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**Comparability of  
Mortality Statistics  
for the Seventh and Eighth Revisions  
of the International Classification  
of Diseases,  
United States**

DHEW Publication No. (HRA) 76-1340

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# PREFACE

It has been the practice to revise the International Classification of Diseases every 10 years since 1900 to keep abreast of medical knowledge. Each decennial revision has produced breaks in the comparability of cause-of-death statistics. The degree of discontinuity resulting from the introduction of the Eighth Revision, used beginning with data year 1968, has been considerable for a number of causes of death. An adequate presentation of mortality trends without reference to these discontinuities is impossible. The authors acknowledge with pleasure that special thanks are due to Bernice Wilkins, formerly Statistician, National Center for Health Statistics, for her assistance in identifying some of the important changes between the Seventh and Eighth Revisions that resulted in these discontinuities. Grateful appreciation is also expressed to Jeffrey D. Maurer and Evelyn J. Glass for help in the preparation of the tables in this report.

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<b>SYMBOLS</b>	
Data not available-----	---
Category not applicable-----	...
Quantity zero-----	-
Quantity more than 0 but less than 0.05-----	0.0
Figure does not meet standards of reliability or precision-----	*

# COMPARABILITY OF MORTALITY STATISTICS FOR THE SEVENTH AND EIGHTH REVISIONS OF THE INTERNATIONAL CLASSIFICATION OF DISEASES

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## INTRODUCTION

### Scope of the Report

During 1900-1969 causes of death were classified according to eight revisions of the International Classification of Diseases (ICD). These revisions are made about every 10 years to reflect progress in medical knowledge. The revision in use in the United States beginning with data year 1968 is the *Eighth Revision International Classification of Diseases, Adapted for Use in the United States, 1965* (hereinafter denoted by ICDA).

This report presents the principal changes in classification and coding procedures for the 15 leading causes of death in 1969 and their major components. These 15 leading causes and their components are included among the 48 causes shown in tables 1 and 2. Measures of the comparability of mortality statistics between 1967 and 1968 are shown for these 48 causes in appendix I. The 15 leading causes accounted for 89 percent of the 1,921,990 deaths that occurred in the United States in 1969 (table A).

A description of the sources of data and of rates and other terms is given in appendix II,

Table A. Deaths and death rates for the 15 leading causes of death: United States, 1969

[Rates per 100,000 estimated population]

Rank	Cause of death (Eighth Revision, International Classification of Diseases, Adapted, 1965)	Number	Rate
...	All causes-----	1,921,990	951.9
1	Diseases of heart-----390-398,402,404,410-429	739,265	366.1
2	Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues-----140-209	323,092	160.0
3	Cerebrovascular diseases-----430-438	207,179	102.6
4	Accidents-----E800-E949	116,385	57.6
	Motor vehicle accidents-----E810-E823	55,791	27.6
	All other accidents-----E800-E807, E825-E949	60,594	30.0
5	Influenza and pneumonia-----470-474, 480-486	68,365	33.9
6	Certain causes of mortality in early infancy-----760-769.2, 769.4-772, 774-778	43,171	21.4
7	Diabetes mellitus-----250	38,541	19.1
8	Arteriosclerosis-----440	33,063	16.4
9	Bronchitis, emphysema, and asthma-----490-493	31,144	15.4
10	Cirrhosis of liver-----571	29,866	14.8
11	Suicide-----E950-E959	22,364	11.1
12	Congenital anomalies-----740-759	17,008	8.4
13	Homicide-----E960-E978	15,477	7.7
14	Nephritis and nephrosis-----580-584	9,417	4.7
15	Peptic ulcer-----531-533	9,312	4.6
...	All other causes-----Residual	218,341	108.1

"Technical Notes." A copy of the standard certificate of death adopted with some modifications by most States is shown in appendix III. A brief summary of the statistical design to estimate the numerators of the comparability ratios used in this report is given in appendix IV; and the comparability ratio for the group title Major cardiovascular diseases (ICDA Nos. 390-448) is given in appendix V. Notes for use in primary mortality coding for the Eighth Revision are shown in appendix VI.

### Changes in Methodology

A review of earlier approaches made to provide guidelines to the comparability of the titles from revision to revision of the International Classification of Diseases (ICD) makes it clear that progress has been made over the years. But undoubtedly even the systematic method for evaluating breaks in comparability of mortality statistics in the transition from the Seventh to the Eighth Revision will leave the reader with unanswered questions that point to the need for further development of the method for evaluating more details of the disruption of mortality trends caused by revisions of the ICD.

As shown below, there have now been eight revisions of the ICD:

Revision of the International Classification of Diseases	Year of Conference by which adopted	Years in use in United States
First .....	1900	1900-1909
Second .....	1909	1910-1920
Third .....	1920	1921-1929
Fourth .....	1929	1930-1938
Fifth .....	1938	1939-1948
Sixth .....	1948	1949-1957
Seventh .....	1955	1958-1967
Eighth .....	1965	1968 to date

The search for a systematic method for evaluation of classification changes and other changes in the transition from one to the next revision of the ICD began with the introduction of the Second Revision, adopted in 1909 and used during 1910-20. Dunn and Shackley, in their report on the comparability of mortality

statistics between the Fourth Revision (adopted in 1929 and in use 1930-38) and the Fifth Revision (adopted in 1938 and in use 1939-48), included a definitive review of earlier attempts to assess the effects on the comparability of mortality statistics resulting from the introduction of a new revision.<sup>1</sup>

Essentially, the approach in these earlier attempts was to compare the frequencies of deaths assigned to a given title of the new revision for the first year it was in use with the frequencies assigned to the most nearly comparable title of the prior revision for the last year it was in use.

Dunn and Shackley were the first to apply the dual-coding method. In their attempt to measure the loss of comparability with the introduction of the Fifth Revision, they first classified all certificates for deaths occurring in 1940 by the Fifth Revision (in use 1939-48) and then classified the same certificates by the Fourth Revision (in use 1930-38). They presented the results in two sets of figures: one showing the number of certificates assigned to each cause by the Fifth Revision and the other showing the number of certificates assigned by the Fourth Revision. Instead of computing comparability ratios, however, these authors computed percentages to show the extent to which comparability had been lost for each cause by the introduction of the Fifth Revision.

The International Conference for the Sixth Decennial Revision of the International Lists recommended that deaths for a country as a whole in the year 1949 or 1950 should be coded according to both the Fifth and Sixth Revisions. In the United States 1950 was selected as the transition year. The first set of comparability ratios, based on coding the same deaths occurring in 1950 by both the Fifth and Sixth Revisions, was published by the Vital Statistics Division of the National Center for Health Statistics (NCHS) in 1964.<sup>2</sup> The second set of comparability ratios measured the effects of changes between the Sixth and Seventh Revisions.

The ratios in the present report, computed to measure breaks in comparability of cause-of-death statistics resulting from the introduction of the Eighth Revision, make only the third set of ratios for the United States.



The Sixth Revision represented a more sweeping change than any of the previous revisions. As stated by Faust and Dolman,<sup>3</sup> up until the Sixth Revision (in use 1949-57)

... selection of a cause of death for tabulation was made by reference to a set of priority tables published in the *Manual of Joint Causes of Death*. This manual, which was developed for use in the United States, was followed until 1949, when an international procedure for joint-cause selection was adopted. The *Manual of Joint Causes of Death* consists of priority tables based on a series of decisions made by clinicians regarding the relative importance of various diseases as causes of death. By using these priority tables when more than one cause was jointly reported, the primary cause for tabulation was selected. The new international rules adopted for use in the United States in 1949 made the medical practitioner responsible for indicating the underlying cause of death. If the medical certification is properly made, the physician's statement of the underlying cause of death is accepted for tabulation.

In general the changes incorporated in the Seventh Revision (in use 1958-67) were of limited scope and consisted of only essential changes and amendments of errors and inconsistencies.<sup>4</sup>

The ICD has been made increasingly specific over these eight revisions. In the First Revision the categories and subcategories of diseases and injuries numbered about 200; by 1939, when the Fifth Revision was put in use, the categories and subcategories numbered 425; and by 1968, when the Eighth Revision was first used, the Detailed List consisted of 671 categories of diseases and morbid conditions plus 182 categories for classification of external causes of injuries and 187 categories for characterization of injuries according to the nature of lesion.

### Meaning of Comparability Ratios

The comparability ratios presented in this report are based on coding the same deaths occurring in 1966 by both the Seventh and

Eighth Revisions. More specifically, the denominator of a ratio for any particular cause is the number of deaths in 1966 assigned to that cause in accordance with the Seventh Revision, and the numerator is the estimate of the number of deaths in 1966 assigned to the comparable cause in accordance with the Eighth Revision. The estimates of the deaths assigned by the Eighth Revision are based on a random sample of all deaths in 1966 stratified by cause (appendix IV). The year 1966 was selected because it was the most recent year for which final mortality statistics according to the Seventh Revision were available at the time of this study.

A comparability ratio of 1.00 indicates that the same number of deaths was assigned to a particular cause or combination of causes whether the Seventh or Eighth Revision was used. A ratio showing perfect correspondence (1.00) between the two revisions does not necessarily indicate that the cause was unaffected by changes in classification and coding procedures because the changes may compensate for each other.

A ratio of less than 1.00 results from one of two situations: (1) a decrease in assignments of deaths to a cause in the Eighth Revision as compared to the Seventh, resulting, for example, from the transfer of inclusion terms, or (2) the cause as described by the Eighth Revision is only a part of the Seventh Revision title with which it is compared.

Usually a ratio of more than 1.00 results from an increase in assignments of deaths to a cause in the Eighth Revision as compared with the comparable Seventh Revision cause. At times, however, the increase may result from the fact that the Eighth Revision cause is not the equivalent of that described by the Seventh Revision title with which it is compared. For example, consider the following division of the Eighth Revision group title Diseases of arteries, arterioles, and capillaries (440-448): Arteriosclerosis (440) and Other diseases of arteries, arterioles, and capillaries (441-448). A ratio of 1.549 is obtained by comparing the group title corresponding to ICDA Nos. 441-448 with the combination of the following three titles in the Seventh Revision: Aortic aneurysm, non-syphilitic, and dissecting aneurysm (451);

Eighth Revision title	Seventh Revision		Eighth Revision	
	Category number	Number of deaths	Category number	Estimated number of deaths
Total .....	---	15,213	---	23,567
Other diseases of arteries, arterioles, and capillaries .....	451-456	15,213	441-448	<sup>1</sup> 23,567
Aortic aneurysm (nonsyphilitic).....	451	11,270	441	12,196
Gangrene.....	455	348	445	2,720
All other diseases of arteries, arterioles, and capillaries .....	452-454,456	3,595	442-444,446-448	8,555

<sup>1</sup>The subtotals do not add up exactly to the total because of the application of different sampling fractions.

Gangrene of unspecified cause (455); and Other arterial diseases (452-454, 456). The estimated number of deaths assigned to each of the three-digit subcategories in the Eighth Revision under 441-448 together with the number of deaths assigned to each of the comparable three-digit subcategories in the Seventh Revision are shown above.

As this table shows, the comparability ratio of 1.549 (appendix I) results from an increase in assignments of deaths to each of the three subcategories in the Eighth Revision as compared with the corresponding assignments in the Seventh Revision. About 86 percent of the 1,434 deaths assigned in the Seventh Revision to Aneurysm of aorta (022) under Syphilis and its sequelae (020-029) are assigned in the Eighth Revision to Aortic aneurysm (nonsyphilitic) (441). Also, about 83 percent of the 2,342 deaths assigned in the Seventh Revision to

General arteriosclerosis with mention of gangrene as a consequence (450.1) are assigned in the Eighth Revision to Arteriosclerotic gangrene (445.0). Finally, about 21 percent of the 10,078 deaths assigned in the Seventh Revision to Hernia and intestinal obstruction (560, 561, 570) are transferred in the Eighth Revision to Arterial embolism and thrombosis of mesenteric artery (444.2).

#### Use of Ratios as Revision Factors

The following table illustrates the application of comparability ratios to determine whether changes for two death rates were real or resulted from the adoption of the Eighth Revision. The figures used are from the 10-percent sample for January-June 1967 and January-June 1968. In each instance the reported death rate in column (3) was multiplied by the ratio in

Eighth Revision title and category numbers	Comparability ratio (1)	Death rate per 100,000 population: January-June		
		1968: Eighth Revision (2)	1967: Seventh Revision	
			Reported (3)	Revised by ratio in column (1) (4)
Hypertensive heart disease with or without renal disease.....402,404	0.3941	9.7	26.6	10.5
Active rheumatic fever and chronic rheumatic heart disease.....390-398	1.1519	8.7	7.6	8.8

column (1) to obtain the death rate for January-June 1967 that is most nearly comparable to the death rate for January-June 1968. A comparison of the revised death rates for the earlier period with the corresponding death rates

for January-June 1968 shows a small decrease in the death rate for hypertensive heart diseases and no significant change in the death rate for active rheumatic fever and chronic rheumatic heart disease.

## 1. DISEASES OF HEART

### All Diseases of Heart (ICDA Nos. 390-398, 402, 404, 410-429)

As shown in the table below, the net effect of changes introduced with the Eighth Revision on the number of deaths classified to Diseases of heart, based on coding the above-described sample of records for deaths occurring in 1966 by both the Seventh and Eighth Revisions, was an increase from 727,002 to 730,261. This gives a comparability ratio of 1.0045 (appendix I).

An estimated 10,711 deaths classified under this title by the Eighth Revision were classified elsewhere by the Seventh Revision, and 7,452 deaths classified under this title by the Seventh Revision were classified elsewhere by the Eighth. In other words, by the Eighth Revision there was a gain to Diseases of heart of 10,711 deaths and a loss of 7,452 deaths, resulting in a net gain of 3,259 deaths.

The changes responsible for the largest losses among the estimated 7,452 deaths no longer assigned to Diseases of heart are presented below under the discussions relating to the major components of the diseases of heart for which the losses occurred. The four major changes responsible for the largest gains among the estimated 10,711 deaths now assigned to Diseases of heart came from a number of Seventh Revision categories and were distributed over the components of heart disease. These four major changes are presented below.

(1) Among the 10,711 deaths assigned to Diseases of heart by the Eighth but not by the Seventh Revision were an estimated 1,773 that had been assigned by the Seventh to accidental causes. Of these 1,773 deaths, an estimated 1,422 were assigned by the Eighth Revision to

Ischemic heart disease (ICDA Nos. 410-413). These assignments occurred because the Seventh Revision rules that under certain circumstances resulted in coding an accidental cause in preference to other reported conditions were changed in the Eighth Revision. These Seventh Revision rules applied when two or more conditions, one of which was an accident, poisoning, or violence (but not a late effect of these), were entered on the death certificate in such a way that none could be regarded as the underlying cause of death.<sup>5</sup> The Eighth Revision rules, however, lead to the selection of the first-mentioned condition when causes of death are entered on the death certificate in this manner.<sup>6</sup> The following example of entries in the medical certification section of a death certificate illustrates the effect of this change in the coding rules. The death described was classified to accidental fall by the Seventh Revision rules and to coronary arteriosclerosis by the Eighth Revision rules.

- I (a) Coronary arteriosclerosis
- (b) Fracture of hip due to
- (c) Accidental fall

(For further discussion on transfers by the Eighth Revision from accidental causes, especially falls, see section 4, "Accidents.")

(2) Also among the 10,711 deaths assigned to Diseases of heart by the Eighth but not by the Seventh Revision were an estimated 2,326 that were assigned by the Seventh Revision to Other hypertensive disease (ICD Nos. 444-447). These transfers resulted from a change in the procedure for coding causes of death involving arteriosclerotic heart disease (without mention of coronary artery disease) jointly reported with

Seventh Revision		Eighth Revision	
Cause of death and category number (1)	Number of deaths in 1966 (2)	Estimated number of deaths in column (2) that went to Diseases of heart (ICDA Nos. 390-398, 402,404,410-429) (3)	Estimated number of deaths in column (2) that went to other causes (4)
All causes ..... 001-E999	1,863,149	730,261	1,132,888
Diseases of heart.....400-402,410-443	727,002	719,550	7,452
Rheumatic fever.....400-402	456	449	7
Chronic rheumatic heart disease.....410-416	14,556	14,436	120
Diseases of mitral valve.....410	5,718	5,666	52
Diseases of aortic valve specified as rheumatic.....411	1,713	1,693	20
Diseases of pulmonary valve and other endocarditis, specified as rheumatic.....413,414	773	773	-
Other rheumatic heart diseases.....412,415,416	6,352	6,304	48
Arteriosclerotic heart disease, including coronary disease.....420	573,191	570,220	2,971
Arteriosclerotic heart disease so described.....420.0	158,802	158,012	790
Heart disease specified as involving coronary arteries.....420.1	414,101	411,920	2,181
Angina pectoris without mention of coronary disease.....420.2	288	<sup>1</sup> 288	L
Chronic endocarditis not specified as rheumatic...421	3,785	3,560	225
Of mitral valve, specified as nonrheumatic.....421.0	166	157	9
Of aortic valve, not specified as rheumatic.....421.1	2,311	2,261	50
Of other valves, not specified as rheumatic.....421.2-421.4	1,308	1,142	166
Other myocardial degeneration.....422	49,796	49,175	621
With arteriosclerosis.....422.1	41,935	41,464	471
Without mention of arteriosclerosis.....422.0,422.2	7,861	7,711	150
Other diseases of heart.....430-434	31,042	28,277	2,765
Acute and subacute endocarditis.....430	757	706	51
Acute myocarditis and acute pericarditis, not specified as rheumatic.....431,432	1,065	1,051	14
Functional disease of heart.....433	10,008	7,693	2,315
Other and unspecified diseases of heart.....434	19,212	18,827	385
Hypertensive heart disease.....440-443	54,176	53,433	743
Hypertensive heart disease with arteriolar nephrosclerosis.....442	11,606	11,345	261
Other hypertensive heart disease.....440,441,443	42,570	42,088	482
Other causes..... Residual	1,136,147	10,711	1,125,436

<sup>1</sup>There were no deaths in the sample assigned to the Seventh Revision title Angina pectoris without mention of coronary disease (ICD No. 420.2). NCHS nosologists state, however, that with a possible few exceptions these deaths would be assigned by the Eighth Revision to Angina pectoris (ICDA No. 413). The exceptions, if any, resulted from the dropping of the preference in the Seventh Revision of angina pectoris over cardiovascular diseases.

hypertensive disease. The Seventh Revision had no special provision for classifying this combination of diseases, and under certain circumstances the hypertensive disease was coded as the cause of death. For example, reports of arteriosclerotic heart disease (ICD No. 420.0) due to a condition classifiable to ICD Nos. 444-447 (Other hypertensive disease) were

classified to the appropriate hypertensive disease category. In the Eighth Revision arteriosclerotic heart disease is classified as an ischemic heart disease, and four-digit subdivisions have been provided under the ischemic heart disease categories for jointly reported hypertensive disease.

(3) A third group among these 10,711 deaths assigned by the Eighth Revision to

Diseases of heart included an estimated 1,743 that were classified by the Seventh Revision to Vascular lesions affecting central nervous system (ICD Nos. 330-334). The largest number of these 1,743 causes, an estimated 1,249, were assigned to Chronic ischemic heart disease (ICDA No. 412). In addition, an estimated 166 were assigned to Hypertensive heart disease (ICDA No. 402), 164 to Acute myocardial infarction (ICDA No. 410), and 82 to Symptomatic heart disease (ICDA No. 427).

The assignments to ICDA No. 412, Chronic ischemic heart disease, resulted primarily from a change in the procedure for coding arteriosclerotic heart disease, hypertension, and an intracranial vascular lesion when jointly reported as causes of death. As mentioned above, no special provision was made in the Seventh Revision for coding Arteriosclerotic heart disease (ICD No. 420.0) jointly reported with hypertension, but provision was made for coding hypertension jointly reported with an intracranial vascular lesion to the intracranial vascular lesion. In the Eighth Revision provision is made for coding hypertension jointly reported with arteriosclerotic heart disease as well as with intracranial vascular lesions. The result of this change in coding procedure is that some deaths that were attributed to intracranial vascular lesions by the Seventh Revision are classified to chronic ischemic heart disease with hypertension by the Eighth Revision.

Two examples of entries in the medical certification part of the death certificates that illustrate this change in assignment are given below:

- I (a) Arteriosclerotic heart disease and cerebral hemorrhage
- (b) Hypertension
- (c)
  
- I (a) Cerebral embolism
- (b) Arteriosclerotic heart disease
- (c) Hypertension

By the Seventh Revision both of the deaths reported above would have been assigned to intracranial vascular lesions, but by the Eighth Revision, they are assigned to Chronic ischemic heart disease.

(4) Another substantial group among the 10,711 deaths assigned by the Eighth Revision to Diseases of heart is an estimated 1,242 causes that were coded by the Seventh Revision to General arteriosclerosis (ICD No. 450). Almost all of these (1,209) were transferred to Chronic ischemic heart disease (ICDA No. 412). In the Eighth Revision provision is made for coding arteriosclerotic heart disease (which is classified to ICDA No. 412) in preference to arteriosclerosis when the two conditions are jointly reported on the death certificate. According to the provisions of the Seventh Revision preference was given to arteriosclerotic heart disease only when this condition was specified as due to arteriosclerosis. Therefore causes of death certified in the following manner are classified to Chronic ischemic heart disease (412) by the Eighth Revision and to General arteriosclerosis (450) by the Seventh Revision.

- I (a) Hypostatic pneumonia
- (b) General arteriosclerosis with arteriosclerotic heart disease
- (c)

Although the comparability ratio for the entire group of Diseases of heart is close to 1.000, some major components of this group have comparability ratios that differ substantially from 1.000. Factors pertinent to the ratios shown in the table in appendix I for the five major components of diseases of heart are presented in the following paragraphs.

#### Major Components of Diseases of Heart

*Active rheumatic fever and chronic rheumatic heart disease (ICDA Nos. 390-398).*—In the Seventh Revision diseases of the aortic valve not qualified as rheumatic were included in ICD No. 421.1, Chronic endocarditis of aortic valve, not specified as rheumatic. This category was not included under the heading Chronic rheumatic heart disease (ICD Nos. 410-416). In the Eighth Revision, however, aortic valve diseases, unless specified as nonrheumatic, are included under Chronic rheumatic heart disease (ICDA Nos. 393-398). As a result of this change in classification almost all of the deaths that were

Seventh Revision		Eighth Revision	
Cause of death and category number (1)	Number of deaths in 1966 (2)	Estimated number of deaths in column (2) that went to Active rheumatic fever and chronic rheumatic heart disease (ICDA Nos. 390-398) (3)	Estimated number of deaths in column (2) that went to other causes (4)
All causes ..... 001-E999	1,863,149	17,293	1,845,856
Comparable causes ..... 400-402,410-416,421.1	17,323	16,652	671
Rheumatic fever and chronic rheumatic heart disease <sup>1</sup> ..... 400-402,410-416	15,012	14,724	288
Rheumatic fever ..... 400-402	456	443	13
Chronic rheumatic heart disease ..... 410-416	14,556	14,256	275
Diseases of mitral valve ..... 410	5,718	5,600	118
Diseases of aortic valve specified as rheumatic.. 411	1,713	1,686	27
Diseases of pulmonary valve and other endocarditis, specified as rheumatic ..... 413,414	773	759	14
Other rheumatic heart diseases ..... 412,415,416	6,352	6,236	116
Chronic endocarditis of aortic valve, not specified as rheumatic ..... 421.1	2,311	1,928	383
Other causes ..... Residual	1,845,826	641	1,845,185

<sup>1</sup>This is the title to which deaths in tables 1 and 2 were assigned during 1950-67, when the Sixth and Seventh Revisions were in use.

assigned to category 421.1 by the Seventh Revision were classified under chronic rheumatic heart disease by the Eighth. This change accounts in great part for the fact that a larger number of deaths (an estimated 17,293) were classified by the Eighth Revision to Active rheumatic fever and chronic rheumatic heart disease (ICDA Nos. 390-398) than were classified by the Seventh Revision (only 15,012 deaths) to the similar title Rheumatic fever and chronic rheumatic heart disease (ICD Nos. 400-402, 410-416). This gives an adjustment factor of 1.1519 for these two titles. (See appendix I.)

As shown above, 1,928 of the 2,311 deaths assigned by the Seventh Revision to ICD No. 421.1 were classified by the Eighth Revision to ICDA Nos. 390-398.

