of Kidney	590
49	Other Diseases of the Urinary System	591-599
50	Diseases of Genital Organs (and Breast)	600-629
51	Complications of Pregnancy, Childbirth and the	630-676
52	Diseases of the Skin and Subcutaneous Tissue	680-709
53	Arthropathies and Related Disorders	710-719
54	Other Musculoskeletal and Connective Tissue	720-739
55	Congenital Anomalies	740-759
56	Certain Conditions Originating in the Perinatal	760-779
57	Symptoms, Signs and Ill-Defined Conditions	780-799
58	Motor Vehicle Traffic Crashes <sup>1</sup>	E810-E819
59	Motor Vehicle Nontraffic Crashes <sup>2</sup>	E800-E807, E826-E848

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<sup>1</sup>Any transport crash involving a motor vehicle which originates from and/or terminates on a public roadway.

<sup>2</sup>Any transport crash involving a motor vehicle which occurs entirely off the public roadway

<b>Code</b>	<b>Cause of Death</b>	<b>ICD Codes</b>
<b>60</b>	<b>Nontransport Accidents<sup>3</sup></b>	<b>E820-E825</b>
<b>61</b>	<b>Other Transport Crashes<sup>4</sup></b>	<b>E850-E949</b>
<b>62</b>	<b>Suicide</b>	<b>E950-E959</b>
<b>63</b>	<b>Homicide and Legal Intervention</b>	<b>E960-E978</b>
<b>64</b>	<b>Injury Unknown if Purposely or Accidentally Inflicted</b>	<b>E980-E999</b>

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<sup>3</sup>Accidents due to poisoning, surgical misadventures, falls, fires, natural and environmental factors, submersion, Accidental Suffocation, firearms, machinery, overexertion etc.

<sup>4</sup>Any transport crash involving aircraft, watercraft, railway trains, or other road vehicles, but excluding crashes involving motor vehicles and railway trains, or motor vehicles.

**Appendix 2 : List of 39 Single and Aggregated Causes of Death Adopted by the NCHS for Cause-of-Death Ranking<sup>1</sup>**

<b>Cause of Death</b>	<b>ICD Codes</b>
Shigellosis and Amebiasis	004, 006
Tuberculosis	010-018
Whooping Cough	033
Streptococcal Sore Throat, Scarlatina, and Erysipelas	034-035
Meningococcal Infection	036
Septicemia	038
Human Immunodeficiency Virus (HIV) Infection	042-044
Acute Poliomyelitis	045
Measles	055
Viral Hepatitis	070
Syphilis	090-097
Malignant Neoplasms, including Neoplasms of Lymphatic and Hematopoietic Tissues	140-208
Benign Neoplasms, Carcinoma in Situ, and Neoplasms of Uncertain Behavior and of Unspecified Nature	210-239
Diabetes Mellitus	250
Nutritional Deficiencies	260-269
Anemias	280-285
Meningitis	320-322
Diseases of the Heart	390-398, 402, 404-429
Hypertension with or without Renal Disease	401, 403
Cerebrovascular Diseases	430-438

<sup>1</sup>Based on 37 categories from the NCHS List of 72 Selected Causes of Death, HIV and Alzheimer's Disease. See Reference 9, Tables 7-11, for listings of the 72 selected causes by age and race-sex group.

Atherosclerosis	440
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**Appendix 2 (Continued):**

<b>Cause of Death</b>	<b>ICD Codes</b>
Acute Bronchitis and Bronchiolitis	466
Pneumonia and Influenza	480-487
Chronic Obstructive Pulmonary Diseases and Allied Conditions	490-496
Ulcer of Stomach and Duodenum	531-533
Appendicitis	540-543
Hernia of Abdominal Cavity and Intestinal Obstruction without mention of Hernia	550-553,560
Chronic Liver Disease and Cirrhosis	571
Cholelithiasis and Other Disorders of Gallbladder	574-575
Nephritis, Nephrotic Syndrome, and Nephrosis	580-589
Infections of Kidney	590
Hyperplasia of Prostrate	600
Complications of Pregnancy, Childbirth and the Puerperium	630-676
Congenital Anomalies	740-759
Certain Conditions Originating in the Perinatal Period	760-779
Accidents and Adverse Effects	E800-E949
Suicide	E950-E959
Homicide and Legal Intervention	E960-E978
Alzheimer's Disease	331.0