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Report of the Second Workshop on Age Adjustment

December 1998



U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Centers for Disease Control and Prevention
National Center for Health Statistics



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December 1998
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Foreword

The Second Workshop on Age Adjustment, sponsored by the National Center for Health Statistics, focused on important policy issues related to this widely used index in health statistics, thereby complementing an earlier workshop that was devoted to technical issues. I am particularly pleased that the recommendations of the Second Workshop have been translated into a change in Departmental statistical policy effective with Secretary Shalala's directive of August 26, 1998. I am using this as an opportunity to thank the participants of the first and second workshops for their contributions to improving the Federal Government's statistical practices in the area of health.

Edward J. Sondik, Ph.D.
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Contents

- Abstract 1
- Chapter 1. Introduction 1
- Chapter 2. Recommendations of the Second Workshop on Age Adjustment 2
- Chapter 3. Recommendations of the First Workshop and Follow Up 4
- Chapter 4. Summary and Conclusion 7
- References 8
- Appendix I 33
 - Agenda 33
- Appendix II 34
 - Workshop Participants 34
- Appendix III 35
 - Comments on Age Adjustment by Robert Schoen 35
 - References 35

Text Tables

- A. Age-adjusted death rates for 15 leading causes of death using National Center for Health Statistics 10-year age groups and expanded 10-year age groups: United States, 1994 5
- B. Unadjusted and age-adjusted death rates for selected causes of death for all ages and by three broad age categories: United States, 1979–94 6

Detailed Tables

- 1. Age-adjusted death rates for 72 selected causes of death, Human immunodeficiency virus infection, and Alzheimer’s disease using National Center for Health Statistics 10-year age groups and expanded 10-year age groups: United States, 1994 9
- 2. Unadjusted death rates for 72 selected causes of death, Human immunodeficiency virus infection, and Alzheimer’s disease by three broad age categories: United States, 1979–94 11
- 3. Age-adjusted death rates for 72 selected causes of death, Human immunodeficiency virus infection, and Alzheimer’s disease by three broad age categories: United States, 1979–94 20
- 4. Age-adjusted death rates for 72 selected causes of death, Human immunodeficiency virus infection, and Alzheimer’s disease: United States, 1979–94 30

Appendix Figures

- 1. Age-specific death rates per thousand population. Coale-Demeny (1966) “West” life tables for females 36
- 2. Percent differences in mortality rates by sex for whites: United States, 1950, 1960, and 1970 37

Abstract

This report contains a summary of the Second Workshop on Age Adjustment held at the National Center for Health Statistics on June 5–6, 1997. The workshop, which was a follow up to the First Workshop on Age Adjustment (1991), was held to consider changing the standard used for age-adjusting death rates and to develop an implementation plan. This report includes follow up to the recommendations from the first workshop.

Participants in the second workshop included representatives from selected Federal agencies, State health departments, nongovernmental agencies, and academia. The participants recommended that the current population standard for age-adjusting death rates be changed from the 1940 standard million population to a standard based on a projected year 2000 population. On August 26, 1998, the Secretary, U.S. Department of Health and Human Services approved the recommendations of the second workshop as departmental policy effective with the 1999 data year. In addition, the proposed change has been widely publicized in presentations to State vital statistics programs and to Federal agencies.

Report of the Second Workshop on Age Adjustment

by Robert N. Anderson, Ph.D., and Harry M. Rosenberg, Ph.D.

Chapter 1 Introduction

Age standardization, often called “age adjustment,” has been used broadly for about 150 years to eliminate the confounding effects of differences in age composition. In 1844 F.G.P. Neison presented a paper to the Statistical Society of London in which he proposed a method to account for the differences in age composition of communities when comparing mortality (1). Since then experts have met at least nine times to discuss age adjustment (2). Most recently the National Center for Health Statistics (NCHS) held two workshops (1991, 1997) to examine aspects of age-adjusting death rates. This report provides a description and the recommendations of the 1997 workshop. This report also provides a summary of the results and recommendations of the 1991 workshop as well as the follow up to those recommendations. A record of the first workshop, which addressed technical issues, can be found in “Reconsidering Age Adjustment Procedures: Workshop Proceedings (3).”

The crude death rate is a widely used measure of mortality. However, crude death rates are heavily influenced by the age composition of populations. As such, comparisons of crude rates

over time or between groups may be misleading if the groups differ in age composition. This is relevant, for example, in trend comparisons of U.S. mortality given the aging of the U.S. population over the past few decades (4). Age adjustment is one of the key tools used in mortality statistics to account for the changing age distribution of the population, and thereby to make meaningful comparisons over time and among groups in the risk of mortality.

Age adjustment by the direct method requires a standard age distribution or “standard population.” The selection of an appropriate standard population is to some extent an arbitrary decision, i.e., there is no theoretically correct standard population. In fact there are few statistical reasons to guide the selection of a standard (5–7). The only guidance given in the statistical literature is that the standard population selected should not be considered abnormal relative to the populations being studied. That is, it should reflect a reasonable age distribution (8). Thus, the choice of a standard has typically been driven by practical considerations. Currently, the most commonly used standard in the United States is based on the 1940 U.S. population (9). Termed the “U.S. standard million population,” this standard has been used by NCHS for age adjustment since 1943. Although there are no compelling statistical

This report was prepared in the Division of Vital Statistics. Susan A. Hawk and Kimberley D. Peters of the Division of Vital Statistics served as facilitators during the workshop. Jennifer Madans provided helpful comments and suggestions. The Registration Methods staff and the Data Acquisition and Evaluation Branch of the Division of Vital Statistics provided consultation to State vital statistics offices regarding collection of the death certificate data on which chapter 3 of this report is based. This report was edited by Patricia Keaton-Williams and typeset by Jacqueline M. Davis of the Publications Branch, Division of Data Services.

reasons to change from the 1940 standard, the question of whether the public health community would be better served by a new standard is valid.

On March 7, 1991, NCHS convened the first workshop on age adjustment to examine technical issues and problems related to the calculation and interpretation of age-adjusted death rates. The first workshop recommended the continued use of the 1940 standard by NCHS and encouraged other Federal and State governmental agencies to use this standard when publishing official mortality statistics (10). In addition, the workshop recommended that NCHS study issues that might lead to the introduction of a new or additional standard by the year 2000.

Recently NCHS and other Federal agencies have come under renewed pressure to change standards. The 1940 standard is viewed by some as an anachronistic set of population weights for two reasons.

- The 1940 population sounds too old. That is, it gives the impression to the media and other audiences that the technical procedures used by the Federal Government are outdated.
- The 1940 population has a younger age distribution than the current population. Although it is a matter of judgment as to whether the 1940 population is “abnormal” or “unnatural” relative to the current population, the negative perceptions remain.

Further, some agencies have departed from the 1940 standard in favor of more recent standards. At least three different standards, based on the 1940, 1970, and 1980 U.S. populations, are used by Federal agencies (9,11–13). These multiple standards have led to confusion among data users and have placed unnecessary burden on State health agencies, and have resulted in a renewed emphasis on the need for a single population standard among governmental agencies in the publication of mortality statistics.

The Second Workshop on Age Adjustment was convened by NCHS to reach agreement on a coordinated approach to age standardization in the

presentation of mortality statistics within the U.S. Department of Health and Human Services (DHHS) and among State health departments. Participants of the workshop were asked to address four questions with the goal of formulating recommendations to the Secretary, U.S. Department of Health and Human Services.

- Should a single standard or multiple standards be used?
- Which standard should be used?
- How often should standards be updated?
- How should recommendations of the workshop be publicized?

Presentations that addressed these questions were given by representatives from academia, the National Cancer Institute (NCI), the National Heart, Lung, and Blood Institute (NHLBI), NCHS, the National Center for Chronic Disease Prevention and Health Promotion, the National Association for Public Health Statistics and Information Systems, the National Academy of Sciences, and the National Committee on Vital and Health Statistics. See [appendix I](#) for the workshop agenda and [appendix II](#) for a list of workshop participants. The presentations were followed by a facilitated discussion of the major issues and formulation of recommendations.

The report proceeds as follows: Chapter 2 presents the recommendations, which reflect the consensus of the workshop participants. Included with each recommendation are related considerations raised during the discussion. Chapter 3 contains a summary of the first workshop and presents the results of research that addressed questions raised as a result of the first workshop recommendations. Chapter 4 provides a summary and conclusion of the second workshop and implementation issues. A paper, “Comments on Age Adjustment,” by Robert Schoen is presented in [appendix III](#). The purpose of this paper is to provide background on a proposal that received serious consideration by the workshop participants.

Chapter 2

Recommendations of the Second Workshop on Age Adjustment

Nine recommendations resulted from the Second Workshop on Age Adjustment. The recommendations reflect the consensus of the participants and are listed here with considerations that were raised during the development of the recommendations. In these recommendations, “agencies” refers to agencies in DHHS. For comparability and consistency, it would be advantageous if the recommendations were adopted by other Federal agencies, State agencies, and the private sector.

1. The population standard for age-adjusting death rates should be changed from the 1940 U.S. standard million population to the projected 2000 U.S. population to be published by the Census Bureau in the spring of 1998. A single standard should be used by all agencies for official presentation of data. For special analyses, alternative standards may be used as appropriate to the research.

Currently, at least three different standards are used by DHHS agencies. Although most agencies use the 1940 standard, NCI uses a 1970 standard (11,12), and some centers of the Centers for Disease Control and Prevention use a 1980 standard (13). There is a need for consistency among DHHS agencies and States when publishing mortality statistics to minimize confusion and misunderstanding. Thus, when releasing official mortality statistics to the public, age-adjusted death rates should be based on a single, uniform standard. Alternative standards may be used for special analyses when appropriate. To avoid confusion researchers should note their departure from standard practice when publishing their results.

From a statistical standpoint, when it is appropriate to standardize, the choice of population standard matters very little. However, even though

changing the standard is not a scientific necessity, there exists a significant public relations problem related to the 1940 standard. The 1940 population standard is perceived as outdated and misrepresenting the current population. These problems are considered sufficient reason to discard the 1940 standard and replace it with a standard that better reflects the current population.

The projected 2000 population was chosen as the replacement for the 1940 standard. The 2000 standard has the advantage of being similar in structure to the current population and will likely remain so for at least the next 10 years. The 2000 standard has the added appeal of being associated with a millennial year. Although there is no overriding statistical reason for choosing the 2000 standard over other age distributions, it is appropriate to choose a year that is similar to current reality and with which data users can be comfortable.

Other standards were considered by the workshop participants. These included the life table stationary population, the projected 2020 U.S. population, the projected 2050 U.S. population, and a uniform population distribution. The life table stationary population has the advantage of being a hypothetical standard not associated with a particular year. The concept of a standard based on a life table's stationary population was generally well received by the workshop participants. (The rationale for the life table standard is outlined in [appendix III](#).) However, the life table standard lacks the simplicity and intelligibility of the 2000 standard. The projected 2020 and 2050 populations are significantly older than the current population and could be viewed in much the same manner as the 1940 population is now viewed. The uniform population distribution gives equal weight to each age group. However, the uniform standard is highly sensitive to the age categories used. In addition it is expected that any standard should reflect a reasonable age distribution (8).

Implementation of the new 2000 population standard in data year 1999 (see recommendation 2) necessitates the use of a projected population. Each spring the U.S. Bureau of the Census

releases an updated set of U.S. population projections. The weights for the new 2000 standard should be based on population projections available in the spring of 1998 from the U.S. Bureau of the Census. Concerns have been raised regarding the use of a projected 2000 population rather than the actual 2000 Census population. However, the 2000 Census will not be available until 2002 or 2003, which would substantially delay implementation. It is very likely that differences between the actual and projected populations will be small. Thus, weights based on the projected population calculated to five or six decimal places will be, in all likelihood, identical to weights based on the actual Census population. Finally, it is worth noting that the current 1940 standard is not based on the enumerated 1940 census population.

2. Agencies should implement the new population standard by data year 1999.

The workshop participants recommended that official implementation of the new 2000 standard take place with data year 1999, i.e., beginning with publications reporting 1999 data. NCHS will begin publishing provisional 1999 data in June 1999.

Earlier implementation dates were considered. However, resource limitations particularly at the State level necessitate a somewhat later implementation date. Participants from all agencies were confident that implementation could become effective with the data year 1999.

3. Agencies should continue to use and publish their current standards until the official implementation data year (1999) when the new common standard will be adopted. To avoid confusion, agencies implementing the new standard prior to data year 1999 should simultaneously publish rates adjusted to both the old and new standards.

Some DHHS agencies indicated a desire to implement the new standard before data year 1999. To maintain the current level of consistency, each agency will continue to publish age-adjusted death rates using their current official standard until data year 1999 when the

new 2000 standard will be used exclusively for the publication of official mortality statistics. Rates based on the new standard may be published before data year 1999 provided that rates using the old standard are also published until data year 1999.

4. After the implementation date, agencies should use the new standard in all press releases and other communication with the public.

Beginning with data year 1999, all age-adjusted death rates reported to the media or to the general public should be calculated using the new standard. These statistics will be considered official. Rates using the old or other standards may be disseminated for research purposes as appropriate.

5. NCHS will be responsible for naming the new standard and will determine the number of significant digits.

The new standard will be referred to as the year 2000 standard population and will be a standard million. Therefore, weights will be calculated to six decimal places.

6. Agencies should continue to use the current 11 age groups (less than 1 year, 1 to 4 years, 5 to 14 years, 15 to 24 years, 25 to 34 years, 35 to 44 years, 45 to 54 years, 55 to 64 years, 65 to 74 years, 75 to 84 years, and 85 years and older) for calculating age-adjusted rates using the new standard.

The participants considered two proposals for expanding the number of age groups used to calculate age-adjusted rates. The first was to disaggregate the 85 years and older category to 85 to 94 years and 95 years and older. However, because the statistical stability of the rates for these upper age groups was of concern (especially for small geographical areas), the group decided that age-adjusted rates should continue to be based on the current standard 10-year age groups.

A second proposal recommended the use of 5-year age groups in the calculation of age-adjusted rates. Again, the statistical stability of the rates for those smaller age groups are a potential problem, especially for less common

causes of death. It is clear, however, that in special cases, the standard 10-year age groups may not be appropriate. Consequently, population weights will be made available by 5-year age groups for special studies.

7. NCHS will convene an implementation committee that will be responsible for developing a time table and strategies for implementation and for commissioning papers to publicize the change in standard.

The implementation committee will be responsible for addressing the practical matters related to implementation of the new age-adjustment standard. This will include the development of a time table and strategies for implementation and the commission of at least two papers—one technical and one nontechnical—drawing on publications developed by NHLBI (14). The committee will also need to garner support from such offices and organizations as the Secretary of DHHS, the DHHS Data Council, all DHHS agencies, the CDC Excellence in Science Committee, the Committee on National Statistics of the National Academy of Science, the National Cancer Policy Board, the National Committee on Vital and Health Statistics, and the Office of Management and Budget.

8. NCHS will publicize the new standard in NCHS publications, the Morbidity and Mortality Weekly Report, Public Health Reports, and appropriate professional newsletters. Scholarly papers could also be published in appropriate professional and technical journals.

It is important that the new standard be publicized as widely as possible, particularly in the public health, medical, and statistical communities where age-adjusted death rates are most used in scientific study and in reports of health trends. This can be accomplished by publications in professional newsletters and scholarly and technical journals, particularly those with wide readership.

In addition to the scientific community, the public should also be educated about the new standard in

particular and age adjustment in general, e.g., a definition of age-adjusted rates and an explanation on appropriate usage. This education will take the form of publications oriented to a nontechnical audience. NHLBI has taken the lead and is producing publications designed to educate the public on age adjustment (14).

9. NCHS will convene a workgroup to evaluate the age-adjustment standard at least every 10 years.

It is hoped that the new 2000 standard will be useful for many years. However, it is probable that another change will be needed. Therefore, the workshop participants recommend that the standard be evaluated at least every 10 years. A change in the standard should be made only if differences between the standard population and the actual population become problematic.

The results of the second workshop are nine recommendations to the Secretary of DHHS. On August 26, 1998, these recommendations were approved by the Secretary as DHHS policy.

Chapter 3 Recommendations of the First Workshop and Follow Up

On March 7, 1991, NCHS convened the First Workshop on Age Adjustment to examine technical issues and problems related to the calculation and interpretation of age-adjusted death rates (3). These issues arose during the formulation of the year 2000 health objectives. Among the issues examined were historical perspectives, advantages and disadvantages of age adjustment, the effect of the choice of standard on mortality patterns, and statistical and nonstatistical considerations in the selection of standard populations. Overall the need for age adjustment was reaffirmed by the workshop participants.

A set of four recommendations was formulated from the First Workshop on Age Adjustment (10):

- NCHS will continue to use the 1940 U.S. population as the basis for calculating age-adjusted death rates. This population will be converted into a relative distribution totaling 1,000,000 and will be referred to as the “U.S. Standard Million Population.”
- NCHS will study the following issues that may lead to the introduction of a new or an additional standard by the year 2000:
 - The effects on age-adjusted death rates of using rates for ages 85–94 years and 95 years and over, in place of 85 years and over in their calculation.
 - The feasibility of producing tables of trends for leading causes of death from 1960 to the present for broad age groupings and the desirability of finer age adjustment within the broad age groups.
 - The utility and timeliness of producing age-adjusted rates based on the latest decennial census.
- NCHS shall develop suitable technical notes and expository material concerning the appropriate use of age adjustment, differences in interpretation from crude and other rates used in the scientific literature, and clarification of issues expressed by data users.
- Other official agencies should use the standard million population when publishing age-adjusted mortality rates. Researchers examining unique issues might consider the use of other standard populations when appropriate and, to minimize confusion, point out this departure from standard practice.

The first recommendation was that all should refer to the 1940 population standard as the “U.S. Standard Million Population,” which NCHS has done in its publications since 1991. The third recommendation was to develop suitable technical notes and expository material concerning age adjustment. NCHS has also implemented this recommendation in its publications (9,15), including a

Healthy People 2000 *Statistical Notes* on age standardization (6). The second recommendation charged NCHS to investigate three additional areas:

Expanded age categories—NCHS examined the effect on age-adjusted death rates of expanding the number of age group categories used in the calculation by disaggregating the 85 years and over group into two categories—85–94 years and 95 years. **Table A** compares age-adjusted death rates for the 15 leading causes of death in 1994 using the standard age categories with rates calculated using age groups 85–94 and 95 years. The effect of using the different age groups is negligible for virtually all of the 15 leading causes of death (see **table 1** for other causes). For example, for heart disease the age-adjusted rate calculated using the standard age groups is 140.4 per 100,000 standard population, compared with 139.7 when calculated using the 85–94 and 95 and over age categories. The difference between these rates is only 0.49 percent. For most of the 15 leading causes of death, the difference in rates resulting from these two procedures is less than 1 percent. A similar result is obtained when the 1990

population is used as the standard (see **tables A** and **1**).

NCHS does not currently produce death rates for specific age groups older than 85 years because of problems in age reporting and instability in population estimates at the older ages. These issues are presently being examined. As the U.S. population ages and life expectancy increases, NCHS will be under pressure to present mortality statistics in more detail for the older age groups. In 1994 the life expectancy of white females at birth was 79.6 years; at age 65 years, it was 84.1 years (16). When NCHS begins to routinely show age-specific death rates separately for the age groups 85–94 years and 95 years, NCHS can consider expanding the age categories in the standard population to match these more detailed categories. Because the effects of expanding the age categories would be inconsequential, comparability with years before the change will not be substantially affected.

Age adjusting for broad age groups—NCHS examined the feasibility of producing trend tables for leading causes of death for three broad age groupings—0–24, 25–64, and 65 years

and over—and age adjusting within each of the broad groups. These broad age groups are useful from a programmatic standpoint and for showing complex patterns. **Table B** shows unadjusted and age-adjusted death rates from 1979 to 1994 for selected causes of death for these three broad age groups. **Tables 2** and **3** show these data for 72 selected causes of death, Human immunodeficiency virus infection, and Alzheimer's disease.