During the period 1950-67 the death rate for Rheumatic fever and chronic rheumatic heart disease (ICD Nos. 400-402, 410-416) declined from 14.8 to 7.2 deaths per 100,000 population. The apparent rise in the death rate for these causes in 1968 to 8.2 per 100,000 population is attributable in great part to the above-

mentioned classification change. Applying the comparability ratio 1.1519 to the 1967 death rate of 7.2 raises it to 8.3 deaths per 100,000 population, which is very close to the 1968 rate of 8.2. The downward trend continued through 1971, when the rate was 7.1 per 100,000 population.

*Hypertensive heart disease with or without renal disease (ICDA Nos. 402, 404).*—The comparability ratio for Hypertensive heart disease with or without renal disease (ICDA Nos. 402, 404) is only 0.3941. This ratio is obtained by dividing 21,350, the estimated number of 1966 deaths classified by the Eighth Revision to this group of causes, by 54,176, the number classified to the most nearly comparable Seventh Revision title, Hypertensive heart disease (ICD Nos. 440-443). (See appendix I.) The following table shows the results of coding a random sample of 2,389 of these 54,176 deaths.

As shown in the table below, an estimated 33,741 of the 1966 deaths that were classified by the Seventh Revision to Hypertensive heart disease (ICD Nos. 440-443) were not classified

Eighth Revision		Seventh Revision	
Cause of death and category number	Estimated number of deaths	Category number	Number of deaths
Total .....	54,176	440-443	54,176
Hypertensive heart disease with or without renal disease:			
402 .....	10,717		
404 .....	9,718		
412.0 .....	32,636		
Other .....	1,105		
Hypertensive disease:	Total .....	440,441,443	42,570
402 .....	10,717		
404 .....	46		
412.0 .....	31,050		
Other .....	757		
Hypertensive heart and renal disease:	Total .....	442	11,606
402 .....	--		
404 .....	9,672		
Chronic ischemic heart disease with hypertensive disease .....	412.0 .....		1,587
Other Eighth Revision titles .....	Other .....		347

to the most nearly comparable Eighth Revision title, Hypertensive heart disease with or without renal disease (ICDA Nos. 402, 404). Of these, about 97 percent (32,636 of the 33,741) were classified to Chronic ischemic heart disease with hypertensive disease (ICDA No. 412.0) by the Eighth Revision.

As shown in the next table, there were a total of 42,570 deaths assigned to Other hypertensive heart disease (ICD Nos. 440, 441, 443) in 1966 when the Seventh Revision was in use. In the dual-coding study, it was found that about 75 percent of these deaths (31,807) were not assigned to Hypertensive heart disease with or without renal disease (ICDA Nos. 402, 404) by the Eighth Revision. Of the 31,807 deaths, an estimated 31,050 were classified to Chronic ischemic heart disease with hypertensive disease (ICDA No. 412.0).

The table below also shows that a total of 11,606 deaths in 1966 were assigned to Hypertensive heart disease with arteriolar nephrosclerosis (ICD No. 442) by the Seventh Revision. In the dual-coding study it was found that about 17 percent of these deaths (1,934) were not

assigned to the Eighth Revision title Hypertensive heart disease with or without renal disease (ICDA Nos. 402, 404). Again, an estimated 1,587 of these 1,934 deaths were classified to Chronic ischemic heart disease with hypertensive disease (ICDA No. 412.0).

These differences in code assignments between the Seventh and Eighth Revisions resulted primarily from the two changes in classification that are described below.

One of the two changes is for *Arteriosclerotic heart disease jointly reported with hypertensive disease*. The Seventh Revision had no special provision for classifying Arteriosclerotic heart disease so described (ICD No. 420.0) jointly reported with hypertensive disease. Consequently, some deaths attributable to this combination of diseases were classified by the Seventh Revision to Hypertensive heart disease (ICD Nos. 440-443). In the Eighth Revision arteriosclerotic heart disease is classified as an ischemic heart disease, and four-digit subdivisions are provided under the ischemic heart disease categories for jointly reported hypertensive disease. As a result of this change in classifi-

Seventh Revision		Eighth Revision	
Cause of death and category number (1)	Number of deaths in 1966 (2)	Estimated number of deaths in column (2) that went to Hypertensive heart disease with or without renal disease (ICDA Nos. 402,404) (3)	Estimated number of deaths in column (2) that went to other causes (4)
All causes .....001-E999	1,863,149	21,350	1,841,799
Hypertensive heart disease.....440-443	54,176	20,435	33,741
Hypertensive heart disease with arteriolar nephrosclerosis.....442	11,606	9,672	1,934
Other hypertensive heart disease .....440,441,443	42,570	10,763	31,807
Other causes.....Residual	1,808,973	915	1,808,058

cation, the following examples of cause-of-death certifications were classified to a hypertensive heart disease (specifically to ICD No. 443) by the Seventh Revision and to Chronic ischemic heart disease with hypertensive disease (ICDA No. 412.0) by the Eighth Revision:

- I (a) Arteriosclerotic heart disease
- (b) Hypertensive heart disease
  
- I (a) Hypertensive and arterio-
- (b) sclerotic heart disease

The second change is for *Other myocardial degeneration with arteriosclerosis, jointly reported with hypertensive disease*. In the Seventh Revision category 422.1, Other myocardial degeneration with arteriosclerosis, included the conditions listed below, and provision was made for coding any condition in this category jointly reported with a hypertensive disease (ICD Nos. 440-447) to Hypertensive heart disease (440-443).

- Cardiosclerosis
- Cardiovascular:
  - arteriosclerosis
  - degeneration
  - disease

Cardiovascular sclerosis  
Myocardial degeneration with  
arteriosclerosis or  
synonym in ICD category 450

In the Eighth Revision the above-listed conditions are included in ICDA category 412, Chronic ischemic heart disease, and provision is made for classifying a jointly reported hypertensive disease in a four-digit subdivision of this category, 412.0. Specific examples illustrating the effect of this change in classification are given below.

- I (a) Cardiovascular disease [7th, ICD No. 422.1;  
8th, ICDA No. 412.9]
  
- (b) Hypertension [7th, ICD No. 444;  
8th, ICDA No. 401]

As stated above, the Seventh Revision provided for the classification of cases such as this to hypertensive heart disease (ICD No. 443), which includes cardiovascular disease (ICD No. 422.1) jointly reported with hypertension (ICD No. 444). In the Eighth Revision this example is classified to category 412.0, Chronic ischemic heart disease with hypertensive disease, which includes cardiovascular disease unqualified (ICDA No. 412.9) jointly reported with hypertension (ICDA No. 401).



I (a) Myocardial degeneration [7th, ICD No. 422.2;  
8th, ICDA No. 428]

(b) Arteriosclerosis [7th, ICD No. 450;  
8th, ICDA No. 440.9]

II Nephrosclerosis [7th, ICD No. 446;  
8th, ICDA No. 403]

In the Seventh Revision arteriosclerosis (ICD No. 450) with myocardial degeneration (ICD No. 422.2) was classified to 422.1, Other myocardial degeneration with arteriosclerosis. The above example was assigned by the Seventh Revision, however, to category 442, Hypertensive heart disease with arteriolar nephrosclerosis, with includes conditions classifiable to category 422.1 jointly reported with nephrosclerosis. In the Eighth Revision, arteriosclerosis (ICDA No. 440) with myocardial degeneration (ICDA No. 428) is classified to 412.9, Chronic ischemic heart disease without mention of hypertensive disease. This example, however, is assigned to category 412.0, which includes conditions classifiable to 412.9 jointly reported with nephrosclerosis.

During 1958-67 the death rate for Hypertensive heart disease (ICD Nos. 440-443) declined from 42.7 to 25.3 deaths per 100,000 population. Applying the comparability ratio of 0.3941 to the 1967 death rate of 25.3 lowers it to 10.0. This adjusted rate is close to the 1968 rate of 8.8 deaths per 100,000 population. The downward trend for this cause continued through 1971, for which year the rate was 6.8 deaths per 100,000 population.

*Ischemic heart disease (ICDA Nos. 410-413).*—The most nearly comparable title for this group of diseases in the Seventh Revision is Arteriosclerotic heart disease, including coronary disease (ICD No. 420) (table B). Based on the 1966 comparability study, an estimated 14.57 percent more deaths (totaling 83,500) were assigned by the Eighth Revision to this title than were assigned to Arteriosclerotic heart disease, including coronary disease (ICD No. 420) by the Seventh Revision (appendix I). As shown in the table, page 12, the largest single group of these 83,500 deaths (an estimated 41,228) were assigned by the Seventh Revision to Other myocardial degeneration with arterio-

Table B. Estimated number of deaths in 1966 assigned to specified category numbers (ICDA) according to the Eighth Revision: based on a stratified random sample drawn from specified Seventh Revision category numbers for provisional set of comparability ratios

[Some figures in this table differ slightly from those in other tables because they are based on a preliminary sample that was smaller in size]

Seventh Revision ICD numbers	Total	Eighth Revision ICDA numbers					
		400,401	402-404	410	411	412	413
Total-----	687,083	3,238	27,443	366,951	6,888	282,309	254
420.0-----	157,748	-	-	3,160	-	154,588	-
420.1-----	411,678	-	-	360,794	6,785	43,857	242
420.2-----	-	-	-	-	-	-	-
422.1-----	41,229	-	-	236	-	40,993	-
430-434-----	4,095	-	27	1,090	53	2,925	-
440-443-----	53,657	184	20,543	69	-	32,861	-
442-----	11,454	-	9,780	-	-	1,674	-
440, 441, 443-----	42,203	184	10,763	69	-	31,187	-
444-447-----	10,959	2,857	6,189	46	-	1,867	-
446-----	6,620	5	5,705	11	-	899	-
444, 445, 447-----	4,338	2,851	484	35	-	968	-
All other-----	7,717	197	684	1,556	50	5,218	12

Seventh Revision		Eighth Revision	
Cause of death and category number (1)	Number of deaths in 1966 (2)	Estimated number of deaths in column (2) that went to Ischemic heart disease (ICDA Nos. 410-413) (3)	Estimated number of deaths in column (2) that went to other causes (4)
All causes ..... 001-E999	1,863,149	656,691	1,206,458
Comparable causes ..... 420,422.1,440,441,443	657,696	642,199	15,497
Arteriosclerotic heart disease, including coronary disease <sup>1</sup> ..... 420	573,191	569,715	3,476
Arteriosclerotic heart disease so described ..... 420.0	158,802	157,749	1,053
Heart disease specified as involving coronary arteries ..... 420.1	414,101	411,678	2,423
Angina pectoris without mention of coronary disease ..... 420.2	288	<sup>2</sup> 288	2
Other myocardial degeneration with arteriosclerosis ..... 422.1	41,935	41,228	707
Other hypertensive heart disease ..... 440,441,443	42,570	31,256	11,314
Other causes ..... Residual	1,205,453	14,492	1,190,961

<sup>1</sup>This is the title to which deaths in tables 1 and 2 were assigned during 1950-67, when the Sixth and Seventh Revisions were in use.

<sup>2</sup>There were no deaths in the sample assigned to the Seventh Revision title Angina pectoris without mention of coronary disease (ICD No. 420.2). NCHS nosologists state, however, that with a possible few exceptions these deaths would be assigned by the Eighth Revision to Angina pectoris (ICDA No. 413). The exceptions, if any, resulted from the dropping of the preference in the Seventh Revision of angina pectoris over cardiovascular diseases.

sclerosis (ICD No. 422.1), and of these 41,228 deaths an estimated 40,993 were classified by the Eighth Revision to Chronic ischemic heart disease (ICDA No. 412). Among the terms classified by the Eighth Revision to Chronic ischemic heart disease (ICDA No. 412) that were included under Other myocardial degeneration with arteriosclerosis (ICD No. 422.1) in the Seventh Revision are the following:

Cardiovascular:  
arteriosclerosis  
degeneration  
disease  
sclerosis

Questions have been raised about the appropriateness of including cardiovascular diseases in category 412, Chronic ischemic heart disease, since this classification implies that cardiovascular disease means disease of the coronary arteries. A study conducted several years

ago of death certificates reporting "cardiovascular disease" indicated that this frequently is not the case. In anticipation of a possible change in the classification of these terms and for the benefit of those interested in doing further study, NCHS has created special four-digit subcategories under category 412 that are used instead of those listed under category 412 in the Eighth Revision, ICDA (table 3). These special four-digit subcategories permit the separation of deaths due to cardiovascular disease without evidence of a disease of the coronary arteries from those due to other conditions classifiable to chronic ischemic heart disease with or without mention of cardiovascular disease. They are shown in the table below.

As shown below, of the 303,362 deaths in 1969 assigned to Chronic ischemic heart disease, a total of 235,807 were described in terms that led to their assignment to numbers 412.1 and 412.3. The remaining 67,555 deaths were described in terms that led to their assignment to cardiovascular disease without mention of

Cause of death and Eighth Revision category number	1969		1971	
	Number of deaths	Percent	Number of deaths	Percent
Chronic ischemic heart disease .....412	303,362	100.0	312,351	100.0
Chronic ischemic heart disease with or without cardiovascular disease with hypertensive disease .....412.1	19,884	6.6	19,832	6.3
Cardiovascular disease without mention of chronic ischemic heart disease with hypertensive disease .....412.2	23,486	7.7	22,610	7.2
Chronic ischemic heart disease with or without cardiovascular disease without mention of hypertensive disease .....412.3	215,923	71.2	221,404	70.9
Cardiovascular disease without mention of chronic ischemic heart disease without mention of hypertensive disease .....412.4	44,069	14.5	48,505	15.5

chronic ischemic heart disease, that is, to numbers 412.2 and 412.4. (It should be noted that subcategories 412.1 and 412.2 together are equivalent to ICDA category 412.0, and subcategories 412.3 and 412.4 together are equivalent to ICDA category 412.9.)

For 1969 the death certificates for only 44,069 of these 67,555 deaths, however, did not mention hypertension. Because the Seventh Revision title Other myocardial degeneration (ICD No. 422) excluded conditions with mention of hypertensive disease, no more than these 44,069 deaths may be assumed to have been transferred from Other myocardial degeneration with arteriosclerosis (ICD No. 422.1).

Also, as shown in the above table, the percentage of deaths from Chronic ischemic heart disease assigned to category number 412.4 increased from 14.5 for 1969 to 15.5 for 1971. Of deaths assigned to causes included in 412, the percentage assigned to category number 412.4 is greater for persons of races other than white than for white persons (table 3).

The 1966 comparability study also showed an estimated 31,256 deaths classified to Ischemic heart disease (ICDA Nos. 410-413) by the Eighth Revision that had been assigned to Other hypertensive heart disease (ICD Nos. 440, 441, 443) by the Seventh Revision. The vast majority of these (an estimated 31 050) were classified to Chronic ischemic heart disease with

hypertensive disease (ICDA No. 412.0). As previously stated, these differences in code assignments between the two revisions resulted primarily from changes in the classification of deaths involving arteriosclerotic heart disease jointly reported with hypertensive heart disease and of those involving other myocardial degeneration with arteriosclerosis jointly reported with hypertensive disease.

It was also found that out of a total of 10,008 deaths classified to Functional disease of heart (ICD No. 433) by the Seventh Revision, an estimated 2,805 were assigned to Chronic ischemic heart disease without mention of hypertensive disease (ICDA No. 412.9) by the Eighth Revision. These differences in code assignments resulted primarily from a change in the Seventh Revision procedure which gave priority to Functional disease of heart (ICD No. 433) over Other myocardial degeneration with arteriosclerosis (ICD No. 422.1). In the Eighth Revision functional heart diseases are included in category 427, Symptomatic heart disease; and category 412, Chronic ischemic heart disease, includes conditions classifiable to category 422.1 in the Seventh Revision. Also, a condition classifiable to category 412 is given priority over one classifiable to 427.

The distribution by the Eighth Revision of the 414,101 deaths assigned by the Seventh Revision to Heart disease specified as involving

Cause of death and Eighth Revision category number	Estimated deaths in 1966 assigned to ICD No. 420.1
Ischemic heart disease .....410-413	411,678
With hypertensive disease (.0) .....	37,073
Without mention of hypertensive disease (.9) .....	374,605
Acute myocardial infarction.....410	360,794
With hypertensive disease (.0) .....	31,985
Without mention of hypertensive disease (.9) .....	328,809
Other acute or subacute forms of ischemic heart disease.....411	6,785
With hypertensive disease (.0) .....	485
Without mention of hypertensive disease (.9) .....	6,300
Chronic ischemic heart disease .....412	43,857
With hypertensive disease (.0) .....	4,361
Without mention of hypertensive disease (.9) .....	39,496
Angina pectoris .....413	1,242
With hypertensive disease (.0) .....	1,242
Without mention of hypertensive disease (.9) .....	-
Other causes..... Residual	2,423

<sup>1</sup>This figure may be unreliable because there was only one sample death assigned to this cause.

coronary arteries (ICD No. 420.1), as found by the 1966 comparability study, is shown above. About 88 percent of the 360,794 deaths assigned to Heart disease specified as involving coronary arteries (ICD No. 420.1) by the Seventh Revision were assigned to Acute myocardial infarction (ICDA No. 410) by the Eighth. Since category 410 includes, however, deaths involving acute myocardial infarction jointly reported with chronic ischemic heart disease, the number of these deaths associated with chronic ischemic heart disease cannot be ascertained.

Adjusting the 1967 death rate of 289.7 deaths per 100,000 population for Arteriosclerotic heart disease, including coronary disease (ICD No. 420), to the level it would have been if the 1967 deaths had been coded by the Eighth Revision raises it to 331.9 per 100,000 (289.7 multiplied by 1.1457). This adjusted rate is closer to the 1968 rate of 337.6 deaths per 100,000 population for Ischemic heart disease, which is based on coding deaths by the Eighth Revision. The 1971 death rate for this cause is 327.0 per 100,000 population.

*Chronic disease of endocardium and other myocardial insufficiency (ICDA Nos. 424, 428).*—Figures for 1966 and 1967 are shown in tables 1 and 2 for Seventh Revision categories 421, Chronic endocarditis not specified as rheumatic, and 422, Other myocardial degeneration, which appear to be comparable to the above ICDA categories. As shown in appendix I and in the table below, however, only about 16 percent of the deaths assigned to ICD categories 421 and 422 by the Seventh Revision were assigned to ICDA categories 424 and 428 by the Eighth. This occurred primarily because terms included under Other myocardial degeneration with arteriosclerosis (ICD No. 422.1) were transferred by the Eighth Revision to Chronic ischemic heart disease (ICDA No. 412). The result was that an estimated 41,228 of the 41,935 deaths that were assigned to ICD No. 422.1 by the Seventh Revision were assigned to Ischemic heart disease (ICDA Nos. 410-413) by the Eighth Revision.

Another important factor was the change between the Seventh and Eighth Revisions in the classification of diseases of the aortic valve. As stated under the discussion of Active rheumatic fever and chronic rheumatic heart disease (ICDA Nos. 390-398), diseases of the aortic valve not specified as rheumatic were included in category 421.1 in the Seventh Revision. In the Eighth Revision aortic valve diseases, unless they are qualified as nonrheumatic, are included under Chronic rheumatic heart disease. As a result of this change an estimated 1,922 deaths that were assigned to ICD No. 421.1 by the Seventh Revision were assigned to ICDA No. 395.9 by the Eighth Revision.

The 1967 death rate for Chronic endocarditis not specified as rheumatic together with Other myocardial degeneration (ICD Nos. 421 and 422) was 26.6 per 100,000 population. Adjusting this rate to the level it would have been if 1967 deaths had been coded by the Eighth Revision reduces it to 4.8 per 100,000 (26.6 multiplied by 0.1823). This adjusted rate is close to the 1968 rate of 3.9 deaths per 100,000 population, based on coding deaths by the Eighth Revision. For 1971 the death rate for this cause dropped to 3.0 per 100,000 population.

Seventh Revision		Eighth Revision	
Cause of death and category number (1)	Number of deaths in 1966 (2)	Estimated number of deaths in column (2) that went to Chronic disease of endocardium and other myocardial insufficiency (ICDA Nos. 424, 428) (3)	Estimated number of deaths in column (2) that went to other causes (4)
All causes ..... 001-E999	1,863,149	9,768	1,853,381
Nonrheumatic chronic endocarditis and other myocardial degeneration <sup>1</sup> .....421.422	53,581	8,688	44,893
Comparable causes .....421.422.0,422.2	11,646	8,452	3,194
Chronic endocarditis not specified as			
rheumatic .....421	3,785	1,469	2,316
Of mitral valve, specified as nonrheumatic ....421.0	166	129	37
Of aortic valve, not specified as rheumatic ....421.1	2,311	283	2,028
Of other valves, not specified as			
rheumatic .....421.2-421.4	1,308	1,057	251
Other myocardial degeneration without mention of arteriosclerosis .....422.0,422.2	7,861	6,983	878
Other causes ..... Residual	1,851,503	1,316	1,850,187
Other myocardial degeneration with arteriosclerosis .....422.1	41,935	236	41,699

<sup>1</sup>This is the title to which deaths in tables 1 and 2 were assigned during 1950-67, when the Sixth and Seventh Revisions were in use.

All other forms of heart disease (ICDA Nos. 420-423, 425-427, 429).—Introduction of the Eighth Revision resulted in assigning about 19 percent fewer deaths to this group title than were assigned to the most nearly comparable title, Other diseases of heart (ICD Nos. 430-434), by the Seventh Revision. This gives a comparability ratio of 0.8104 (appendix I).

As shown in the table below, an estimated 5,664 of the 10,008 deaths that had been assigned to Functional disease of heart (ICD No. 433) by the Seventh Revision were not assigned to All other forms of heart disease (ICDA Nos. 420-423, 425-427, 429) by the Eighth Revision. An estimated 2,805 of these 5,664 deaths were classified to Chronic ischemic heart disease without mention of hypertensive disease (ICDA No. 412.9), an estimated 1,498 to Arteriosclerosis (ICDA No. 440), and an estimated 272 to Cerebrovascular diseases (ICDA Nos. 430-438) by the Eighth Revision. These differences in assignments resulted from the following changes in coding procedures:

- 1) *Functional heart disease jointly reported with Other myocardial degeneration with arteriosclerosis.*—In the Seventh Revision provision is made for coding Functional disease of heart (ICD No. 433) in preference to Other myocardial degeneration with arteriosclerosis (ICD No. 422.1). In the Eighth Revision this combination of diseases is classified to Chronic ischemic heart disease without mention of hypertensive disease.
- 2) *Functional heart disease jointly reported with arteriosclerosis.*—The Seventh Revision provides for the classification of this combination of diseases to functional heart disease. In the Eighth Revision no special preference is given to functional heart disease. Therefore, under certain circumstances assignment is to Arteriosclerosis, e.g., when functional heart disease is reported as due to arteriosclerosis.

Seventh Revision		Eighth Revision	
Cause of death and category number (1)	Number of deaths in 1966 (2)	Estimated number of deaths in column (2) that went to All other forms of heart disease (ICDA Nos. 420-423,425-427,429) (3)	Estimated number of deaths in column (2) that went to other causes (4)
All causes ..... 001-E999	1,863,149	25,156	1,837,993
Other diseases of heart ..... 430-434	31,042	23,375	7,667
Acute and subacute endocarditis.....430	757	654	103
Acute myocarditis and acute pericarditis, not specified as rheumatic .....431,432	1,065	892	173
Functional disease of heart.....433	10,008	4,344	5,664
Other and unspecified diseases of heart .....434	19,212	17,485	1,727
Other causes ..... Residual	1,832,107	1,781	1,830,326

3) *Functional heart disease jointly reported with arteriosclerosis and cerebrovascular disease.*—In both the Seventh and Eighth Revisions provision is made for coding cerebrovascular diseases in preference to arteriosclerosis. As noted above, however, the provision for coding functional heart disease in preference to arteriosclerosis was dropped in the Eighth Revision. As a result of this change the following examples are classified to cardiac arrhythmia by the Seventh Revision and cerebrovascular disease by the Eighth Revision:

- I (a) Cardiac arrhythmia
- (b) Arteriosclerosis
- (c)

II Cerebrovascular disease

- I (a) Arrhythmia and cerebrovascular disease
- (b) General arteriosclerosis
- (c)

The adjusted 1967 death rate for Other diseases of heart (ICD Nos. 430-434) is 12.8 deaths per 100,000 population. This is obtained by multiplying the recorded death rate of 15.8 by the comparability ratio of 0.8104. The death rates for 1968-71 are 14.0, 15.0, 15.9, and 16.6, respectively, per 100,000 population.

## 2. MALIGNANT NEOPLASMS

### All Malignant Neoplasms (ICDA Nos. 140-209)

The introduction of the Eighth Revision resulted in an estimated net increase of less than 0.2 of 1 percent in the number of deaths assigned to this group of causes. Based on the

sample of 1966 deaths coded by both the Seventh and Eighth Revisions, there were 2,342 deaths assigned to categories under this title by the Eighth Revision that were classified elsewhere by the Seventh. On the other hand, there were 1,816 deaths assigned to this title (ICD

Seventh Revision		Eighth Revision	
Cause of death and category number  (1)	Number of deaths in 1966  (2)	Estimated number of deaths in column (2) that went to Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues (ICDA Nos. 140-209)  (3)	Estimated number of deaths in column (2) that went to other causes  (4)
All causes ..... 001-E999	1,863,149	304,262	1,558,887
Selected causes ..... 140-205,294,295,297-299	305,013	302,559	2,454
Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues <sup>1</sup> ..... 140-205	303,736	301,920	1,816
Malignant neoplasm of buccal cavity and pharynx..... 140-148	6,800	6,744	56
Of lip..... 140	150	143	7
Of tongue..... 141	1,629	1,614	15
Of other and unspecified parts of buccal cavity ..... 142-144	2,224	2,205	19
Of pharynx..... 145-148	2,797	2,782	15
Malignant neoplasm of digestive organs and peritoneum, not specified as secondary... 150-156A, 157-159	95,079	94,559	520
Of esophagus..... 150	5,505	5,461	44
Of stomach..... 151	17,623	17,623	-
Of small intestine, including duodenum ..... 152	693	652	41
Of large intestine, except rectum..... 153	32,811	32,616	195
Cecum, appendix, and ascending colon ..... 153.0	4,605	4,568	37
Transverse colon, including hepatic and splenic flexures ..... 153.1	1,472	1,397	75
Descending colon ..... 153.2	1,151	1,151	-
Sigmoid colon ..... 153.3	5,814	5,814	-
Multiple parts of large intestine ..... 153.7	78	78	-
Large intestine (including colon), part unspecified ..... 153.8	18,155	18,117	38
Intestinal tract, part unspecified..... 153.9	1,536	1,491	45
Of rectum..... 154	10,663	10,538	125
Of biliary passages and of liver (stated to be primary site)..... 155	6,584	6,543	41
Liver..... 155.0	2,112	2,112	-
Other and multiple sites of biliary passages..... 155.1, 155.8	4,472	4,431	41
Of liver, not stated whether primary or secondary ..... 156A	3,149	3,149	-
Of pancreas ..... 157	16,360	16,286	74
Of peritoneum and of unspecified digestive organs..... 158, 159	1,691	1,691	-

<sup>1</sup>This is the title to which deaths in tables 1 and 2 were assigned during 1950-67, when the Sixth and Seventh Revisions were in use.

Continued from previous page.

Seventh Revision		Eighth Revision	
Cause of death and category number  (1)	Number of deaths in 1966  (2)	Estimated number of deaths in column (2) that went to Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues (ICDA Nos. 140-209)  (3)	Estimated number of deaths in column (2) that went to other causes  (4)
Malignant neoplasm of respiratory system, not specified as secondary .....160-164	54,934	54,841	93
Of larynx.....161	2,623	2,623	-
Of bronchus and trachea, and of lung specified as primary .....162	20,913	20,891	22
Of lung, unspecified as to whether primary or secondary .....163	30,565	30,519	46
Of other parts of respiratory system.....160,164	833	808	25
Malignant neoplasm of breast.....170	27,533	27,377	156
Malignant neoplasm of genital organs.....171-179	40,378	40,175	203
Of cervix uteri.....171	7,665	7,614	51
Of other and unspecified parts of uterus ...172-174	5,731	5,697	34
Of ovary, fallopian tube, and broad ligament ...175	9,163	9,145	18
Of other and unspecified female genital organs.....176	865	850	15
Of prostate.....177	15,941	15,856	85
Of all other and unspecified male genital organs.....178,179	1,013	1,013	-
Malignant neoplasm of urinary organs.....180,181	14,166	14,073	93
Of kidney .....180	5,841	5,827	14
Of bladder and other urinary organs.....181	8,325	8,246	79
Malignant neoplasm of other and unspecified sites ..... 156B,165,190-199	35,032	34,667	365
Of skin .....190,191	4,560	4,545	15
Of eye .....192	358	358	-
Of brain and other parts of nervous system.....193	7,355	7,152	203
Of thyroid gland.....194	1,008	1,008	-
Of bone.....196	1,792	1,792	-
Of connective tissue .....197	1,318	1,318	-
Of other specified sites, not stated to be secondary .....195,199A	1,422	1,408	14
Of unspecified sites ..... 156B,165,198,199B	17,219	17,086	133
Leukemia and aleukemia.....204	14,012	13,926	86
Lymphosarcoma and other neoplasms of lymphatic and hematopoietic tissues.....200-203,205	15,802	15,558	244
Lymphosarcoma and reticulosarcoma .....200	7,563	7,548	15
Hodgkin's disease .....201	3,412	3,398	14
Other neoplasms of lymphatic and hematopoietic tissues.....202,203,205	4,827	4,612	215
Other diseases of blood and blood-forming organs.....294,295,297-299	1,277	639	638
Other causes..... Residual	1,558,136	1,703	1,556,433

Nos. 140-205) by the Seventh Revision that were classified elsewhere by the Eighth.

Among the 2,342 deaths that were assigned to Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues, by the Eighth Revision but to other categories by the

Seventh were about 639 deaths that were classified under Other diseases of blood and blood-forming organs (ICD Nos. 294, 295, 297-299) by the Seventh Revision. A change in the classification of polycythemia (vera) from ICD No. 294 in the Seventh Revision to ICDA No. 208 in



the Eighth Revision accounted for most of these differences in assignments.

Also included in the 2,342 figure were an additional 382 deaths that were classified under Diseases of the blood and blood-forming organs (ICD Nos. 290-299) by the Seventh Revision. These differences in assignments were due primarily to the transfer of terms from Leukoerythroblastic anemia (ICD No. 292.3) in the Seventh Revision to Myelofibrosis (ICDA No. 209) in the Eighth Revision.

### Major Components of Malignant Neoplasms

*Malignant neoplasms of buccal cavity and pharynx (ICDA Nos. 140-149).*—There was a net increase of 405 deaths assigned to this group of causes by the Eighth Revision.

Of the 567 deaths classified under the above title by the Eighth Revision and under other titles by the Seventh, the largest component was assigned by the Seventh Revision to Malignant neoplasm of unspecified sites (ICD Nos. 156B, 165, 198, 199B). More specifically, it is estimated that 415 of these deaths were assigned by the Seventh Revision to Malignant neoplasm with primary site not indicated (category number 199B).

These differences in assignments resulted primarily from a change in the procedure for classifying malignant neoplasm of multiple sites with no indication as to which was the primary

site. The rules in effect with the two revisions are given below. It should be noted, however, that these rules do not apply to malignant neoplasm of liver or lymph nodes without specification as primary jointly reported with another site. Under such circumstances the neoplasm of liver or lymph nodes is assumed to be secondary.

Seventh Revision.—“If there is no indication as to which was the primary site (for example, if sites are entered on the same line or in a sequence which does not point to one as the primary), assignment should be to malignant neoplasm of multiple sites (199), except where the classification provides specifically for multiple sites within three-digit categories (140.8, 141.8, etc.).”<sup>5</sup>

Eighth Revision.—“If there is no indication as to which was the primary site (for example, if sites are entered on the same line or in a sequence which does not point to one as the primary), prefer a defined site to an ill-defined site in category 195 and of two or more defined sites prefer the first mentioned.”<sup>6</sup>

The effect of this change in coding procedure can be illustrated by the following example, which was classified to Malignant neoplasm with primary site not indicated (category number

Seventh Revision		Eighth Revision	
Cause of death and category number (1)	Number of deaths in 1966 (2)	Estimated number of deaths in column (2) that went to Malignant neoplasms of buccal cavity and pharynx (ICDA Nos. 140-149) (3)	Estimated number of deaths in column (2) that went to other causes (4)
All causes ..... 001-E999	1,863,149	7,205	1,855,944
Malignant neoplasm of buccal cavity and pharynx..... 140-148	6,800	6,638	162
Of lip..... 140	150	126	24
Of tongue..... 141	1,629	1,603	26
Of other and unspecified parts of buccal cavity ..... 142-144	2,224	2,194	30
Of pharynx..... 145-148	2,797	2,715	82
Other causes ..... Residual	1,856,349	567	1,855,782

Table C. Comparable category numbers for Malignant neoplasms of digestive organs and peritoneum according to the Eighth and Seventh Revisions and comparability ratios for these causes of death: United States, 1966

Eighth Revision category title	Eighth Revision ICDA numbers (1)	Seventh Revision ICD numbers (2)	Comparability ratio <sup>1</sup> (3)
Malignant neoplasms of digestive organs and peritoneum-----	150-159	150-156A,157-159	0.9660
Of esophagus-----	150	150	0.9909
Of stomach-----	151	151	1.0165
Of small intestine, including duodenum---	152	152	0.9806
Of large intestine, except rectum-----	153	153	0.9994
Of rectum and rectosigmoid junction-----	154	154	1.0012
Of liver and intrahepatic bile ducts, specified as primary-----	155	155.0	0.9814
Of gallbladder and bile ducts-----	156	155.1,155.8	0.9860
Of pancreas-----	157	157	1.0019
Of peritoneum, retroperitoneal tissue, and unspecified digestive organs-----	158,159	158,159	0.8639

<sup>1</sup>Ratio of deaths assigned according to the Eighth Revision to deaths assigned according to the Seventh Revision.

199B), by the Seventh Revision and to Malignant neoplasm of nasopharynx (ICDA No. 147) by the Eighth Revision.

- I (a) Carcinoma of nasopharynx and larynx  
(b)  
(c)

Notes for use in primary mortality coding for the Eighth Revision are shown in appendix VI.

Estimates based on 1968 data that are consistent with the estimated number of 1966 deaths that were assigned by the Seventh Revision to category number 199B and by the Eighth Revision to ICDA Nos. 140-149 are presented in appendix VII.

The rise in the death rate for Malignant neoplasms of buccal cavity and pharynx between 1967 and 1968 from 3.4 to 3.6 deaths per 100,000 population is attributable to the above-mentioned change in coding procedure between the Seventh and Eighth Revisions. Applying the comparability ratio of 1.0596 to the 1967 death rate for this group of causes raises it to 3.6, the same as that for 1968. For 1969 the rate was 3.7 deaths per 100,000 population.

*Malignant neoplasms of digestive organs and peritoneum (ICDA Nos. 150-159).*—The introduction of the Eighth Revision resulted in the assignment of about 3.4 percent fewer deaths to categories under the above title than were assigned to categories under the comparable Seventh Revision title. The comparability ratios for this group of causes and for the nine subcategories into which it has been divided are shown in table C.

As shown in the table below, an estimated 4,415 of the 95,079 deaths that were assigned to the comparable Seventh Revision title Malignant neoplasm of digestive organs and peritoneum, not specified as secondary (ICD Nos. 150-156A, 157-159), were not assigned to Malignant neoplasms of digestive organs and peritoneum (ICDA Nos. 150-159) by the Eighth Revision. Conversely, an estimated 1,184 deaths assigned to this group by the Eighth Revision were classified elsewhere by the Seventh.

Among the 4,415 deaths classified by the Seventh Revision under Malignant neoplasm of digestive organs and peritoneum, not specified as secondary, but classified elsewhere by the Eighth Revision were an estimated 3,149 deaths that were assigned to category number 156A by the Seventh Revision and to ICDA Nos. 194-199 by the Eighth Revision (table D). Most of these

Seventh Revision		Eighth Revision	
Cause of death and category number  (1)	Number of deaths in 1966  (2)	Estimated number of deaths in column (2) that went to Malignant neoplasms of digestive organs and peritoneum (ICDA Nos. 150-159)  (3)	Estimated number of deaths in column (2) that went to other causes  (4)
All causes ..... 001-E999	1,863,149	91,848	1,771,301
Malignant neoplasm of digestive organs and peritoneum, not specified as secondary ..... 150-156A,157-159	95,079	90,664	4,415
Of esophagus ..... 150	5,505	5,461	44
Of stomach ..... 151	17,623	17,547	76
Of small intestine, including duodenum ..... 152	693	652	41
Of large intestine, except rectum ..... 153	32,811	32,418	393
Cecum, appendix, and ascending colon ..... 153.0	4,605	4,494	111
Transverse colon, including hepatic and splenic flexures ..... 153.1	1,472	1,397	75
Descending colon ..... 153.2	1,151	1,151	-
Sigmoid colon ..... 153.3	5,814	5,774	40
Multiple parts of large intestine ..... 153.7	78	78	1
Large intestine (including colon), part unspecified ..... 153.8	18,155	18,078	77
Intestinal tract, part unspecified ..... 153.9	1,536	1,446	90
Of rectum ..... 154	10,663	10,455	208
Of biliary passages and of liver (stated to be primary site) ..... 155	6,584	6,398	186
Liver ..... 155.0	2,112	2,008	104
Other and multiple sites of biliary passages ..... 155.1,155.8	4,472	4,390	82
Of liver not stated whether primary or secondary <sup>2</sup> ..... 156A	3,149	2	3,149
Of pancreas ..... 157	16,360	16,248	112
Of peritoneum and of unspecified digestive organs ..... 158,159	1,691	1,485	206
Other causes ..... Residual	1,768,070	1,184	1,766,886

<sup>1</sup>There were no deaths in the sample assigned to the Seventh Revision title Malignant neoplasm of multiple parts of large intestine (ICD No. 153.7). NCHS nosologists state, however, that these deaths would be distributed by the Eighth Revision over the four-digit categories under Malignant neoplasm of large intestine, except rectum (ICDA No. 153).

<sup>2</sup>In computing a provisional comparability ratio (0.9991) for Malignant neoplasm of digestive organs and peritoneum (ICDA Nos. 150-159), the Seventh Revision title Malignant neoplasm of liver not stated whether primary or secondary (ICD No. 156A) was not included in the set of titles most nearly comparable to Malignant neoplasm of digestive organs and peritoneum. Category number 156A was thus excluded because most deaths assigned to this category by the Seventh Revision were removed by the Eighth Revision from under the title classifying the system of the body attacked by the neoplasm (in this case, from under digestive organs and peritoneum) and placed under a subsection of Section II, "Neoplasms": Malignant neoplasm of other and unspecified sites (ICDA Nos. 190-199). More specifically, these deaths were transferred to the new Eighth Revision title: Malignant neoplasms of liver, unspecified (ICDA No. 197.8).

differences in assignments were due to the transfer of malignant neoplasm of liver, not stated whether primary or secondary, from category number 156A in the Seventh Revision to ICDA No. 197.8 in the Eighth. A satisfactory indication of how many of the 3,149 deaths were assigned to ICDA No. 197.8 and how many were assigned to ICDA Nos. 194-199 other than 197.8 may be obtained from the distribution of deaths occurring in 1968 in the three- and four-

digit categories of ICDA Nos. 194-199. This distribution shows that the 2,981 deaths assigned to ICDA No. 197.8 constituted 14.35 percent of the total number (20,768 deaths) assigned to ICDA Nos. 194-199. It may be postulated, therefore, that approximately 14.35 percent (or 2,808 deaths) of the estimated 19,570 deaths in 1966 assigned by the Eighth Revision to ICDA Nos. 194-199 were assigned to 197.8. The difference between 3,149 and 2,808

Table D. Number of deaths in 1966 coded by the Seventh Revision to each title in which malignant neoplasm of liver, intrahepatic bile ducts, gallbladder, or extrahepatic bile ducts is included in the title, whether the title was for neoplasm specified as primary or secondary or was unqualified, distributed by the titles to which assigned by the Eighth Revision, and number of deaths in 1966 and 1968 assigned to these Eighth Revision titles: United States

Seventh Revision			Eighth Revision			
Cause of death	ICD No.	Number of deaths in 1966	Estimated number of deaths in col. (2) that went to ICDA Nos. 155, 156, and 194-199 (primarily to 197.7 and 197.8) <sup>1</sup>		Estimated number of deaths in col. (2) that went to other causes	Number of deaths in 1968 that went to ICDA Nos. in col. (3)
			ICDA No.	Number of deaths in 1966		
	(1)	(2)	(3)	(4)	(5)	(6)
All causes-----	001-E999	1,863,149	155,156,197.7,197.8	10,982	1,852,168	11,251
Specified causes-----	155,156	11,083	155,156,197.7,197.8	10,898	185	11,251
Malignant neoplasm of biliary passages and of liver (stated to be primary site)-----	155	6,584	155,156	6,398	185	6,805
Liver-----	155.0	2,112	{ 155.0 155.1 }	2,008	104	{ 2,109 87 }
Gallbladder and extrahepatic gall ducts, including ampulla of Vater----	155.1	4,471	{ 151.1 156 156.0 156.1 156.2 156.9 }	41 4,349 ... ... ... ...	81	4,609 2,777 1,204 397 231
Multiple sites-----	155.8	<sup>2</sup> 1	<sup>2</sup> 155 or 156	<sup>2</sup> 1	<sup>2</sup> -	...
Malignant neoplasm of liver (secondary and unspecified)-----	156	4,499	194-199, primarily to 197.7,197.8	4,499	-	4,446
Malignant neoplasm of liver not stated whether primary or secondary-----	156A	3,149	194-199, primarily to 197.8	3,149	-	2,981
Malignant neoplasm of liver, secondary-----	156B	1,350	194-199, primarily to 197.7	1,350	-	1,465
Other causes-----	Residual	1,852,066	155,156	84	1,851,982	6,805

<sup>1</sup>The titles corresponding to these ICDA numbers are as follows: Malignant neoplasms of liver specified as primary and intrahepatic bile ducts (ICDA No. 155); Malignant neoplasms of gallbladder and bile ducts (ICDA No. 156); Malignant neoplasms of other sites (ICDA Nos. 194-199); Malignant neoplasms of liver, specified as secondary (ICDA No. 197.7); and Malignant neoplasms of liver, unspecified (ICDA No. 197.8).

<sup>2</sup>According to the coding rules in effect with the Eighth Revision, this death was assigned to either No. 155 or 156.

(341) may be taken as the minimum estimate of the number of deaths assigned to 156A by the Seventh Revision that were assigned by the Eighth Revision to ICDA Nos. 194-199 other than 197.8. This estimate of 341 deaths is qualified as minimum because the number of 1968 deaths assigned to 197.8 (which constituted 14.35 percent of the total number in ICDA Nos. 194-199) may have included some deaths assigned by the Seventh Revision to categories other than 156A.

Among the estimated 341 deaths assigned to 156A by the Seventh Revision and to ICDA Nos. 194-199 other than 197.8 by the Eighth were those involving malignant neoplasm of liver, not stated whether primary or secondary, jointly reported with malignant neoplasm of abdomen. In the Seventh Revision malignant neoplasm of the abdomen and intra-abdominal cancer were included under Malignant neoplasm with primary site not indicated (category number 199B), and provision was made for coding Malignant neoplasm of liver, not stated whether primary or secondary (156A), in preference to a condition classifiable to 199B. In the Eighth Revision a separate subcategory is provided for Abdomen, intra-abdominal cancer (ICDA No. 195.0) under Malignant neoplasms of ill-defined sites (ICDA No. 195), and provision is made for coding malignant neoplasm of an ill-defined site in preference to malignant neoplasm of liver, not stated whether primary or secondary. As a result of this change in coding procedure the following example would be assigned to category number 156A by the Seventh Revision and to ICDA No. 195.0 by the Eighth Revision.

- I (a) Carcinoma of liver [7th, category no. 156A;  
8th, ICDA No. 197.8]
- (b) Abdominal carcinoma [7th, category no. 199B;  
8th, ICDA No. 195.0]

In the relatively small sample of 1966 deaths coded by both revisions none of the deaths assigned by the Seventh Revision to category number 156A were assigned to ICDA numbers other than 194-199 by the Eighth Revision. It is known from other sources, however, that some deaths assigned to 156A by the Seventh Revision may have been assigned to numbers other

than 194-199 by the Eighth Revision. For example, in 1968 a review was made of 103 death certificates on which cancer of the lung was mentioned. Among these certificates was the following:

- I (a) Cancer of liver [7th, category no. 156A;  
8th, ICDA No. 197.8]
- (b) Metastatic cancer of lung [7th, ICD No. 165;  
8th, ICDA No. 162.1]

Because of a change in the interpretation of "metastatic" neoplasm of lung, the above record would be coded to Malignant neoplasm of liver, not stated whether primary or secondary (category number 156A), by the Seventh Revision and to Malignant neoplasms of bronchus and lung (ICDA No. 162.1) by the Eighth. The coding rules in use with the Seventh Revision provided for the classification of malignant neoplasm of lung qualified as "metastatic" to secondary neoplasm of lung. Malignant neoplasm of a site not specified as secondary (including liver) was coded in preference to a secondary neoplasm. According to the Eighth Revision rules, malignant neoplasm of the lung qualified as "metastatic" is not considered to be specified as secondary. A malignant neoplasm of the liver or lymph nodes without specification as primary is assumed to be secondary when it is jointly reported with malignant neoplasm of another site that is not specified as secondary.

In addition to the deaths coded to category number 156A by the Seventh Revision and to 197.8 by the Eighth Revision, the comparability study also showed that some deaths coded to Seventh Revision ICD No. 155.0 were assigned to 197.8 by the Eighth Revision. It is likely that most of the 104 deaths assigned by the Seventh Revision to Malignant neoplasm of liver (stated to be primary site) (ICD No. 155.0) and not reassigned by the Eighth Revision to primary malignant neoplasm of liver were coded to Malignant neoplasms of liver, unspecified (ICDA No. 197.8) (table D). The 1955 multiple-cause study shows that a significant number of deaths attributable to Malignant neoplasm of biliary passages and of liver (stated to be primary site) (ICD No. 155) were associated with cirrhosis of liver.<sup>9</sup> According to the coding rule in use with

the Seventh Revision, cancer of liver, unqualified, indicated by the certifier to be due to cirrhosis of liver was coded to primary cancer of liver (ICD No. 155.0). This rule was not incorporated in the coding instructions for use with the Eighth Revision in time to be applicable to any data year prior to 1975. Prior to this time deaths certified in the above-described manner were coded by the Eighth Revision to Malignant neoplasms of liver, unspecified (ICDA No. 197.8).

The largest component of the estimated 1,184 deaths assigned to Malignant neoplasms of digestive organs and peritoneum by the Eighth Revision but coded elsewhere by the Seventh was an estimated 727 deaths assigned by the Seventh Revision to Malignant neoplasm, primary site not indicated (category number 199B). These differences in assignments resulted primarily from a change in the procedure for classifying malignant neoplasm of multiple sites with no indication as to which was the primary site. For example, a report of "cancer of stomach and pancreas" was coded to Malignant neoplasm with primary site not indicated (category number 199B) by the Seventh Revision and to the first-mentioned site, cancer of stomach (ICDA No. 151.9), by the Eighth Revision. A more detailed discussion pertaining to the classification of malignant neoplasms of multiple sites appears above under Malignant neoplasms of

buccal cavity and pharynx (ICDA Nos. 140-149).

Estimates based on 1968 data that are consistent with the estimated number of 1966 deaths assigned by the Seventh Revision to 199B and by the Eighth Revision to ICDA Nos. 150-159 (727 deaths) are presented in appendix VII.

In 1968 the death rate for Malignant neoplasms of digestive organs and peritoneum was 46.8 per 100,000 population (table 1). In 1967 the death rate for this group of causes was 48.2 per 100,000 population. Based on the dual coding of 1966 data, however, there were 91,848 deaths assigned to ICDA Nos. 150-159 by the Eighth Revision and 95,079 deaths assigned to ICD Nos. 150-156A, 157-159 by the Seventh Revision. The comparability ratio for these causes, 0.9660, is obtained by dividing 91,848 by 95,079. Adjusting the 1967 death rate to the level it would have been if the 1967 deaths had been coded by the Eighth Revision (48.2 multiplied by 0.9660) lowers it to 46.6 deaths per 100,000 population.

*Malignant neoplasms of respiratory system (ICDA Nos. 160-163).*—The net effect of changes introduced with the Eighth Revision on the number of deaths classified to Malignant neoplasms of respiratory system was an increase from 54,934 to 56,668. The comparability ratio is 1.0316 (appendix I).