Age adjusting within the broad age groups does result in cases of trends that differ from those based on unadjusted rates. In the top panel of **table B**, unadjusted and age-adjusted rates are compared for all causes of death combined. For all causes at the youngest ages (0–24 years), the trends based on unadjusted and age-adjusted rates are virtually the same. In contrast, among the older age groups, the rate of change is substantially different depending on which type of rate is used. This is particularly true for the age group 65 years and over where the percent change is 0.92 percent for the unadjusted rates and 9.07 percent for the age-adjusted rates. The difference in trends reflects the shifts in the age distribution that

Table A. Age-adjusted death rates for 15 leading causes of death using National Center for Health Statistics 10-year age groups and expanded 10-year age groups: United States, 1994

[Age-adjusted death rates are calculated per 100,000 U.S. standard population. National Center for Health Statistics 10-year age groups are under 1 year, 1–4, 5–14, 15–24, 25–34, 35–44, 45–54, 55–64, 65–74, 75–84, and 85 years and over. Expanded 10-year age groups are the National Center for Health Statistics age groups expanded to include the age groups 85–94 years and 95 years and over]

Rank ¹	Cause of death (ICD-9 category)	Age-adjusted rates		
		NCHS age groups	Expanded age groups	Percent difference
...	All causes	507.4	506.1	-0.26
1	Diseases of heart (390–398,402,404–429)	140.4	139.7	-0.49
2	Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues (140–208)	131.5	131.5	0.01
3	Cerebrovascular diseases (430–438)	26.5	26.4	-0.47
4	Chronic obstructive pulmonary diseases and allied conditions (490–496)	21.0	21.0	0.00
5	Accidents and adverse effects (E800–E949)	30.3	30.3	-0.06
...	Motor vehicle accidents (E810–E825)	16.1	16.1	0.01
...	All other accidents and adverse effects (E800–E807,E826–E949)	14.2	14.2	-0.14
6	Pneumonia and influenza (480–487)	13.0	12.9	-1.08
7	Diabetes mellitus (250)	12.9	12.9	-0.05
8	Human immunodeficiency virus infection (*042–*044)	15.4	15.4	0.00
9	Suicide (E950–E959)	11.2	11.2	0.01
10	Chronic liver disease and cirrhosis (571)	7.8	7.8	0.02
11	Homicide and legal intervention (E960–E978)	10.2	10.2	-0.00
12	Nephritis, nephrotic syndrome, and nephrosis (580–589)	4.3	4.3	-0.42
13	Septicemia (038)	4.0	4.0	-0.25
14	Alzheimer's disease (331.0)	2.5	2.5	-0.79
15	Atherosclerosis (440)	2.3	2.3	-2.18

0.0 Quantity more than zero but less than 0.05.

*Beginning with data year 1987, the National Center for Health Statistics introduced categories *042–*044 for classifying and coding Human immunodeficiency virus infection. The asterisks indicate that these categories are not part of the *Ninth Revision, International Classification of Diseases, 1975*.

¹Rank based on number of deaths.

Table B. Unadjusted and age-adjusted death rates for selected causes of death for all ages and by three broad age categories: United States, 1979–94

[Unadjusted rates per 100,000 population in specified group; age-adjusted death rates per 100,000 U.S. standard population]

Cause of death, age group, and type of rate	1979	1994	Percent change
			1979–94
All causes			
All ages			
Unadjusted	852.2	875.4	2.72
Age-adjusted	577.1	507.4	-12.07
0–24 years			
Unadjusted	121.0	88.1	-27.17
Age-adjusted	117.6	85.6	-27.20
25–64 years			
Unadjusted	500.2	398.6	-20.31
Age-adjusted	461.5	403.4	-12.59
65 years and over			
Unadjusted	5,060.5	5,014.1	-0.92
Age-adjusted	4,317.9	3,926.3	-9.07
Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues (140–208)			
All ages			
Unadjusted	179.6	205.2	14.25
Age-adjusted	130.8	131.5	0.54
0–24 years			
Unadjusted	5.1	3.6	-29.77
Age-adjusted	5.1	3.7	-27.70
25–64 years			
Unadjusted	142.7	115.6	-19.02
Age-adjusted	129.6	117.9	-9.00
65 years and over			
Unadjusted	986.6	1,134.5	14.99
Age-adjusted	932.4	1,036.6	11.18
Diabetes mellitus (205)			
All ages			
Unadjusted	14.8	21.8	47.30
Age-adjusted	9.8	12.9	32.24
0–24 years			
Unadjusted	0.2	0.2	-33.33
Age-adjusted	0.2	0.2	-26.09
25–64 years			
Unadjusted	8.5	10.4	21.90
Age-adjusted	7.7	10.6	37.13
65 years and over			
Unadjusted	95.3	128.5	34.82
Age-adjusted	84.8	110.3	30.08
Diseases of heart (390–398,402,404–429)			
All ages			
Unadjusted	326.5	281.3	-13.84
Age-adjusted	199.6	140.4	-29.66
0–24 years			
Unadjusted	2.5	2.5	-2.78
Age-adjusted	2.5	2.4	-2.44
25–64 years			
Unadjusted	155.2	89.4	-42.39
Age-adjusted	139.2	91.2	-34.45
65 years and over			
Unadjusted	2,256.1	1,840.7	-18.41
Age-adjusted	1,883.2	1,369.2	-27.29

have occurred within the age group 65 years and over. Consequently, trend analysis for the three broad age groups benefits greatly by age adjusting within the groups.

Age adjusting within three broad age groups also has some advantage over a single age-adjusted rate for all age groups combined. For some causes of death, a single summary measure cannot adequately describe the mortality

experience of the population over time. Cancer (malignant neoplasms) is a notable example. In [table B](#) age-adjusted rates for all ages combined for cancer from 1979 to 1994 show that the risk of death remained fairly stable rising only

very slightly (0.54 percent) over this period. However, age-adjusted rates for the three broad age groupings show a much more complex pattern. For those aged 0–24 years, cancer death rates showed a consistent decline of nearly 30 percent. Age-adjusted rates for those aged 25–64 years also declined by 9 percent from 1979 to 1994. In contrast, age-adjusted cancer death rates for the age 65 and over population *increased* by 11 percent from 1979 to 1994.

Trends in age-adjusted death rates for diabetes show similar limitations of the single summary measure. Age-adjusted death rates for diabetes show a 32-percent increase in risk from 1979 to 1994 for all age groups combined. However, this increase is only evident in the 25–64- and 65-year and over age groups. In the 0–24-year age group, age-adjusted diabetes mortality declined by 26 percent over the same period.

For heart disease from 1979 to 1994, the age-adjusted death rate declined by nearly 30 percent for all ages. Although declines are evident in each of the three age groups, the distribution of decline is not uniform. For those aged 65 years and over, the decline is 27 percent; for those aged 25–64 years, 35 percent, but only 2 percent for those under 25 years of age.

In terms of quality of data for cancer and diabetes, there is a clear advantage to using three age groups as compared with the single summary measure for presenting trends in mortality. However, for most other causes of death, the single value summary measure works well in showing trends in “average” risk.

There are some advantages to presenting age-adjusted death rates for three broad age groups compared with the age-specific death rates for 5- or 10-year age groups routinely produced by NCHS. Although some information is lost in collapsing detailed age groups, overall trends in mortality can be more easily perceived by examining trends in three age categories rather than 11 age categories in the case of 10-year age groups or 19 age categories in the case of 5-year age groups.

If NCHS were asked to consider replacing the current age-adjusted death rates for all ages with age-adjusted rates for the three broad age groups, its response might be as follows:

- It would be difficult and probably unwise to discontinue what has become the most relied upon summary measure of mortality in the field of public health. The single age-adjusted death rate is highly useful and only in some cases does it obscure the complexity of divergent age-specific trends. A more thorough analysis requires age-specific comparisons. If very broad age groups are used, age adjustment of these groups is justified.
- If NCHS were asked if the advantages of presenting age-adjusted death rates for three broad age groups warrant their inclusion in public health reports as a standard fixture along with age-adjusted rates and age-specific rates for 5- or 10-year age groups, the response would be “probably not.” The potential advantages of presenting death rates for three broad age groups over the presentation of age-adjusted rates and rates by 5- and 10-year age groups are probably not substantial enough to warrant their addition. Nevertheless, this approach may be useful on a limited basis for specific types of reports.

Using the most recent decennial census—NCHS was asked to consider the utility and timeliness of producing age-adjusted death rates based on a population standard derived from the latest decennial census. NCHS has used the 1940 standard for over 50 years. In the past staying with one standard proved to be prudent and efficient, mainly because of the level of effort required to recalculate trend tables, etc., when much of the data was not computerized. However, using current technology, historic rates can be recalculated with far less effort. In addition, while NCHS consistently adhered to the 1940 standard, other Federal agencies have discarded it in favor of more contemporary population

standards. Therefore, it would be useful to review the population standard every 10 years to evaluate its appropriateness.

Chapter 4 Summary and Conclusion

Two workshops were convened by NCHS to reexamine technical and policy issues related to the age adjustment of mortality statistics. The first workshop examined technical issues and problems related to the calculation and interpretation of age-adjusted death rates. The results of the second workshop, the focus of this report, are a set of recommendations to the Secretary of DHHS.

Participants of the second workshop recommended adopting a new standard based on the 2000 U.S. population to replace the old standard based on the 1940 U.S. population. Implementing this recommendation would effect the following:

- Bring departmental coherence to the age-adjustment issue
- Facilitate public understanding
- Address technical concerns

In addition, participants recommended that a periodic review process be instituted to ensure the continuing appropriateness of the standard.

Implementation of the year 2000 standard has implications for the presentation and interpretation of mortality patterns based on age-adjusted death rates. Important issues include:

- Time series showing trends of age-adjusted death rates must be recalculated retrospectively as far back as possible. Age-adjusted death rates calculated using the 1940 standard will not be comparable to those calculated using the year 2000 standard.
- The Healthy People 2010 goals based on age-adjusted death rates must be recalibrated to reflect the change in population standard.
- The change in standard population is likely to affect some group

comparisons and trends, particularly for race and ethnic groups and for selected causes of death. These effects will be explained.

These and other issues related to age adjustment will be addressed in a series of publications and presentations oriented to the scientific community and to the public.

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Table 1. Age-adjusted death rates for 72 selected causes of death, Human immunodeficiency virus infection, and Alzheimer's disease using National Center for Health Statistics' 10-year age groups and expanded 10-year age groups: United States, 1994

[Age-adjusted death rates are calculated per 100,000 using 1940 and 1990 U.S. standard populations. National Center for Health Statistics 10-year age groups are less than 1 year, 1-4, 5-14, 15-24, 25-34, 35-44, 45-54, 55-64, 65-74, 75-84 years, and 85 years and over. Expanded 10-year age groups are the National Center for Health Statistics age groups expanded to include the age groups 85-94 years and 95 years and over]

Cause of death (ICD-9 category)	Age-adjusted rates			
	1940 standard		1990 standard	
	NCHS age groups	Expanded age groups	NCHS age groups	Expanded age groups
All causes	507.4	506.1	849.2	838.0
Shigellosis and amebiasis (004,006)	0.0	0.0	0.0	0.0
Certain other intestinal infections (007-009)	0.2	0.2	0.3	0.2
Tuberculosis (010-018)	0.4	0.4	0.6	0.6
Tuberculosis of respiratory system (010-012)	0.3	0.3	0.4	0.4
Other tuberculosis (013-018)	0.1	0.1	0.1	0.1
Whooping cough (033)	0.0	0.0	0.0	0.0
Streptococcal sore throat, scarlatina, and erysipelas (034-035)	0.0	0.0	0.0	0.0
Meningococcal infection (036)	0.1	0.1	0.1	0.1
Septicemia (038)	4.0	4.0	7.5	7.5
Acute poliomyelitis (045)	-	-	-	-
Measles (055)	-	-	-	-
Viral hepatitis (070)	0.9	0.9	1.2	1.1
Syphilis (090-097)	0.0	0.0	0.0	0.0
All other infectious and parasitic diseases (001-003,005, 020-032,037,039-041,*042-*044,046-054,056-066, 071-088,098-139)	17.5	17.5	18.6	18.5
Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues (140-208)	131.5	131.5	201.6	201.6
Malignant neoplasms of lip, oral cavity, and pharynx (140-149)	2.1	2.1	3.0	3.0
Malignant neoplasms of digestive organs and peritoneum (150-159)	29.3	29.3	47.2	47.2
Malignant neoplasms of respiratory and intrathoracic organs (160-165)	40.1	40.1	58.9	58.9
Malignant neoplasm of breast (174-175)	11.6	11.6	16.5	16.5
Malignant neoplasms of genital organs (179-187)	13.2	13.2	22.9	22.9
Malignant neoplasms of urinary organs (188-189)	5.1	5.1	8.4	8.4
Malignant neoplasms of all other and unspecified sites (170-173,190-199)	17.0	17.0	24.8	24.8
Leukemia (204-208)	4.9	4.9	7.4	7.4
Other malignant neoplasms of lymphatic and hematopoietic tissues (200-203)	8.2	8.2	12.6	12.6
Benign neoplasms, carcinoma in situ, and neoplasms of uncertain behavior and of unspecified nature (210-239)	1.7	1.7	2.8	2.8
Diabetes mellitus (250)	12.9	12.9	21.3	21.3
Nutritional deficiencies (260-269)	0.5	0.5	1.3	1.2
Anemias (280-285)	0.9	0.9	1.6	1.6
Meningitis (320-322)	0.2	0.2	0.3	0.3
Major cardiovascular diseases (390-448)	176.8	175.9	347.9	347.2
Diseases of heart (390-398,402,404-429)	140.4	139.7	271.2	270.6
Rheumatic fever and rheumatic heart disease (390-398)	1.2	1.2	2.0	2.0
Hypertensive heart disease (402)	5.0	5.0	8.9	8.9
Hypertensive heart and renal disease (404)	0.5	0.5	0.9	0.9
Ischemic heart disease (410-414)	91.5	91.0	178.4	178.2
Acute myocardial infarction (410)	45.7	45.6	82.8	82.8
Other acute and subacute forms of ischemic heart disease (411)	0.6	0.6	1.1	1.1
Angina pectoris (413)	0.2	0.2	0.3	0.3
Old myocardial infarction and other forms of chronic ischemic heart disease (412,414)	45.0	44.7	94.1	94.0
Other diseases of endocardium (424)	2.6	2.6	5.7	5.7
All other forms of heart disease (415-423,425-429)	39.7	39.4	75.3	75.0
Hypertension with or without renal disease (401,403)	2.2	2.2	4.4	4.3
Cerebrovascular diseases (430-438)	26.5	26.4	56.4	56.2
Intracerebral and other intracranial hemorrhage (431-432)	5.0	5.0	8.1	8.1
Cerebral thrombosis and unspecified occlusion of cerebral arteries (434.0,434.9)	2.4	2.4	5.4	5.4
Cerebral embolism (434.1)	0.1	0.1	0.3	0.3
All other and late effects of cerebrovascular diseases (430,433,435-438)	19.0	18.9	42.6	42.5
Atherosclerosis (440)	2.3	2.3	6.2	6.2
Other diseases of arteries, arterioles, and capillaries (441-448)	5.3	5.3	9.8	9.7
Acute bronchitis and bronchiolitis (466)	0.1	0.1	0.2	0.2

See footnotes at end of table.

Table 1. Age-adjusted death rates for 72 selected causes of death, Human immunodeficiency virus infection, and Alzheimer's disease using National Center for Health Statistics' 10-year age groups and expanded 10-year age groups: United States, 1994—Con.

[Age-adjusted death rates are calculated per 100,000 using 1940 and 1990 U.S. standard populations. National Center for Health Statistics 10-year age groups are less than 1 year, 1–4, 5–14, 15–24, 25–34, 35–44, 45–54, 55–64, 65–74, 75–84 years, and 85 years and over. Expanded 10-year age groups are the National Center for Health Statistics age groups expanded to include the age groups 85–94 years and 95 years and over]

Cause of death (ICD–9 category)	Age-adjusted rates			
	1940 standard		1990 standard	
	NCHS age groups	Expanded age groups	NCHS age groups	Expanded age groups
Pneumonia and influenza (480–487)	13.0	12.9	29.8	29.5
Pneumonia (480–486)	12.8	12.7	29.3	29.1
Influenza (487)	0.2	0.2	0.4	0.4
Chronic obstructive pulmonary diseases and allied conditions (490–496)	21.0	21.0	38.2	38.1
Bronchitis, chronic and unspecified (490–491)	0.7	0.7	1.3	1.3
Emphysema (492)	3.7	3.7	6.5	6.5
Asthma (493)	1.5	1.5	2.1	2.1
Other chronic obstructive pulmonary diseases and allied conditions (494–496)	15.1	15.1	28.2	28.2
Ulcer of stomach and duodenum (531–533)	1.2	1.2	2.3	2.2
Appendicitis (540–543)	0.1	0.1	0.1	0.1
Hernia of abdominal cavity and intestinal obstruction without mention of hernia (550–553,560)	1.0	1.0	2.3	2.2
Chronic liver disease and cirrhosis (571)	7.8	7.8	9.5	9.5
Cholelithiasis and other disorders of gallbladder (574–575)	0.5	0.5	1.1	1.0
Nephritis, nephrotic syndrome, and nephrosis (580–589)	4.3	4.3	8.5	8.4
Acute glomerulonephritis and nephrotic syndrome (580–581)	0.1	0.1	0.1	0.1
Chronic glomerulonephritis, nephritis and nephropathy, not specified as acute or chronic, and renal sclerosis, unspecified (582–583,587)	0.3	0.3	0.6	0.6
Renal failure, disorders resulting from impaired renal function, and small kidney of unknown cause (584–586,588–589)	3.9	3.9	7.8	7.7
Infections of kidney (590)	0.2	0.2	0.4	0.4
Hyperplasia of prostate (600)	0.1	0.1	0.2	0.2
Complications of pregnancy, childbirth, and the puerperium (630–676)	0.1	0.1	0.1	0.1
Pregnancy with abortive outcome (630–638)	0.0	0.0	0.0	0.0
Other complications of pregnancy, childbirth, and the puerperium (640–676)	0.1	0.1	0.1	0.1
Congenital anomalies (740–759)	4.4	4.4	4.3	2.0
Certain conditions originating in the perinatal period (760–779)	5.7	5.7	4.9	0.1
Birth trauma, intrauterine hypoxia, birth asphyxia, and respiratory distress syndrome (767–769)	0.9	0.9	0.8	0.0
Other conditions originating in the perinatal period (760–766,770–779)	4.8	4.8	4.1	0.0
Symptoms, signs, and ill-defined conditions (780–799)	6.8	6.7	9.2	7.5
All other diseases (Residual)	40.2	40.1	75.3	74.8
Accidents and adverse effects (E800–E949)	30.3	30.3	34.9	34.6
Motor vehicle accidents (E810–E825)	16.1	16.1	16.5	16.5
All other accidents and adverse effects (E800–E807,E826–E949)	14.2	14.2	18.4	18.1
Suicide (E950–E959)	11.2	11.2	12.0	12.0
Homicide and legal intervention (E960–E978)	10.2	10.2	9.8	9.7
All other external causes (E980–E999)	1.3	1.3	1.3	1.3
Human immunodeficiency virus infection ¹ (*042–*044)	15.4	15.4	15.9	15.9
Alzheimer's disease ² (331.0)	2.5	2.5	6.8	6.8

0.0 Quantity more than zero but less than 0.05.

– Quantity zero.

* Beginning with data year 1987, the National Center for Health Statistics introduced categories *042–*044 for classifying and coding Human immunodeficiency virus infection. The asterisks indicate that these categories are not part of the *Ninth Revision, International Classification of Diseases, 1975*.

¹Included in All other infectious and parasitic diseases shown above.

²Included in All other diseases (Residual category).