Seventh Revision		Eighth Revision	
Cause of death and category number (1)	Number of deaths in 1966 (2)	Estimated number of deaths in column (2) that went to Malignant neoplasms of respiratory system (ICDA Nos. 160-163) (3)	Estimated number of deaths in column (2) that went to other causes (4)
All causes ..... 001-E999	1,863,149	56,668	1,806,481
Malignant neoplasm of respiratory system, not specified as secondary ..... 160-164	54,934	54,584	350
Of larynx ..... 161	2,623	2,597	26
Of bronchus and trachea, and of lung specified as primary ..... 162	20,913	20,801	112
Of lung, unspecified as to whether primary or secondary ..... 163	30,565	30,403	162
Of other parts of respiratory system ..... 160,164	833	783	50
Other causes ..... Residual	1,808,215	2,084	1,806,131

As shown in the table above, an estimated 2,084 deaths classified under the above title by the Eighth Revision were classified to causes other than Malignant neoplasm of respiratory system, not specified as secondary (ICD Nos. 160-164), the comparable Seventh Revision title.

Included in the 2,084 figure were an estimated 1,572 deaths. The majority of these were assigned to Malignant neoplasm of thoracic organs (secondary) (ICD No. 165) by the Seventh Revision. A limited number of these 1,572 deaths probably were assigned to Malignant neoplasm with primary site not indicated (category number 199B) by the Seventh Revision (appendix VII). A change in the classification of "metastatic" neoplasm of the lung from Malignant neoplasm of thoracic organs (secondary) (ICD No. 165) in the Seventh Revision to Malignant neoplasms of bronchus and lung (ICDA No. 162.1) in the Eighth Revision accounted for most of these differences. The remaining differences resulted from a change in the procedure for coding malignant neoplasm of multiple sites with no indication as to primary site. For example, a report of "carcinoma of lung and bladder" was coded to Malignant neoplasm with primary site not indicated (category number 199B) by the Seventh Revision and to the first-mentioned site, carcinoma of lung (coded to ICDA No. 162.1), by the Eighth Revision. (A more detailed discussion pertaining to the classification of malignant neoplasm of multiple sites appears under Malignant neoplasms of buccal cavity and pharynx (ICDA Nos. 140-149), page 19.)

Also among the 2,084 deaths transferred to Malignant neoplasms of respiratory system by the Eighth Revision were an estimated 56 deaths assigned by the Seventh Revision to Benign neoplasm of respiratory system. These differences resulted from a change in the classification of "mesothelioma of the pleura" from Benign neoplasm of respiratory system (ICD No. 212) in the Seventh Revision to Malignant neoplasms of pleura (ICDA No. 163.0) in the Eighth Revision.

The third group among the 2,084 transferred deaths comprised an estimated 53 deaths that

had been assigned to Tuberculosis of respiratory system (ICD Nos. 001-008) by the Seventh Revision. These differences in assignments occurred because the Seventh Revision rules which under certain circumstances resulted in coding an infectious or parasitic disease in preference to other reported conditions were changed in the Eighth Revision. These Seventh Revision rules applied when two or more conditions, one of which was an infectious or parasitic disease, were entered on the death certificate in such a way that none could be regarded as the underlying cause. The Eighth Revision rules lead to the selection of the first-mentioned condition when causes of death are entered on the death certificate in this manner. A death attributable to "lung cancer and tuberculosis of lung," for example, was assigned to tuberculosis of lung by the Seventh Revision rules and to cancer of lung by the Eighth Revision rules.

The assignment to other categories of about 350 deaths that had been assigned to Malignant neoplasm of respiratory system, not specified as secondary, by the Seventh Revision partly offset the gain of about 2,084 deaths to the Eighth Revision title Malignant neoplasms of respiratory system. An estimated 184 of these deaths were assigned to Malignant neoplasms of abdomen, intra-abdominal cancer (ICDA No. 195.0), and to Malignant neoplasms of pelvis, pelvic viscera, rectovaginal septum (ICDA No. 195.1), by the Eighth Revision. These differences in assignments resulted from a change in the procedure for coding malignant neoplasms of the abdomen and pelvis. In the Seventh Revision these neoplasms were included under Malignant neoplasm with primary site not indicated (category number 199B), and provision was made for coding malignant neoplasm of a specified site in preference to a condition classifiable to 199B. In the Eighth Revision malignant neoplasms of the abdomen and pelvis are included under Malignant neoplasms of ill-defined sites. When malignancy of another site is indicated to be due to malignant neoplasm of an ill-defined site, assignment is to the ill-defined site. As a result of this change in coding procedure the following example would be assigned to carcinoma of lung (coded to ICD No. 163) by

the Seventh Revision and to abdominal carcinoma (coded to ICDA No. 195.0) by the Eighth Revision.

- I (a) Carcinoma of lung
- (b) Abdominal carcinoma
- (c)

Also among the 350 deaths not reassigned to malignant neoplasm of respiratory system were an estimated 74 deaths coded by the Eighth Revision to malignant neoplasm of other sites. These transfers probably resulted from a change in the interpretation of the rules used to determine whether there was more than one primary neoplasm. When the Seventh Revision was in use, a malignant neoplasm of a site not specified as either primary or secondary was assumed to be secondary when jointly reported with a primary malignant neoplasm, regardless of the position of the causes on the medical certification form. When the Eighth Revision went into effect, this interpretation was changed. The fact that a malignant neoplasm of one site is specified as primary is not considered evidence that neoplasms of other reported sites are secondary. As a result of this change in coding procedure, the following example was assigned to Malignant neoplasm of larynx (ICD No. 161) by the Seventh Revision and to Malignant neoplasms of breast (ICDA No. 174) by the Eighth.

- I (a) Cancer of breast
- (b)
- (c)
- II Primary cancer of larynx

Applying the comparability ratio of 1.0316 to the 1967 death rate of 29.4 deaths per 100,000 population for Malignant neoplasm of respiratory system, not specified as secondary (ICD Nos. 160-164), raises this rate to 30.3 deaths per 100,000 population. This is the level the 1967 death rate would have been if deaths for that year had been classified by the Eighth Revision. This adjustment of the 1967 rate reduces the percentage rise between 1967 and 1968 from 8.16 percent to 4.95 percent. For 1969 the death rate for Malignant neoplasms of respiratory system (ICDA Nos. 160-163) was 32.7 deaths per 100,000 population.

*Malignant neoplasms of breast (ICDA No. 174).*—The introduction of the Eighth Revision caused no serious break in the comparability of mortality statistics for this cause. The comparability ratio is 0.9913 (appendix I).

As shown in the table below there were an estimated 312 deaths in 1966 that were assigned by the Seventh Revision to Malignant neoplasm of breast (ICD No. 170) and to other causes by the Eighth Revision. Approximately one-half of these deaths were assigned by the Eighth Revision to malignant neoplasm of other sites, mainly to sites of the respiratory system and to abdomen and pelvis. Some of these differences in assignments occurred because of a change in the classification of metastatic neoplasm of the lung from Malignant neoplasm of thoracic organs (secondary) (ICD No. 165) in the Seventh Revision to Malignant neoplasms of bronchus and lung (ICDA No. 162.1) in the Eighth Revision. As a result of this change the

Seventh Revision		Eighth Revision	
Cause of death and category number (1)	Number of deaths in 1966 (2)	Estimated number of deaths in column (2) that went to Malignant neoplasms of breast (ICDA No. 174) (3)	Estimated number of deaths in column (2) that went to other causes (4)
All causes ..... 001-E999	1,863,149	27,293	1,835,856
Malignant neoplasm of breast ..... 170	27,533	27,221	312
Other causes ..... Residual	1,835,616	72	1,835,544



following example would be classified to carcinoma of the breast by the Seventh Revision and to carcinoma of the lung by the Eighth.

- I (a) Carcinoma of breast
- (b) Metastatic carcinoma of lung
- (c)

The previously mentioned change in the procedure for coding malignant neoplasms of the abdomen and pelvis resulted in some deaths being assigned to malignant neoplasm of the breast by the Seventh Revision and to malignant neoplasm of the abdomen or pelvis by the Eighth Revision. Malignant neoplasms of the abdomen and pelvis were included under Malignant neoplasm with primary site not indicated (category number 199B) in the Seventh Revision, and provision was made for coding malignant neoplasm of a specified site in preference to a condition classifiable to 199B. In the Eighth Revision malignant neoplasms of abdomen and pelvis are included under Malignant neoplasms of ill-defined sites, and the rules provide for the assignment of malignant neoplasm of a specific site which is reported as due to malignant neoplasm of an ill-defined site to the ill-defined site. Thus the following example would have been assigned to carcinoma of the breast (under ICD No. 170) by the Seventh Revision and to carcino-

matosis of abdomen (under ICDA No. 195.0) by the Eighth Revision.

- I (a) Carcinoma of breast
- (b) Carcinomatosis of abdomen
- (c)

*Malignant neoplasms of genital organs (ICDA Nos. 180-187).*—As shown in the table below, there was no serious break in the continuity of mortality statistics for Malignant neoplasms of genital organs as a result of the introduction of the Eighth Revision. The comparability ratio for this cause is 1.0034 (appendix I).

Inasmuch as the rates in table 1 are based on the total population (male and female) they are of limited value. Data from the comparability study of deaths occurring in 1966 are given below. The comparability ratio for malignant neoplasms of female genital organs is 0.9963. The corresponding comparability ratio for malignant neoplasms of the male genital organs is 1.0133.

*Malignant neoplasms of urinary organs (ICDA Nos. 188, 189).*—The comparability ratio for causes classified under this title is 1.0171 (appendix I). As shown in the table, page 29,

Seventh Revision		Eighth Revision	
Cause of death and category number (1)	Number of deaths in 1966 (2)	Estimated number of deaths in column (2) that went to Malignant neoplasms of genital organs (ICDA Nos. 180-187) (3)	Estimated number of deaths in column (2) that went to other causes (4)
All causes ..... 001-E999	1,863,149	40,516	1,822,633
Malignant neoplasm of genital organs ..... 171-179	40,378	39,969	409
Of cervix uteri ..... 171	7,665	7,562	103
Of other and unspecified parts of uterus ..... 172-174	5,731	5,680	51
Of ovary, fallopian tube, and broad ligament ..... 175	9,163	9,092	71
Of other and unspecified female genital organs ..... 176	865	835	30
Of prostate ..... 177	15,941	15,806	135
Of all other and unspecified male genital organs ..... 178,179	1,013	994	19
Other causes ..... Residual	1,822,771	547	1,822,224

Seventh Revision		Eighth Revision	
Cause of death and category number (1)	Number of deaths in 1966 (2)	Estimated number of deaths in column (2) that went to Malignant neoplasms of female genital organs (ICDA Nos. 180-184) (3)	Estimated number of deaths in column (2) that went to other causes (4)
All causes ..... 001-E999	1,863,149	23,337	1,839,812
Malignant neoplasm of female genital organs...171-176	23,424	23,169	255
Of cervix uteri.....171	7,665	7,562	103
Of other and unspecified parts of uterus .....172-174	5,731	5,680	51
Of ovary, fallopian tube, and broad ligament .....175	9,163	9,092	71
Of other and unspecified female genital organs.....176	865	835	30
Other causes..... Residual	1,839,725	168	1,839,557

Seventh Revision		Eighth Revision	
Cause of death and category number (1)	Number of deaths in 1966 (2)	Estimated number of deaths in column (2) that went to Malignant neoplasms of male genital organs (ICDA Nos. 185-187) (3)	Estimated number of deaths in column (2) that went to other causes (4)
All causes ..... 001-E999	1,863,149	17,179	1,845,970
Malignant neoplasm of male genital organs.....177-179	16,954	16,800	154
Of prostate.....177	15,941	15,806	135
Of all other and unspecified male genital organs.....178,179	1,013	994	19
Other causes..... Residual	1,846,195	379	1,845,816

there were 14,166 deaths assigned to this title by the Seventh Revision and 14,408 deaths assigned to it by the Eighth Revision.

The largest component of the estimated 421 deaths classified under Malignant neoplasms of urinary organs by only the Eighth Revision included about 193 deaths that were classified to Malignant neoplasm with primary site not indicated (category number 199B) by the Seventh Revision. These transfers resulted from a change in the procedure for classifying malignant neoplasm of multiple sites with no indica-

tion as to which was the primary site. For example, a report of "cancer of kidney and lung" was coded to Malignant neoplasm with primary site not indicated (category number 199B) by the Seventh Revision and to the first-mentioned site, cancer of the kidney (coded to ICDA No. 189.0), by the Eighth Revision. (A more detailed discussion pertaining to the classification of malignant neoplasm of multiple sites appears under Malignant neoplasms of buccal cavity and pharynx (ICDA Nos. 140-149), page 19.)

Seventh Revision		Eighth Revision	
Cause of death and category number (1)	Number of deaths in 1966 (2)	Estimated number of deaths in column (2) that went to Malignant neoplasms of urinary organs (ICDA Nos. 188,189) (3)	Estimated number of deaths in column (2) that went to other causes (4)
All causes ..... 001-E999	1,863,149	14,408	1,848,741
Malignant neoplasm of urinary organs.....180,181	14,166	13,987	179
Of kidney.....180	5,841	5,787	54
Of bladder and other urinary organs.....181	8,325	8,200	125
Other causes..... Residual	1,848,983	421	1,848,562

*Malignant neoplasms of all other and unspecified sites (ICDA Nos. 170-173, 190-199).*—About 2 percent more deaths were classified under the above title by the Eighth Revision than had been classified under the comparable Seventh Revision title (ICD Nos. 156B, 165, 190-199) (appendix I). Data from the comparability study show that an estimated 4,478 deaths classified under this title by the Eighth Revision were classified elsewhere by the Seventh Revision. On the other hand, an estimated 3,736 deaths classified to these causes by the Seventh Revision were classified elsewhere by the Eighth Revision. The result was a net increase of 742 deaths.

Among the 4,478 deaths classified under Malignant neoplasms of all other and unspecified sites by the Eighth Revision were an estimated 3,149 deaths which were classified by the Seventh Revision to Malignant neoplasm of liver, not stated whether primary or secondary (category number 156A). Most of these differences in assignments were due to the transfer of malignant neoplasm of liver, unspecified as to whether primary or secondary, from category number 156A in the Seventh Revision to category 197.8 in the Eighth Revision.

As shown in the table below, the 3,736 deaths assigned to Malignant neoplasm of other and unspecified sites by the Seventh Revision

but to other causes by the Eighth Revision included 3,307 deaths assigned by the Seventh Revision to Malignant neoplasm of unspecified sites (ICD Nos. 156B, 165, 198, 199B).

An estimated 1,572 of these 3,307 deaths were coded to Malignant neoplasm of thoracic organs (secondary) (ICD No. 165) by the Seventh Revision and to Malignant neoplasms of respiratory system (ICDA Nos. 160-163) by the Eighth. As previously mentioned, these differences resulted primarily from a change in the classification of metastatic neoplasm of the lung from the Seventh Revision title Malignant neoplasm of thoracic organs (secondary) (ICD No. 165) to the Eighth Revision title Malignant neoplasms of bronchus and lung (ICDA No. 162.1).

Also included in the 3,307 figure were an estimated 1,587 deaths coded to category 199B by the Seventh Revision and to malignant neoplasm of specified sites other than those classifiable to ICDA Nos. 160-163, 170-173, 190-194 by the Eighth Revision (appendix VII). These differences resulted from a change in the procedure for classifying malignant neoplasm of multiple sites with no indication as to which was the primary site.

The remaining 148 of the 3,307 deaths were assigned by the Eighth Revision to causes other than malignant neoplasms.

Seventh Revision		Eighth Revision	
Cause of death and category number (1)	Number of deaths in 1966 (2)	Estimated number of deaths in column (2) that went to Malignant neoplasms of all other and unspecified sites (ICDA Nos. 170-173, 190-199) (3)	Estimated number of deaths in column (2) that went to other causes (4)
All causes ..... 001-E999	1,863,149	35,774	1,827,375
Comparable causes ..... 156A,156B,165,190-199	38,181	34,445	3,736
Malignant neoplasm of other and unspecified sites <sup>1</sup> ..... 156B,165,190-199	35,032	31,296	3,736
Of skin ..... 190,191	4,560	4,498	62
Of eye ..... 192	358	358	-
Of brain and other parts of nervous system ..... 193	7,355	7,137	218
Of thyroid gland ..... 194	1,008	1,008	-
Of bone ..... 196	1,792	1,698	94
Of connective tissue ..... 197	1,318	1,318	-
Of other specified sites, not stated to be secondary ..... 195,199A	1,422	1,367	55
Of unspecified sites ..... 156B,165,198,199B	17,219	13,912	3,307
Malignant neoplasm of liver, not stated whether primary or secondary ..... 156A	3,149	3,149	-
Other causes ..... Residual	1,824,968	1,329	1,823,639

<sup>1</sup>This is the title to which deaths in tables 1 and 2 were assigned during 1950-67, when the Sixth and Seventh Revisions were in use.

*Leukemia (ICDA Nos. 204-207).*—There was no appreciable break in the comparability of mortality statistics for this cause as a result of implementation of the Eighth Revision. The comparability ratio is 0.9974 (appendix I). As shown in the table below, there were 14,012 deaths assigned to Leukemia and aleukemia (ICD No. 204) by the Seventh Revision. An estimated 13,976 deaths were assigned to the comparable title Leukemia by the Eighth Revision.

*Other neoplasms of lymphatic and hematopoietic tissues (ICDA Nos. 200-203, 208, 209).*—About 5 percent more deaths were assigned by the Eighth Revision to this group of causes than were assigned by the Seventh Revision to the comparable title Lymphosarcoma and other neoplasms of lymphatic and hematopoietic tissues (ICD Nos. 200-203, 205) (appendix I). As shown in the table, page 31, this increase was due in large part to the assignment of an estimated 585 deaths to ICDA Nos.

Seventh Revision		Eighth Revision	
Cause of death and category number (1)	Number of deaths in 1966 (2)	Estimated number of deaths in column (2) that went to Leukemia (ICDA Nos. 204-207) (3)	Estimated number of deaths in column (2) that went to other causes (4)
All causes ..... 001-E999	1,863,149	13,976	1,849,173
Leukemia and aleukemia ..... 204	14,012	13,834	178
Other causes ..... Residual	1,849,137	142	1,848,995

200-203, 208, 209 by the Eighth Revision that were assigned ICD Nos. 294, 295, 297-299 by the Seventh Revision. Most of these differences in assignments resulted from the transfer of

polycythemia (vera) from ICD No. 294 in the Seventh Revision to ICDA No. 208 in the Eighth Revision.

Seventh Revision		Eighth Revision	
Cause of death and category number (1)	Number of deaths in 1966 (2)	Estimated number of deaths in column (2) that went to Other neoplasms of lymphatic and hematopoietic tissues (ICDA Nos. 200-203,208,209) (3)	Estimated number of deaths in column (2) that went to other causes (4)
All causes ..... 001-E999	1,863,149	16,602	1,846,547
Comparable causes .....200-203,205,294,295,297-299	17,079	16,063	1,016
Lymphosarcoma and other neoplasms of lymphatic and hematopoietic tissues <sup>1</sup> .....200-203,205	15,802	15,478	324
Lymphosarcoma and reticulosarcoma .....200	7,563	7,497	66
Hodgkin's disease .....201	3,412	3,398	14
Other neoplasms of lymphatic and hematopoietic tissues.....202,203,205	4,827	4,583	244
Other diseases of blood and blood-forming organs.....294,295,297-299	1,277	585	692
Other causes ..... Residual	1,846,070	539	1,845,531

<sup>1</sup>This is the title to which deaths in tables 1 and 2 were assigned during 1950-67, when the Sixth and Seventh Revisions were in use.

### 3. CEREBROVASCULAR DISEASES

The comparable Seventh Revision title for Cerebrovascular diseases (ICDA Nos. 430-438) is Vascular lesions affecting central nervous system (ICD Nos. 330-334). In the Seventh Revision this title was included in Section VI, "Diseases of the nervous system and sense organs," but the Eighth Revision title Cerebrovascular diseases (ICDA Nos. 430-438) is in Section VII, "Diseases of the circulatory system."

The comparability ratio between these two titles for cerebrovascular diseases is 0.9905 (appendix I). Although this ratio is close to 1.00, there were some important changes in coding procedures, which in part compensated for each other. The table at bottom of page shows that 4,516 deaths in 1966 assigned to ICD Nos. 330-334 in the Seventh Revision (2.2 percent) were transferred by the coding procedures in effect with the Eighth Revision to categories other than Cerebrovascular diseases (ICDA Nos. 430-438). On the other hand, about 2,569 deaths not assigned to Seventh Revision categories 330-334 were assigned by the coding procedures in effect with the Eighth Revision to Cerebrovascular diseases.

The largest groups transferred from cerebrovascular diseases were an estimated 1,249 deaths to Chronic ischemic heart disease (ICDA No. 412) and about 582 deaths to All other diseases

of arteries, arterioles, and capillaries (ICDA Nos. 442-444, 446-448). The changes in coding procedure resulting in the transfers to ICDA No. 412 are described above in the section "Diseases of Heart."

Most of the 582 transfers of deaths to the Eighth Revision title All other diseases of arteries, arterioles, and capillaries (ICDA Nos. 442-444, 446-448) resulted from the linking of the conditions under this title by a provision in the classification to Arteriosclerosis (ICDA No. 440) when it is reported as the underlying cause of the conditions under the following categories of this group title: 443-444, 446. For example, a frequently encountered certificate contains the following combination of diseases.

Entries in Part I and Part II of certificate	Category number	
	7th Rev.	8th Rev.
I (a) Mesenteric infarction	570.2	444.2
(b) Arteriosclerosis	450.0	440.9
II Cerebral thrombosis	332	433
Final code	332	444.2

Seventh Revision		Eighth Revision	
Cause of death and category number (1)	Number of deaths in 1966 (2)	Estimated number of deaths in column (2) that went to Cerebrovascular diseases (ICDA Nos. 430-438) (3)	Estimated number of deaths in column (2) that went to other causes (4)
All causes ..... 001-E999	1,863,149	202,894	1,660,255
Vascular lesions affecting central nervous system ..... 330-334	204,841	200,325	4,516
Subarachnoid hemorrhage ..... 330	8,531	8,287	244
Cerebral hemorrhage ..... 331	111,446	109,400	2,046
Cerebral embolism and thrombosis ..... 332	63,943	62,937	1,006
Other vascular lesions affecting central nervous system ..... 333,334	20,921	19,701	1,220
Other causes ..... Residual	1,658,308	2,569	1,655,739

By the Seventh Revision, after arteriosclerosis was selected as the presumptive underlying cause of death (taken to be the underlying cause of the mesenteric infarction), the assignment was modified by the provision that if arteriosclerosis appeared on the certificate with mention of any condition in ICD Nos. 330-332, 334, the combination was coded. That is, the death was assigned to the specified cerebrovascular disease. By the linking provided by the Eighth Revision between arteriosclerosis and mesenteric infarction, the presumptive underlying cause is taken to be the mesenteric infarction.

Thus, despite the fact that both the Seventh and Eighth Revisions provide for the linkage of cerebrovascular disease with mention of arteriosclerosis, the final assignment by the Eighth Revision of the above certificate is to the first condition linked with arteriosclerosis—that is, the assignment is made to Arterial embolism and thrombosis of mesenteric artery (ICDA No. 444.2).

The largest transfers to Cerebrovascular diseases (ICDA Nos. 430-438) from Seventh Revision categories other than 330-334 were from: Accidental falls (ICD Nos. E900-E904), about 377 deaths (with other accidents only about 47 deaths); Other arterial diseases (ICD Nos. 452-454, 456), about 311 deaths; Functional disease of heart (ICD No. 433), about 272 deaths; General arteriosclerosis (ICD No. 450), 331 deaths; and Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues (ICD Nos. 140-205), about 178 deaths.

The changes in coding procedures resulting in the transfers from Accidental falls and from Functional disease of heart are described above in the section "Diseases of Heart" (page 5).

The assignment of about 311 deaths from Other arterial diseases (ICD Nos. 452-454, 456) in the Seventh Revision to Cerebrovascular diseases (ICDA Nos. 430-438) in the Eighth Revision resulted primarily from the reclassification of occlusion of carotid artery from Arterial embolism and thrombosis (ICD No. 454) to Occlusion of precerebral arteries (ICDA No. 432). In addition, about 64 deaths assigned by the Seventh Revision to Other aneurysm, except of heart and aorta (ICD No. 452), were assigned by the Eighth Revision to Subarachnoid hemor-

rhage (ICDA No. 430). This change resulted from the reclassification of berry and miliary aneurysm (of the brain) from ICD No. 452 to ICDA No. 430.