Table 2. Unadjusted death rates for 72 selected causes of death, Human immunodeficiency virus infection, and Alzheimer's disease by three broad age categories: United States, 1979–94

[Rates are per 100,000 population in specified age group]

Cause of death (ICD-9 category)	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
All causes																
0–24 years	121.02	120.96	114.00	109.61	104.50	103.16	102.96	104.39	102.09	103.12	101.92	99.54	97.14	91.34	91.27	88.14
25–64 years	500.21	498.04	481.87	462.65	453.71	445.72	441.41	434.13	426.86	423.20	414.07	406.23	400.72	394.66	400.09	398.64
65 years and over	5,060.51	5,251.97	5,117.26	5,056.39	5,134.53	5,118.73	5,174.88	5,130.17	5,095.81	5,146.30	5,012.35	4,963.15	4,924.03	4,880.60	5,047.68	5,014.09
Shigellosis and amebiasis (004,006)																
0–24 years	0.01	0.01	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.01	0.01	0.00	0.01	0.00	0.00	0.00
25–64 years	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
65 years and over	0.05	0.04	0.04	0.02	0.05	0.04	0.05	0.01	0.02	0.02	0.03	0.02	0.02	0.02	0.02	0.02
Certain other intestinal infections (007–009)																
0–24 years	0.14	0.15	0.18	0.18	0.17	0.17	0.13	0.14	0.13	0.11	0.12	0.13	0.16	0.16	0.16	0.25
25–64 years	0.04	0.05	0.04	0.04	0.04	0.04	0.03	0.06	0.04	0.03	0.03	0.04	0.04	0.04	0.05	0.06
65 years and over	0.51	0.65	0.61	0.45	0.58	0.46	0.50	0.50	0.50	0.58	0.60	0.79	0.84	1.00	1.26	1.30
Tuberculosis (010–018)																
0–24 years	0.03	0.02	0.03	0.02	0.03	0.04	0.04	0.03	0.04	0.04	0.04	0.04	0.03	0.03	0.02	0.02
25–64 years	0.79	0.71	0.72	0.61	0.60	0.61	0.59	0.63	0.59	0.62	0.64	0.61	0.58	0.54	0.49	0.42
65 years and over	4.57	4.67	4.29	4.12	3.89	3.54	3.58	3.45	3.37	3.69	3.70	3.21	2.95	3.02	2.94	2.69
Tuberculosis of respiratory system (010–012)																
0–24 years	0.01	0.01	0.01	0.01	0.02	0.02	0.01	0.02	0.02	0.01	0.02	0.02	0.02	0.01	0.00	0.01
25–64 years	0.65	0.58	0.58	0.49	0.47	0.46	0.45	0.47	0.45	0.46	0.47	0.43	0.43	0.39	0.37	0.30
65 years and over	3.82	3.93	3.59	3.43	3.18	2.85	2.90	2.85	2.79	3.00	3.02	2.63	2.32	2.44	2.40	2.18
Other tuberculosis (013–018)																
0–24 years	0.02	0.02	0.02	0.01	0.01	0.02	0.02	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.01
25–64 years	0.14	0.13	0.14	0.13	0.13	0.15	0.14	0.16	0.14	0.16	0.16	0.18	0.14	0.14	0.12	0.13
65 years and over	0.76	0.73	0.70	0.69	0.72	0.69	0.68	0.60	0.57	0.69	0.67	0.58	0.64	0.58	0.54	0.51
Whooping cough (033)																
0–24 years	0.01	0.01	0.01	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.01	0.01	–	0.01	0.01	0.01
25–64 years	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
65 years and over	–	–	–	–	–	–	–	0.00	–	–	–	–	–	–	–	–
Streptococcal sore throat, scarlatina, and erysipelas (034–035)																
0–24 years	0.01	0.00	0.00	0.00	–	–	–	0.00	0.00	0.00	0.00	0.00	–	–	0.00	0.00
25–64 years	0.01	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
65 years and over	0.04	0.03	0.03	0.03	0.02	0.01	0.02	0.01	0.02	0.02	0.02	0.02	0.01	0.01	0.02	0.01
Meningococcal infection (036)																
0–24 years	0.28	0.28	0.32	0.26	0.22	0.22	0.19	0.20	0.20	0.20	0.19	0.15	0.15	0.14	0.17	0.19
25–64 years	0.09	0.08	0.09	0.07	0.05	0.06	0.04	0.06	0.05	0.05	0.05	0.04	0.03	0.03	0.05	0.05
65 years and over	0.16	0.17	0.21	0.15	0.14	0.11	0.12	0.11	0.07	0.09	0.13	0.09	0.08	0.09	0.10	0.10
Septicemia (038)																
0–24 years	0.48	0.46	0.54	0.49	0.54	0.56	0.57	0.57	0.55	0.53	0.56	0.55	0.52	0.47	0.49	0.47
25–64 years	1.78	2.01	2.18	2.22	2.38	2.61	2.76	2.87	2.91	2.88	2.71	2.62	2.58	2.56	2.52	2.60
65 years and over	22.67	26.78	28.76	31.91	37.17	41.20	47.16	51.09	53.56	56.03	50.29	49.39	50.04	49.21	51.40	49.58
Acute poliomyelitis (045)																
0–24 years	–	–	–	–	–	–	–	–	–	0.00	–	–	–	–	–	–
25–64 years	0.00	0.00	–	–	–	–	0.00	–	–	–	–	–	0.00	–	–	–
65 years and over	–	0.01	–	–	–	–	0.01	–	–	–	–	–	–	–	–	–

See footnotes at end of table.

Table 2. Unadjusted death rates for 72 selected causes of death, Human immunodeficiency virus infection, and Alzheimer's disease by three broad age categories: United States, 1979–94—Con.

[Rates are per 100,000 population in specified age group]

Cause of death (ICD-9 category)	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Measles (055)																
0–24 years	0.00	0.01	0.00	0.00	0.00	–	0.00	0.00	0.00	0.00	0.03	0.06	0.02	0.00	–	–
25–64 years	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	–	–
65 years and over	–	–	–	–	–	–	–	–	–	–	0.00	–	–	–	–	–
Viral hepatitis (070)																
0–24 years	0.11	0.12	0.12	0.10	0.12	0.10	0.09	0.08	0.08	0.05	0.08	0.05	0.05	0.04	0.05	0.04
25–64 years	0.37	0.37	0.43	0.37	0.38	0.40	0.41	0.42	0.51	0.54	0.60	0.61	0.77	0.82	1.06	1.27
65 years and over	1.02	1.17	1.06	1.14	1.17	1.11	1.31	1.46	1.66	1.90	2.24	2.43	2.51	2.75	3.19	3.97
Syphilis (090–097)																
0–24 years	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.03	0.03	0.02	0.02	0.01
25–64 years	0.04	0.02	0.03	0.03	0.02	0.01	0.02	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01
65 years and over	0.51	0.49	0.37	0.31	0.33	0.29	0.18	0.21	0.19	0.15	0.17	0.15	0.14	0.15	0.12	0.14
All other infectious and parasitic diseases (001–003,005,020–032,037, 039–041,*042–*044,046–054, 056–066,071–088,098–139)																
0–24 years	0.65	0.62	0.58	0.63	0.61	0.64	0.70	0.78	1.48	1.55	1.71	1.66	1.72	1.67	1.84	1.87
25–64 years	1.37	1.42	1.54	1.58	1.88	2.58	3.40	4.61	12.29	14.72	19.00	21.26	24.13	26.84	29.24	32.51
65 years and over	6.18	7.69	7.72	8.01	8.30	9.03	9.83	10.49	10.91	12.01	12.47	12.03	11.54	11.68	12.24	12.02
Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues (140–208)																
0–24 years	5.14	5.19	4.84	4.98	4.75	4.44	4.35	4.33	4.11	4.00	3.99	3.87	3.85	3.79	3.70	3.61
25–64 years	142.71	142.91	139.41	138.35	136.56	136.21	134.64	130.96	128.75	127.02	124.52	123.37	121.30	118.60	117.13	115.56
65 years and over	986.60	1,011.33	1,008.60	1,023.90	1,033.97	1,045.17	1,051.07	1,062.41	1,067.30	1,076.25	1,095.85	1,111.32	1,117.27	1,121.80	1,133.69	1,134.53
Malignant neoplasms of lip, oral cavity, and pharynx (140–149)																
0–24 years	0.04	0.03	0.04	0.05	0.04	0.03	0.03	0.04	0.03	0.04	0.04	0.03	0.03	0.03	0.03	0.03
25–64 years	3.94	3.80	3.62	3.50	3.42	3.35	3.10	3.01	2.83	2.84	2.79	2.71	2.65	2.51	2.55	2.37
65 years and over	17.46	17.41	17.14	17.03	16.59	16.30	16.21	16.02	15.17	15.43	14.88	15.89	15.25	14.87	14.78	14.24
Malignant neoplasms of digestive organs and peritoneum (150–159)																
0–24 years	0.22	0.26	0.22	0.26	0.22	0.19	0.22	0.18	0.19	0.17	0.18	0.17	0.19	0.19	0.19	0.20
25–64 years	31.56	30.88	29.98	29.41	28.81	28.74	27.97	26.89	26.40	25.55	24.82	24.70	24.46	24.02	23.91	23.80
65 years and over	300.88	302.48	298.10	296.40	295.36	298.07	293.47	289.76	287.11	284.28	287.91	287.30	283.66	282.87	282.74	281.38
Malignant neoplasms of respiratory and intrathoracic organs (160–165)																
0–24 years	0.08	0.09	0.08	0.09	0.10	0.10	0.08	0.07	0.06	0.07	0.07	0.07	0.07	0.07	0.06	0.06
25–64 years	43.42	43.81	43.32	43.48	42.88	42.88	42.54	41.48	41.25	40.77	39.93	39.79	38.36	37.38	36.70	35.45
65 years and over	227.89	240.47	242.72	252.37	259.47	264.90	271.08	277.79	285.67	291.23	300.18	308.51	313.71	317.12	322.18	323.26
Malignant neoplasm of breast (174–175)																
0–24 years	0.02	0.02	0.02	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.01	0.02	0.02	0.01	0.02	0.01
25–64 years	16.60	16.81	16.33	16.20	15.96	16.08	16.01	15.54	15.32	15.31	14.89	14.75	14.48	13.80	13.52	13.39
65 years and over	67.95	69.88	71.64	72.89	73.20	75.51	75.57	76.24	76.00	78.00	79.65	80.27	79.27	78.44	79.38	78.63

See footnotes at end of table.

Table 2. Unadjusted death rates for 72 selected causes of death, Human immunodeficiency virus infection, and Alzheimer's disease by three broad age categories: United States, 1979–94—Con.

[Rates are per 100,000 population in specified age group]

Cause of death (ICD-9 category)	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Malignant neoplasms of genital organs (179–187)																
0–24 years	0.24	0.25	0.22	0.21	0.24	0.19	0.18	0.16	0.14	0.14	0.14	0.13	0.11	0.12	0.12	0.11
25–64 years	12.05	11.90	11.53	11.14	10.89	10.56	10.33	10.18	9.71	9.63	9.53	9.60	9.35	9.23	8.88	8.93
65 years and over	129.17	130.87	129.18	130.19	131.85	131.01	131.40	134.02	134.55	137.12	139.69	145.42	147.36	148.36	148.10	147.74
Malignant neoplasms of urinary organs (188–189)																
0–24 years	0.14	0.12	0.12	0.11	0.13	0.09	0.09	0.10	0.08	0.11	0.09	0.08	0.09	0.08	0.07	0.08
25–64 years	4.62	4.57	4.43	4.46	4.31	4.20	4.21	4.14	4.09	3.91	4.01	4.00	4.00	3.96	3.89	3.87
65 years and over	49.47	50.17	49.66	49.88	49.41	48.97	48.72	48.42	48.38	48.27	49.29	49.91	50.19	50.80	50.53	51.81
Malignant neoplasms of all other and unspecified sites (170–173,190–199)																
0–24 years	2.04	2.06	1.97	2.03	1.92	1.85	1.83	1.83	1.76	1.73	1.75	1.72	1.70	1.66	1.70	1.64
25–64 years	18.62	18.97	18.66	18.61	18.78	18.76	18.99	18.55	18.30	18.09	17.44	16.81	16.95	16.72	16.82	16.64
65 years and over	107.50	111.18	112.01	113.73	115.73	117.52	119.01	122.39	123.51	123.40	122.41	120.13	121.27	122.37	126.61	126.49
Leukemia (204–208)																
0–24 years	1.75	1.72	1.55	1.60	1.48	1.41	1.35	1.36	1.33	1.26	1.24	1.22	1.20	1.21	1.15	1.13
25–64 years	4.70	4.87	4.57	4.45	4.49	4.53	4.39	4.26	4.13	4.06	4.14	4.09	3.98	4.00	3.97	3.88
65 years and over	37.36	37.99	37.40	38.23	37.78	37.79	38.35	37.96	37.24	37.89	38.86	39.48	40.06	40.05	40.32	40.46
Other malignant neoplasms of lymphatic and hematopoietic tissues (200–203)																
0–24 years	0.62	0.64	0.64	0.60	0.59	0.55	0.55	0.58	0.49	0.47	0.47	0.43	0.45	0.43	0.38	0.36
25–64 years	7.19	7.31	6.97	7.11	7.02	7.12	7.11	6.91	6.71	6.86	6.97	6.91	7.07	6.98	6.89	7.24
65 years and over	48.93	50.90	50.74	53.17	54.60	55.10	57.26	59.81	59.68	60.63	62.97	64.42	66.49	66.91	69.05	70.52
Benign neoplasms, carcinoma in situ, and neoplasms of uncertain behavior and of unspecified nature (210–239)																
0–24 years	0.34	0.36	0.33	0.37	0.34	0.33	0.35	0.39	0.33	0.37	0.32	0.37	0.34	0.35	0.33	0.38
25–64 years	1.90	1.92	1.73	1.75	1.63	1.50	1.56	1.52	1.34	1.39	1.33	1.31	1.29	1.31	1.37	1.37
65 years and over	14.25	14.86	15.33	15.51	15.75	15.74	15.97	15.69	15.63	15.54	15.43	15.28	15.82	15.60	16.25	16.06
Diabetes mellitus (250)																
0–24 years	0.24	0.19	0.21	0.21	0.19	0.17	0.18	0.19	0.18	0.18	0.21	0.17	0.18	0.18	0.17	0.16
25–64 years	8.54	8.81	8.43	8.18	8.45	7.89	8.06	8.12	8.20	8.61	9.44	9.46	9.51	9.62	10.00	10.41
65 years and over	95.30	98.69	96.04	94.15	96.61	94.99	96.01	93.96	95.78	98.09	113.42	114.30	115.04	115.66	123.58	128.48
Nutritional deficiencies (260–269)																
0–24 years	0.06	0.05	0.05	0.05	0.06	0.03	0.05	0.04	0.05	0.04	0.03	0.03	0.04	0.04	0.04	0.04
25–64 years	0.27	0.24	0.22	0.19	0.19	0.17	0.19	0.19	0.16	0.17	0.17	0.17	0.15	0.17	0.16	0.16
65 years and over	7.41	8.06	7.77	8.09	8.73	8.49	9.15	8.96	8.94	9.06	9.13	8.92	8.70	8.91	9.77	9.65
Anemias (280–285)																
0–24 years	0.36	0.32	0.29	0.31	0.33	0.32	0.28	0.28	0.25	0.26	0.27	0.28	0.25	0.33	0.28	0.26
25–64 years	0.63	0.63	0.60	0.55	0.60	0.54	0.60	0.54	0.61	0.56	0.63	0.64	0.61	0.62	0.60	0.67
65 years and over	8.63	8.87	9.03	8.89	9.11	9.35	9.62	9.65	9.57	9.60	9.63	9.74	9.78	9.69	9.93	9.78
Meningitis (320–322)																
0–24 years	0.75	0.82	0.72	0.64	0.63	0.57	0.53	0.46	0.45	0.46	0.41	0.38	0.25	0.24	0.22	0.23
25–64 years	0.33	0.29	0.35	0.29	0.28	0.27	0.26	0.29	0.31	0.25	0.27	0.27	0.23	0.22	0.21	0.22
65 years and over	1.34	1.32	1.32	1.34	1.37	1.27	1.45	1.37	1.27	1.43	1.13	1.08	1.14	0.91	0.93	0.80

See footnotes at end of table.

Table 2. Unadjusted death rates for 72 selected causes of death, Human immunodeficiency virus infection, and Alzheimer's disease by three broad age categories: United States, 1979–94—Con.

[Rates are per 100,000 population in specified age group]

Cause of death (ICD-9 category)	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Major cardiovascular diseases																
(390–448)																
0–24 years	3.42	3.83	3.51	3.52	3.74	3.78	3.69	3.72	3.62	3.63	3.20	3.22	3.22	3.11	3.15	3.14
25–64 years	184.35	179.95	172.79	164.61	159.99	153.64	148.17	141.29	135.00	129.74	121.44	116.20	112.81	110.47	110.46	108.08
65 years and over	3,025.74	3,099.23	2,974.10	2,912.38	2,906.01	2,839.49	2,812.87	2,740.06	2,685.52	2,673.81	2,530.61	2,463.60	2,418.25	2,375.11	2,437.96	2,391.45
Diseases of heart																
(390–398,402,404–429)																
0–24 years	2.52	2.88	2.68	2.74	2.91	2.98	2.91	3.02	2.93	2.91	2.53	2.53	2.52	2.45	2.42	2.45
25–64 years	155.21	151.87	146.05	139.62	135.74	130.04	125.57	119.47	113.69	109.00	101.59	96.87	94.02	91.86	91.79	89.41
65 years and over	2,256.05	2,330.41	2,253.52	2,227.21	2,240.05	2,193.26	2,182.08	2,133.93	2,089.34	2,083.18	1,968.60	1,914.03	1,880.98	1,844.51	1,891.03	1,840.67
Rheumatic fever and rheumatic heart disease (390–398)																
0–24 years	0.11	0.13	0.08	0.10	0.08	0.11	0.10	0.07	0.07	0.08	0.06	0.06	0.04	0.06	0.05	0.07
25–64 years	2.95	2.82	2.47	2.21	2.16	1.96	1.80	1.65	1.51	1.42	1.29	1.25	1.17	1.10	1.05	0.97
65 years and over	18.23	18.35	17.51	16.75	15.91	16.29	15.44	15.14	15.15	15.22	14.39	14.09	13.89	13.05	13.16	12.20
Hypertensive heart disease (402)																
0–24 years	0.02	0.02	0.02	0.03	0.01	0.02	0.03	0.02	0.02	0.03	0.02	0.02	0.03	0.02	0.02	0.02
25–64 years	5.40	5.10	5.08	4.76	4.77	4.49	4.47	4.23	4.23	4.11	4.06	3.92	3.91	4.04	4.05	4.27
65 years and over	60.73	61.07	57.95	57.52	56.79	55.51	54.81	53.11	52.32	52.03	51.65	51.75	51.30	51.25	53.88	54.89
Hypertensive heart and renal disease (404)																
0–24 years	0.01	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.01	0.00
25–64 years	0.44	0.44	0.38	0.32	0.32	0.27	0.32	0.29	0.30	0.28	0.25	0.29	0.27	0.28	0.26	0.27
65 years and over	12.66	12.65	11.16	9.94	9.89	9.10	8.51	7.42	7.26	6.95	6.73	6.43	6.59	6.59	6.43	6.42
Ischemic heart disease (410–414)																
0–24 years	0.20	0.22	0.24	0.25	0.24	0.26	0.20	0.18	0.20	0.20	0.18	0.18	0.19	0.16	0.19	0.17
25–64 years	115.40	111.52	106.20	101.21	96.00	90.71	86.03	79.65	74.72	69.97	65.98	62.70	60.33	58.06	56.97	55.23
65 years and over	1,708.36	1,745.15	1,671.31	1,639.50	1,618.28	1,563.15	1,530.60	1,464.19	1,420.40	1,403.48	1,352.67	1,317.57	1,283.19	1,251.68	1,264.80	1,228.38
Acute myocardial infarction (410)																
0–24 years	0.13	0.15	0.15	0.16	0.15	0.14	0.13	0.10	0.12	0.11	0.11	0.11	0.10	0.10	0.09	0.10
25–64 years	79.03	74.22	69.64	65.98	61.60	57.45	53.43	48.30	44.66	40.99	38.94	36.66	34.97	33.38	32.30	31.27
65 years and over	863.11	860.42	823.21	810.07	789.16	761.62	742.55	699.38	671.58	654.30	645.22	619.14	598.55	575.20	563.41	544.12
Other acute and subacute forms of ischemic heart disease (411)																
0–24 years	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.00
25–64 years	1.57	1.52	1.43	1.30	1.18	1.10	1.10	1.03	0.87	0.76	0.76	0.80	0.75	0.69	0.63	0.58
65 years and over	12.30	12.25	11.34	9.93	9.92	9.86	9.35	8.99	8.32	8.14	7.88	7.46	7.31	7.01	6.49	6.25
Angina pectoris (413)																
0–24 years	0.00	–	–	0.00	0.00	0.00	0.00	0.00	–	–	–	0.00	–	0.00	0.00	0.00
25–64 years	0.10	0.11	0.11	0.12	0.12	0.15	0.13	0.14	0.12	0.11	0.12	0.09	0.09	0.08	0.09	0.09
65 years and over	1.56	1.72	1.72	1.77	2.20	2.41	2.72	2.84	2.98	2.96	3.00	3.07	2.97	2.76	2.63	2.38
Old myocardial infarction and other forms of chronic ischemic heart disease (412,414)																
0–24 years	0.06	0.07	0.08	0.08	0.08	0.10	0.07	0.07	0.08	0.07	0.06	0.07	0.08	0.06	0.09	0.07
25–64 years	34.70	35.66	35.02	33.81	33.10	32.01	31.37	30.19	29.06	28.11	26.17	25.15	24.51	23.89	23.95	23.28
65 years and over	831.39	870.77	835.03	817.74	817.00	789.26	775.98	752.98	737.52	738.08	696.56	687.91	674.36	666.71	692.27	675.63

See footnotes at end of table.

Table 2. Unadjusted death rates for 72 selected causes of death, Human immunodeficiency virus infection, and Alzheimer's disease by three broad age categories: United States, 1979-94—Con.