Most of the transfers from General arteriosclerosis (ICD No. 450), an estimated 248 out of the 331 deaths, were coded by the Eighth Revision to Other cerebrovascular diseases (ICDA Nos. 437, 438). This transfer resulted from shifting the terms "cerebral ischemia" and "cerebral insufficiency" to the Eighth Revision title Generalized ischemic cerebrovascular disease (ICDA No. 437). In accordance with the Seventh Revision these terms were included under Other diseases of brain (ICD No. 355). By the Seventh Revision, when a cause classified under Other diseases of brain (with the exception of cerebral atrophy) was reported on the certificate as due to arteriosclerosis, the death was coded to arteriosclerosis and not to cerebrovascular disease.

Both the Seventh and Eighth Revisions provide for the modification of the provisionally selected underlying cause when such modification results in a more useful and informative condition for tabulations of mortality data. For example, as discussed above, if arteriosclerosis, a generalized disease, has been provisionally selected as the underlying cause for a certificate on which a cerebrovascular disease also is reported, both the Seventh and Eighth Revisions provide for the assignment of the death to the cerebrovascular disease. The provisionally selected underlying cause (arteriosclerosis) is "linked" by the rules for classification to cerebrovascular diseases (and to a number of other diseases), and the combination of arteriosclerosis and the cerebrovascular disease is coded to the cerebrovascular disease. Thus when the terms "cerebral ischemia" and "cerebral insufficiency" were transferred to Other cerebrovascular diseases (ICDA Nos. 437, 438), the certificates on which these terms appeared with arteriosclerosis were assigned by the Eighth Revision to the indicated cerebrovascular disease.

The transfers from Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues (ICD Nos. 140-205), to Cerebrovascular diseases (ICDA Nos. 430-438)

resulted for the most part from a modification of guides for determining the probability of sequences. In accordance with coding procedures in effect with the Seventh Revision (beginning with 1959 for this particular procedure), any intracranial disease in ICD Nos. 330-334 reported as due to a malignant neoplasm was classified to the neoplasm as the underlying cause of death. But with the Eighth Revision the coding procedure was changed so that not every one of the intracranial vascular diseases reported as due to a malignant neoplasm would be assigned to the malignant neoplasm.

Although the introduction of the Eighth

Revision for data year 1968 did not produce any appreciable break in the comparability of mortality statistics for the entire group of cerebrovascular diseases, it did produce a considerable degree of discontinuity for the components of this group of diseases. One of the reasons for the lack of comparability for the components is that while the Sixth and Seventh Revisions were in use (1949-67) cerebrovascular diseases were distributed among only five components, but according to the Eighth Revision they are distributed among nine components (table E).

Table E. Deaths from Eighth Revision category Cerebrovascular diseases, distributed by the Seventh Revision categories: United States, 1966

[Deaths are those occurring within the United States. Seventh Revision categories for which the number of deaths was less than 5 percent of the number assigned to the Eighth Revision category or was less than 100 are not shown]

Eighth Revision			Seventh Revision				Final count of deaths for Seventh Revision categories comparable to Eighth Revision category	Col. (6) as a percent of col. (8)
ICDA No.	Category title	Estimated number of deaths	ICD No.	Category title	Estimated number of deaths going to Eighth Revision category	Col. (6) as a percent of col. (3)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
430-438	Cerebrovascular diseases-----	202,942	330-334	Vascular lesions affecting central nervous system-----	200,364	98.7	204,841	97.8
			450	General arteriosclerosis-----	331	0.2	@	...
			452-454, 456	Other arterial diseases--	312	0.2	@	...
			433	Functional disease of heart-----	268	0.1	@	...
			E903	Fall on same level-----	176	0.1	@	...
			341-344, 352, 354-369, 380-384, 386, 388-390, 394-398	Other diseases of nervous system and sense organs-----	106	0.1	@	...
			E900-E902	Fall from one level to another-----	101	0.0	@	...
			E904	Unspecified falls-----	101	0.0	@	...
			---	Other categories-----	1,183	0.6	@	...
				Total	202,942	100.0		

@ = Category not comparable to Eighth Revision category.



Table E. Deaths from Eighth Revision category Cerebrovascular diseases, distributed by the Seventh Revision categories: United States, 1966—Con.

[Deaths are those occurring within the United States. Seventh Revision categories for which the number of deaths was less than 5 percent of the number assigned to the Eighth Revision category or was less than 100 are not shown]

Eighth Revision			Seventh Revision				Col. (6) as a percent of col. (3)	Final count of deaths for Seventh Revision categories comparable to Eighth Revision category	Col. (6) as a percent of col. (8)
ICDA No.	Category title	Estimated number of deaths	ICD No.	Category title	Estimated number of deaths going to Eighth Revision category				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	
430	Subarachnoid hemorrhage-----	8,723	330	Subarachnoid hemorrhage--	8,459	97.0	8,531	99.2	
			---	Other categories-----	254	3.0	@	...	
				Total	8,723	100.0			
431	Cerebral hemorrhage----	52,616	331	Cerebral hemorrhage-----	52,247	99.3	111,446	46.9	
			---	Other categories-----	369	0.7	@	...	
				Total	52,616	100.0			
433	Cerebral thrombosis----	57,600	332	Cerebral embolism and thrombosis-----	56,311	97.8	63,943	88.1	
			---	Other categories-----	1,289	2.2	@	...	
				Total	57,600	100.0			
434	Cerebral embolism-----	1,272	332	Cerebral embolism and thrombosis-----	1,244	97.8	63,943	1.9	
			---	Other categories-----	28	2.2	@	...	
				Total	1,272	100.0			
432,435	Other specified acute cerebrovascular diseases-----	3,776	332	Cerebral embolism and thrombosis-----	2,903	76.9	63,943	4.5	
			331	Cerebral hemorrhage-----	498	13.2	@	...	
			452-454,456	Other arterial diseases--	220	5.8	@	...	
			---	Other categories-----	155	4.1	@	...	
				Total	3,776	100.0			
436	Acute but ill-defined cerebrovascular disease-----	51,168	331	Cerebral hemorrhage-----	46,773	91.4	111,446	45.9	
			333,334	Other vascular lesions affecting central nervous system-----	3,815	7.5	@	...	
			---	Other categories-----	580	1.1	@	...	
				Total	51,168	100.0			
437,438	Other cerebrovascular diseases-----	27,787	333,334	Other vascular lesions affecting central nervous system-----	14,762	53.1	20,921	70.6	
			331	Cerebral hemorrhage-----	10,449	37.6	111,446	9.4	
			332	Cerebral embolism and thrombosis-----	1,659	6.0	@	...	
			450	General arteriosclerosis--	248	0.9	@	...	
			---	Other categories-----	669	2.4	@	...	
				Total	27,787	100.0			

@ = Category not comparable to Eighth Revision category.

## 4. ACCIDENTS

The comparability ratio for Accidents (with motor vehicle and other accidents taken together) between the Seventh Revision (ICD Nos. E800-E962) and Eighth Revision (ICDA Nos. E800-E949) was 0.9570 (appendix I).

As shown in the three tables below, this reduction in the number of deaths assigned to Accidents by the Eighth Revision over the number assigned by the Seventh Revision resulted primarily from transfers from accidents

Seventh Revision		Eighth Revision	
Cause of death and category number (1)	Number of deaths in 1966 (2)	Estimated number of deaths in column (2) that went to Accidents (ICDA Nos. E800-E949) (3)	Estimated number of deaths in column (2) that went to other causes (4)
All causes ..... 001-E999	1,863,149	108,683	1,754,466
Accidents ..... E800-E962	113,563	106,455	7,108
Railway accidents..... E800-E802	1,027	1,000	27
Motor vehicle accidents..... E810-E835	53,041	52,456	585
Motor vehicle traffic accidents ..... E810-E825	51,933	51,373	560
Motor vehicle traffic accident involving collision with railway train..... E810	1,800	1,757	43
Motor vehicle traffic accident to pedestrian .. E812	8,675	8,612	63
Other motor vehicle traffic accidents involving collision.....E811,E813-E819	22,641	22,297	344
Motor vehicle noncollision traffic accidents ..... E820-E824	14,291	14,202	89
Motor vehicle traffic accident of unspecified nature..... E825	4,526	4,505	21
Motor vehicle nontraffic accidents ..... E830-E835	1,108	1,083	25
Other road vehicle accidents..... E840-E845	292	292	-
Water transport accidents..... E850-E858	1,630	1,630	-
Aircraft accidents..... E860-E866	1,510	1,486	24
Accidental poisoning by solid and liquid substances ..... E870-E888	2,283	1,806	477
Accidental poisoning by gases and vapors... E890-E895	1,648	1,523	125
Accidental falls..... E900-E904	20,066	16,906	3,160
Fall from one level to another ..... E900-E902	5,772	5,312	460
Fall on same level ..... E903	5,593	4,839	754
Unspecified falls..... E904	8,701	6,755	1,946
Blow from falling or projected object or missile... E910	1,459	1,432	27
Accident caused by machinery ..... E912	2,070	1,989	81
Accident caused by electric current..... E914	1,025	1,025	-
Accident caused by fire and explosion of combustible material ..... E916	8,084	7,813	271
Accident caused by hot substance, corrosive liquid, steam, and radiation..... E917,E918	409	337	72
Accident caused by firearm ..... E919	2,558	2,189	369
Inhalation and ingestion of food or other object causing obstruction or suffocation ..... E921,E922	1,831	1,672	159
Accidental drowning ..... E929	5,687	5,431	256
Excessive heat and insolation ..... E931	531	430	101
Complications due to nontherapeutic medical and surgical procedures, therapeutic misadventure, and late complications of therapeutic procedures..... E940-E959	1,411	1,129	282
All other accidents ..... E911,E913,E915,E920,E923- E928,E930,E932-E936,E960-E962	7,001	5,909	1,092
Other causes ..... Residual	1,749,586	2,228	1,747,358

Seventh Revision		Eighth Revision	
Cause of death and category number (1)	Number of deaths in 1966 (2)	Estimated number of deaths in column (2) that went to Motor vehicle accidents (ICDA Nos. E810-E823) (3)	Estimated number of deaths in column (2) that went to other causes (4)
All causes ..... 001-E999	1,863,149	52,622	1,810,527
Motor vehicle accidents ..... E810-E835	53,041	52,250	791
Motor vehicle traffic accidents ..... E810-E825	51,933	51,243	690
Motor vehicle traffic accident involving collision with railway train ..... E810	1,800	1,757	43
Motor vehicle traffic accident to pedestrian .... E812	8,675	8,570	105
Other motor vehicle traffic accidents involving collision ..... E811, E813-E819	22,641	22,274	367
Motor vehicle noncollision traffic accidents ..... E820-E824	14,291	14,158	133
Motor vehicle traffic accident of unspecified nature ..... E825	4,526	4,484	42
Motor vehicle nontraffic accidents ..... E830-E835	1,108	1,007	101
Other causes ..... Residual	1,810,108	372	1,809,736

other than motor vehicle accidents. The comparability ratio for Motor vehicle accidents (ICDA Nos. E810-E823) between the Seventh and Eighth Revisions was close to 1.00—actually 0.9921, but the comparability ratio for All other accidents (ICDA Nos. E800-E807, E825-E949) was only 0.9250 (appendix I).

Three major changes between the Seventh and Eighth Revisions that resulted in the transfer of a substantial number of deaths formerly attributed to All other accidents (ICD Nos. E800-E802, E840-E962) are summarized below.

(1) An estimated 1,923 of the 6,751 deaths transferred from these accident categories were assigned by the Eighth Revision to the following new title introduced for classifying deaths for which it was not possible for the certifier to determine whether the injuries were accidentally or purposely inflicted: Injury undetermined whether accidentally or purposely inflicted (ICDA Nos. E980-E989). These 1,923 deaths that were formerly assigned to accidents (excluding motor vehicle accidents) constitute about 63 percent of this new category. (Deaths assigned by the Seventh Revision to Suicide make up about 31 percent of the new category; and those assigned to Homicide, about 2 percent.)

(2) The second largest group transferred from these accidents was 1,773 deaths that were assigned to the Eighth Revision title Diseases of heart. As stated above in section 1 of this report, "Diseases of Heart," an estimated 1,422 of the deaths transferred from All other accidents were assigned by the Eighth Revision to Ischemic heart disease (ICDA Nos. 410-413), and the important changes in the coding procedures for accidents that resulted in this transfer of deaths are summarized in that section. It is believed these same changes in coding procedures between the Seventh and Eighth Revisions account for the most part for an additional estimated 424 deaths that were assigned by the Seventh Revision to these accidents being transferred by the Eighth Revision to Cerebrovascular diseases (ICDA Nos. 430-438).

In summary, an estimated 3,188 of these 6,751 transferred deaths were fatalities resulting from falls. About half of these 3,188 deaths were transferred by the Eighth Revision to Ischemic heart disease (1,171 deaths with falls involved) and to Cerebrovascular diseases (377 deaths with falls involved) (appendix I).

(3) An estimated 319 of the 6,751 transferred deaths were assigned by the Eighth Revision to Pneumonia (ICDA Nos. 480-486). About

Seventh Revision		Eighth Revision	
Cause of death and category number (1)	Number of deaths in 1966 (2)	Estimated number of deaths in column (2) that went to All other accidents (ICDA Nos. E800-E807, E825-E949) (3)	Estimated number of deaths in column (2) that went to other causes (4)
All causes ..... 001-E999	1,863,149	55,983	1,807,166
All other accidents ..... E800-E802, E840-E962	60,522	53,771	6,751
Railway accidents..... E800-E802	1,027	1,000	27
Other road vehicle accidents..... E840-E845	292	292	--
Water transport accidents..... E850-E858	1,630	1,630	--
Aircraft accidents..... E860-E866	1,510	1,486	24
Accidental poisoning by solid and liquid substances ..... E870-E888	2,283	1,806	477
Accidental poisoning by gases and vapors. E890-E895	1,648	1,523	125
Accidental falls..... E900-E904	20,066	16,878	3,188
Fall from one level to another ..... E900-E902	5,772	5,312	460
Fall on same level..... E903	5,593	4,839	754
Unspecified falls..... E904	8,701	6,727	1,974
Blow from falling or projected object or missile... E910	1,459	1,405	54
Accident caused by machinery ..... E912	2,070	1,936	134
Accident caused by electric current..... E914	1,025	1,025	--
Accident caused by fire and explosion of combustible material..... E916	8,084	7,788	296
Accident caused by hot substance, corrosive liquid, steam, and radiation ..... E917, E918	409	337	72
Accident caused by firearm..... E919	2,558	2,189	369
Inhalation and ingestion of food or other object causing obstruction or suffocation ..... E921, E922	1,831	1,672	159
Accidental drowning ..... E929	5,687	5,431	256
Excessive heat and insolation ..... E931	531	430	101
Complications due to nontherapeutic medical and surgical procedures, therapeutic misadventure, and late complications of therapeutic procedures..... E940-E959	1,411	1,129	282
All other accidents ..... E911, E913, E915, E920, E923-E928, E930, E932-E936, E960-E962	7,001	5,814	1,187
Other causes..... Residual	1,802,627	2,212	1,800,415

53 of these 319 deaths were assigned by the Seventh Revision to Inhalation and ingestion of food or other object causing obstruction or suffocation (ICD Nos. E921, E922); and it is possible that an additional 119 of them were assigned by the Seventh Revision to Foreign body entering other orifice (ICD No. E923). The resulting total of 172 deaths were transferred from these accidents to the Eighth Revision category Pneumonia, unspecified (ICDA No. 486). These transfers were probably made as a result of the provision that when such a disease as Pneumonia, unspecified (ICDA No. 486), is the resulting disease condition of such accidents, the assignment is to be made to the resulting

disease condition and not to the accident. (In both revisions if this aspiration of food resulted from a disease which presumably affects the ability to control the process of swallowing, for example, cancer of the throat or a disease resulting in paralysis, the assignment is to the stated underlying disease. Also in both revisions asphyxia from aspiration of mucus or vomitus which resulted from a disease is coded to the disease.)

Partly compensating for the 6,751 deaths transferred from these titles for accidental fatalities were 2,212 deaths transferred by the Eighth Revision from other causes to these titles.

## 5. INFLUENZA AND PNEUMONIA

The introduction of the Eighth Revision resulted in assigning about 4 percent more deaths to Influenza and pneumonia (ICDA Nos. 470-474, 480-486) than had been assigned by the Seventh Revision to the most nearly comparable title, Influenza and pneumonia, except pneumonia of newborn (ICD Nos. 480-483, 490-493) (appendix I). About 5,355 deaths not assigned to ICD Nos. 480-483, 490-493 by the Seventh Revision were transferred by the coding procedures in effect with the Eighth Revision to ICDA Nos. 470-474, 480-486, while about 2,557 deaths that were assigned by the Seventh Revision to ICD Nos. 480-483, 490-493 were transferred by the coding procedures in effect with the Eighth Revision to categories other than ICDA Nos. 470-474, 480-486.

As shown in the table below, the largest group transferred to Influenza and pneumonia by the Eighth Revision was an estimated 2,232 deaths that had been assigned by the Seventh Revision to Pneumonia of newborn (ICD No. 763). This transfer reflects a change in classification providing that only diseases specific to the newborn (e.g., hemolytic disease of the new-

born) be included under the title Certain causes of mortality in early infancy (ICDA Nos. 760-769.2, 769.4-772, 774-778), and that conditions not different from those classified outside the perinatal classification, such as pneumonia and diarrhea, be excluded. Tabulations of deaths assigned by the Eighth Revision to Pneumonia (ICDA Nos. 480-486) for all infants will give the number for this age group dying from pneumonia. The Seventh Revision title Pneumonia of newborn (ICD No. 763) was limited to deaths from Pneumonia (ICD Nos. 490-493) and interstitial pneumonia (unspecified), an inclusion term under ICD No. 525, at ages under 28 days. Therefore tabulations of 1968 deaths at ages under 28 days assigned by the Eighth Revision to Pneumonia (ICDA Nos. 480-486) will give the approximate number that would have been assigned to Pneumonia of newborn (ICD No. 763) if the Seventh Revision had been used for 1968.

Another large group transferred to Influenza and pneumonia by the Eighth Revision was about 1,472 deaths that had been assigned by the Seventh Revision to Other chronic inter-

Seventh Revision		Eighth Revision	
Cause of death and category number (1)	Number of deaths in 1966 (2)	Estimated number of deaths in column (2) that went to Influenza and pneumonia (ICDA Nos. 470-474, 480-486) (3)	Estimated number of deaths in column (2) that went to other causes (4)
All causes..... 001-E999	1,863,149	66,413	1,796,736
Selected causes.....480-483,490-493,525,763	70,363	64,762	5,601
Influenza and pneumonia, except pneumonia of newborn <sup>1</sup> .....480-493	63,615	61,058	2,557
Influenza.....480-483	2,830	2,683	147
Pneumonia, except pneumonia of newborn.....490-493	60,785	58,375	2,410
Lobar pneumonia.....490	8,864	8,565	299
Bronchopneumonia.....491	33,276	31,949	1,327
Primary atypical pneumonia.....492	5,729	5,409	320
Pneumonia, other and unspecified.....493	12,916	12,452	464
Other chronic interstitial pneumonia.....525	4,271	1,472	2,799
Pneumonia of newborn.....763	2,477	2,232	245
Other causes..... Residual	1,792,786	1,651	1,791,135

<sup>1</sup>This is the title to which deaths in tables 1 and 2 were assigned during 1950-67, when the Sixth and Seventh Revisions were in use.

stitial pneumonia (ICD No. 525). The 4,271 deaths in 1966 assigned to this Seventh Revision title were reassigned by the Eighth Revision primarily to the following titles: (1) Other chronic interstitial pneumonia (ICDA No. 517), about 2,656 deaths, and (2) Acute interstitial pneumonia (ICDA No. 484), about 1,400 deaths. The transfer of these 1,400 deaths to the latter title resulted from shifting the terms "interstitial pneumonitis" and "interstitial pneumonia," not otherwise specified, to the Eighth Revision title Acute interstitial pneumonia (ICDA No. 484).

The transfers from Influenza and pneumonia by the Eighth Revision are quite widely distributed over the classification. Each of the three transfers, however, involved over 200 deaths.

One of these three resulted from the change in assignment of the combination of pneumonia and alcoholism (with alcoholism in the "due to" position on the certificate) from Pneumonia, other and unspecified (ICD No. 493), by the Seventh Revision to Alcoholic addiction (ICDA No. 303.2) by the Eighth Revision.

Another of these changes was the transfer of about 213 deaths from Pneumonia (ICD Nos. 490-493) to Nutritional marasmus (ICDA No. 268) and to Other and unspecified nutritional deficiency (ICDA No. 269.9). In the Seventh Revision the terms athrepsia, cachexia, extreme wasting, marasmus, and inanition were considered to be ill-defined conditions and deaths from these conditions at ages 1 year and over were assigned to causes under Senility and ill-defined diseases (ICD Nos. 790-795). Consequently, in accordance with the Seventh Revision, in the event that the provisionally selected underlying cause was one of these conditions and some condition other than an ill-defined condition was also reported, e.g., pneumonia, the other condition was usually reselected as the underlying cause of death. But by the Eighth Revision, inasmuch as the terms athrepsia, cachexia, extreme wasting, marasmus, and inanition are no longer classified under Symptoms and ill-defined conditions (ICDA Nos. 780-796), no reselection of another condition on the certificate as the underlying cause of death is made. Instead, by the Eighth Revision, if the condition selected as the underlying cause

is athrepsia, cachexia, extreme wasting, or marasmus, the death is assigned to Nutritional marasmus (ICDA No. 268), and if the condition selected as the underlying cause is inanition, the death is assigned to Other and unspecified nutritional deficiency (ICDA No. 269.9).

About 208 deaths transferred from pneumonia in the Seventh Revision to Other diseases of respiratory system (ICDA Nos. 501-508, 512, 514-516, 519) in the Eighth constituted the third group of transferred deaths. It is believed that most of these transfers are attributable to the shift of a number of terms included by the Seventh Revision under the pneumonias to other categories by the Eighth Revision. Among such terms were "lipoid pneumonia," which by the Eighth Revision is included under Other diseases of lung (ICDA No. 519.2), and "adynamic pneumonia" and "asthenic pneumonia," which by the Eighth Revision are included under Pulmonary congestion and hypostasis (ICDA No. 514).

The 1968 death rate (36.8 deaths per 100,000) for Influenza and pneumonia (ICDA Nos. 470-474, 480-486) is 27.8 percent higher than the 1967 death rate (28.8 deaths per 100,000) for Influenza and pneumonia, except pneumonia of newborn (ICD Nos. 480-483, 490-493). Applying the factor 1.044 to the 1967 death rate, however, raises it to 30.1 deaths per 100,000, the level it would have reached if deaths in 1967 had been coded by the Eighth Revision rather than by the Seventh. The remaining increase in this death rate for 1968 (36.8 minus 30.1, or 6.7 deaths per 100,000 population) may be attributable to the widespread influenza epidemic in 1968.

The comparability ratio for Influenza between the Seventh Revision (ICD Nos. 480-483) and Eighth Revision (ICDA Nos. 470-474) is 0.9572 (appendix I). As shown in the table below, this reduction in the number of deaths assigned to influenza by the Eighth Revision (2,709 deaths) from the number assigned by the Seventh Revision (2,830 deaths) amounted to 121 deaths.

This reduction is attributable in great part to the dropping by the Eighth Revision of the priority given by the Seventh Revision to influenza when two or more conditions are entered

Seventh Revision		Eighth Revision	
Cause of death and category number (1)	Number of deaths in 1966 (2)	Estimated number of deaths in column (2) that went to Influenza (ICDA Nos. 470-474) (3)	Estimated number of deaths in column (2) that went to other causes (4)
All causes ..... 001-E999	1,863,149	2,709	1,860,440
Influenza ..... 480-483	2,830	2,676	154
Other causes ..... Residual	1,860,319	33	1,860,286

on the certificate in such a way that none of them can be regarded as the underlying cause. Most of these transferred deaths assigned by the Seventh Revision to influenza were assigned by the Eighth Revision to Acute myocardial infarction (ICDA No. 410) (32 deaths), Chronic ischemic heart disease (ICDA No. 412) (32 deaths), and to the remainder of the diseases of the circulatory system (38 deaths).