[Rates are per 100,000 population in specified age group]

Cause of death (ICD-9 category)	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Other diseases of endocardium (424)																
0-24 years	0.09	0.10	0.08	0.09	0.09	0.09	0.10	0.08	0.09	0.07	0.09	0.08	0.09	0.08	0.06	0.07
25-64 years	1.43	1.49	1.40	1.38	1.31	1.30	1.33	1.30	1.36	1.34	1.31	1.34	1.23	1.24	1.25	1.21
65 years and over	19.48	21.42	21.83	23.03	24.84	25.59	27.60	29.27	31.11	33.24	34.11	36.15	37.97	39.23	41.15	41.40
All other forms of heart disease (415-423,425-429)																
0-24 years	2.09	2.41	2.25	2.28	2.48	2.51	2.48	2.66	2.55	2.52	2.18	2.18	2.17	2.12	2.09	2.11
25-64 years	29.59	30.49	30.51	29.74	31.19	31.30	31.62	32.34	31.57	31.89	28.70	27.37	27.11	27.14	28.21	27.45
65 years and over	436.61	471.76	473.75	480.46	514.34	523.62	545.13	564.81	563.11	572.26	509.06	488.04	488.03	482.71	511.62	497.37
Hypertension with or without renal disease (401,403)																
0-24 years	0.03	0.03	0.02	0.02	0.02	0.01	0.02	0.02	0.02	0.01	0.03	0.02	0.02	0.02	0.02	0.03
25-64 years	1.39	1.45	1.35	1.24	1.23	1.24	1.21	1.18	1.15	1.21	1.18	1.20	1.20	1.23	1.40	1.34
65 years and over	22.99	24.43	23.22	23.00	23.07	22.70	22.21	22.59	22.66	23.05	23.64	24.55	25.07	26.77	28.60	29.99
Cerebrovascular diseases (430-438)																
0-24 years	0.72	0.78	0.68	0.62	0.67	0.65	0.62	0.53	0.55	0.60	0.53	0.55	0.57	0.52	0.59	0.54
25-64 years	22.64	21.51	20.63	19.15	18.38	17.88	17.02	16.44	16.03	15.53	14.65	14.33	13.82	13.69	13.61	13.78
65 years and over	576.59	573.07	534.71	506.47	489.72	476.97	465.71	445.94	438.07	434.05	412.84	403.52	394.10	388.51	401.40	405.15
Intracerebral and other intracranial hemorrhage (431-432)																
0-24 years	0.32	0.33	0.30	0.28	0.29	0.28	0.25	0.22	0.20	0.21	0.21	0.19	0.19	0.18	0.18	0.16
25-64 years	6.30	6.03	5.84	5.56	5.24	5.25	5.13	4.96	5.00	4.92	4.72	4.59	4.45	4.47	4.46	4.56
65 years and over	58.89	54.80	51.45	50.07	48.11	49.66	50.85	49.33	48.58	49.66	47.43	46.92	46.50	46.83	46.92	46.90
Cerebral thrombosis and unspecified occlusion of cerebral arteries (434.0,434.9)																
0-24 years	0.06	0.06	0.05	0.05	0.06	0.06	0.06	0.05	0.06	0.07	0.06	0.06	0.07	0.04	0.06	0.07
25-64 years	3.06	2.81	2.45	2.22	2.17	2.08	1.89	1.80	1.68	1.53	1.35	1.32	1.18	1.06	1.00	0.95
65 years and over	129.05	121.25	107.83	96.39	87.36	81.79	78.20	73.27	68.51	64.10	58.82	53.21	47.58	43.87	42.29	40.10
Cerebral embolism (434.1)																
0-24 years	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	—	0.01	—	0.00	—
25-64 years	0.14	0.14	0.13	0.11	0.09	0.10	0.09	0.08	0.09	0.07	0.06	0.06	0.05	0.05	0.06	0.06
65 years and over	2.77	2.49	2.52	2.38	2.32	2.34	2.39	2.34	2.14	2.15	1.95	1.87	1.76	1.74	1.72	1.90
All other and late effects of cerebrovascular diseases (430,433,435-438)																
0-24 years	0.34	0.38	0.33	0.29	0.32	0.30	0.31	0.25	0.29	0.32	0.26	0.30	0.31	0.30	0.34	0.31
25-64 years	13.13	12.54	12.21	11.27	10.88	10.44	9.92	9.60	9.26	9.00	8.51	8.37	8.12	8.11	8.10	8.21
65 years and over	385.88	394.53	372.90	357.63	351.94	343.19	334.27	321.00	318.84	318.14	304.64	301.52	298.26	296.08	310.47	316.26
Atherosclerosis (440)																
0-24 years	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00
25-64 years	1.21	1.27	1.16	1.13	1.11	0.96	0.96	0.94	0.90	0.83	0.75	0.70	0.66	0.64	0.61	0.58
65 years and over	109.52	109.91	101.90	95.33	91.70	83.71	80.13	74.31	72.14	69.90	60.02	55.21	52.18	49.56	50.22	49.25
Other diseases of arteries, arterioles, and capillaries (441-448)																
0-24 years	0.15	0.14	0.13	0.12	0.14	0.13	0.14	0.15	0.12	0.10	0.11	0.11	0.11	0.12	0.11	0.11
25-64 years	3.90	3.86	3.61	3.47	3.52	3.53	3.41	3.26	3.23	3.17	3.27	3.11	3.12	3.06	3.05	2.97
65 years and over	60.58	61.41	60.75	60.37	61.47	62.84	62.75	63.31	63.31	63.64	65.50	66.30	65.92	65.77	66.71	66.38

See footnotes at end of table.

Table 2. Unadjusted death rates for 72 selected causes of death, Human immunodeficiency virus infection, and Alzheimer's disease by three broad age categories: United States, 1979–94—Con.

[Rates are per 100,000 population in specified age group]

Cause of death (ICD-9 category)	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Acute bronchitis and bronchiolitis (466)																
0–24 years	0.15	0.15	0.13	0.12	0.12	0.10	0.10	0.09	0.11	0.11	0.11	0.11	0.10	0.13	0.11	0.12
25–64 years	0.09	0.10	0.08	0.08	0.08	0.07	0.07	0.05	0.06	0.07	0.06	0.06	0.06	0.06	0.07	0.05
65 years and over	1.24	1.55	1.37	1.13	1.27	1.33	1.51	1.51	1.26	1.47	1.49	1.44	1.44	1.17	1.43	1.21
Pneumonia and influenza (480–487)																
0–24 years	2.07	1.94	1.64	1.55	1.51	1.43	1.43	1.41	1.36	1.35	1.39	1.29	1.32	1.22	1.18	1.14
25–64 years	6.14	6.78	6.51	5.72	5.82	5.87	6.30	6.40	6.10	6.53	6.28	6.19	5.96	5.43	5.94	5.71
65 years and over	145.64	178.13	171.75	153.16	174.70	182.05	207.02	209.60	204.35	226.89	219.67	226.79	217.18	209.11	225.34	219.44
Pneumonia (480–486)																
0–24 years	2.03	1.89	1.59	1.52	1.49	1.40	1.40	1.37	1.34	1.32	1.33	1.25	1.26	1.19	1.14	1.11
25–64 years	6.09	6.61	6.28	5.65	5.73	5.79	6.18	6.29	6.04	6.44	6.16	6.08	5.87	5.37	5.87	5.62
65 years and over	143.58	168.47	161.42	150.81	169.96	178.56	200.40	203.84	202.56	220.92	215.13	220.64	214.13	206.35	222.59	216.16
Influenza (487)																
0–24 years	0.04	0.05	0.05	0.02	0.03	0.03	0.03	0.04	0.02	0.03	0.06	0.04	0.06	0.03	0.05	0.02
25–64 years	0.05	0.17	0.22	0.07	0.10	0.08	0.12	0.11	0.06	0.10	0.12	0.12	0.09	0.07	0.07	0.09
65 years and over	2.06	9.67	10.34	2.36	4.74	3.49	6.62	5.76	1.80	5.97	4.54	6.16	3.05	2.76	2.76	3.28
Chronic obstructive pulmonary diseases and allied conditions (490–496)																
0–24 years	0.34	0.35	0.37	0.44	0.42	0.39	0.42	0.43	0.47	0.42	0.43	0.44	0.48	0.43	0.48	0.49
25–64 years	10.77	11.31	11.29	10.74	11.35	11.31	11.55	11.25	11.07	11.19	11.14	10.66	10.70	10.22	10.73	10.54
65 years and over	152.21	170.60	175.76	177.04	193.36	199.52	213.37	215.97	217.55	227.79	228.05	234.10	240.64	242.24	263.71	262.52
Bronchitis, chronic and unspecified (490–491)																
0–24 years	0.13	0.09	0.10	0.09	0.08	0.08	0.08	0.07	0.10	0.08	0.08	0.08	0.10	0.08	0.08	0.07
25–64 years	0.74	0.69	0.65	0.58	0.55	0.52	0.48	0.47	0.43	0.46	0.43	0.42	0.44	0.41	0.40	0.37
65 years and over	10.94	11.35	10.97	10.31	10.51	10.28	10.46	10.75	10.00	10.22	10.24	9.61	9.67	9.48	9.68	9.10
Emphysema (492)																
0–24 years	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.00	0.00	0.01	0.01	0.01
25–64 years	3.03	2.91	2.69	2.45	2.44	2.32	2.37	2.36	2.28	2.25	2.22	2.14	2.08	1.95	2.10	1.96
65 years and over	41.25	42.08	39.67	37.46	38.36	37.87	39.92	40.09	39.47	42.23	41.28	41.80	43.30	42.78	45.15	43.99
Asthma (493)																
0–24 years	0.17	0.21	0.21	0.29	0.28	0.26	0.31	0.32	0.34	0.31	0.30	0.33	0.35	0.33	0.37	0.39
25–64 years	1.00	1.04	1.14	1.13	1.31	1.22	1.31	1.24	1.39	1.45	1.45	1.43	1.48	1.37	1.43	1.57
65 years and over	5.51	6.20	6.13	6.05	6.65	6.85	7.22	7.50	7.97	8.36	9.04	8.72	9.04	8.89	8.95	9.11
Other chronic obstructive pulmonary diseases and allied conditions (494–496)																
0–24 years	0.02	0.04	0.05	0.05	0.05	0.04	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.02	0.02	0.02
25–64 years	6.01	6.68	6.81	6.58	7.06	7.24	7.39	7.18	6.97	7.02	7.04	6.67	6.69	6.48	6.80	6.64
65 years and over	94.51	110.97	118.99	123.22	137.85	144.51	155.77	157.64	160.10	166.98	167.48	173.97	178.64	181.09	199.92	200.32
Ulcer of stomach and duodenum (531–533)																
0–24 years	0.05	0.06	0.05	0.04	0.03	0.03	0.03	0.03	0.03	0.05	0.03	0.03	0.02	0.02	0.03	0.03
25–64 years	1.39	1.35	1.32	1.23	1.09	1.10	1.04	0.99	0.90	0.89	0.85	0.80	0.81	0.74	0.76	0.76
65 years and over	17.44	18.05	19.05	19.87	18.62	18.87	18.95	18.14	17.65	17.55	17.47	16.56	15.91	15.92	14.99	15.21

See footnotes at end of table.

Table 2. Unadjusted death rates for 72 selected causes of death, Human immunodeficiency virus infection, and Alzheimer's disease by three broad age categories: United States, 1979-94—Con.

[Rates are per 100,000 population in specified age group]

Cause of death (ICD-9 category)	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Appendicitis (540-543)																
0-24 years	0.07	0.08	0.05	0.06	0.05	0.04	0.04	0.05	0.03	0.04	0.04	0.04	0.03	0.03	0.04	0.03
25-64 years	0.19	0.21	0.15	0.13	0.12	0.11	0.11	0.12	0.10	0.10	0.09	0.10	0.09	0.08	0.09	0.08
65 years and over	1.66	1.59	1.42	1.20	1.28	1.18	1.19	1.12	1.12	1.02	0.97	0.88	0.75	0.85	0.67	0.71
Hernia of abdominal cavity and intestinal obstruction without mention of hernia (550-553,560)																
0-24 years	0.28	0.25	0.23	0.23	0.19	0.19	0.16	0.21	0.19	0.15	0.17	0.17	0.16	0.16	0.15	0.13
25-64 years	0.81	0.80	0.65	0.63	0.59	0.56	0.55	0.54	0.53	0.52	0.51	0.47	0.50	0.46	0.43	0.49
65 years and over	16.82	16.96	16.61	15.45	15.52	16.07	16.06	15.89	15.96	16.00	15.46	16.35	16.74	16.50	15.92	16.15
Chronic liver disease and cirrhosis (571)																
0-24 years	0.16	0.19	0.17	0.15	0.12	0.13	0.10	0.11	0.11	0.09	0.10	0.08	0.07	0.07	0.08	0.06
25-64 years	19.52	19.47	17.70	16.14	15.49	14.88	14.29	13.47	13.34	13.23	12.80	12.08	11.60	11.26	11.19	11.21
65 years and over	35.64	37.26	37.03	35.38	34.69	35.58	34.48	34.07	33.19	33.00	34.34	33.51	32.76	32.43	31.51	31.18
Cholelithiasis and other disorders of gallbladder (574-575)																
0-24 years	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.02
25-64 years	0.48	0.48	0.41	0.38	0.40	0.37	0.35	0.29	0.31	0.31	0.30	0.27	0.27	0.28	0.25	0.28
65 years and over	10.44	10.77	10.00	9.34	9.22	9.25	8.97	8.95	8.92	9.05	8.67	8.58	7.93	7.86	7.36	7.42
Nephritis, nephrotic syndrome, and nephrosis (580-589)																
0-24 years	0.46	0.42	0.46	0.43	0.40	0.45	0.44	0.43	0.37	0.38	0.33	0.28	0.32	0.31	0.30	0.26
25-64 years	3.15	3.16	2.97	2.98	2.94	2.93	3.01	2.93	2.84	2.91	2.63	2.53	2.41	2.42	2.49	2.29
65 years and over	47.62	50.76	51.81	53.61	55.81	58.48	61.21	61.54	61.60	61.26	57.07	55.68	56.57	57.97	60.24	59.31
Acute glomerulonephritis and nephrotic syndrome (580-581)																
0-24 years	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.02	0.02	0.02	0.02	0.02	0.01
25-64 years	0.06	0.07	0.05	0.07	0.06	0.06	0.07	0.05	0.04	0.05	0.05	0.05	0.05	0.04	0.04	0.04
65 years and over	0.97	0.88	0.86	0.82	0.98	0.84	0.88	0.73	0.69	0.78	0.75	0.69	0.77	0.71	0.67	0.74
Chronic glomerulonephritis, nephritis and nephropathy, not specified as acute or chronic, and renal sclerosis, unspecified (582-583,587)																
0-24 years	0.06	0.04	0.04	0.04	0.04	0.03	0.02	0.03	0.03	0.02	0.03	0.02	0.03	0.02	0.02	0.01
25-64 years	0.51	0.46	0.40	0.37	0.33	0.33	0.25	0.25	0.23	0.24	0.24	0.25	0.21	0.20	0.20	0.19
65 years and over	7.06	6.72	6.00	5.57	5.40	5.08	4.43	4.07	4.05	4.01	3.87	3.82	3.83	3.80	3.98	3.87
Renal failure, disorders resulting from impaired renal function, and small kidney of unknown cause (584-586,588-589)																
0-24 years	0.38	0.36	0.40	0.38	0.34	0.41	0.40	0.38	0.33	0.34	0.29	0.23	0.27	0.27	0.26	0.24
25-64 years	2.58	2.63	2.51	2.54	2.56	2.55	2.70	2.64	2.56	2.62	2.34	2.24	2.16	2.18	2.25	2.06
65 years and over	39.60	43.16	44.95	47.22	49.44	52.57	55.90	56.73	56.85	56.47	52.45	51.17	51.96	53.47	55.58	54.70
Infections of kidney (590)																
0-24 years	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.02	0.02	0.02	0.02	0.03	0.01	0.01	0.01
25-64 years	0.36	0.33	0.28	0.25	0.23	0.24	0.19	0.19	0.17	0.16	0.14	0.14	0.13	0.11	0.12	0.10
65 years and over	9.79	9.23	7.55	7.16	6.60	6.40	6.14	5.62	5.14	4.62	3.97	3.54	3.25	2.87	2.62	2.49

See footnotes at end of table.

Table 2. Unadjusted death rates for 72 selected causes of death, Human immunodeficiency virus infection, and Alzheimer's disease by three broad age categories: United States, 1979–94—Con.

[Rates are per 100,000 population in specified age group]

Cause of death (ICD-9 category)	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Hyperplasia of prostate (600)																
0–24 years	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
25–64 years	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.02	0.02	0.01	0.01	0.01	0.01	0.01
65 years and over	3.11	2.83	2.54	2.36	2.00	1.83	1.62	1.67	1.52	1.42	1.40	1.41	1.31	1.21	1.20	1.19
Complications of pregnancy, childbirth, and the puerperium (630–676)																
0–24 years	0.13	0.12	0.13	0.09	0.12	0.09	0.10	0.10	0.08	0.12	0.11	0.12	0.11	0.12	0.09	0.12
25–64 years	0.20	0.21	0.17	0.18	0.15	0.18	0.17	0.15	0.14	0.18	0.18	0.19	0.17	0.16	0.16	0.16
65 years and over . . . . .	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Pregnancy with abortive outcome (630–638)																
0–24 years	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.03	0.02	0.02	0.02	0.02	0.02	0.01
25–64 years	0.03	0.04	0.03	0.03	0.03	0.03	0.02	0.03	0.03	0.03	0.02	0.03	0.03	0.03	0.02	0.02
65 years and over . . . . .	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Other complications of pregnancy, childbirth, and the puerperium (640–676)																
0–24 years	0.10	0.10	0.11	0.07	0.10	0.06	0.08	0.08	0.07	0.10	0.09	0.10	0.09	0.10	0.07	0.11
25–64 years	0.17	0.17	0.14	0.15	0.13	0.15	0.15	0.12	0.12	0.15	0.15	0.16	0.15	0.13	0.14	0.14
65 years and over . . . . .	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Congenital anomalies (740–759)																
0–24 years	11.82	12.16	11.84	12.01	11.54	11.41	11.29	11.07	10.75	11.07	11.04	11.11	10.37	9.99	9.58	9.07
25–64 years	1.55	1.58	1.45	1.39	1.38	1.41	1.29	1.28	1.31	1.33	1.36	1.34	1.34	1.38	1.43	1.42
65 years and over	3.12	3.27	3.27	3.28	3.38	3.23	3.24	3.47	3.32	3.57	3.85	4.13	4.33	4.61	5.09	5.04
Certain conditions originating in the perinatal period (760–779)																
0–24 years	24.93	24.37	23.12	22.35	20.86	20.51	21.01	20.17	20.07	20.08	20.67	19.42	18.32	17.05	16.25	15.51
25–64 years	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
65 years and over	0.01	0.01	0.01	0.01	0.01	—	0.00	0.01	0.01	0.01	0.01	0.02	0.00	0.02	0.02	0.01
Birth trauma, intrauterine hypoxia, birth asphyxia, and respiratory distress syndrome (767–769)																
0–24 years	8.53	8.08	7.14	6.64	5.80	5.61	5.70	5.15	4.79	4.65	5.10	4.25	3.73	3.17	2.81	2.54
25–64 years	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01
65 years and over	—	—	—	0.00	—	—	—	—	—	—	0.00	—	—	0.00	0.01	0.01
Other conditions originating in the perinatal period (760–766,770–779)																
0–24 years	16.40	16.29	15.98	15.71	15.05	14.90	15.31	15.03	15.27	15.43	15.57	15.17	14.59	13.88	13.43	12.97
25–64 years	0.01	0.01	0.00	0.00	0.01	0.01	0.00	0.01	0.00	0.01	0.01	0.00	0.01	0.01	0.01	0.01
65 years and over	0.01	0.01	0.01	0.00	0.01	—	0.00	0.01	0.01	0.01	0.01	0.02	0.00	0.02	0.01	0.01
Symptoms, signs, and ill-defined conditions (780–799)																
0–24 years	7.63	7.90	7.82	7.86	7.70	7.57	7.74	8.09	8.24	8.61	8.64	8.27	8.09	7.45	7.29	6.43
25–64 years	7.32	7.37	7.56	7.64	6.83	6.66	6.96	7.05	7.50	6.89	6.14	5.33	5.13	4.67	5.55	5.02
65 years and over	50.15	52.56	52.61	51.84	53.53	53.71	54.80	53.33	49.13	48.25	37.02	31.46	32.26	32.24	37.74	37.58

See footnotes at end of table.

Table 2. Unadjusted death rates for 72 selected causes of death, Human immunodeficiency virus infection, and Alzheimer's disease by three broad age categories: United States, 1979–94—Con.

[Rates are per 100,000 population in specified age group]

Cause of death (ICD-9 category)	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
All other diseases (Residual)																
0–24 years	7.38	7.33	7.01	6.61	6.68	6.50	6.43	6.36	5.87	5.86	6.07	5.82	5.88	5.58	5.61	5.24
25–64 years	31.03	31.51	30.43	28.84	29.75	29.74	31.85	33.61	28.75	29.21	28.28	27.62	27.66	27.35	27.93	28.23
65 years and over	269.33	291.99	296.72	304.54	328.85	347.95	373.66	385.82	405.96	419.77	425.21	426.56	430.86	433.77	468.12	486.24
Accidents and adverse effects (E800–E949)																
0–24 years	39.08	38.29	34.86	32.18	30.36	30.07	29.67	30.79	29.49	29.27	27.15	25.74	24.65	22.08	22.55	22.31
25–64 years	42.11	41.84	40.32	36.68	35.49	35.15	34.91	34.93	34.69	35.11	34.63	33.35	31.20	30.37	31.54	31.52
65 years and over	95.63	97.24	90.55	85.95	87.18	87.49	87.87	86.65	87.21	89.62	87.46	84.34	83.28	82.52	84.78	85.39
Motor vehicle accidents (E810–E825)																
0–24 years	25.33	24.75	22.68	20.36	19.21	19.73	19.44	20.60	19.87	19.92	18.13	17.38	16.12	14.36	14.60	14.82
25–64 years	22.57	22.53	22.10	19.08	18.44	18.96	18.58	18.86	19.22	19.25	19.01	18.75	16.83	15.81	15.88	15.73
65 years and over	23.43	22.61	22.42	20.45	20.64	21.89	21.66	22.10	22.89	23.77	23.63	23.20	22.18	21.85	22.34	22.93
All other accidents and adverse effects (E800–807, E826–E949)																
0–24 years	13.75	13.54	12.18	11.82	11.15	10.35	10.24	10.19	9.62	9.35	9.02	8.36	8.54	7.72	7.95	7.49
25–64 years	19.54	19.31	18.22	17.60	17.05	16.19	16.33	16.07	15.47	15.86	15.63	14.59	14.37	14.55	15.67	15.79
65 years and over	72.21	74.62	68.13	65.51	66.53	65.60	66.21	64.55	64.33	65.86	63.82	61.14	61.10	60.67	62.44	62.46
Suicide (E950–E959)																
0–24 years	5.75	5.74	5.70	5.62	5.46	5.72	5.90	5.90	5.70	5.71	5.64	5.65	5.48	5.44	5.57	5.66
25–64 years	16.19	15.79	16.18	16.16	15.75	15.94	15.48	16.03	15.70	15.23	15.04	15.28	15.13	14.77	14.90	14.81
65 years and over	18.71	17.76	17.08	18.36	19.31	19.79	20.37	21.63	21.82	21.12	20.30	20.57	19.74	19.09	18.94	18.12
Homicide and legal intervention (E960–E978)																
0–24 years	7.49	8.09	7.67	7.23	6.39	6.34	6.27	7.20	7.02	7.64	8.19	9.44	10.36	10.16	10.66	10.16
25–64 years	13.39	14.17	13.76	12.74	11.39	10.97	10.91	11.48	10.89	11.05	11.25	11.84	12.13	11.36	11.23	10.64
65 years and over	5.21	5.55	5.00	4.93	4.54	4.27	4.30	4.50	4.59	4.42	4.17	4.03	4.11	3.81	3.69	3.46
All other external causes (E980–E999)																
0–24 years	1.13	1.02	0.96	0.82	0.77	0.75	0.63	0.68	0.68	0.68	0.55	0.49	0.50	0.50	0.62	0.63
25–64 years	2.24	2.10	2.03	1.83	1.74	1.65	1.61	1.76	1.66	1.64	1.51	1.32	1.36	1.65	1.92	1.90
65 years and over	1.74	1.80	1.86	1.38	1.46	1.43	1.20	1.24	1.21	1.20	0.91	0.82	0.83	0.79	0.88	0.84
Human immunodeficiency virus infection¹ (*042–*044)																
0–24 years . . . . .	...	...	...	...	...	...	...	...	0.80	0.87	1.00	0.94	1.05	1.02	1.14	1.20
25–64 years . . . . .	...	...	...	...	...	...	...	...	10.19	12.47	16.53	18.83	21.75	24.48	26.89	30.10
65 years and over . . . . .	...	...	...	...	...	...	...	...	1.07	1.25	1.33	1.44	1.73	1.92	1.97	2.09
Alzheimer's disease² (331.0)																
0–24 years	–	–	–	0.00	–	0.00	0.00	–	–	–	–	0.00	–	–	0.00	0.00
25–64 years	0.19	0.26	0.26	0.33	0.35	0.35	0.37	0.37	0.36	0.35	0.30	0.28	0.27	0.23	0.25	0.27
65 years and over	2.60	4.06	5.62	8.44	14.76	20.97	27.52	30.96	36.71	39.31	41.51	43.08	43.36	43.80	50.11	54.94

0.0 Quantity more than zero but less than 0.05.

... Category not applicable.

– Quantity zero.

* Beginning with data year 1987, the National Center for Health Statistics introduced categories *042–*044 for classifying and coding Human immunodeficiency virus infection. The asterisks indicate that these categories are not part of the *Ninth Revision, International Classification of Diseases, 1975*.

¹Included in All other infectious and parasitic diseases shown above.

²Included in All other diseases (Residual category).

Table 3. Age-adjusted death rates for 72 selected causes of death, Human immunodeficiency virus infection, and Alzheimer's disease by three broad age categories: United States 1979–94

[Age-adjusted death rates per 100,000 U.S. standard population]

Cause of death (ICD-9 category)	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
All causes																
0–24 years	117.60	115.89	108.21	103.54	98.63	98.10	96.73	97.95	95.94	96.82	95.10	92.72	91.07	86.32	87.67	85.61
25–64 years	461.49	461.73	452.39	437.54	432.52	428.80	428.85	426.62	423.99	423.18	417.49	411.52	408.18	401.24	406.03	403.40
65 years and over	4,317.87	4,454.11	4,320.12	4,255.26	4,290.10	4,256.68	4,275.51	4,224.95	4,175.46	4,185.91	4,064.64	4,009.74	3,949.97	3,894.69	3,979.69	3,926.32
Shigellosis and amebiasis (004,006)																
0–24 years	0.02	0.01	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.01	0.01	0.00	0.01	0.00	0.00	0.00
25–64 years	0.01	0.01	0.01	0.00	0.01	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
65 years and over	0.04	0.04	0.04	0.02	0.05	0.03	0.04	0.01	0.02	0.01	0.02	0.02	0.01	0.02	0.02	0.01
Certain other intestinal infections (007–009)																
0–24 years	0.14	0.15	0.17	0.16	0.15	0.16	0.12	0.13	0.11	0.10	0.11	0.11	0.13	0.14	0.14	0.22
25–64 years	0.04	0.05	0.04	0.04	0.04	0.04	0.04	0.06	0.04	0.03	0.03	0.04	0.04	0.04	0.05	0.06
65 years and over	0.40	0.50	0.47	0.35	0.43	0.34	0.38	0.36	0.39	0.43	0.46	0.57	0.60	0.71	0.92	0.92
Tuberculosis (010–018)																
0–24 years	0.03	0.02	0.03	0.02	0.03	0.04	0.04	0.03	0.03	0.04	0.04	0.04	0.03	0.03	0.02	0.02
25–64 years	0.75	0.68	0.69	0.59	0.59	0.60	0.59	0.63	0.60	0.63	0.65	0.62	0.58	0.54	0.49	0.43
65 years and over	4.13	4.27	3.88	3.63	3.47	3.18	3.15	3.00	2.97	3.17	3.21	2.80	2.53	2.63	2.55	2.26
Tuberculosis of respiratory system (010–012)																
0–24 years	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.02	0.01	0.02	0.02	0.02	0.01	0.00	0.01
25–64 years	0.62	0.55	0.56	0.47	0.46	0.45	0.45	0.47	0.45	0.47	0.48	0.44	0.44	0.40	0.37	0.30
65 years and over	3.46	3.59	3.25	3.02	2.82	2.55	2.54	2.47	2.45	2.56	2.60	2.28	1.98	2.11	2.07	1.79
Other tuberculosis (013–018)																
0–24 years	0.02	0.02	0.02	0.01	0.01	0.02	0.02	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.01
25–64 years	0.13	0.13	0.13	0.12	0.13	0.15	0.14	0.16	0.14	0.16	0.17	0.19	0.14	0.14	0.12	0.13
65 years and over	0.67	0.68	0.63	0.62	0.64	0.64	0.62	0.54	0.52	0.61	0.61	0.52	0.56	0.52	0.47	0.47
Whooping cough (033)																
0–24 years	0.01	0.01	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.01	–	0.00	0.01	0.01
25–64 years	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
65 years and over	–	–	–	–	–	–	–	0.00	–	–	–	–	–	–	–	–
Streptococcal sore throat, scarlatina, and erysipelas (034–035)																
0–24 years	0.01	0.00	0.00	0.00	–	–	–	0.00	0.00	0.00	0.00	0.00	–	–	0.00	0.00
25–64 years	0.01	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01
65 years and over	0.03	0.02	0.03	0.02	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.01	0.01	0.01	0.01
Meningococcal infection (036)																
0–24 years	0.29	0.28	0.32	0.25	0.21	0.21	0.18	0.19	0.18	0.19	0.18	0.14	0.14	0.13	0.16	0.18
25–64 years	0.09	0.08	0.09	0.07	0.05	0.06	0.05	0.06	0.05	0.06	0.05	0.04	0.03	0.03	0.05	0.05
65 years and over	0.15	0.16	0.19	0.15	0.13	0.11	0.11	0.11	0.07	0.08	0.12	0.08	0.07	0.07	0.09	0.09
Septicemia (038)																
0–24 years	0.47	0.45	0.51	0.46	0.51	0.53	0.53	0.53	0.51	0.49	0.50	0.49	0.46	0.42	0.44	0.43
25–64 years	1.64	1.85	2.04	2.08	2.25	2.50	2.65	2.81	2.88	2.88	2.73	2.65	2.62	2.61	2.56	2.63
65 years and over	19.09	22.20	23.57	25.94	29.87	32.85	37.29	39.80	41.74	43.09	37.88	37.42	37.51	36.92	37.99	36.45
Acute poliomyelitis (045)																
0–24 years	–	–	–	–	–	–	–	–	–	0.00	–	–	–	–	–	–
25–64 years	0.00	0.00	–	–	–	–	0.00	–	–	–	–	–	0.00	–	–	–
65 years and over	–	0.01	–	–	–	–	0.01	–	–	–	–	–	–	–	–	–

See footnotes at end of table.

Table 3. Age-adjusted death rates for 72 selected causes of death, Human immunodeficiency virus infection, and Alzheimer's disease by three broad age categories: United States 1979-94—Con.

[Age-adjusted death rates per 100,000 U.S. standard population]

Cause of death (ICD-9 category)	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Measles (055)																
0-24 years	0.00	0.01	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.03	0.05	0.02	0.00	—	—
25-64 years	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	—	—
65 years and over	—	—	—	—	—	—	—	—	—	—	0.00	—	—	—	—	—
Viral hepatitis (070)																
0-24 years	0.11	0.11	0.11	0.09	0.12	0.10	0.09	0.08	0.08	0.05	0.08	0.05	0.05	0.04	0.05	0.04
25-64 years	0.35	0.36	0.42	0.36	0.37	0.40	0.41	0.42	0.51	0.55	0.61	0.62	0.78	0.83	1.06	1.26
65 years and over	0.99	1.11	1.03	1.11	1.16	1.08	1.31	1.43	1.64	1.85	2.18	2.38	2.50	2.69	3.17	3.93
Syphilis (090-097)																
0-24 years	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.00	0.02	0.02	0.02	0.03	0.03	0.02	0.01	0.01
25-64 years	0.03	0.02	0.03	0.02	0.02	0.01	0.02	0.01	0.02	0.02	0.02	0.03	0.02	0.02	0.02	0.01
65 years and over	0.47	0.44	0.33	0.27	0.29	0.25	0.15	0.18	0.17	0.12	0.14	0.12	0.11	0.12	0.10	0.13
All other infectious and parasitic diseases (001-003,005,020-032, 037,039-041,*042-*044,046-054, 056-066,071-088,098-139)																
0-24 years	0.65	0.61	0.57	0.61	0.58	0.62	0.66	0.75	1.41	1.50	1.64	1.60	1.66	1.62	1.80	1.85
25-64 years	1.30	1.36	1.49	1.54	1.85	2.56	3.40	4.61	12.25	14.67	18.87	21.06	23.81	26.44	28.76	31.91
65 years and over	5.65	6.90	6.91	7.30	7.55	8.11	8.85	9.46	9.99	10.90	11.44	11.10	10.71	10.81	11.27	11.27
Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues (140-208)																
0-24 years	5.09	5.13	4.80	4.93	4.72	4.40	4.32	4.31	4.09	4.00	4.01	3.90	3.90	3.85	3.76	3.68
25-64 years	129.60	130.58	129.32	129.61	129.22	130.30	130.28	128.53	128.05	127.43	126.27	125.94	124.72	121.69	119.96	117.94
65 years and over	932.37	953.97	949.75	962.26	970.61	979.43	984.27	994.34	996.44	1,001.33	1,017.43	1,028.21	1,029.31	1,030.96	1,037.78	1,036.61
Malignant neoplasms of lip, oral cavity, and pharynx (140-149)																
0-24 years	0.04	0.03	0.04	0.05	0.04	0.03	0.03	0.04	0.02	0.04	0.04	0.03	0.03	0.03	0.03	0.03
25-64 years	3.58	3.48	3.36	3.29	3.25	3.22	3.02	2.98	2.84	2.88	2.84	2.78	2.74	2.59	2.62	2.42
65 years and over	17.02	16.94	16.79	16.51	16.11	15.88	15.85	15.47	14.70	14.95	14.39	15.17	14.54	14.21	14.09	13.50
Malignant neoplasms of digestive organs and peritoneum (150-159)																
0-24 years	0.21	0.25	0.22	0.25	0.21	0.19	0.21	0.18	0.19	0.17	0.18	0.17	0.19	0.20	0.19	0.20
25-64 years	28.13	27.72	27.37	27.15	26.94	27.19	26.81	26.19	26.10	25.52	25.11	25.22	25.13	24.66	24.51	24.33
65 years and over	277.28	277.84	273.06	270.87	268.95	270.73	266.16	262.71	259.28	255.48	258.13	256.58	251.97	250.72	250.26	248.63
Malignant neoplasms of respiratory and intrathoracic organs (160-165)																
0-24 years	0.08	0.09	0.07	0.09	0.10	0.10	0.08	0.06	0.06	0.07	0.07	0.07	0.07	0.07	0.06	0.06
25-64 years	38.86	39.48	39.71	40.23	40.14	40.57	40.74	40.37	40.77	40.70	40.39	40.57	39.51	38.47	37.74	36.36
65 years and over	230.38	242.82	245.12	254.77	261.86	267.03	273.24	279.22	286.93	291.60	300.39	307.87	311.94	315.19	319.53	320.31
Malignant neoplasm of breast (174-175)																
0-24 years	0.02	0.02	0.02	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.01	0.02	0.02	0.01	0.02	0.02
25-64 years	15.66	15.93	15.73	15.72	15.58	15.87	15.95	15.67	15.59	15.65	15.32	15.23	14.98	14.18	13.82	13.57
65 years and over	64.21	65.88	67.49	68.18	68.48	70.48	70.45	71.10	70.69	72.10	73.47	73.75	72.27	71.61	71.23	70.70

See footnotes at end of table.

Table 3. Age-adjusted death rates for 72 selected causes of death, Human immunodeficiency virus infection, and Alzheimer's disease by three broad age categories: United States 1979–94—Con.

[Age-adjusted death rates per 100,000 U.S. standard population]

Cause of death (ICD-9 category)	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Malignant neoplasms of genital organs (179–187)																
0–24 years	0.22	0.24	0.20	0.20	0.23	0.18	0.17	0.15	0.14	0.14	0.14	0.13	0.12	0.12	0.13	0.12
25–64 years	10.97	10.88	10.66	10.38	10.25	10.06	9.95	9.94	9.62	9.60	9.61	9.75	9.56	9.42	9.06	9.09
65 years and over	117.12	118.00	116.19	116.77	118.12	116.60	117.33	119.45	119.27	121.16	122.55	127.23	127.52	127.70	125.69	125.04
Malignant neoplasms of urinary organs (188–189)																
0–24 years	0.14	0.12	0.12	0.11	0.13	0.09	0.09	0.10	0.09	0.11	0.09	0.08	0.09	0.08	0.07	0.08
25–64 years	4.13	4.08	4.04	4.14	4.02	3.99	4.05	4.04	4.06	3.91	4.06	4.08	4.12	4.07	4.00	3.96
65 years and over	45.00	45.76	44.80	45.02	44.42	43.78	43.57	43.16	43.06	43.06	43.71	43.90	44.18	44.24	44.27	45.10
Malignant neoplasms of all other and unspecified sites (170–173,190–199)																
0–24 years	2.03	2.05	1.96	2.02	1.91	1.84	1.82	1.82	1.75	1.73	1.75	1.73	1.71	1.67	1.70	1.65
25–64 years	17.25	17.68	17.62	17.70	18.02	18.17	18.58	18.35	18.29	18.22	17.72	17.15	17.39	17.11	17.16	16.90
65 years and over	101.12	104.34	104.86	106.17	107.81	109.74	110.36	113.81	114.52	114.01	112.68	110.32	111.47	111.74	115.37	114.95
Leukemia (204–208)																
0–24 years	1.75	1.72	1.56	1.60	1.48	1.41	1.36	1.36	1.34	1.26	1.25	1.23	1.21	1.22	1.16	1.14
25–64 years	4.40	4.57	4.33	4.26	4.33	4.40	4.28	4.19	4.11	4.07	4.17	4.15	4.06	4.08	4.03	3.95
65 years and over	33.73	34.28	33.73	34.14	33.70	33.74	34.11	33.72	32.89	33.29	34.52	34.75	35.05	34.90	35.07	34.91
Other malignant neoplasms of lymphatic and hematopoietic tissues (200–203)																
0–24 years	0.60	0.62	0.62	0.58	0.58	0.54	0.54	0.57	0.49	0.47	0.48	0.44	0.47	0.45	0.40	0.38
25–64 years	6.61	6.75	6.51	6.74	6.69	6.84	6.89	6.80	6.68	6.88	7.04	7.02	7.23	7.12	7.02	7.36
65 years and over	46.51	48.11	47.72	49.82	51.15	51.45	53.20	55.70	55.10	55.67	57.58	58.64	60.36	60.66	62.29	63.47
Benign neoplasms, carcinoma in situ, and neoplasms of uncertain behavior and of unspecified nature (210–239)																
0–24 years	0.34	0.36	0.33	0.36	0.34	0.33	0.34	0.38	0.32	0.36	0.31	0.36	0.33	0.34	0.32	0.37
25–64 years	1.76	1.80	1.65	1.67	1.57	1.44	1.53	1.50	1.34	1.40	1.35	1.33	1.31	1.33	1.39	1.38
65 years and over	12.95	13.38	13.72	13.79	13.66	13.67	13.77	13.33	13.39	13.07	12.87	12.68	12.99	12.71	13.02	12.64
Diabetes mellitus (250)																
0–24 years	0.23	0.19	0.20	0.21	0.19	0.16	0.18	0.19	0.18	0.18	0.21	0.17	0.19	0.19	0.18	0.17
25–64 years	7.73	8.03	7.82	7.64	7.97	7.54	7.76	7.95	8.13	8.63	9.53	9.61	9.75	9.84	10.21	10.60
65 years and over	84.81	87.97	84.95	82.93	85.15	82.79	83.55	81.69	83.43	84.96	98.61	99.02	99.71	99.89	106.19	110.32
Nutritional deficiencies (260–269)																
0–24 years	0.06	0.05	0.05	0.05	0.05	0.03	0.04	0.03	0.05	0.04	0.03	0.03	0.03	0.04	0.03	0.03
25–64 years	0.25	0.22	0.21	0.17	0.18	0.17	0.19	0.18	0.16	0.17	0.17	0.17	0.15	0.17	0.17	0.16
65 years and over	5.40	5.80	5.49	5.70	5.97	5.73	6.09	5.95	5.83	5.87	5.82	5.64	5.44	5.47	5.95	5.72
Anemias (280–285)																
0–24 years	0.36	0.32	0.29	0.31	0.32	0.31	0.27	0.28	0.25	0.25	0.27	0.28	0.24	0.32	0.28	0.26
25–64 years	0.60	0.59	0.58	0.53	0.58	0.53	0.58	0.53	0.61	0.55	0.63	0.64	0.62	0.63	0.61	0.67
65 years and over	6.86	7.05	7.14	6.91	7.01	7.07	7.19	7.10	6.99	6.95	7.02	6.94	6.87	6.78	6.73	6.67
Meningitis (320–322)																
0–24 years	0.76	0.81	0.70	0.61	0.60	0.54	0.49	0.42	0.42	0.42	0.36	0.33	0.22	0.21	0.20	0.21
25–64 years	0.32	0.28	0.34	0.29	0.28	0.26	0.26	0.28	0.31	0.25	0.28	0.27	0.23	0.22	0.21	0.22
65 years and over	1.27	1.25	1.18	1.18	1.26	1.13	1.32	1.25	1.12	1.30	1.04	0.98	1.01	0.81	0.85	0.72

See footnotes at end of table.

Table 3. Age-adjusted death rates for 72 selected causes of death, Human immunodeficiency virus infection, and Alzheimer's disease by three broad age categories: United States 1979-94—Con.