Most of the transfers resulting in breaks in

continuity of mortality statistics for Pneumonia (ICDA Nos. 480-486) have been described above in the discussion of Influenza and pneumonia. As shown in the table below, an estimated 4.8 percent more deaths were assigned by the Eighth Revision to Pneumonia (ICDA Nos. 480-486) than were assigned by the Seventh Revision to Pneumonia, except pneumonia of newborn (ICD Nos. 490-493) (appendix I).

Seventh Revision		Eighth Revision	
Cause of death and category number (1)	Number of deaths in 1966 (2)	Estimated number of deaths in column (2) that went to Pneumonia (ICDA Nos. 480-486) (3)	Estimated number of deaths in column (2) that went to other causes (4)
All causes ..... 001-E999	1,863,149	63,704	1,799,445
Selected causes..... 490-493,525,763	67,533	62,079	5,454
Pneumonia, except pneumonia of newborn <sup>1</sup> 490-493	60,785	58,375	2,410
Lobar pneumonia..... 490	8,864	8,565	299
Bronchopneumonia..... 491	33,276	31,949	1,327
Primary atypical pneumonia..... 492	5,729	5,409	320
Pneumonia, other and unspecified..... 493	12,916	12,452	464
Other chronic interstitial pneumonia..... 525	4,271	1,472	2,799
Pneumonia of newborn ..... 763	2,477	2,232	245
Other causes ..... Residual	1,795,616	1,625	1,793,991

<sup>1</sup>This is the title to which deaths in tables 1 and 2 were assigned during 1950-67, when the Sixth and Seventh Revisions were in use.

## 6. CERTAIN CAUSES OF MORTALITY IN EARLY INFANCY

The Eighth Revision reduced deaths assigned to Certain causes of mortality in early infancy (ICDA Nos. 760-769.2, 769.4-772, 774-778) by 8.17 percent from the number assigned by the Seventh Revision to the comparable cause Certain diseases of early infancy (ICD Nos. 760-776). This percentage, based on coding the sample of deaths in 1966 by both the Seventh and Eighth Revisions, represents a reduction from 51,644 deaths by the Seventh Revision to 47,425 deaths by the Eighth Revision (appendix I and table below).

It may be assumed that the 8.17 percent reduction found for the sample of 1966 deaths also is close to the percent reduction between 1967 and 1968 that is attributable to the change to the Eighth Revision. The number of deaths in 1967 coded to this cause by the Seventh Revision was 48,314, and the number for 1968 coded to the comparable group of causes by the Eighth Revision was 43,840 deaths—a reduction of 4,474 deaths. Inasmuch as 8.17 percent of the 48,314 deaths in 1967 is 3,947 deaths, the difference between 4,474 and 3,947 deaths (527 deaths) is the estimated maximum number that may be attributed to an actual lowering of the death rate for this group of causes.

A more precise measure of the true decline in mortality among infants from these causes

may be obtained by applying the comparability ratio of 0.9183 to the 1967 infant mortality rate from these causes (1,371.0 deaths per 100,000 live births). Multiplying the rate of 1,371.0 by 0.9183 gives a death rate of only 1,259.0 per 100,000 live births. The difference between the 1968 rate (1,248.2 deaths per 100,000 live births) and the adjusted 1967 rate (1,259.0) is 10.8, constituting a real decrease in mortality of only 0.86 percent.

As stated above under section 5, "Influenza and Pneumonia," the reduction in the assignment of deaths to the Eighth Revision title Certain causes of mortality in early infancy reflects primarily the change in classification to provide that only diseases specific to the newborn (e.g., hemolytic disease of the newborn) be included under this title, and that conditions not different from those classified outside the perinatal classification, such as pneumonia and diarrhea, be excluded.

About 2,232 of the 2,477 deaths assigned by the Seventh Revision to Pneumonia of newborn (ICD No. 763) were assigned by the Eighth Revision to Pneumonia (ICDA Nos. 480-486). Tabulations for the age group under 1 year of deaths assigned to this latter cause by the Eighth Revision give the number of infants dying from pneumonia. Tabulations are also available

Seventh Revision		Eighth Revision	
Cause of death and category number (1)	Number of deaths in 1966 (2)	Estimated number of deaths in column (2) that went to Certain causes of mortality in early infancy (ICDA Nos. 760-769.2, 769.4-772,774-778) (3)	Estimated number of deaths in column (2) that went to other causes (4)
All causes ..... 001-E999	1,863,149	47,425	1,815,724
Certain diseases of early infancy.....760-776	51,644	46,706	4,938
Pneumonia of newborn .....763	2,477	191	2,286
Diarrhea of newborn .....764	250	5	245
Remainder of Certain diseases of early infancy .....760-762,765-776	48,917	46,510	2,407
Other causes ..... Residual	1,811,505	719	1,810,786



showing the number of these deaths that occurred at ages under 28 days.

About 233 of the 250 deaths that were assigned by the Seventh Revision to Diarrhea of newborn (ICD No. 764) were assigned by the Eighth Revision to Enteritis and other diarrheal diseases (ICDA Nos. 008, 009). As for the pneumonias, tabulations of deaths for the age group under 1 year assigned to Enteritis and other diarrheal diseases (ICDA Nos. 008, 009) give the number of infants dying from this cause. Tabulations are also available showing the number of these deaths that occurred at ages under 28 days.

The estimated 2,407 deaths that were assigned by the Seventh Revision to Certain diseases of early infancy (other than Pneumonia of newborn and Diarrhea of newborn) and were not assigned by the Eighth Revision to the comparable title Certain causes of mortality in early infancy were distributed among Eighth Revision titles as follows:

Title and category number	Number of deaths
Septicemia.....038	555
Congenital anomalies.....740-759	288
Symptoms and ill-defined conditions.....780-796	226
Other avitaminoses and nutritional deficiencies.....260,261,263-269	329
All other endocrine and metabolic diseases.....251,252,256-258,270-272,273.1-279	82
Other diseases of respiratory system.....501-508,512,514-516,519	206
Diseases of the skin and subcutaneous tissue.....680-686,690-709	82
Other causes.....	639

An estimated 719 deaths not coded by the Seventh Revision to Certain diseases of early infancy were shifted from a number of cate-

gories to the Eighth Revision title Certain causes of mortality in early infancy (ICDA Nos. 760-769.2, 769.4-772, 774-778).

Among these were an estimated 203 deaths that in the Seventh Revision were assigned to Other diseases of heart (ICD Nos. 430-434). This change resulted from the transfer of such terms as "cardiac arrest of newborn" and "cardiac respiratory arrest of newborn" from ICD No. 433.0 of the Seventh Revision to the Eighth Revision category number 778.9, under Other conditions of fetus or newborn (ICDA No. 778).

Also among these 719 deaths were an estimated 158 deaths that in the Seventh Revision were assigned to Symptoms, ill-defined, and unknown causes (ICD Nos. 780-793, 795). This shift resulted primarily from the transfer of terms under the category of the Seventh Revision for ill-defined conditions to the Eighth Revision title Other conditions of fetus or newborn (ICDA No. 778). Deaths to newborns resulting from hemorrhage of a number of sites (e.g., liver and kidney) that by the Seventh Revision were coded to categories other than Hemorrhagic disease of newborn (ICD No. 771) were transferred to this title by the Eighth Revision (ICDA No. 778.2).

Data from the comparability study based on deaths in 1966 show that transfers from the Seventh Revision title Certain diseases of early infancy (ICD Nos. 760-776) to the Eighth Revision title Congenital anomalies (ICDA Nos. 740-759) resulted in a decrease of 315 deaths assigned to the former cause; and transfers from the Seventh Revision title Congenital malformations (ICD Nos. 750-759) to Certain causes of mortality in early infancy (ICDA Nos. 760-769.2, 769.4-772, 774-778) resulted in an increase of 148 deaths to the latter cause.

## 7. DIABETES MELLITUS

There were no serious breaks in continuity for mortality statistics for Diabetes mellitus (ICDA No. 250) between 1967 and 1968. The

comparability ratio between the Seventh and Eighth Revisions is 0.9971 (appendix I).

Seventh Revision		Eighth Revision	
Cause of death and category number (1)	Number of deaths in 1966 (2)	Estimated number of deaths in column (2) that went to Diabetes mellitus (ICDA No. 250) (3)	Estimated number of deaths in column (2) that went to other causes (4)
All causes ..... 001-E999	1,863,149	34,496	1,828,653
Diabetes mellitus.....260	34,597	33,870	727
Other causes ..... Residual	1,828,552	626	1,827,926

## 8. ARTERIOSCLEROSIS

As shown in the table below, the break in trend between the Seventh and the Eighth Revision, introduced for data year 1968, for Arteriosclerosis (ICDA No. 440), was appreciable, resulting in a comparability ratio for the Seventh and Eighth Revisions of only 0.8963 (appendix I).

The three largest components of the estimated 6,824 deaths in the 1966 comparability study that were assigned by the Seventh Revision

to General arteriosclerosis (ICD No. 450) but were not reassigned by the Eighth Revision to the comparable title Arteriosclerosis (ICDA No. 440) were as follows: (1) an estimated 2,418 deaths that were transferred by the Eighth Revision to the list title All other diseases of arteries, arterioles, and capillaries (ICDA Nos. 442-444, 446-448); (2) an estimated 1,938 deaths that were transferred from the four-digit Seventh Revision title General arteriosclerosis,

Seventh Revision		Eighth Revision	
Cause of death and category number (1)	Number of deaths in 1966 (2)	Estimated number of deaths in column (2) that went to Arteriosclerosis (ICDA No. 440) (3)	Estimated number of deaths in column (2) that went to other causes (4)
All causes ..... 001-E999	1,863,149	34,873	1,828,276
General arteriosclerosis.....450	38,907	32,083	6,824
Other causes ..... Residual	1,824,242	2,790	1,821,452

with mention of gangrene as a consequence (ICD No. 450.1), to the Eighth Revision title Arteriosclerotic gangrene (ICDA No. 445.0); and (3) an estimated 1,209 deaths that were transferred from General arteriosclerosis (ICD No. 450) to Chronic ischemic heart disease (ICDA No. 412).

The reason for the transfer of the 2,418 deaths from General arteriosclerosis to All other diseases of arteries, arterioles, and capillaries (ICDA Nos. 442-444, 446-448) is that the Eighth Revision provides that if Arteriosclerosis (ICDA No. 440) is reported as the *underlying cause* of any condition in ICDA Nos. 443, 444, and 446, the combination of arteriosclerosis and the condition is to be coded, and the death assigned to the condition.

As mentioned above in section 1, "Diseases of Heart," the estimated 1,209 deaths were transferred from General arteriosclerosis (ICD

No. 450) to Chronic ischemic heart disease (ICDA No. 412) because the Eighth Revision provides that if Arteriosclerosis (ICDA No. 440) is jointly reported *with* Chronic ischemic heart disease (ICDA No. 412), the combination is coded, and the death is assigned to Chronic ischemic heart disease (ICDA No. 412).

The major shift in the opposite direction from the changes described above was the transfer of an estimated 1,498 deaths from the Seventh Revision title Functional disease of heart (ICD No. 433) to the Eighth Revision title Arteriosclerosis (ICDA No. 440). As also mentioned under section 1, "Diseases of Heart," this resulted primarily from the dropping in the Eighth Revision of the priority given in the Seventh Revision to Functional disease of heart (ICD No. 433) over General arteriosclerosis (ICD No. 450).

## 9. BRONCHITIS, EMPHYSEMA, AND ASTHMA

### All Bronchitis, Emphysema, and Asthma (ICDA Nos. 490-493)

The comparability ratio for this group of causes between the Seventh and Eighth Revisions is 1.0034 (appendix I). Although this ratio is close to 1.000, the corresponding factors for the three components of this group of diseases vary considerably from 1.000. Before describing

the classification changes and trends of the death rates for each of these three components, the reasons for the introduction by the United States for data year 1969 of a fourth component will be given. This new four-digit component is Chronic obstructive lung disease (ICDA No. 519.3).

The assignment of deaths by physicians and other medical certifiers to the general title

Seventh Revision		Eighth Revision	
Cause of death and category number (1)	Number of deaths in 1966 (2)	Estimated number of deaths in column (2) that went to Bronchitis, emphysema, and asthma (ICDA Nos. 490-493) (3)	Estimated number of deaths in column (2) that went to other causes (4)
All causes ..... 001-E999	1,863,149	29,841	1,833,308
Comparable causes ..... 241,501,502,527.1	29,740	28,602	1,138
Asthma.....241	4,324	4,089	235
Bronchitis, chronic and unqualified.....501,502	5,164	4,894	270
Emphysema without mention of bronchitis .....527.1	20,252	19,619	633
Other causes..... Residual	1,833,409	1,239	1,832,170

“chronic obstructive lung disease” (COLD) or to “chronic obstructive pulmonary disease” (COPD) did not start to become fashionable until the late 1960’s or early 1970’s.

For the years the Seventh Revision was in use (1958-67) “chronic obstructive lung disease” was indexed as an inclusion term under *Other* (ICD No. 527.2), which in turn was a four-digit code under *Other diseases of lung and pleural cavity* (ICD No. 527). The number of deaths attributed to ICD No. 527.2 remained almost stable between 1958 and 1967, increasing only from 2,482 for 1958 to 2,596 for 1967.

It should be stressed that there were a considerable number of other terms in addition to “chronic obstructive lung disease” that were indexed as inclusion terms under ICD No. 527.2. Some, but not all of these terms, are shown in the section below, extracted from the *International Classification of Diseases* (Seventh Revision):

Acute oedema of lung	}	without mention of heart disease NOS or heart failure
Acute pulmonary oedema		
Hernia of lung		
Mediastinitis (acute) (chronic)		
Stenosis of:		
bronchus		
trachea		
Ulcer of bronchus		

This title excludes acute oedema of lung with mention of any condition in 434.4 or 782.4 (434.2) and chronic or unspecified pulmonary oedema (522).

Nevertheless, as stated above, there were only 2,482 deaths for 1958 and 2,596 deaths for 1967 assigned to ICD No. 527.2.

During the late 1960’s persons involved in coding the medical section observed that “chronic obstructive lung disease” was appearing with increasing frequency on the death certificate. By this time the Eighth Revision had already been adopted by the 1965 International Conference for the Revision of the International Classification of Diseases. The *Index* to the

Eighth Revision (Volume 2) provided that chronic obstructive lung disease be assigned, again along with a number of other inclusion terms, to *Other diseases of lung* (ICDA No. 519.2). The National Center for Health Statistics, to separate out of ICDA No. 519.2 deaths attributed to chronic obstructive lung disease, introduced with data year 1969 the following special four-digit category: *\*Chronic obstructive lung disease* (ICDA No. 519.3) (which is marked with an asterisk that indicates it was introduced independently by the United States). As data for later years became available it was found that the number of deaths attributed to this cause increased rapidly, rising from 2,704 deaths for 1969 to 6,321 deaths for 1971.

To provide that deaths would not be assigned to *\*Chronic obstructive lung disease* (ICDA No. 519.3) if a more specific diagnosis such as chronic bronchitis, emphysema, or asthma also appeared on the death certificate, the coding procedures were updated for 1971 and 1972 data years in accordance with the linkages below:<sup>7</sup>

*\*519.3 Chronic obstructive lung disease without mention of asthma, bronchitis, or emphysema*

*Excludes conditions in 519.3 with conditions in:*

- 490 Bronchitis(491)(Chronic bronchitis)
- 491 (Chronic bronchitis) (491)
- 492 (Emphysema) (492)
- 493 (Asthma) (493)

But the limitation imposed by these linkage provisions did not alter the upward trend in the number of deaths assigned to *\*Chronic obstructive lung disease without mention of asthma, bronchitis, or emphysema* (ICDA No. 519.3). The number of deaths assigned to ICDA No. 519.3 increased from 6,321 for 1971 to 11,334 for 1973.

This special four-digit subdivision for *\*Chronic obstructive lung disease without mention of asthma, bronchitis, or emphysema* (519.3) includes the following inclusion terms:

\*519.3 Chronic obstruction (disease):  
 airway(s)  
 lung(s)  
 pulmonary  
 respiratory

Obstructive (chronic):  
 airway disease  
 broncho-pulmonary  
 disease  
 lung disease  
 pulmonary disease  
 respiratory disease

only } Without mention of asthma (493) bronchitis (chronic) (491) emphysema (492)

Medical textbooks for decades have included a section on "chronic obstructive lung disease," a title that embraces a number of clinical syndromes of varying etiology and pathology, with the common feature of increased hindrance to the flow of air out of the lungs resulting from an intrapulmonary condition—including asthma, bronchitis, and emphysema. But until recent years physicians almost always entered on the death certificate a specific diagnosis such as emphysema, bronchitis, or asthma instead of this generalized term.

Rarely in the history of classification of diseases has such a reversal as this one been observed—with an increasing number of medical certifiers entering on the certificates a group title for a complex of diseases instead of a specific diagnosis.

It is believed that the general term "chronic obstructive lung disease" is most often used by medical certifiers when they are in doubt as to whether the specific underlying cause of death was emphysema or chronic bronchitis.

### Major Components

*Chronic and unqualified bronchitis (ICDA Nos. 490, 491).*—Based on the sample of deaths in 1966 coded by the Seventh and Eighth Revisions, there were 5,484 deaths assigned to this cause by the Eighth Revision and 5,164 deaths assigned to the comparable title (ICD Nos. 501, 502) by the Seventh Revision, giving a ratio of 1.0620 (appendix I and table below). The deaths not assigned by the Seventh Revision to ICD Nos. 501, 502 that were assigned by the Eighth Revision to ICDA Nos. 490, 491 were transferred from a number of Seventh Revision titles including Asthma (ICD No. 241) and Bronchiectasis (ICD No. 526).

An estimated 41 deaths assigned by the Seventh Revision to Asthma (ICD No. 241) were transferred by the Eighth Revision to Chronic bronchitis (ICDA No. 491). By the Seventh Revision *only* that asthma not indicated as allergic with mention of bronchitis (acute or chronic) was considered to be linked with bronchitis: that is, a death attributed to such a combination of causes was assigned to bronchitis. But by the Eighth Revision allergic asthma, as well as asthma not indicated as allergic, when selected as the presumptive underlying cause of death, is linked with bronchitis: that is, the death is assigned to bronchitis.

About 132 of the deaths assigned by the Eighth Revision to Chronic bronchitis (ICDA No. 491) were assigned by the Seventh Revision to Bronchiectasis (ICD No. 526). In the Seventh Revision bronchiectasis was linked with mention

Seventh Revision		Eighth Revision	
Cause of death and category number (1)	Number of deaths in 1966 (2)	Estimated number of deaths in column (2) that went to Chronic and unqualified bronchitis (ICDA Nos. 490,491) (3)	Estimated number of deaths in column (2) that went to other causes (4)
All causes ..... 001-E999	1,863,149	5,484	1,857,665
Bronchitis, chronic and unqualified.....501,502	5,164	4,851	313
Other causes..... Residual	1,857,985	633	1,857,352

Seventh Revision		Eighth Revision	
Cause of death and category number (1)	Number of deaths in 1966 (2)	Estimated number of deaths in column (2) that went to Emphysema (ICDA No. 492) (3)	Estimated number of deaths in column (2) that went to other causes (4)
All causes ..... 001-E999	1,863,149	21,350	1,841,799
Comparable causes ..... 241,527.1	24,576	20,980	3,596
Asthma.....241	4,324	1,425	2,899
Emphysema without mention of bronchitis <sup>1</sup> ....527.1	20,252	19,555	697
Other causes..... Residual	1,838,573	370	1,838,203

<sup>1</sup>This is the title to which deaths in tables 1 and 2 were assigned during 1950-67, when the Sixth and Seventh Revisions were in use.

of any condition under Bronchitis (ICD Nos. 500-502); but this linkage was dropped by the Eighth Revision. For example, the deaths described by the following entries were classified by the Seventh Revision to Bronchiectasis (ICD No. 526) and by the Eighth Revision to Chronic bronchitis (ICDA No. 491):

- I (a) Chronic bronchitis and bronchiectasis
- (b)
- (c)
  
- I (a) Bronchiectasis
- (b) Chronic bronchitis
- (c)

Actually, as indicated above, all 132 deaths were assigned to Chronic bronchitis by the Eighth Revision.

*Emphysema (ICDA No. 492).*—There were 21,350 deaths assigned by the Eighth Revision to Emphysema (ICDA No. 492) and 20,252 deaths assigned by the Seventh Revision to the

nearly comparable title Emphysema without mention of bronchitis (ICD No. 527.1), giving a ratio of 1.0542 (appendix I). As shown in the table above, this increase of about 5.42 percent in the deaths assigned to emphysema resulted primarily from the transfer of about 1,425 deaths that were assigned by the Seventh Revision to Asthma (ICD No. 241).

By the Seventh Revision asthma was not linked with emphysema; while by the Eighth Revision it is linked with emphysema: that is, if asthma is the presumptive underlying cause and there is mention of emphysema on the certificate, the death is assigned to emphysema.

Applying the factor 1.0542 to the 1967 death rate for emphysema (10.6) raises it to 11.2—the level it would have reached if the deaths in 1967 had been coded by the Eighth Revision.

*Asthma (ICDA No. 493).*—Based on the sample of deaths in 1966, there were only 3,007 deaths assigned to this cause by the Eighth Revision but 4,324 deaths assigned to it by the

Seventh Revision		Eighth Revision	
Cause of death and category number (1)	Number of deaths in 1966 (2)	Estimated number of deaths in column (2) that went to Asthma (ICDA No. 493) (3)	Estimated number of deaths in column (2) that went to other causes (4)
All causes ..... 001-E999	1,863,149	3,007	1,860,142
Asthma.....241	4,324	2,623	1,701
Other causes..... Residual	1,858,825	384	1,858,441

Seventh Revision, giving a ratio of 0.6954. (Appendix I.)

As stated above, an estimated 1,425 of the 1,701 deaths that were assigned to asthma by only the Seventh Revision were transferred to Emphysema (ICDA No. 492) as a result of the provision in the Eighth Revision for linkage of asthma with emphysema.

An estimated 60 deaths assigned by the Seventh Revision to Asthma were assigned by the Eighth Revision to Acute myocardial infarction (ICDA No. 410), with the greatest number of them (49 deaths) going to the four-digit title Acute myocardial infarction, without mention of hypertensive disease (ICDA No. 410.9).

## 10. CIRRHOSIS OF LIVER

As shown in the table below, there was no serious break in comparability of mortality statistics for Cirrhosis of liver (ICDA No. 571)

between 1967 and 1968. The comparability ratio is 1.0055 between the Seventh and Eighth Revisions (appendix I).

Seventh Revision		Eighth Revision	
Cause of death and category number (1)	Number of deaths in 1966 (2)	Estimated number of deaths in column (2) that went to Cirrhosis of liver (ICDA No. 571) (3)	Estimated number of deaths in column (2) that went to other causes (4)
All causes ..... 001-E999	1,863,149	26,839	1,836,310
Cirrhosis of liver ..... 581	26,692	26,203	489
Without mention of alcoholism ..... 581.0	17,320	16,962	358
With alcoholism ..... 581.1	9,372	9,241	131
Other causes ..... Residual	1,836,457	636	1,835,821

## 11. SUICIDE

The comparability ratio for Suicide (ICDA Nos. E950-E959) between the Seventh and Eighth Revisions was 0.9472 (appendix I). About 31 percent of the 3,059 deaths in 1966 assigned by the Eighth Revision to the new category Injury undetermined whether accidentally

or purposely inflicted (ICDA Nos. E980-E989) had been assigned by the Seventh Revision to Suicide. Assignments to this new title are also discussed under Accidents (ICDA Nos. E800-E949) on page 36 and under Homicide (ICDA Nos. E960-E978) on page 52.

Seventh Revision		Eighth Revision	
Cause of death and category number (1)	Number of deaths in 1966 (2)	Estimated number of deaths in column (2) that went to Suicide (ICDA Nos. E950-E959) (3)	Estimated number of deaths in column (2) that went to other causes (4)
All causes ..... 001-E999	1,863,149	20,158	1,842,991
Suicide ..... E963, E970-E979	21,281	20,046	1,235
Suicide by poisoning ..... E970-E973	5,588	5,192	396
Suicide by hanging and strangulation ..... E974	2,863	2,825	38
Suicide by firearm and explosive ..... E976	10,407	10,072	335
Suicide by all other means ..... E963, E975, E977-E979	2,423	1,957	466
Other causes ..... Residual	1,841,868	112	1,841,756

## 12. CONGENITAL ANOMALIES

Based on the sample of 1966 deaths coded by both revisions, there were about 18,529 deaths assigned by the Eighth Revision to Congenital anomalies (ICDA Nos. 740-759) and 18,158 deaths assigned by the Seventh Revision to the most nearly comparable title Congenital malformations (ICD Nos. 750-759), giving a comparability ratio of 1.0204 (appendix I).

If the 17,328 deaths in 1967 were increased by this factor, the adjusted figure would be 17,681. The difference between the figure for 1968 (16,793) and the adjusted figure for 1967 (17,681) is 888 deaths. But this reduction of 888 deaths also reflects fewer infants at risk resulting from the decrease in live births in 1968 as compared with the number in 1967.

More precise annual measures of the true decline in mortality may be obtained by limiting consideration to deaths occurring at ages under 1 year from Congenital anomalies per 100,000 live births. (About 66 percent of the total number of deaths assigned to this cause occur at ages under 1 year.)

Based on the dual-coding study of deaths occurring in 1966, an estimated 12,644 infant deaths were assigned by the Eighth Revision to Congenital anomalies (ICDA Nos. 740-759) and 12,200 infant deaths were assigned by the Seventh Revision to Congenital malformations (ICD Nos. 750-759). Use of the comparability ratio 1.036 (obtained by dividing the 12,644 deaths by the 12,200 to adjust the 1967



Seventh Revision		Eighth Revision	
Cause of death and category number (1)	Number of deaths in 1966 (2)	Estimated number of deaths in column (2) that went to Congenital anomalies (ICDA Nos. 740-759) (3)	Estimated number of deaths in column (2) that went to other causes (4)
All causes ..... 001-E999	1,863,149	18,529	1,844,620
Congenital malformations .....750-759	18,158	17,453	705
Spina bifida and meningocele.....751	1,151	1,125	26
Congenital hydrocephalus and other congenital malformations of nervous system and sense organs.....752,753	1,756	1,655	101
Congenital malformations of circulatory system ..754	9,020	8,819	201
Other congenital malformations.....750,755-759	6,231	5,853	378
Mental deficiency.....325	511	256	255
Other causes..... Residual	1,844,480	820	1,843,660

infant mortality rate for congenital malformations (330.4 per 100,000 live births) to the level it would have had if the Eighth Revision had been used for 1967 results in an adjusted rate of 342.3. The difference between the 1968 rate (315.6 per 100,000 live births) and the adjusted rate for 1967 is 26.7 deaths per 100,000 live births, constituting a real decrease of 7.8 percent between 1967 and 1968 in the

risk of dying from this group of causes at ages under 1 year.

One of the changes involving congenital anomalies was the transfer of about 256 of the 511 deaths assigned by the Seventh Revision to Mental deficiency (ICD No. 325) to Down's disease (ICDA No. 759.3). These transferred deaths were assigned by the Seventh Revision to the four-digit subtitle Mongolism (ICD No. 325.4).

## 13. HOMICIDE

There was no sizable disruption in the comparability of statistics for Homicide (ICDA Nos. E960-E978) with the introduction of the Eighth Revision (with a comparability ratio of 0.9969) (appendix I).

In the dual-coding study of deaths occurring in 1966 it was found that about 52 of the 211 deaths that were not reassigned to homicide were transferred to the new Eighth Revision title

Injury undetermined whether accidentally or purposely inflicted (ICDA Nos. E980-E989). Assignments to this new title are also discussed under Accidents (ICDA Nos. E800-E949) on page 36 and under Suicide (ICDA Nos. E950-E959) on page 50. Deaths assigned by the Seventh Revision to homicide constituted only about 2 percent of all deaths assigned to this new Eighth Revision title.

Seventh Revision		Eighth Revision	
Cause of death and category number (1)	Number of deaths in 1966 (2)	Estimated number of deaths in column (2) that went to Homicide (ICDA Nos. E960-E978) (3)	Estimated number of deaths in column (2) that went to other causes (4)
All causes ..... 001-E999	1,863,149	11,570	1,851,579
Homicide.....E964,E980-E985	11,606	11,395	211
Assault by firearm and explosive..... E981	6,855	6,773	82
Assault by cutting and piercing instruments..... E982	2,330	2,300	30
Assault by other means.....E964,E980,E983	2,122	2,023	99
Injury by intervention of police..... E984	298	298	-
Execution..... E985	1	1	-
Other causes..... Residual	1,851,543	175	1,851,368

## 14. NEPHRITIS AND NEPHROSIS

The dual-coding study of deaths occurring in 1966 showed that an estimated 10,227 deaths were assigned to Nephritis and nephrosis (ICDA Nos. 580-584), whereas the number assigned by the Seventh Revision to this title (ICD Nos. 590-594) was 11,540 deaths, giving a comparability ratio of only 0.8862 (appendix I). If the 10,941 deaths in 1967 were decreased by applying this factor, the adjusted figure would be 9,696, giving a reduction between 1967 and 1968 of only 4.0 percent.

Because of the increase in the population, a more precise measure of the amount of reduc-

tion in mortality may be obtained by applying the comparability ratio to the death rate rather than to the number of deaths. Using the adjusted death rate for 1967 (4.9 deaths per 100,000) gives a reduction between 1967 and 1968 of 4.1 percent.

As shown in the table below, an estimated 1,476 of the 10,376 deaths that were assigned by the Seventh Revision to Chronic and unspecified nephritis and other renal sclerosis (ICD Nos. 592-594) were not reassigned by the Eighth Revision under Nephritis and nephrosis (ICDA Nos. 580-584) (appendix I). An examina-

Seventh Revision		Eighth Revision	
Cause of death and category number (1)	Number of deaths in 1966 (2)	Estimated number of deaths in column (2) that went to Nephritis and nephrosis (ICDA Nos. 580-584) (3)	Estimated number of deaths in column (2) that went to other causes (4)
All causes ..... 001-E999	1,863,149	10,227	1,852,922
Nephritis and nephrosis ..... 590-594	11,540	9,955	1,585
Acute nephritis ..... 590	485	462	23
Nephritis with edema, including nephrosis ..... 591	679	593	86
Chronic and unspecified nephritis and other renal sclerosis ..... 592-594	10,376	8,900	1,476
Other causes ..... Residual	1,851,609	272	1,851,337

tion of the major components of these 1,476 deaths shows that they were assigned by the Eighth Revision as follows: (1) an estimated 986 of the deaths were transferred to the list title Other diseases of urinary system (ICDA Nos. 591, 593, 595-599), and (2) an estimated 152 deaths were transferred by the Eighth Revision to Hypertensive renal disease (ICDA No. 403). It should be noted that the subgroup of categories under the title "Other diseases of urinary system" does not include Infections of kidney (ICDA No. 590).

*Association of Hypertension with Nephritis and nephrosis.*—About 84 percent of all deaths attributed to Nephritis and nephrosis (ICDA Nos. 580-584) were assigned to chronic and unqualified nephritis (ICDA Nos. 582, 583). These conditions are frequently associated with hypertension. The percentage of deaths attributed to category numbers 582 and 583 was somewhat higher for the population of races other than white (85.9 percent) than for the white population (83.1 percent).

Physicians report that since the kidney is frequently involved in forms of hypertension, it is often difficult to be sure of the difference between primary change causing the hypertension and secondary damage because of the hypertension.

Although hypertension may complicate any form of renal disease, clinical histories show that it is particularly common and severe in glomerular disease.<sup>8</sup>

Multiple-cause data based on a sample of deaths in 1955<sup>9</sup> show that for the white population hypertension was reported as a contributory condition in 12.7 percent of all deaths assigned to Chronic and unspecified nephritis and other renal sclerosis (ICD Nos. 592-594). The corresponding percentage for the population of races other than white was even higher—18.1 percent. It is believed that figures for hypertension as a contributory condition of nephritis and nephrosis are underreported, particularly for the population of races other than white.

It should be noted that the coding procedures in effect with the Eighth Revision provide, as did the procedures in effect with the Seventh Revision, that conditions of renal damage classifiable to nephritis and nephrotic syndrome (ICDA Nos. 580-583) be selected as the underlying cause of death when the renal condition was a consequence of Essential benign hypertension (ICDA No. 401). Within this fact may be found an explanation of why the mortality from Nephritis and nephrosis continues to be higher for the population of races other than white, for it is well known that this population is afflicted relatively more frequently with hypertension than is the white population. Consistent with this prevalence differential by color, hypertension is also reported as the underlying cause of death relatively more frequently for the population of races other than white than for the white population (figure 1).

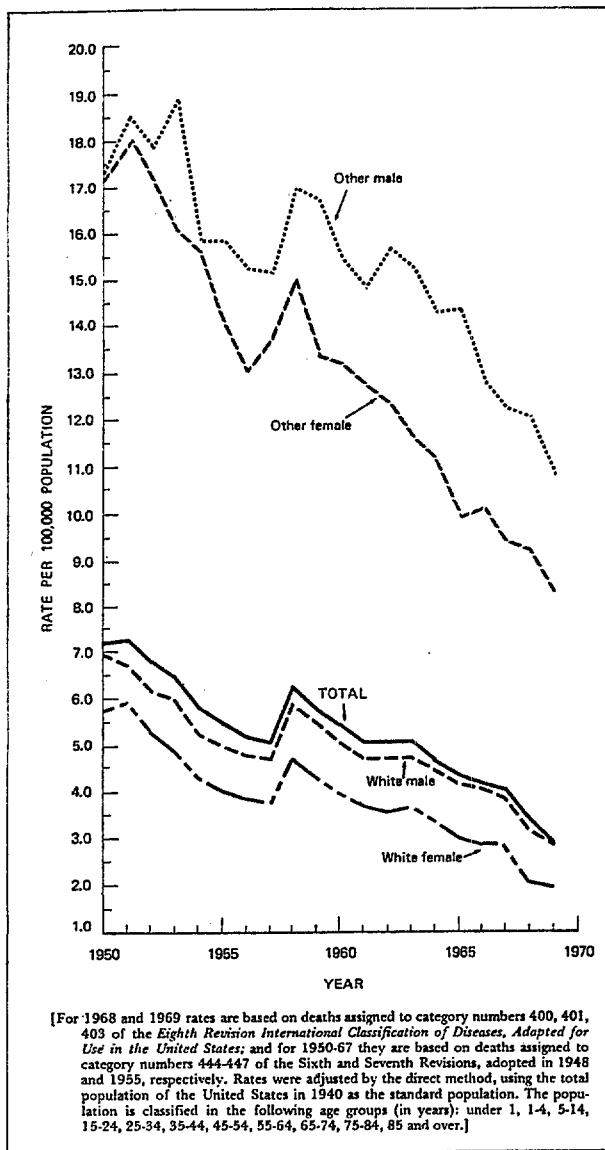


Figure 1. Age-adjusted death rates for Hypertension, by color and sex: United States, 1950-69.

Except for the break in continuity of mortality statistics between 1957 and 1958 (with the introduction of the Seventh Revision) and the lesser break between 1967 and 1968 (with the introduction of the Eighth Revision), the mortality trend for hypertension as the underlying cause of death was clearly downward

during 1950-69. The comparability ratio for hypertension between the Sixth and Seventh Revisions was 1.33, resulting primarily from the dropping of the preference given by the Sixth Revision to Arteriosclerotic heart disease so described (ICD No. 420.0) over Other hypertensive disease (ICD Nos. 444-447).<sup>5</sup> Between the Seventh and Eighth Revisions the comparability ratio was 0.8199.

An estimated 1,238 deaths assigned by the Seventh Revision to Hypertension with arteriolar nephrosclerosis (ICD No. 446) were transferred by the Eighth Revision to titles other than Hypertension (ICDA Nos. 400, 401, 403). About 899 of these 1,238 deaths were transferred to Chronic ischemic heart disease with or without cardiovascular disease with hypertensive disease (ICDA No. 412.\*1).

The transfer of these 899 deaths constituted a reinstatement of the Sixth Revision priority that Arteriosclerotic heart disease so described (ICD No. 420.0) had over Hypertension with arteriolar nephrosclerosis without mention of heart (ICD No. 446). This priority given to ICD No. 420.0 was dropped by the coding rules introduced with the Seventh Revision for 1958. It should be noted that the Seventh Revision also eliminated the words "without mention of heart" from the Sixth Revision title corresponding to ICD No. 446: thus the Seventh Revision title is reduced to Hypertension with arteriolar nephrosclerosis (ICD No. 446). As used with the Sixth Revision, the words "without mention of heart" were not to be interpreted literally but were defined to mean without mention of only the following types of heart disease: Other myocardial degeneration (ICD No. 422), Functional disease of heart (ICD No. 433), and Other and unspecified diseases of heart (ICD No. 434). In other words the phrase was *not* to be taken to mean "without mention of coronary heart disease."

*Comparison of mortality from Infections of kidney and from Nephritis and nephrosis.*—A number of researchers have called attention to the fact that while the total death rate for Nephritis and nephrosis decreased, the death rate for infections of the kidney turned upward, at least until about the middle of the 1960's. Waters<sup>10</sup> states:

Seventh Revision		Eighth Revision	
Cause of death and category number (1)	Number of deaths in 1966 (2)	Estimated number of deaths in column (2) that went to Hypertension (ICDA Nos. 400,401,403) (3)	Estimated number of deaths in column (2) that went to other causes (4)
All causes ..... 001-E999	1,863,149	9,331	1,853,818
Other hypertensive disease ..... 444-447	11,380	8,638	2,742
Hypertension with arteriolar nephrosclerosis..... 446	6,873	5,635	1,238
Essential hypertension and other hypertensive disease without mention of heart ..... 444,445,447	4,507	3,003	1,504
Other causes..... Residual	1,851,769	693	1,851,076

In England and Wales age-specific death rates for nephritis and nephroses have decreased while those for infections of the kidney have increased during the same period (1949-65). This seems to be due at least in part to a change in diagnostic terminology. The death rates for nephritis and nephrosis and infections of the kidney combined show a decrease in men at all ages and in women below the age of 65 years. Reasons for the increase in deaths recorded as from infections of the kidney include the possibility that infection is more commonly sought for now that it is amenable to treatment, the increased number of cases coming to necropsy, and the association between analgesics and renal disease.

In the United States, as in England and Wales, the death rate for Infections of kidney (ICDA No. 590) did rise throughout the 1950's and the early 1960's. This rise continued for 1958 and the early years of the 1960's, despite the fact that with the introduction of the Seventh Revision for 1958 about 2 percent fewer deaths were assigned to Infections of kidney than had been assigned to this title by the Sixth Revision.<sup>4</sup> But during the early sixties the upward trend in the United States for Infections of kidney leveled off and then started downward (figures 2, 3A, and 3B).

The coding procedures in effect with the Eighth Revision, introduced for data year 1968, result in the assignment of about 3 percent more

deaths to Infections of kidney (ICDA No. 590) than had been assigned to this cause by the Seventh Revision.

The transfer of 120 deaths from Other diseases of urinary system (ICD Nos. 601, 603, 605-609) to the Eighth Revision title Infections of kidney (ICDA No. 590) is believed to reflect primarily the transfer of a number of inclusion

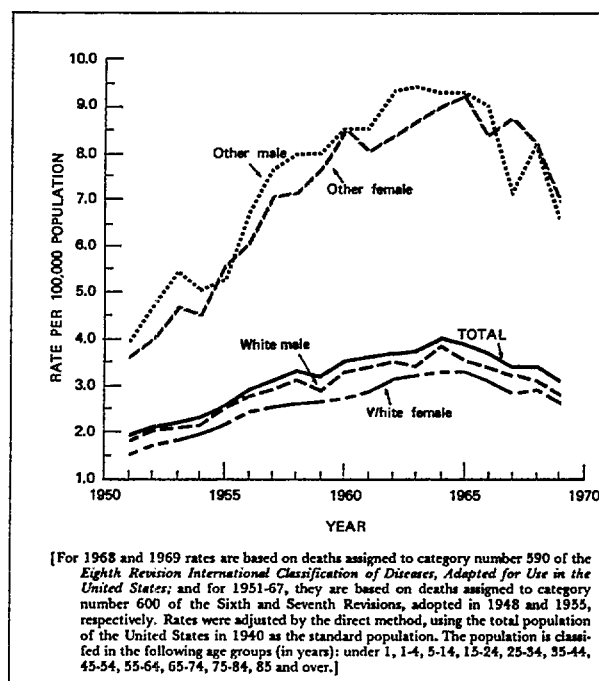


Figure 2. Age-adjusted death rates for Infections of kidney, by color and sex: United States, 1951-69.

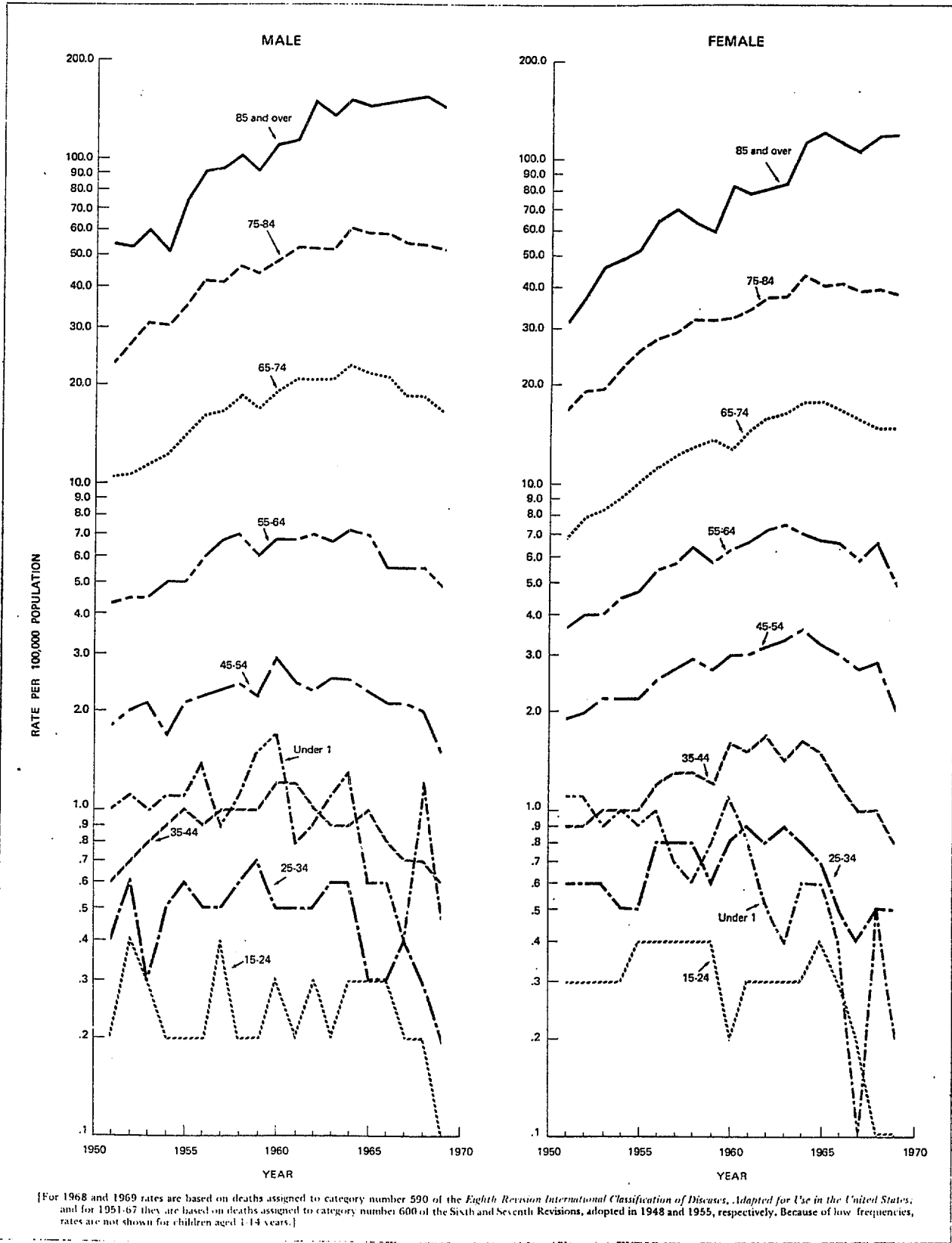


Figure 3A. Death rates for Infections of kidney among the white population, by age and sex: United States, 1951-69.

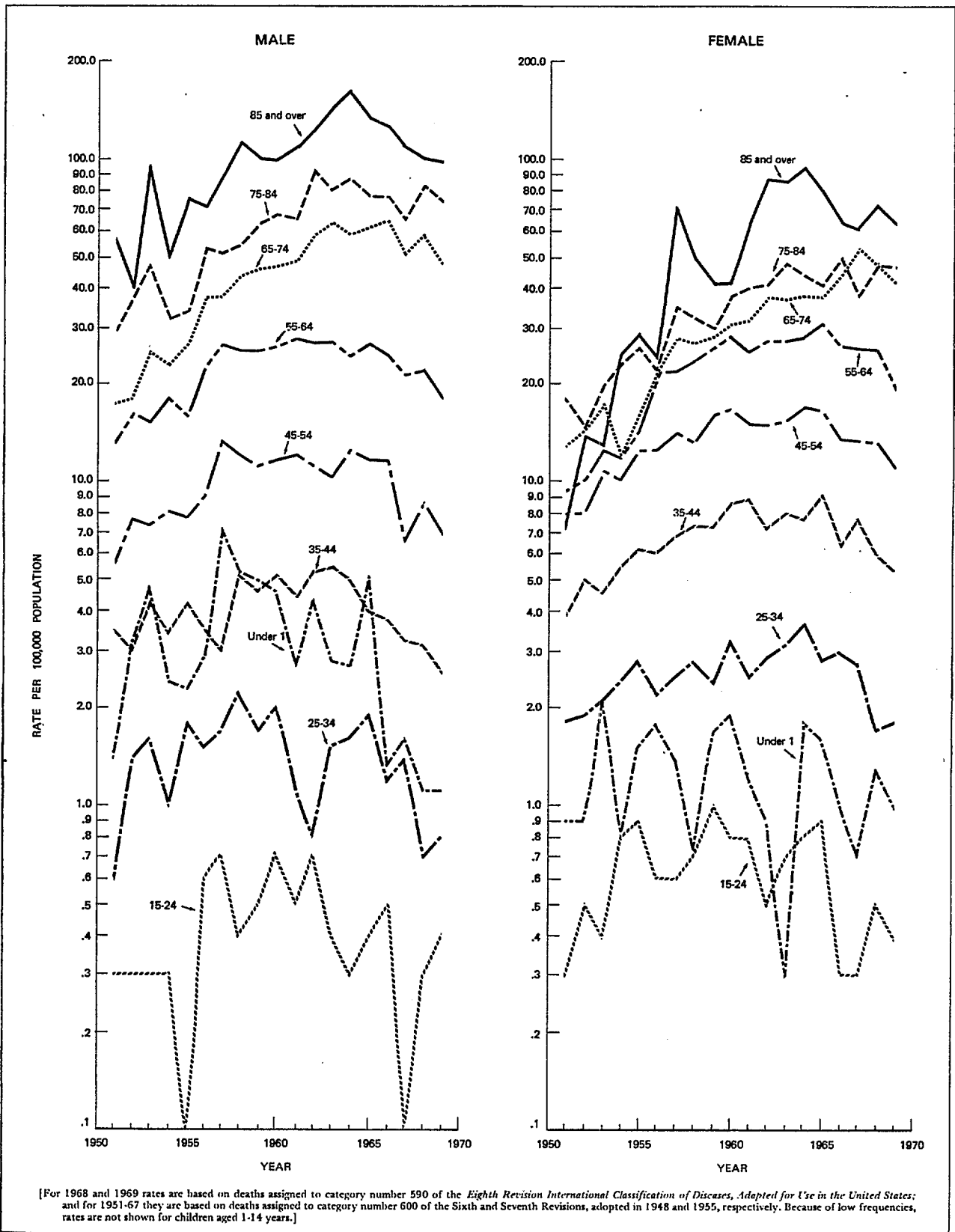


Figure 3B. Death rates for Infections of kidney among the population other than white, by age and sex: United States, 1951-69.

Seventh Revision		Eighth Revision	
Cause of death and category number (1)	Number of deaths in 1966 (2)	Estimated number of deaths in column (2) that went to Infections of kidney (ICDA No. 590) (3)	Estimated number of deaths in column (2) that went to other causes (4)
All causes ..... 001-E999	1,863,149	9,772	1,853,377
Infections of kidney .....600	9,498	9,157	341
Other diseases of urinary system .....601,603,605-609	3,207	120	3,087
Other causes ..... Residual	1,850,444	495	1,849,949

terms under the Seventh Revision title Other diseases of kidney and ureter (ICD No. 603) to the Eighth Revision title Other pyelonephritis, pyelitis, and pyelocystitis (ICDA No. 590.1). Among these transferred terms were necrosis, kidney, and renal papillitis.