[Age-adjusted death rates per 100,000 U.S. standard population]

Cause of death (ICD-9 category)	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Major cardiovascular diseases																
(390-448)																
0-24 years	3.34	3.70	3.37	3.38	3.57	3.63	3.51	3.52	3.44	3.46	3.04	3.05	3.08	2.98	3.06	3.07
25-64 years	165.46	162.60	158.80	152.89	150.28	146.01	142.63	137.93	133.79	129.66	122.87	118.41	115.91	113.26	113.03	110.20
65 years and over	2,483.59	2,528.34	2,410.60	2,350.23	2,326.22	2,259.46	2,222.92	2,154.85	2,098.37	2,073.55	1,948.98	1,888.89	1,836.03	1,788.53	1,810.03	1,757.79
Diseases of heart (390-398,402,404-429)																
0-24 years	2.46	2.79	2.58	2.63	2.77	2.85	2.76	2.86	2.77	2.76	2.39	2.39	2.40	2.34	2.35	2.40
25-64 years	139.16	137.08	134.11	129.58	127.43	123.48	120.83	116.59	112.67	108.94	102.81	98.72	96.63	94.24	93.97	91.22
65 years and over	1,883.20	1,932.09	1,856.46	1,825.65	1,821.19	1,771.67	1,749.29	1,700.87	1,654.39	1,636.10	1,534.94	1,484.68	1,444.52	1,405.28	1,420.77	1,369.23
Rheumatic fever and rheumatic heart disease (390-398)																
0-24 years	0.10	0.12	0.08	0.09	0.08	0.10	0.09	0.07	0.07	0.08	0.06	0.06	0.04	0.06	0.05	0.07
25-64 years	2.73	2.63	2.32	2.08	2.08	1.89	1.76	1.63	1.50	1.43	1.31	1.27	1.19	1.13	1.07	0.99
65 years and over	17.56	17.64	16.72	15.90	14.77	15.13	14.16	13.74	13.70	13.58	12.65	12.27	11.94	11.19	11.14	10.40
Hypertensive heart disease (402)																
0-24 years	0.02	0.02	0.02	0.02	0.01	0.02	0.03	0.02	0.02	0.03	0.02	0.02	0.03	0.03	0.02	0.03
25-64 years	4.92	4.66	4.74	4.49	4.52	4.33	4.36	4.19	4.25	4.15	4.15	4.02	4.04	4.15	4.15	4.34
65 years and over	52.21	52.10	49.15	48.59	47.87	46.33	45.26	43.62	42.89	42.21	41.20	40.99	39.93	39.76	40.96	40.90
Hypertensive heart and renal disease(404)																
0-24 years	0.01	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.01	0.00
25-64 years	0.39	0.40	0.34	0.29	0.29	0.26	0.31	0.28	0.30	0.28	0.25	0.30	0.28	0.28	0.27	0.27
65 years and over	9.93	9.79	8.64	7.56	7.50	6.99	6.44	5.63	5.49	5.23	5.07	4.93	4.93	4.84	4.71	4.67
Ischemic heart disease (410-414)																
0-24 years	0.19	0.21	0.23	0.24	0.23	0.25	0.19	0.18	0.19	0.19	0.17	0.18	0.19	0.17	0.19	0.18
25-64 years	102.92	100.17	97.08	93.61	89.83	85.90	82.59	77.57	73.93	69.88	66.75	63.91	62.07	59.65	58.43	56.46
65 years and over	1,434.80	1,456.07	1,386.78	1,354.32	1,326.15	1,273.06	1,237.34	1,177.57	1,134.17	1,111.64	1,062.83	1,029.95	993.34	961.40	958.52	922.33
Acute myocardial infarction (410)																
0-24 years	0.13	0.14	0.14	0.15	0.14	0.14	0.12	0.10	0.11	0.11	0.11	0.11	0.10	0.10	0.10	0.10
25-64 years	70.62	66.80	63.83	61.13	57.74	54.48	51.32	47.14	44.30	41.00	39.44	37.42	36.04	34.33	33.14	31.98
65 years and over	772.46	766.93	730.63	715.90	692.52	663.31	641.38	599.97	571.23	550.95	535.81	510.90	488.40	465.76	451.46	432.62
Other acute and subacute forms of ischemic heart disease (411)																
0-24 years	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.00
25-64 years	1.42	1.40	1.33	1.23	1.14	1.06	1.08	1.02	0.88	0.78	0.77	0.83	0.77	0.71	0.64	0.60
65 years and over	10.92	10.83	9.97	8.81	8.64	8.53	8.06	7.76	6.99	6.76	6.49	6.22	6.02	5.67	5.20	4.79
Angina pectoris (413)																
0-24 years	0.00	-	-	0.00	0.00	0.00	0.00	0.00	-	-	-	0.00	-	0.00	0.00	0.00
25-64 years	0.09	0.10	0.10	0.11	0.12	0.14	0.13	0.13	0.12	0.10	0.12	0.09	0.10	0.09	0.09	0.09
65 years and over	1.32	1.50	1.43	1.52	1.81	2.01	2.20	2.33	2.33	2.32	2.29	2.31	2.20	1.97	1.84	1.65
Old myocardial infarction and other forms of chronic ischemic heart disease (412,414)																
0-24 years	0.05	0.06	0.08	0.08	0.08	0.10	0.06	0.07	0.08	0.07	0.06	0.07	0.08	0.06	0.09	0.07
25-64 years	30.79	31.86	31.82	31.14	30.83	30.21	30.07	29.28	28.64	28.00	26.43	25.57	25.16	24.52	24.55	23.79
65 years and over	650.10	676.82	644.76	628.10	623.17	599.20	585.69	567.51	553.62	551.61	518.25	510.52	496.73	488.01	500.02	483.27

See footnotes at end of table.

Table 3. Age-adjusted death rates for 72 selected causes of death, Human immunodeficiency virus infection, and Alzheimer's disease by three broad age categories: United States 1979-94—Con.

[Age-adjusted death rates per 100,000 U.S. standard population]

Cause of death (ICD-9 category)	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Other diseases of endocardium (424)																
0-24 years	0.09	0.09	0.08	0.09	0.09	0.09	0.10	0.08	0.09	0.07	0.08	0.08	0.09	0.08	0.06	0.07
25-64 years	1.30	1.35	1.31	1.29	1.23	1.23	1.29	1.27	1.34	1.33	1.31	1.36	1.25	1.26	1.27	1.23
65 years and over	17.02	18.37	18.54	19.15	20.37	20.68	21.91	23.03	23.93	25.39	25.50	26.67	27.18	27.76	28.37	28.35
All other forms of heart disease (415-423,425-429)																
0-24 years	2.06	2.34	2.17	2.18	2.36	2.40	2.34	2.51	2.40	2.38	2.05	2.04	2.05	2.01	2.02	2.05
25-64 years	26.90	27.87	28.32	27.83	29.46	29.86	30.52	31.66	31.35	31.87	29.04	27.87	27.79	27.77	28.80	27.92
65 years and over	351.67	378.12	376.63	380.13	404.53	409.49	424.18	437.28	434.21	438.05	387.69	369.87	367.19	360.33	377.07	362.58
Hypertension with or without renal disease (401,403)																
0-24 years	0.03	0.03	0.02	0.02	0.02	0.01	0.02	0.01	0.02	0.01	0.03	0.02	0.02	0.03	0.03	0.03
25-64 years	1.27	1.33	1.26	1.15	1.16	1.17	1.17	1.16	1.15	1.22	1.20	1.22	1.23	1.25	1.42	1.36
65 years and over	18.38	19.61	18.58	18.35	18.29	18.25	17.61	17.87	17.91	18.03	18.29	18.90	19.22	20.34	21.20	22.10
Cerebrovascular diseases (430-438)																
0-24 years	0.70	0.75	0.65	0.60	0.64	0.63	0.60	0.51	0.53	0.58	0.51	0.53	0.54	0.49	0.57	0.52
25-64 years	20.57	19.66	19.18	18.01	17.46	17.21	16.53	16.17	15.96	15.58	14.86	14.63	14.20	14.00	13.90	14.00
65 years and over	452.67	446.93	413.51	389.13	372.66	360.32	349.49	333.35	324.80	320.19	301.87	294.27	284.02	277.23	282.05	282.09
Intracerebral and other intracranial hemorrhage (431-432)																
0-24 years	0.31	0.32	0.29	0.27	0.28	0.27	0.24	0.21	0.20	0.21	0.20	0.18	0.18	0.17	0.18	0.16
25-64 years	5.88	5.66	5.58	5.36	5.10	5.17	5.09	4.98	5.07	5.01	4.84	4.72	4.60	4.58	4.55	4.62
65 years and over	51.64	47.62	44.74	43.66	41.80	43.15	43.63	42.49	41.66	42.64	39.96	39.85	39.26	39.38	39.46	39.01
Cerebral thrombosis and unspecified occlusion of cerebral arteries (434.0,434.9)																
0-24 years	0.06	0.06	0.05	0.05	0.06	0.06	0.05	0.05	0.05	0.06	0.06	0.06	0.07	0.04	0.06	0.07
25-64 years	2.66	2.44	2.19	2.02	1.99	1.94	1.78	1.72	1.64	1.52	1.35	1.33	1.21	1.08	1.02	0.97
65 years and over	98.90	92.46	81.73	72.08	64.98	60.24	57.57	53.71	49.90	46.40	41.88	37.90	33.64	30.61	29.10	27.52
Cerebral embolism (434.1)																
0-24 years	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	—	0.01	—	0.00	—
25-64 years	0.13	0.13	0.12	0.10	0.09	0.09	0.08	0.08	0.09	0.07	0.06	0.06	0.05	0.05	0.06	0.06
65 years and over	2.35	2.10	2.14	1.95	1.91	1.96	1.92	1.90	1.69	1.71	1.54	1.45	1.36	1.33	1.26	1.44
All other and late effects of cerebrovascular diseases (430,433,435-438)																
0-24 years	0.33	0.36	0.31	0.28	0.31	0.30	0.30	0.24	0.28	0.31	0.25	0.29	0.29	0.28	0.33	0.30
25-64 years	11.89	11.43	11.29	10.53	10.28	10.00	9.58	9.39	9.17	8.98	8.60	8.52	8.33	8.29	8.27	8.36
65 years and over	299.78	304.75	284.90	271.45	263.98	254.98	246.37	235.25	231.56	229.44	218.49	215.07	209.75	205.90	212.22	214.12
Atherosclerosis (440)																
0-24 years	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00
25-64 years	1.03	1.10	1.02	1.00	1.01	0.87	0.89	0.89	0.86	0.81	0.74	0.70	0.67	0.65	0.62	0.60
65 years and over	75.15	74.93	68.23	63.49	60.41	54.56	51.91	47.88	46.79	44.75	38.11	35.01	32.81	30.78	30.65	29.86

See footnotes at end of table.

Table 3. Age-adjusted death rates for 72 selected causes of death, Human immunodeficiency virus infection, and Alzheimer's disease by three broad age categories: United States 1979-94—Con.

[Age-adjusted death rates per 100,000 U.S. standard population]

Cause of death (ICD-9 category)	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Other diseases of arteries, arterioles, and capillaries (441-448)																
0-24 years	0.15	0.14	0.12	0.12	0.14	0.12	0.13	0.14	0.12	0.10	0.10	0.11	0.11	0.12	0.12	0.12
25-64 years	3.43	3.42	3.24	3.15	3.22	3.28	3.21	3.11	3.14	3.12	3.26	3.13	3.18	3.12	3.11	3.02
65 years and over	54.18	54.78	53.82	53.61	53.66	54.66	54.62	54.88	54.48	54.48	55.77	56.04	55.46	54.90	55.37	54.50
Acute bronchitis and bronchiolitis (466)																
0-24 years	0.16	0.15	0.13	0.12	0.11	0.10	0.09	0.08	0.10	0.10	0.10	0.10	0.09	0.11	0.09	0.10
25-64 years	0.09	0.09	0.08	0.07	0.08	0.07	0.07	0.05	0.06	0.07	0.06	0.06	0.07	0.07	0.07	0.05
65 years and over	0.99	1.17	1.05	0.83	0.91	0.97	1.10	1.13	0.91	1.07	1.09	1.02	0.98	0.85	1.00	0.85
Pneumonia and influenza (480-487)																
0-24 years	2.05	1.89	1.58	1.47	1.43	1.37	1.33	1.31	1.25	1.24	1.26	1.16	1.19	1.09	1.09	1.05
25-64 years	5.69	6.29	6.10	5.40	5.55	5.65	6.12	6.27	6.06	6.53	6.32	6.26	6.05	5.51	6.01	5.77
65 years and over	108.47	130.72	124.48	110.44	123.60	128.56	143.73	145.01	140.51	153.78	147.76	151.91	143.47	137.84	146.02	141.42
Pneumonia (480-486)																
0-24 years	2.01	1.84	1.52	1.45	1.40	1.33	1.30	1.27	1.23	1.21	1.21	1.12	1.13	1.07	1.04	1.03
25-64 years	5.64	6.13	5.90	5.34	5.46	5.58	6.00	6.16	6.00	6.43	6.20	6.14	5.96	5.44	5.94	5.67
65 years and over	107.03	124.13	117.37	108.88	120.47	126.24	139.51	141.29	139.38	150.07	144.89	147.97	141.54	136.10	144.35	139.39
Influenza (487)																
0-24 years	0.04	0.05	0.05	0.02	0.03	0.03	0.03	0.04	0.02	0.03	0.05	0.04	0.05	0.03	0.05	0.02
25-64 years	0.05	0.16	0.20	0.06	0.09	0.07	0.12	0.11	0.06	0.10	0.12	0.12	0.09	0.07	0.07	0.09
65 years and over	1.44	6.60	7.11	1.56	3.13	2.32	4.22	3.72	1.13	3.71	2.86	3.94	1.93	1.74	1.67	2.04
Chronic obstructive pulmonary diseases and allied conditions (490-496)																
0-24 years	0.33	0.35	0.37	0.43	0.41	0.38	0.41	0.42	0.47	0.41	0.43	0.44	0.48	0.43	0.48	0.50
25-64 years	9.29	9.81	9.95	9.60	10.26	10.32	10.73	10.64	10.63	10.92	11.04	10.69	10.87	10.42	10.98	10.80
65 years and over	142.74	159.00	163.58	163.93	177.73	182.07	193.37	195.47	195.03	203.67	202.39	206.43	211.14	211.04	228.81	225.32
Bronchitis, chronic and unspecified (490-491)																
0-24 years	0.13	0.09	0.10	0.09	0.08	0.07	0.07	0.07	0.09	0.07	0.08	0.07	0.09	0.07	0.08	0.06
25-64 years	0.63	0.60	0.57	0.52	0.50	0.48	0.45	0.45	0.42	0.45	0.43	0.43	0.45	0.42	0.41	0.38
65 years and over	9.88	10.13	9.67	9.02	9.10	8.82	8.84	9.02	8.26	8.53	8.36	7.82	7.90	7.77	7.80	7.31
Emphysema (492)																
0-24 years	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.00	0.00	0.01	0.01	0.01
25-64 years	2.60	2.50	2.37	2.18	2.19	2.10	2.19	2.23	2.18	2.18	2.19	2.14	2.12	1.99	2.15	2.01
65 years and over	39.37	39.89	37.89	35.55	36.28	35.68	37.67	37.68	36.79	39.39	38.37	38.66	39.67	39.23	41.32	39.86
Asthma (493)																
0-24 years	0.17	0.21	0.21	0.28	0.27	0.26	0.31	0.31	0.34	0.31	0.31	0.33	0.36	0.34	0.38	0.40
25-64 years	0.94	0.98	1.08	1.10	1.27	1.20	1.29	1.24	1.41	1.47	1.47	1.46	1.52	1.40	1.45	1.59
65 years and over	5.21	5.82	5.79	5.69	6.14	6.37	6.66	6.90	7.32	7.61	8.23	7.80	8.02	7.84	7.90	8.03
Other chronic obstructive pulmonary diseases and allied conditions (494-496)																
0-24 years	0.02	0.04	0.05	0.05	0.05	0.04	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.02	0.02	0.02
25-64 years	5.12	5.73	5.93	5.80	6.30	6.55	6.80	6.72	6.63	6.82	6.95	6.66	6.78	6.61	6.97	6.82
65 years and over	88.28	103.16	110.24	113.67	126.21	131.20	140.19	141.86	142.67	148.14	147.43	152.16	155.55	156.20	171.79	170.12

See footnotes at end of table.

Table 3. Age-adjusted death rates for 72 selected causes of death, Human immunodeficiency virus infection, and Alzheimer's disease by three broad age categories: United States 1979-94—Con.

[Age-adjusted death rates per 100,000 U.S. standard population]

Cause of death (ICD-9 category)	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Ulcer of stomach and duodenum (531-533)																
0-24 years	0.05	0.06	0.05	0.04	0.03	0.03	0.03	0.03	0.03	0.04	0.03	0.03	0.02	0.02	0.03	0.03
25-64 years	1.28	1.23	1.22	1.15	1.03	1.04	1.01	0.96	0.90	0.89	0.86	0.81	0.83	0.75	0.78	0.77
65 years and over	14.66	15.22	15.79	16.22	15.17	15.16	15.09	14.29	13.87	13.73	13.50	12.79	12.06	11.98	11.21	11.30
Appendicitis (540-543)																
0-24 years	0.07	0.08	0.05	0.06	0.05	0.04	0.04	0.05	0.03	0.04	0.04	0.04	0.03	0.03	0.04	0.03
25-64 years	0.17	0.19	0.15	0.13	0.11	0.10	0.10	0.11	0.10	0.10	0.10	0.10	0.09	0.08	0.09	0.08
65 years and over	1.46	1.35	1.27	1.01	1.10	1.00	1.01	0.98	0.93	0.85	0.83	0.74	0.63	0.72	0.58	0.59
Hernia of abdominal cavity and intestinal obstruction without mention of hernia (550-553,560)																
0-24 years	0.27	0.24	0.22	0.21	0.18	0.18	0.15	0.19	0.17	0.14	0.15	0.16	0.14	0.14	0.13	0.12
25-64 years	0.74	0.74	0.61	0.59	0.55	0.53	0.52	0.53	0.52	0.52	0.51	0.48	0.51	0.47	0.44	0.50
65 years and over	13.37	13.14	12.81	11.61	11.71	11.83	11.74	11.59	11.54	11.38	11.00	11.42	11.71	11.32	10.81	10.79
Chronic liver disease and cirrhosis (571)																
0-24 years	0.16	0.18	0.16	0.15	0.12	0.13	0.10	0.11	0.11	0.09	0.09	0.08	0.07	0.07	0.08	0.06
25-64 years	18.87	18.92	17.41	15.93	15.38	14.90	14.40	13.66	13.60	13.54	13.13	12.40	11.91	11.48	11.31	11.26
65 years and over	37.42	38.97	38.68	36.97	36.10	37.06	35.75	35.37	34.19	34.06	35.22	34.21	33.45	33.14	32.22	31.99
Cholelithiasis and other disorders of gallbladder (574-575)																
0-24 years	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.02
25-64 years	0.43	0.44	0.37	0.36	0.37	0.35	0.34	0.28	0.31	0.31	0.30	0.27	0.27	0.29	0.25	0.28
65 years and over	8.45	8.59	7.93	7.35	7.12	7.20	6.83	6.83	6.79	6.70	6.40	6.41	5.79	5.76	5.36	5.36
Nephritis, nephrotic syndrome, and nephrosis (580-589)																
0-24 years	0.45	0.40	0.44	0.40	0.37	0.43	0.40	0.39	0.34	0.34	0.30	0.25	0.28	0.27	0.27	0.24
25-64 years	2.91	2.91	2.76	2.77	2.77	2.79	2.89	2.86	2.81	2.90	2.64	2.56	2.45	2.46	2.53	2.32
65 years and over	39.40	41.53	42.32	43.31	44.61	46.38	48.12	47.95	47.62	47.00	43.89	42.55	42.78	43.54	45.00	43.88
Acute glomerulonephritis and nephrotic syndrome (580-581)																
0-24 years	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.02	0.02	0.02	0.02	0.02	0.01
25-64 years	0.06	0.07	0.05	0.06	0.06	0.06	0.06	0.05	0.04	0.05	0.05	0.05	0.05	0.04	0.04	0.04
65 years and over	0.83	0.72	0.74	0.68	0.80	0.68	0.71	0.59	0.58	0.63	0.62	0.54	0.57	0.56	0.50	0.54
Chronic glomerulonephritis, nephritis and nephropathy, not specified as acute or chronic, and renal sclerosis, unspecified (582-583,587)																
0-24 years	0.05	0.04	0.04	0.04	0.04	0.03	0.02	0.03	0.03	0.02	0.03	0.02	0.03	0.01	0.02	0.01
25-64 years	0.48	0.43	0.38	0.36	0.31	0.32	0.24	0.24	0.23	0.24	0.24	0.25	0.21	0.20	0.20	0.19
65 years and over	5.91	5.54	4.95	4.53	4.35	4.02	3.51	3.29	3.12	3.10	3.01	2.97	2.93	2.84	3.01	2.88
Renal failure, disorders resulting from impaired renal function, and small kidney of unknown cause (584-586,588-589)																
0-24 years	0.37	0.34	0.37	0.35	0.31	0.38	0.37	0.35	0.30	0.31	0.25	0.20	0.23	0.24	0.23	0.21
25-64 years	2.37	2.41	2.33	2.36	2.40	2.41	2.59	2.57	2.54	2.61	2.35	2.26	2.19	2.22	2.29	2.10
65 years and over	32.66	35.27	36.63	38.10	39.46	41.68	43.90	44.07	43.92	43.28	40.26	39.05	39.27	40.13	41.49	40.47

See footnotes at end of table.

Table 3. Age-adjusted death rates for 72 selected causes of death, Human immunodeficiency virus infection, and Alzheimer's disease by three broad age categories: United States 1979-94—Con.

[Age-adjusted death rates per 100,000 U.S. standard population]

Cause of death (ICD-9 category)	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Infections of kidney (590)																
0-24 years	0.03	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.01	0.01	0.01
25-64 years	0.33	0.31	0.27	0.24	0.22	0.23	0.18	0.19	0.17	0.17	0.14	0.14	0.13	0.12	0.12	0.10
65 years and over	7.61	7.12	5.76	5.43	4.87	4.71	4.46	3.97	3.72	3.26	2.82	2.50	2.24	1.93	1.77	1.70
Hyperplasia of prostate (600)																
0-24 years	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
25-64 years	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.02	0.01	0.02	0.02	0.01	0.01	0.01	0.01	0.01
65 years and over	2.38	2.12	1.89	1.67	1.45	1.29	1.14	1.16	1.05	1.00	0.96	0.95	0.88	0.78	0.78	0.79
Complications of pregnancy, childbirth, and the puerperium (630-676)																
0-24 years	0.12	0.11	0.12	0.09	0.12	0.08	0.10	0.10	0.08	0.12	0.11	0.12	0.12	0.13	0.10	0.13
25-64 years	0.20	0.21	0.17	0.18	0.15	0.17	0.16	0.14	0.14	0.17	0.17	0.18	0.17	0.15	0.16	0.16
65 years and over . . . . .	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Pregnancy with abortive outcome (630-638)																
0-24 years	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.03	0.02	0.02	0.02	0.02	0.02	0.02
25-64 years	0.03	0.04	0.03	0.03	0.03	0.03	0.02	0.02	0.02	0.03	0.02	0.03	0.02	0.03	0.02	0.02
65 years and over . . . . .	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Other complications of pregnancy, childbirth, and the puerperium (640-676)																
0-24 years	0.10	0.09	0.10	0.07	0.10	0.06	0.08	0.08	0.07	0.10	0.09	0.10	0.09	0.11	0.08	0.12
25-64 years	0.17	0.17	0.14	0.14	0.12	0.14	0.14	0.12	0.11	0.14	0.14	0.15	0.14	0.13	0.14	0.14
65 years and over . . . . .	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Congenital anomalies (740-759)																
0-24 years	11.67	11.69	11.14	11.13	10.60	10.60	10.19	9.91	9.59	9.74	9.50	9.40	8.71	8.45	8.29	7.96
25-64 years	1.53	1.55	1.43	1.37	1.37	1.40	1.28	1.28	1.31	1.33	1.37	1.35	1.35	1.38	1.44	1.42
65 years and over	2.97	3.15	3.08	3.12	3.13	2.99	3.00	3.23	3.06	3.30	3.48	3.70	3.81	4.02	4.31	4.22
Certain conditions originating in the perinatal period (760-779)																
0-24 years	24.27	22.98	21.29	20.26	18.78	18.77	18.58	17.66	17.48	17.22	17.25	15.91	14.87	13.96	13.67	13.28
25-64 years	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
65 years and over	0.01	0.01	0.00	0.01	0.01	—	0.00	0.01	0.01	0.00	0.01	0.01	0.00	0.02	0.02	0.01
Birth trauma, intrauterine hypoxia, birth asphyxia, and respiratory distress syndrome (767-769)																
0-24 years	8.30	7.62	6.57	6.02	5.23	5.14	5.04	4.51	4.18	3.99	4.26	3.49	3.03	2.60	2.37	2.18
25-64 years	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01
65 years and over	—	—	—	0.00	—	—	—	—	—	—	0.00	—	—	0.00	0.01	0.01
Other conditions originating in the perinatal period (760-766,770-779)																
0-24 years	15.97	15.36	14.71	14.24	13.56	13.63	13.54	13.15	13.30	13.23	12.99	12.42	11.84	11.36	11.30	11.10
25-64 years	0.01	0.01	0.00	0.00	0.01	0.01	0.00	0.01	0.00	0.01	0.01	0.00	0.01	0.01	0.01	0.01
65 years and over	0.01	0.01	0.00	0.00	0.01	—	0.00	0.01	0.01	0.00	0.01	0.01	0.00	0.01	0.01	0.00

See footnotes at end of table.

Table 3. Age-adjusted death rates for 72 selected causes of death, Human immunodeficiency virus infection, and Alzheimer's disease by three broad age categories: United States 1979–94—Con.

[Age-adjusted death rates per 100,000 U.S. standard population]

Cause of death (ICD-9 category)	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Symptoms, signs, and ill-defined conditions (780–799)																
0–24 years	7.43	7.50	7.27	7.22	7.02	6.99	6.96	7.23	7.34	7.57	7.42	6.99	6.80	6.31	6.34	5.69
25–64 years	6.94	6.99	7.28	7.40	6.62	6.48	6.84	6.99	7.47	6.87	6.15	5.34	5.15	4.68	5.56	5.01
65 years and over	42.76	44.45	44.27	43.12	43.62	43.66	43.94	42.39	38.77	37.56	28.18	23.76	23.97	23.46	27.15	26.41
All other diseases (Residual)																
0–24 years	7.32	7.19	6.82	6.39	6.43	6.29	6.16	6.08	5.61	5.58	5.78	5.50	5.54	5.30	5.37	5.07
25–64 years	29.27	29.85	29.11	27.73	28.80	29.01	31.37	33.41	28.75	29.39	28.60	28.06	28.18	27.76	28.28	28.49
65 years and over	229.01	246.25	247.36	251.33	268.12	280.05	296.94	303.77	315.63	322.11	323.39	321.26	321.20	320.49	338.79	347.74
Accidents and adverse effects (E800–E949)																
0–24 years	37.75	36.87	33.59	31.12	29.48	29.29	29.00	30.15	29.07	29.10	27.22	25.98	25.14	22.67	23.26	23.13
25–64 years	41.79	41.47	39.92	36.34	35.16	34.82	34.58	34.59	34.35	34.87	34.41	33.17	31.08	30.30	31.46	31.48
65 years and over	82.49	83.03	76.94	72.73	73.21	73.25	73.43	72.04	72.33	73.69	71.76	68.66	66.76	65.91	66.60	67.04
Motor vehicle accidents (E810–E825)																
0–24 years	24.17	23.57	21.64	19.54	18.56	19.15	18.97	20.18	19.64	19.91	18.35	17.75	16.72	15.02	15.36	15.66
25–64 years	22.51	22.44	21.89	18.92	18.27	18.73	18.36	18.60	18.96	19.05	18.83	18.60	16.75	15.78	15.88	15.78
65 years and over	22.85	21.77	21.70	19.71	19.74	20.95	20.63	21.03	21.75	22.50	22.37	21.75	20.71	20.51	20.54	21.35
All other accidents and adverse effects (E800–807, E826–E949)																
0–24 years	13.58	13.30	11.96	11.58	10.92	10.14	10.03	9.97	9.43	9.19	8.87	8.23	8.42	7.65	7.90	7.46
25–64 years	19.28	19.02	18.03	17.42	16.89	16.09	16.21	15.98	15.39	15.82	15.58	14.56	14.34	14.51	15.58	15.70
65 years and over	59.64	61.26	55.24	53.01	53.47	52.30	52.80	51.01	50.58	51.19	49.39	46.91	46.05	45.40	46.06	45.69
Suicide (E950–E959)																
0–24 years	5.37	5.34	5.33	5.30	5.20	5.49	5.71	5.74	5.62	5.71	5.75	5.83	5.78	5.80	6.00	6.14
25–64 years	16.15	15.77	16.16	16.12	15.72	15.91	15.45	16.03	15.71	15.20	15.03	15.26	15.16	14.76	14.89	14.80
65 years and over	18.55	17.54	16.88	18.19	18.99	19.63	20.01	21.25	21.29	20.54	19.70	19.84	18.84	18.28	18.08	17.15
Homicide and legal intervention (E960–E978)																
0–24 years	7.09	7.63	7.25	6.87	6.11	6.11	6.07	6.98	6.87	7.58	8.24	9.61	10.75	10.67	11.28	10.83
25–64 years	13.57	14.32	13.83	12.76	11.36	10.92	10.81	11.33	10.72	10.84	11.06	11.62	11.97	11.25	11.18	10.65
65 years and over	5.26	5.60	4.95	4.90	4.46	4.25	4.31	4.47	4.52	4.38	4.15	3.94	4.09	3.78	3.68	3.44
All other external causes (E980–E999)																
0–24 years	1.08	0.97	0.92	0.78	0.74	0.72	0.61	0.66	0.66	0.68	0.55	0.49	0.51	0.51	0.65	0.66
25–64 years	2.25	2.10	2.03	1.83	1.74	1.65	1.61	1.75	1.63	1.62	1.49	1.30	1.34	1.62	1.89	1.88
65 years and over	1.68	1.73	1.78	1.32	1.36	1.37	1.12	1.18	1.13	1.15	0.88	0.77	0.77	0.75	0.83	0.76
Human immunodeficiency virus infection¹ (*042–*044)																
0–24 years . . . . .	...	...	...	...	...	...	...	...	0.78	0.85	0.99	0.93	1.06	1.03	1.15	1.22
25–64 years . . . . .	...	...	...	...	...	...	...	...	10.15	12.41	16.39	18.61	21.41	24.06	26.40	29.50
65 years and over . . . . .	...	...	...	...	...	...	...	...	1.15	1.37	1.49	1.63	1.97	2.22	2.28	2.45

See footnotes at end of table.

Table 3. Age-adjusted death rates for 72 selected causes of death, Human immunodeficiency virus infection, and Alzheimer's disease by three broad age categories: United States 1979-94—Con.

[Age-adjusted death rates per 100,000 U.S. standard population]

Cause of death (ICD-9 category)	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Alzheimer's disease ² (331.0)																
0-24 years	—	—	—	0.00	—	0.00	0.00	—	—	—	—	0.00	—	—	0.00	0.00
25-64 years	0.16	0.22	0.22	0.28	0.30	0.30	0.33	0.33	0.33	0.34	0.29	0.27	0.27	0.23	0.26	0.28
65 years and over	2.45	3.77	5.03	7.41	12.46	17.01	21.56	23.71	27.11	28.51	29.23	29.64	29.25	28.92	32.19	34.82

0.0 Quantity more than zero but less than 0.05.

. . . Category not applicable.

— Quantity zero.

* Beginning with data year 1987, the National Center for Health Statistics introduced categories *042-044 for classifying and coding Human immunodeficiency virus infection. The asterisks indicate that these categories are not part of the *Ninth Revision, International Classification of Diseases, 1975*.

¹Included in All other infectious and parasitic diseases shown above.

²Included in All other diseases (Residual category).

Table 4. Age-adjusted death rates for 72 selected causes of death, Human immunodeficiency virus infection, and Alzheimer's disease: United States, 1979–94

[Age-adjusted death rates per 100,000 U.S. standard population]

Cause of death (ICD-9 category)	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
All causes	577.05	585.77	568.60	554.73	552.48	548.11	548.83	544.78	539.21	539.90	528.01	520.24	513.76	504.46	513.26	507.40
Shigellosis and amebiasis (004,006)	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00
Certain other intestinal infections (007–009)	0.10	0.12	0.12	0.11	0.11	0.11	0.09	0.11	0.09	0.08	0.09	0.11	0.12	0.13	0.15	0.19
Tuberculosis (010–018)	0.67	0.64	0.62	0.55	0.55	0.53	0.53	0.53	0.52	0.55	0.56	0.52	0.48	0.46	0.43	0.38
Tuberculosis of respiratory system (010–012)	0.55	0.53	0.51	0.44	0.43	0.41	0.40	0.41	0.40	0.42	0.42	0.38	0.36	0.35	0.33	0.27
Other tuberculosis (013–018)	0.12	0.12	0.12	0.11	0.11	0.13	0.12	0.12	0.11	0.13	0.13	0.14	0.12	0.11	0.10	0.10
Whooping cough (033)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	–	0.00	0.00	0.00
Streptococcal sore throat, scarlatina, and erysipelas (034–035)	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00
Meningococcal infection (036)	0.18	0.17	0.20	0.15	0.13	0.13	0.11	0.12	0.11	0.11	0.11	0.09	0.08	0.08	0.10	0.11
Septicemia (038)	2.33	2.64	2.85	3.01	3.39	3.73	4.11	4.36	4.52	4.60	4.17	4.10	4.08	4.01	4.07	4.00
Acute poliomyelitis (045)	0.00	0.00	–	–	–	–	0.00	–	–	0.00	–	–	0.00	–	–	–
Measles (055)	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.03	0.01	0.00	–	–
Viral hepatitis (070)	0.29	0.31	0.33	0.30	0.32	0.31	0.33	0.34	0.40	0.42	0.49	0.50	0.58	0.62	0.77	0.92
Syphilis (090–097)	0.05	0.04	0.04	0.04	0.03	0.03	0.02	0.02	0.03	0.02	0.03	0.03	0.03	0.03	0.02	0.02
All other infectious and parasitic diseases (001– 003,005, 020–032,037,039–041,*042–*044,046– 054,056–066, 071–088,098–139)	1.32	1.42	1.46	1.53	1.69	2.10	2.59	3.27	7.41	8.72	10.91	11.97	13.34	14.65	15.91	17.51
Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues (140–208)	130.79	132.77	131.71	132.77	133.06	134.06	134.35	134.16	133.97	133.96	134.49	135.01	134.48	133.06	132.62	131.50
Malignant neoplasms of lip, oral cavity, and pharynx (140–149)	2.97	2.91	2.84	2.79	2.75	2.71	2.61	2.56	2.44	2.48	2.42	2.44	2.38	2.28	2.29	2.15
Malignant neoplasms of digestive organs and peritoneum (150–159)	33.13	32.98	32.47	32.22	31.97	32.20	31.71	31.15	30.88	30.32	30.30	30.25	29.89	29.57	29.47	29.27
Malignant neoplasms of respiratory and intrathoracic organs (160–165)	35.22	36.39	36.65	37.58	38.03	38.59	39.09	39.31	40.04	40.33	40.78	41.38	41.13	40.83	40.76	40.13
Malignant neoplasm of breast (174–175)	12.23	12.47	12.49	12.53	12.48	12.76	12.80	12.70	12.63	12.76	12.69	12.67	12.44	11.99	11.79	11.63
Malignant neoplasms of genital organs (179–187)	13.60	13.62	13.37	13.27	13.31	13.09	13.08	13.21	13.03	13.15	13.26	13.64	13.56	13.50	13.19	13.16
Malignant neoplasms of urinary organs (188–189)	5.21	5.22	5.14	5.20	5.10	5.03	5.05	5.02	5.01	4.95	5.06	5.08	5.12	5.10	5.06	5.10
Malignant neoplasms of all other and unspecified sites (170–173,190–199)	16.42	16.86	16.83	16.99	17.21	17.39	17.62	17.75	17.73	17.65	17.33	16.87	17.06	16.92	17.21	17.03
Leukemia (204–208)	5.26	5.37	5.15	5.16	5.11	5.12	5.06	4.99	4.89	4.86	4.98	4.98	4.95	4.95	4.92	4.85
Other malignant neoplasms of lymphatic and hematopoietic tissues (200–203)	6.75	6.93	6.79	7.03	7.09	7.17	7.32	7.46	7.32	7.45	7.67	7.71	7.95	7.91	7.94	8.19
Benign neoplasms, carcinoma in situ, and neoplasms of uncertain behavior and of unspecified nature (210–239)	1.91	1.97	1.91	1.93	1.87	1.80	1.85	1.83	1.72	1.75	1.69	1.69	1.69	1.68	1.72	1.72
Diabetes mellitus (250)	9.77	10.12	9.81	9.59	9.89	9.51	9.68	9.65	9.85	10.21	11.61	11.65	11.78	11.84	12.45	12.92
Nutritional deficiencies (260–269)	0.52	0.53	0.50	0.50	0.52	0.49	0.53	0.51	0.50	0.50	0.50	0.48	0.46	0.48	0.50	0.49
Anemias (280–285)	0.93	0.92	0.90	0.87	0.91	0.88	0.90	0.87	0.89	0.86	0.91	0.91	0.88	0.92	0.88	0.90
Meningitis (320–322)	0.57	0.58	0.55	0.49	0.48	0.44	0.43	0.41	0.41	0.40	0.37	0.35	0.28	0.26	0.25	0.25
Major cardiovascular diseases (390–448)	254.20	255.99	245.88	238.80	235.94	229.26	225.01	218.01	212.03	208.28	196.18	189.83	184.98	180.36	181.75	176.77
Diseases of heart (390–398,402,404–429)	199.56	202.01	195.25	190.90	189.58	184.26	181.36	175.97	170.79	167.67	157.52	152.03	148.24	144.33	145.27	140.38
Rheumatic fever and rheumatic heart disease (390–398)	2.61	2.57	2.34	2.17	2.09	2.02	1.89	1.79	1.72	1.68	1.54	1.50	1.43	1.35	1.32	1.24
Hypertensive heart disease (402)	6.04	5.90	5.74	5.58	5.54	5.35	5.29	5.09	5.07	4.98	4.90	4.83	4.77	4.81	4.89	4.98
Hypertensive heart and renal disease (404)	0.88	0.87	0.77	0.67	0.66	0.61	0.60	0.52	0.53	0.50	0.48	0.49	0.48	0.47	0.46	0.46
Ischemic heart disease (410–414)	149.77	149.86	143.57	139.62	135.80	130.21	126.09	119.47	114.70	111.13	106.21	102.54	99.12	95.71	94.92	91.45
Acute myocardial infarction (410)	88.23	85.96	81.99	79.63	76.34	72.71	69.61	64.68	61.30	58.26	56.45	53.73	51.50	49.09	47.52	45.65

See footnotes at end of table.

Table 4. Age-adjusted death rates for 72 selected causes of death, Human immunodeficiency virus infection, and Alzheimer's disease: United States, 1979–94—Con.

[Age-adjusted death rates per 100,000 U.S. standard population]

Cause of death (ICD-9 category)	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Other acute and subacute forms of																
ischemic heart disease (411)	1.46	1.44	1.35	1.22	1.16	1.12	1.10	1.04	0.92	0.85	0.83	0.84	0.80	0.75	0.68	0.63
Angina pectoris (413)	0.14	0.15	0.15	0.16	0.18	0.21	0.21	0.23	0.22	0.21	0.22	0.20	0.20	0.18	0.17	0.16
Old myocardial infarction and other forms																
of chronic ischemic heart disease . . . (412,414)	59.93	62.30	60.09	58.61	58.12	56.18	55.16	53.53	52.26	51.80	48.72	47.77	46.63	45.70	46.55	45.01
Other diseases of endocardium (424)	1.85	1.97	1.96	1.99	2.05	2.07	2.19	2.24	2.35	2.43	2.44	2.54	2.52	2.57	2.60	2.59
All other forms of heart																
disease (415–423,425–429)	38.41	40.83	40.88	40.88	43.44	44.00	45.31	46.85	46.44	46.95	41.95	40.13	39.92	39.42	41.08	39.66
Hypertension with or without renal																
disease (401,403)	1.91	2.02	1.91	1.84	1.84	1.84	1.80	1.81	1.81	1.85	1.87	1.91	1.94	2.03	2.17	2.21
Cerebrovascular diseases (430–438)	41.58	40.76	38.18	35.91	34.52	33.55	32.45	31.13	30.45	29.96	28.32	27.69	26.78	26.20	26.51	26.54
Intracerebral and other intracranial																
hemorrhage (431–432)	6.61	6.22	5.98	5.78	5.53	5.66	5.63	5.49	5.47	5.51	5.24	5.17	5.06	5.06	5.05	5.05
Cerebral thrombosis and unspecified																
occlusion of cerebral arteries (434.0,434.9)	8.13	7.58	6.71	5.97	5.47	5.12	4.86	4.56	4.26	3.96	3.57	3.29	2.94	2.65	2.53	2.40
Cerebral embolism (434.1)	0.23	0.21	0.21	0.18	0.18	0.18	0.17	0.17	0.16	0.15	0.14	0.13	0.12	0.12	0.12	0.13
All other and late effects of cerebrovascular																
diseases (430,433,435–438)	26.62	26.74	25.29	23.97	23.35	22.59	21.79	20.91	20.56	20.34	19.37	19.11	18.65	18.36	18.81	18.97
Atherosclerosis (440)	5.66	5.68	5.18	4.85	4.65	4.17	4.00	3.72	3.64	3.47	2.98	2.75	2.58	2.43	2.41	2.34
Other diseases of arteries, arterioles,																
and capillaries (441–448)	5.49	5.52	5.36	5.29	5.34	5.44	5.40	5.38	5.35	5.33	5.49	5.45	5.43	5.37	5.40	5.29
Acute bronchitis and bronchiolitis (466)	0.18	0.19	0.17	0.14	0.15	0.14	0.15	0.14	0.14	0.15	0.15	0.14	0.14	0.14	0.14	0.13
Pneumonia and influenza (480–487)	11.16	12.91	12.25	10.90	11.85	12.22	13.47	13.63	13.19	14.33	13.82	14.03	13.36	12.67	13.48	13.02
Pneumonia (480–486)	11.02	12.36	11.64	10.75	11.58	12.01	13.11	13.31	13.08	14.01	13.54	13.69	13.16	12.50	13.31	12.83
Influenza (487)	0.14	0.55	0.61	0.15	0.27	0.21	0.36	0.33	0.12	0.32	0.28	0.34	0.20	0.16	0.17	0.19
Chronic obstructive pulmonary diseases																
and allied conditions (490–496)	14.56	15.94	16.33	16.21	17.48	17.79	18.78	18.88	18.87	19.58	19.56	19.67	20.10	19.84	21.37	21.04
Bronchitis, chronic and unspecified . . . (490–491)	1.05	1.03	0.99	0.92	0.91	0.88	0.86	0.87	0.81	0.84	0.82	0.78	0.80	0.77	0.77	0.72
Emphysema (492)	4.00	3.99	3.78	3.53	3.59	3.50	3.68	3.70	3.61	3.79	3.73	3.72	3.78	3.69	3.91	3.74
Asthma (493)	0.90	0.98	1.03	1.06	1.18	1.15	1.23	1.23	1.35	1.39	1.43	1.41	1.46	1.38	1.43	1.52
Other chronic obstructive pulmonary diseases																
and allied conditions (494–496)	8.61	9.94	10.53	10.71	11.81	12.27	13.01	13.09	13.10	13.56	13.58	13.76	14.05	14.01	15.26	15.07
Ulcer of stomach and duodenum (531–533)	1.67	1.68	1.71	1.70	1.57	1.57	1.55	1.47	1.41	1.41	1.37	1.29	1.25	1.21	1.17	1.17
Appendicitis (540–543)	0.22	0.22	0.18	0.16	0.15	0.14	0.14	0.15	0.13	0.13	0.12	0.12	0.11	0.11	0.10	0.10
Hernia of abdominal cavity and intestinal obstruction																
without mention of hernia (550–553,560)	1.41	1.37	1.28	1.18	1.16	1.15	1.13	1.14	1.13	1.10	1.07	1.09	1.12	1.07	1.02	1.04
Chronic liver disease and cirrhosis (571)	12.06	12.19	11.41	10.55	10.21	10.03	9.68	9.29	9.18	9.13	9.01	8.57	8.27	8.03	7.89	7.84
Cholelithiasis and other disorders of																
gallbladder (574–575)	0.80	0.81	0.73	0.69	0.68	0.67	0.64	0.61	0.62	0.62	0.59	0.58	0.54	0.54	0.50	0.52
Nephritis, nephrotic syndrome, and																
nephrosis (580–589)	4.35	4.47	4.46	4.53	4.60	4.75	4.91	4.88	4.81	4.81	4.46	4.30	4.27	4.33	4.47	4.27
Acute glomerulonephritis and nephrotic																
syndrome (580–581)	0.10	0.09	0.08	0.08	0.09	0.08	0.09	0.07	0.07	0.07	0.08	0.07	0.07	0.07	0.06	0.06
Chronic glomerulonephritis, nephritis and																
nephropathy, not specified as acute or chronic,																
and renal sclerosis, unspecified . . . (582–583,587)	0.67	0.61	0.55	0.50	0.47	0.45	0.37	0.36	0.34	0.34	0.34	0.34	0.32	0.30	0.32	0.30

See footnotes at end of table.

Table 4. Age-adjusted death rates for 72 selected causes of death, Human immunodeficiency virus infection, and Alzheimer's disease: United States, 1979–94—Con.

[Age-adjusted death rates per 100,000 U.S. standard population]

Cause of death (ICD-9 category)	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Renal failure, disorders resulting from impaired renal function, and small kidney of unknown cause (584–586,588–589)	3.58	3.77	3.83	3.94	4.04	4.22	4.46	4.45	4.40	4.40	4.04	3.89	3.89	3.96	4.09	3.91
Infections of kidney (590)	0.70	0.65	0.53	0.50	0.45	0.44	0.40	0.37	0.35	0.31	0.27	0.25	0.23	0.19	0.18	0.17
Hyperplasia of prostate (600)	0.17	0.16	0.14	0.12	0.11	0.10	0.08	0.09	0.08	0.08	0.07	0.07	0.07	0.06	0.06	0.06
Complications of pregnancy, childbirth, and the puerperium (630–676)	0.16	0.15	0.14	0.13	0.12	0.12	0.12	0.11	0.10	0.14	0.13	0.14	0.13	0.13	0.12	0.14
Pregnancy with abortive outcome (630–638)	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.02	0.02	0.02	0.02	0.02	0.02
Other complications of pregnancy, childbirth, and the puerperium (640–676)	0.13	0.12	0.12	0.10	0.10	0.10	0.10	0.09	0.09	0.11	0.11	0.12	0.11	0.11	0.10	0.12
Congenital anomalies (740–759)	6.01	6.04	5.74	5.71	5.48	5.49	5.25	5.14	5.01	5.10	5.03	4.99	4.70	4.62	4.60	4.44
Certain conditions originating in the perinatal period (760–779)	10.49	9.93	9.20	8.76	8.12	8.12	8.03	7.63	7.56	7.44	7.46	6.88	6.43	6.04	5.91	5.75
Birth trauma, intrauterine hypoxia, birth asphyxia, and respiratory distress syndrome (767–769)	3.59	3.29	2.84	2.60	2.26	2.22	2.18	1.95	1.81	1.73	1.84	1.51	1.31	1.12	1.03	0.94
Other conditions originating in the perinatal period (760–766,770–779)	6.90	6.64	6.36	6.15	5.86	5.89	5.85	5.69	5.75	5.72	5.62	5.37	5.12	4.91	4.89	4.80
Symptoms, signs, and ill-defined conditions (780–799)	9.61	9.78	9.81	9.77	9.33	9.25	9.43	9.52	9.56	9.27	8.21	7.31	7.15	6.67	7.37	6.77
All other diseases (Residual)	33.47	34.88	34.43	33.83	35.53	36.39	38.67	40.12	38.40	39.15	38.93	38.39	38.47	38.11	39.65	40.24
Accidents and adverse effects (E800–E949)	42.83	42.33	39.72	36.58	35.31	35.07	34.83	35.23	34.67	35.03	33.86	32.49	30.96	29.44	30.32	30.30
Motor vehicle accidents (E810–E825)	23.25	22.88	21.77	19.24	18.49	19.06	18.78	19.45	19.45	19.66	18.86	18.45	17.01	15.78	15.97	16.11
All other accidents and adverse effects (E800–E807,E826–E949)	19.58	19.45	17.95	17.34	16.82	16.00	16.05	15.78	15.22	15.38	15.00	14.04	13.95	13.66	14.35	14.19
Suicide (E950–E959)	11.65	11.39	11.53	11.59	11.40	11.66	11.55	11.94	11.73	11.47	11.34	11.50	11.36	11.13	11.27	11.21
Homicide and legal intervention (E960–E978)	10.20	10.83	10.38	9.68	8.62	8.38	8.32	8.98	8.63	8.99	9.37	10.23	10.90	10.49	10.71	10.23
All other external causes (E980–E999)	1.71	1.59	1.53	1.34	1.28	1.23	1.14	1.24	1.18	1.18	1.04	0.92	0.95	1.08	1.28	1.27
Human immunodeficiency virus infection ¹ (*042–*044)	...	...	...	...	...	...	...	...	5.49	6.66	8.71	9.81	11.28	12.61	13.84	15.42
Alzheimer's disease ² (331.0)	0.25	0.37	0.45	0.65	1.00	1.32	1.64	1.79	2.02	2.12	2.15	2.17	2.14	2.10	2.33	2.53

0.0 Quantity more than zero but less than 0.05.

... Category not applicable.

– Quantity zero.

* Beginning with data year 1987, the National Center for Health Statistics introduced categories *042–*044 for classifying and coding Human immunodeficiency virus infection. These asterisks indicate that these categories are not part of the *Ninth Revision, International Classification of Diseases, 1975*.

¹Included in All other infectious and parasitic diseases shown above.

²Included in All other diseases (Residual category).

Appendix I

AGENDA

Second Workshop Age Adjustment
National Center for Health Statistics
Centers for Disease Control and Prevention
Hyattsville, Maryland
June 5–6, 1997
Auditorium

Thursday, June 5

9:00–9:05 a.m.	Logistics and introduction—Dr. Rosenberg
9:05–9:15	Welcome and introductions—Dr. Madans
9:15–10:30	10-minute presentations and discussions
10:30–11:00	Break
11:00–12:30 p.m.	10-minute presentations and discussions
12:30–1:30	Lunch
1:30–3:00	Remaining presentations and discussions
3:00–3:30	Break
3:30–4:30	Facilitated discussion to identify salient issues

Friday, June 6

9:00–9:05 a.m.	Logistics and messages—Dr. Rosenberg
9:05–10:30	Facilitated discussion to make recommendations
10:30–11:00	Break
11:00–12:00	Facilitated discussion to make recommendations
12:00–12:30 p.m.	Closing remarks—Dr. Sondik
12:30	Adjourn

Appendix II

Workshop Participants

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Appendix III

Comments on Age Adjustment

by Robert Schoen, Ph.D., ASA
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Over 30 years ago, Kitagawa discussed summary measures and identified two distinct classes of demographic indexes (1). The first are called aggregative indexes, and age-adjusted (or age-standardized) death rates are one example. The general form is

$$I_A = \frac{\sum P_s(x) m(x)}{\sum P_s(x)} \quad (1)$$

where I_A is an aggregative index, $P_s(x)$ is the number of persons in a designated standard population at age x , $m(x)$ is the rate at age x , and the summations range over all ages. These indexes aggregate the number of deaths in terms of a standard population, and present the crude death rate of that standard population. The choice of standard population is important because different standards can yield substantially different results (2–4).

The second class are called average of relatives indexes. They can be written

$$I_R = (1/n) \sum [m(x) / m_s(x)] \quad (2)$$

where I_R is an average of relatives index, $m_s(x)$ is a standard rate at age x , n is the number of age categories, and the summation ranges from 1 to n . Here individual rates are compared, and an average of those ratios is taken. There is no need for a standard population. In fertility analysis the Total Fertility Rate (an average of relatives index) is the preferred measure. In mortality analysis, however, aggregative indexes dominate. Some years ago, I tried to introduce the del index—the geometric mean of the age-specific death rates—as an alternative, but without much success (5,6). Yet, I remain convinced that it does matter whether one thinks of weighted deaths (as in crude or

standardized death rates) or in terms of patterns of death rates.

I regard the age-specific death rates as the basic measures. They represent the behavior of interest, and the age curve of death rates is remarkably constant over widely varying levels of mortality. Figure 1 shows that, apart from level, the age pattern of mortality changes little as life expectancy at birth goes from 25 years to 70 years in the Coale-Demeny Model “West” life tables (7). That regularity contrasts sharply with the change in life table death rates. When mortality is very high, most deaths occur to infants and children. At contemporary mortality levels, the great bulk of deaths occur at the high ages. Large proportional changes in death rates at ages under 65 can have only small effects on standardized death rates, regardless of what standard is used.

Consider the pattern of mortality differentials by sex for whites in the United States, 1950, 1960, and 1970, which is shown in figure 2 (8, p.35). Looking at the sex differential by age, we see that it varies from around 10 percent at the high ages to over 200 percent at ages 20–24. The average differential seems to be around 75 to 80 percent. Yet the ratio of male and female life expectancies was 9 percent in 1950, 10 percent in 1960, and 11 percent in 1970. The high death rates and smaller differentials at the older ages make the sex differential in aggregative indexes look much smaller than it is.

Those considerations lead me to two recommendations. First, if we believe aggregative indexes are appropriate, let the rates determine the standard. One could choose a life table with mortality rates similar to the population to be examined, and use the age composition of the life table’s “stationary population” as the standard. For example, we could use the “West” female life table with a life expectancy at birth of 77.5 years (7). Such a standard would not be tied to any time or place, would be conceptually different from any crude rate, and could be used as long as that level of mortality remains a reasonable approximation.

However, there are a number of reasons not to emphasize aggregative

indexes. As noted, they can seriously distort the nature of differences between populations. Furthermore, when standardized rates differ substantially from crude rates, those differences can lead to misunderstandings. To minimize the difference between crude and standardized rates, a contemporaneous population can be taken as the standard. Thus, the age distribution for the year 2000 is a logical choice. The aging of the U.S. population over the past 60 years makes the 1940 age distribution quite obsolete.

Implicit in the recommendation for a year 2000 standard is the idea that the standard will be changed when crude and standardized rates begin to differ appreciably, something that is likely to occur in 10 to 20 years. Deemphasizing the standard population makes sense. It reinforces the principle that careful analysis must look at the rates themselves, and not be content with any single summary measure.

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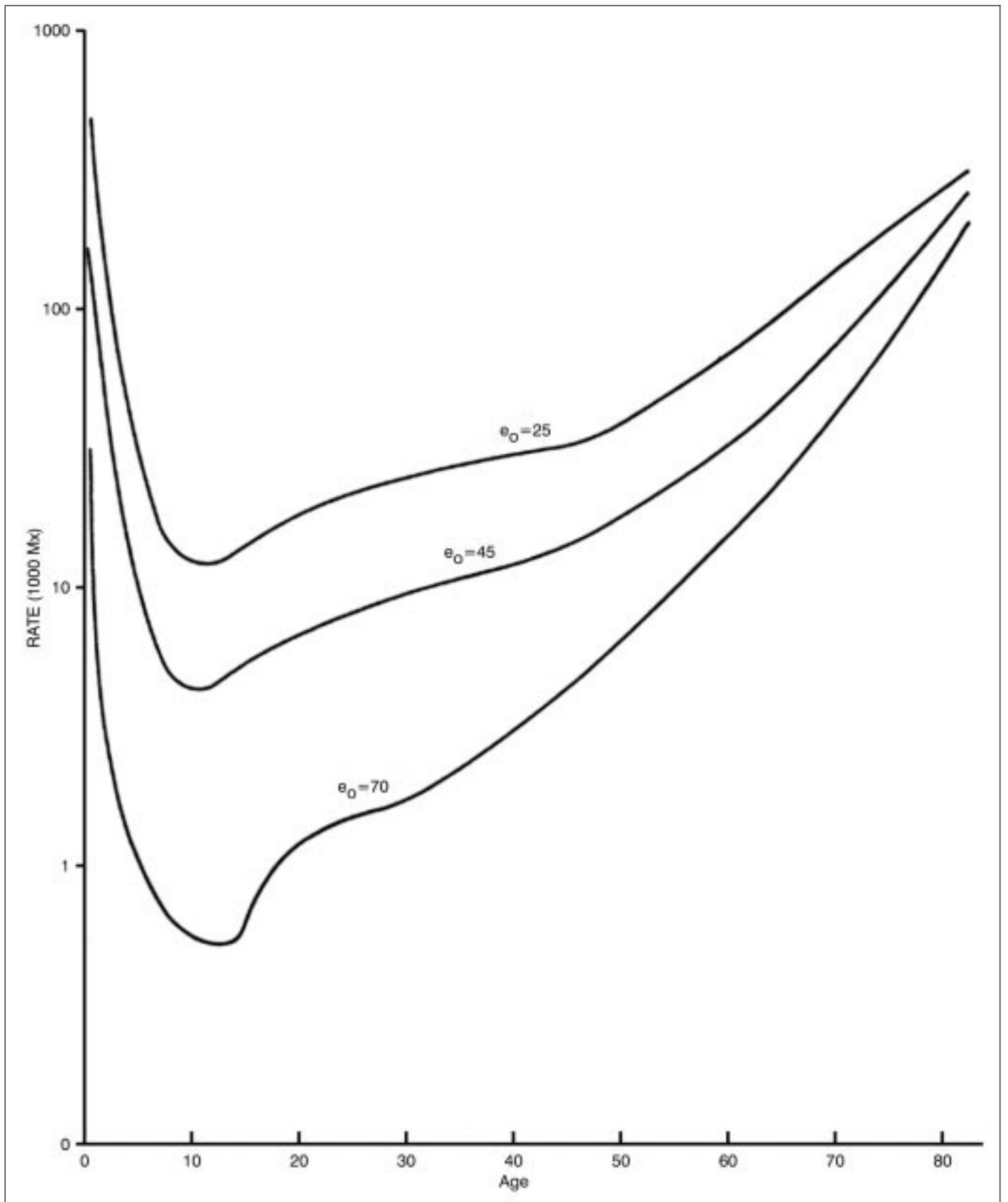


Figure 1. Age-specific death rates per thousand population. Coale-Demeny (1966) "West" life tables for females.

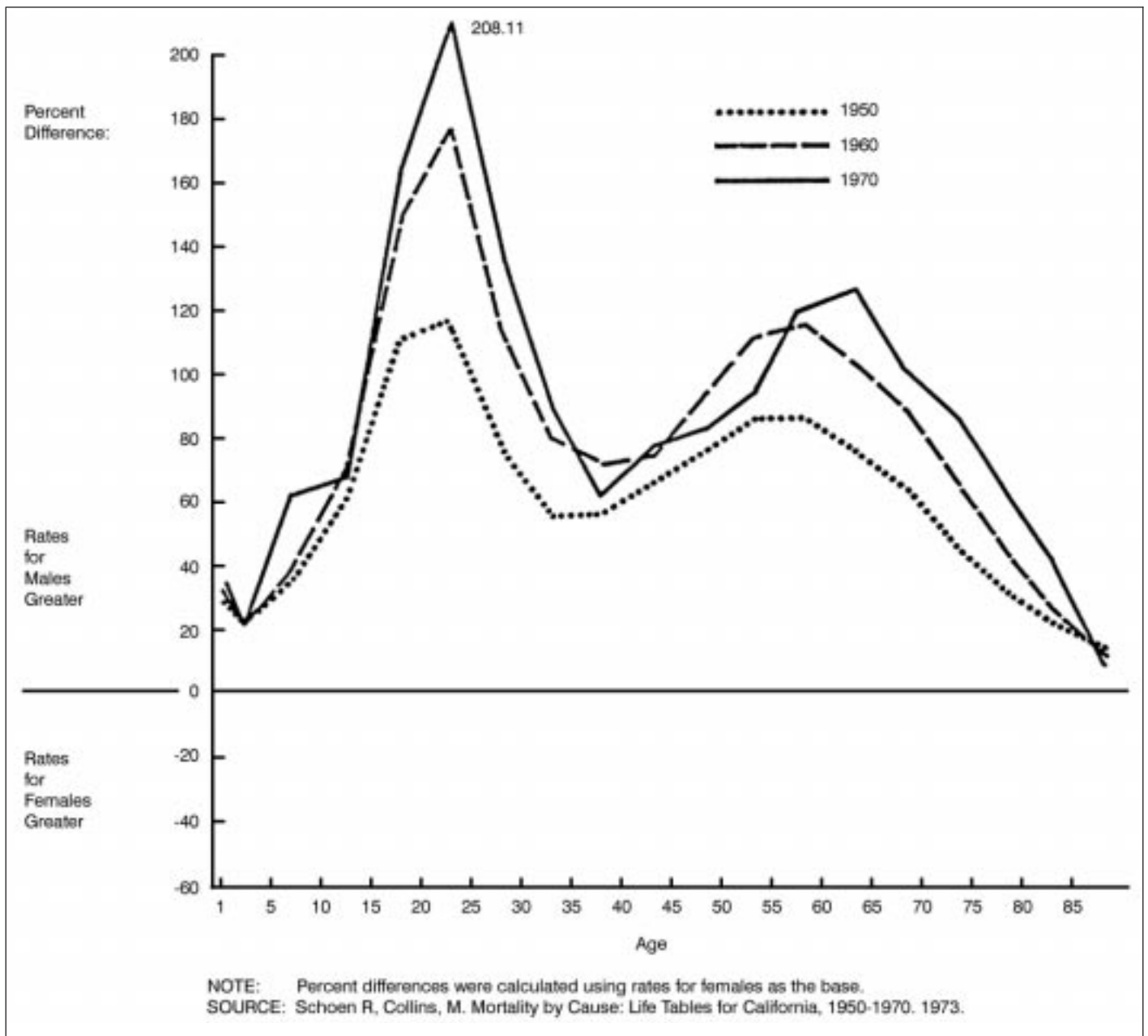


Figure 2. Percent differences in mortality rates by sex for whites: United States, 1950, 1960, and 1970.

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For answers to questions about this report or for a list of reports published in these series, contact:

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