Applying the comparability ratio between the Seventh and Eighth Revisions of 1.0288 to the 1967 death rate for Infections of kidney (4.6 deaths per 100,000 population) gives an adjusted rate for 1967 of 4.7—about the same rate as that for 1968 (table 1).

The puzzling relationship between the trends

for mortality from Nephritis and nephrosis and Infections of kidney may be made clearer with the availability of multiple-cause trends for these two groups of causes. Multiple-cause data from the study of deaths in 1955 (the most recent year for which such data have been published) show that only about 32 percent of the deaths for which the certificates have an entry of Infections of kidney are assigned to this cause.<sup>9</sup> The same study shows that about 52 percent of the deaths for which the certificates have an entry of Nephritis and nephrosis are assigned to this cause.

## 15. PEPTIC ULCER

A reduction in the assignments of deaths to the Eighth Revision title Peptic ulcer (ICDA Nos. 531-533) from the number that had been assigned to the comparable Seventh Revision title Ulcer of stomach and duodenum (ICD Nos. 540, 541) resulted in a comparability ratio of 0.9856 (appendix I).

The major shift in this reduction (based on the study of deaths occurring in 1966) was the transfer of an estimated 498 deaths from those assigned by the Seventh Revision to Ulcer of stomach (ICD No. 540) to the Eighth Revision title Gastrojejunal ulcer (ICDA No. 534). The transfer of these 498 deaths resulted from a

change in assignment of gastrointestinal hemorrhage when the site of the ulcer was not specified. By the Seventh Revision certificates with such entries were assigned to Ulcer of stomach (ICD No. 540). Another estimated 51 deaths that were assigned by the Seventh Revision to Ulcer of duodenum (ICD No. 541) were assigned to Gastrojejunal ulcer (ICDA No. 534). These changes are reflected in the great increase in the number of deaths for 1968 assigned to Gastrojejunal ulcer (ICDA No. 534) (721 deaths) over the number of deaths (196) in 1967 assigned to the same Seventh Revision title Gastrojejunal ulcer (ICD No. 542).



Seventh Revision		Eighth Revision	
Cause of death and category number (1)	Number of deaths in 1966 (2)	Estimated number of deaths in column (2) that went to Peptic ulcer (ICDA Nos. 531-533) (3)	Estimated number of deaths in column (2) that went to other causes (4)
All causes ..... 001-E999	1,863,149	10,172	1,852,977
Ulcer of stomach and duodenum.....540,541	10,321	9,429	892
Ulcer of stomach .....540	5,599	4,896	703
Ulcer of duodenum .....541	4,722	4,533	189
Other causes..... Residual	1,852,828	743	1,852,085

The Eighth Revision group title Peptic ulcer (ICDA Nos. 531-533) has the following three subtitles (shown with the number of deaths assigned to them for 1969):

Subtitle and category number	Number of deaths in 1969
Ulcer of stomach ..... 531	3,719
Ulcer of duodenum .....532	4,381
Peptic ulcer, site unspecified .....533	1,212

It should be noted that the number of deaths coded by the Eighth Revision to Ulcer of stomach (ICDA No. 531) is greatly reduced from the number assigned to this same title (ICD

No. 540) by the Seventh Revision. The study based on deaths occurring in 1966 shows that the comparability ratio for Ulcer of stomach (ICDA No. 531) is 0.6515.

The major component of the 2,084 deaths assigned to Ulcer of stomach (ICD No. 540) by the Seventh Revision but not reassigned to this title by the Eighth Revision was 1,293 deaths that were assigned by the Eighth Revision to the new title Peptic ulcer, site unspecified (ICDA No. 533). By the Seventh Revision, when ulcer (ruptured) with site unspecified was reported with indication that the ulcer was internal, such as resulting peritonitis, the ulcer was considered "peptic," with assignment to Ulcer of stomach (ICD No. 540).

As mentioned above, about 498 of the 2,084 transferred deaths were assigned by the Eighth Revision to Gastrojejunal ulcer (ICDA No. 534).

Seventh Revision		Eighth Revision	
Cause of death and category number (1)	Number of deaths in 1966 (2)	Estimated number of deaths in column (2) that went to Ulcer of stomach (ICDA No. 531) (3)	Estimated number of deaths in column (2) that went to other causes (4)
All causes ..... 001-E999	1,863,149	3,648	1,859,501
Ulcer of stomach.....540	5,599	3,515	2,084
Other causes..... Residual	1,857,550	133	1,857,417

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Table 1. Death rates for 48 selected causes: United States, 1966-69

[Rates per 100,000 population. Numbers after causes of death are category numbers of the Eighth Revision International Classification of Diseases, Adapted for Use in the United States, adopted in 1965. Rates for 1968 and 1969 are based on deaths assigned to these Eighth Revision category numbers; rates for 1966 and 1967 are based on deaths assigned to the category numbers of the Seventh Revision, adopted in 1955. These category numbers are shown in the last column of this table.]

Cause of death and category numbers of Eighth Revision	1969	1968	1967	1966	Category numbers according to the Sixth and Seventh Revisions
All causes-----	951.9	965.7	935.7	951.3	...
Enteritis and other diarrheal diseases-----008,009	1.3	1.5	3.8	3.9	543,571,572
Tuberculosis, all forms-----010-019	2.8	3.1	3.5	3.9	001-019
Syphilis and its sequelae-----090-097	0.3	0.3	1.2	1.1	020-029
Other infective and parasitic diseases-Remainder of 000-136	4.0	4.0	3.5	3.8	001-138, Remainder of
Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues-----140-209	160.0	159.4	157.2	155.1	140-205
Malignant neoplasms of buccal cavity and pharynx--140-149	3.7	3.6	3.4	3.5	140-148
Malignant neoplasms of digestive organs and peritoneum-----150-159	46.5	46.8	48.2	48.5	150-156A, 157-159
Malignant neoplasms of respiratory system-----160-163	32.7	31.8	29.4	28.0	160-164
Malignant neoplasms of breast-----174	14.4	14.6	14.3	14.1	170
Malignant neoplasms of genital organs-----180-187	20.3	20.5	20.4	20.6	171-179
Malignant neoplasms of urinary organs-----188,189	7.4	7.4	7.4	7.2	180,181
Malignant neoplasms of all other and unspecified sites-----170-173, 190-199	18.7	18.6	18.6	17.9	156B, 165, 190-199
Leukemia-----204-207	7.2	7.2	7.2	7.2	204
Other neoplasms of lymphatic and hematopoietic tissues-----200-203, 208, 209	9.0	8.9	8.3	8.1	200-203, 205
Benign neoplasms and neoplasms of unspecified nature-----210-239	2.3	2.5	2.5	2.5	210-239
Diabetes mellitus-----250	19.1	19.2	17.7	17.7	260
Anemias-----280-285	1.6	1.7	1.7	1.8	290-293
Meningitis-----320	0.9	0.9	1.0	1.2	340
Major cardiovascular diseases-----390-448	501.7	512.1	506.5	516.1	330-334, 400-468
Diseases of heart-----390-398, 402, 404, 410-429	366.1	372.6	364.5	371.2	400-402, 410-443
Active rheumatic fever and chronic rheumatic heart disease-----390-398	7.6	8.2	7.2	7.7	400-402, 410-416
Hypertensive heart disease with or without renal disease-----402, 404	8.1	8.9	25.3	27.7	440, 441, 442, 443
Ischemic heart disease-----410-413	331.7	337.6	289.7	292.7	420
Chronic disease of endocardium and other myocardial insufficiency-----424, 428	3.7	3.9	26.6	27.4	421, 422
All other forms of heart disease---420-423, 425-427, 429	15.0	14.0	15.8	15.8	430-434
Hypertension-----400, 401, 403	4.2	4.5	5.6	5.8	444-447
Cerebrovascular diseases-----430-438	102.6	105.8	102.2	104.6	330-334
Arteriosclerosis-----440	16.4	16.8	19.0	19.9	450
Other diseases of arteries, arterioles, and capillaries-----441-448	12.4	12.4	15.1	14.6	451-468
Acute bronchitis and bronchiolitis-----466	0.6	0.7	0.5	0.5	500
Influenza and pneumonia-----470-474, 480-486	33.9	36.8	28.8	32.5	480-493
Influenza-----470-474	3.0	3.5	0.7	1.4	480-483
Pneumonia-----480-486	30.9	33.2	28.0	31.0	490-493
Bronchitis, emphysema, and asthma-----490-493	15.4	16.6	15.3	15.2	501, 502, 527.1, 241
Chronic and unqualified bronchitis-----490, 491	2.9	3.1	2.7	2.6	501, 502
Emphysema-----492	11.4	12.1	10.6	10.3	527.1
Asthma-----493	1.2	1.3	2.1	2.2	241
Peptic ulcer-----531-533	4.6	4.7	5.0	5.3	540, 541
Hernia and intestinal obstruction-----550-553, 560	3.7	3.0	5.0	5.1	560, 561, 570
Cirrhosis of liver-----571	14.8	14.6	14.1	13.6	581
Cholelithiasis, cholecystitis and cholangitis-----574, 575	2.1	2.2	2.2	2.3	584, 585
Nephritis and nephrosis-----580-584	4.7	4.7	5.5	5.9	590-594
Infections of kidney-----590	4.3	4.7	4.6	4.8	600
Hyperplasia of prostate-----600	1.2	1.3	1.6	1.6	610
Congenital anomalies-----740-759	8.4	8.4	8.8	9.3	750-759
Certain causes of mortality in early infancy-----760-769, 772, 774-778	21.4	21.9	24.4	26.4	760-776
Symptoms and ill-defined conditions-----780-796	13.0	11.8	12.2	12.2	780-795
All other diseases-----Residual	50.9	51.1	34.4	34.7	Residual
Accidents-----E800-E949	52.6	57.5	57.2	58.0	E800-E962
Motor vehicle accidents-----E810-E823	27.6	27.5	26.7	27.1	E810-E835
All other accidents-----E800-E807, E825-E949	30.0	30.0	30.4	30.9	E800-E802, E840-E962
Suicide-----E950-E959	11.1	10.7	10.8	10.9	E963, E970-E979
Homicide-----E960-E978	7.7	7.3	6.8	5.9	E964, E980-E985
All other external causes-----E980-E999	2.5	2.2	---	---	Residual

Table 2. Deaths for 48 selected causes: United States, 1966-69

[Numbers after causes of death are category numbers of the Eighth Revision International Classification of Diseases, Adapted for Use in the United States, adopted in 1965. Deaths for 1968 and 1969 are those assigned to these Eighth Revision category numbers; deaths for 1966 and 1967 are those assigned to the category numbers of the Seventh Revision, adopted in 1955. These category numbers are shown in the last column of this table.]

Cause of death and category numbers of Eighth Revision	1969	1968	1967	1966	Category numbers according to the Sixth and Seventh Revisions
All causes-----	1,921,990	1,930,082	1,851,323	1,863,149	...
Enteritis and other diarrheal diseases-----008,009	2,612	2,940	7,504	7,552	543,571,572
Tuberculosis, all forms-----010-019	5,567	6,292	6,901	7,625	001-019
Syphilis and its sequelae-----090-097	543	586	2,381	2,193	020-029
Other infective and parasitic diseases-Remainder of 000-136	8,069	7,958	6,964	7,496	001-138, Remainder of
Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues-----140-209	323,092	318,547	310,983	303,736	140-205
Malignant neoplasms of buccal cavity and pharynx--140-149	7,553	7,294	6,718	6,800	140-148
Malignant neoplasms of digestive organs and peritoneum-----150-159	93,986	93,563	95,320	95,079	150-156A, 157-159
Malignant neoplasms of respiratory system-----160-163	66,038	63,485	58,086	54,934	160-164
Malignant neoplasms of breast-----174	29,083	29,081	28,217	27,533	170
Malignant neoplasms of genital organs-----180-187	41,008	40,936	40,408	40,378	171-179
Malignant neoplasms of urinary organs-----188,189	14,897	14,792	14,656	14,166	180,181
Malignant neoplasms of all other and unspecified sites-----170-173,190-199	37,825	37,247	36,761	35,032	156B,165,190-199
Leukemia-----204-207	14,450	14,375	14,336	14,012	204
Other neoplasms of lymphatic and hematopoietic tissues-----200-203,208,209	18,252	17,774	16,481	15,802	200-203,205
Benign neoplasms and neoplasms of unspecified nature-----210-239	4,677	4,948	5,013	4,923	210-239
Diabetes mellitus-----250	38,541	38,352	35,049	34,597	260
Anemias-----280-285	3,318	3,494	3,460	3,452	290-293
Meningitis-----320	1,719	1,707	2,046	2,324	340
Major cardiovascular diseases-----390-448	1,013,015	1,023,399	1,002,111	1,010,812	330-334,400-468
Diseases of heart-----390-398,402,404,410-429	739,265	744,658	721,268	727,002	400-402,410-443
Active rheumatic fever and chronic rheumatic heart disease-----390-398	15,432	16,358	14,176	15,012	400-402,410-416
Hypertensive heart disease with or without renal disease-----402,404	16,286	17,698	49,975	54,176	440,441,442,443
Ischemic heart disease-----410-413	669,829	674,747	573,153	573,191	420
Chronic disease of endocardium and other myocardial insufficiency-----424,428	7,475	7,836	52,697	53,581	421,422
All other forms of heart disease---420-423,425-427,429	30,243	28,019	31,267	31,042	430-434
Hypertension-----400,401,403	8,426	9,063	11,151	11,380	444-447
Cerebrovascular diseases-----430-438	207,179	211,390	202,184	204,841	330-334
Arteriosclerosis-----440	33,063	33,568	37,564	38,907	450
Other diseases of arteries, arterioles, and capillaries-----441-448	25,082	24,720	29,944	28,682	451-468
Acute bronchitis and bronchiolitis-----466	1,286	1,432	958	987	500
Influenza and pneumonia-----470-474,480-486	68,365	73,492	56,892	63,615	480-493
Influenza-----470-474	5,971	7,062	1,475	2,830	480-483
Pneumonia-----480-486	62,394	66,430	55,417	60,785	490-493
Bronchitis, emphysema, and asthma-----490-493	31,144	33,078	30,318	29,740	501,502,527.1,241
Chronic and unqualified bronchitis-----490,491	5,843	6,205	5,306	5,164	501,502
Emphysema-----492	22,939	24,185	20,875	20,252	527.1
Asthma-----493	2,362	2,688	4,137	4,324	241
Peptic ulcer-----531-533	9,312	9,460	9,825	10,321	540,541
Hernia and intestinal obstruction-----550-553,560	7,500	7,758	9,814	10,078	560,561,570
Cirrhosis of liver-----571	29,866	29,183	27,816	26,692	581
Cholelithiasis, cholecystitis and cholangitis-----574,575	4,262	4,385	4,383	4,592	584,585
Nephritis and nephrosis-----580-584	9,417	9,311	10,941	11,540	590-594
Infections of kidney-----590	8,750	9,395	9,006	9,498	600
Hyperplasia of prostate-----600	2,499	2,647	3,136	3,217	610
Congenital anomalies-----740-759	17,008	16,793	17,328	18,158	750-759
Certain causes of mortality in early infancy-----760-769.2,769.4-772,774-778	43,171	43,840	48,314	51,644	760-776
Symptoms and ill-defined conditions-----780-796	26,160	23,656	24,098	23,960	780-795
All other diseases-----Residual	102,724	102,192	68,163	67,947	Residual
Accidents-----E800-E949	116,385	114,864	113,169	113,563	E800-E962
Motor vehicle accidents-----E810-E823	55,791	54,862	52,924	53,041	E810-E835
All other accidents-----E800-E807,E825-E949	60,594	60,002	60,245	60,522	E800-E802,E840-E962
Suicide-----E950-E959	22,364	21,372	21,325	21,281	E963,E970-E979
Homicide-----E960-E978	15,477	14,686	13,425	11,606	E964,E980-E985
All other external causes-----E980-E999	5,147	4,315	---	---	Residual

Table 3. Death rates for Chronic ischemic heart disease and for four special four-digit categories of this disease, by age, color, and sex: United States, 1968-71

[Rates per 100,000 population in specified groups]

Eighth Revision number	Cause of death, color, sex, and year	Total <sup>1</sup>	Under 1 year	1-4 years	5-9 years	10-14 years	15-19 years	20-24 years	25-29 years	30-34 years
412	<u>Chronic ischemic heart disease</u>									
	Total:									
1	1971-----	151.5	0.1	0.0	0.1	0.1	0.2	0.3	0.8	2.8
2	1970-----	150.1	0.1	0.0	0.0	0.0	0.1	0.2	1.0	2.8
3	1969-----	150.2	0.3	0.0	0.0	0.0	0.1	0.3	0.9	2.8
4	1968-----	150.2	0.4	0.1	0.0	0.0	0.0	0.2	0.7	2.7
	White male:									
5	1971-----	158.7	0.1	0.1	0.0	0.1	0.2	0.3	0.9	3.1
6	1970-----	158.4	0.1	0.1	0.0	0.0	0.1	0.2	1.1	2.8
7	1969-----	158.0	0.3	0.0	-	0.0	0.1	0.3	0.9	2.9
8	1968-----	157.7	0.3	0.0	0.0	0.0	0.0	0.2	0.7	2.7
	White female:									
9	1971-----	152.0	-	-	0.1	0.1	0.1	0.1	0.4	1.1
10	1970-----	148.6	0.1	-	0.0	0.0	0.0	0.1	0.4	1.0
11	1969-----	149.0	0.4	0.0	-	0.0	0.1	0.1	0.3	0.8
12	1968-----	148.1	0.3	0.0	0.0	0.0	-	0.1	0.2	0.7
	All other male:									
13	1971-----	134.7	0.4	0.3	0.2	-	0.2	1.3	3.2	11.6
14	1970-----	136.6	-	0.1	-	-	0.1	0.7	4.1	11.0
15	1969-----	137.6	-	-	0.1	0.1	0.2	1.6	3.9	14.1
16	1968-----	140.3	0.7	0.1	0.1	-	0.2	1.3	4.2	10.9
	All other female:									
17	1971-----	116.0	0.7	-	0.1	0.1	0.4	0.3	1.6	4.9
18	1970-----	117.9	0.4	-	-	0.1	0.4	0.6	1.5	6.8
19	1969-----	118.4	-	-	0.1	-	0.3	0.3	2.8	6.5
20	1968-----	123.8	1.0	0.2	0.1	-	0.1	0.2	1.7	9.9
412.1 <sup>2</sup>	<u>Chronic ischemic heart disease with or without cardiovascular disease with hypertensive disease</u>									
	Total:									
21	1971-----	9.6	-	-	0.0	-	0.0	0.0	0.0	0.1
22	1970-----	9.7	-	0.0	0.0	0.0	-	0.0	0.0	0.1
23	1969-----	9.8	-	-	0.0	-	0.0	0.0	0.0	0.1
24	1968-----	10.2	0.0	-	0.0	-	-	0.0	0.0	0.1
	White male:									
25	1971-----	8.4	-	-	-	-	0.0	0.0	0.0	0.1
26	1970-----	8.5	-	-	0.0	-	-	0.0	0.0	0.0
27	1969-----	8.5	-	-	-	-	-	0.0	0.1	0.1
28	1968-----	9.0	0.1	-	-	-	-	-	-	0.1
	White female:									
29	1971-----	10.9	-	-	0.0	-	0.0	0.0	-	0.1
30	1970-----	10.9	-	-	-	0.0	-	-	0.0	0.0
31	1969-----	11.1	-	-	-	-	0.0	-	0.0	0.0
32	1968-----	11.2	-	-	0.0	-	-	-	-	0.0
	All other male:									
33	1971-----	8.7	-	-	-	-	-	0.1	0.1	0.7
34	1970-----	8.8	-	0.1	-	-	-	-	0.1	0.1
35	1969-----	9.7	-	-	0.1	-	-	-	-	0.5
36	1968-----	10.0	-	-	-	-	-	0.1	0.4	1.2
	All other female:									
37	1971-----	9.8	-	-	0.1	-	0.1	-	0.2	-
38	1970-----	10.2	-	-	-	-	-	-	0.1	0.5
39	1969-----	10.3	-	-	-	-	-	-	-	0.1
40	1968-----	11.3	-	-	-	-	-	-	-	0.1
412.2 <sup>2</sup>	<u>Cardiovascular disease without mention of chronic ischemic heart disease with hypertensive disease</u>									
	Total:									
41	1971-----	11.0	0.1	-	0.0	0.0	0.0	0.1	0.2	0.5
42	1970-----	11.4	-	-	0.0	-	0.0	0.0	0.2	0.7
43	1969-----	11.6	-	-	-	-	0.0	0.1	0.3	0.8
44	1968-----	12.4	-	-	-	0.0	0.0	0.1	0.2	0.8
	White male:									
45	1971-----	7.7	0.1	-	-	-	0.0	0.1	0.1	0.1
46	1970-----	8.0	-	-	-	-	-	0.0	0.1	0.3
47	1969-----	8.2	-	-	-	-	0.0	0.1	0.2	0.3
48	1968-----	8.5	-	-	-	-	-	0.0	0.0	0.3
	White female:									
49	1971-----	10.3	-	-	0.0	0.0	0.0	0.0	0.1	0.2
50	1970-----	10.6	-	-	0.0	-	-	0.0	0.0	0.3
51	1969-----	10.7	-	-	-	-	0.0	0.0	0.1	0.2
52	1968-----	11.5	-	-	-	0.0	-	0.0	0.1	0.2

See footnotes at end of table.

Table 3. Death rates for Chronic ischemic heart disease and for four special four-digit categories of this disease, by age, color, and sex: United States, 1968-71—Con.

[Rates per 100,000 population in specified groups]

35-39 years	40-44 years	45-49 years	50-54 years	55-59 years	60-64 years	65-69 years	70-74 years	75-79 years	80-84 years	85 years and over	
8.4	20.4	40.3	76.0	136.7	238.6	406.3	746.1	1,362.3	2,440.7	5,203.4	1
8.6	19.5	41.2	76.3	138.1	242.4	424.6	753.7	1,383.2	2,480.4	4,800.4	2
8.4	19.3	38.7	75.8	137.9	249.5	437.2	800.2	1,348.1	2,457.2	5,547.1	3
7.6	19.3	39.0	76.2	140.6	255.0	447.5	819.7	1,377.4	2,470.6	5,532.5	4
9.9	26.4	55.2	103.9	189.6	325.0	539.6	937.1	1,643.0	2,846.6	5,675.3	5
10.2	24.8	55.7	103.5	189.9	328.0	557.2	943.2	1,659.7	2,867.8	5,090.2	6
10.0	24.5	52.2	102.8	187.5	336.2	552.2	988.7	1,618.8	2,760.1	5,640.1	7
9.3	23.9	50.8	103.0	186.4	339.4	558.2	1,012.4	1,630.9	2,752.7	5,620.5	8
2.6	6.3	13.7	29.5	60.9	125.7	252.1	550.0	1,155.3	2,268.5	5,228.4	9
2.4	5.8	13.4	30.5	60.7	126.1	265.1	560.5	1,175.5	2,302.1	4,925.3	10
2.4	5.9	12.1	29.5	61.2	126.6	271.6	590.5	1,155.4	2,339.4	6,065.2	11
2.1	5.8	13.3	28.6	62.6	130.3	280.9	606.2	1,193.7	2,367.2	5,968.6	12
33.3	65.6	124.2	216.4	353.9	515.7	755.9	1,231.5	1,685.3	2,163.0	3,324.5	13
32.5	71.9	133.6	210.7	347.3	541.7	808.6	1,253.3	1,745.9	2,112.3	2,872.5	14
34.6	70.0	133.3	229.6	365.3	588.1	942.6	1,581.5	1,649.2	1,975.0	2,465.6	15
28.9	72.8	133.3	224.8	388.4	606.1	982.9	1,630.6	1,599.2	1,925.7	2,785.5	16
16.6	41.5	69.3	131.4	205.8	348.1	562.0	987.5	1,356.3	1,721.4	3,228.9	17
19.9	38.8	76.0	138.2	226.1	374.7	594.0	959.1	1,364.7	1,929.7	2,951.7	18
16.6	41.3	72.3	130.8	231.1	432.0	775.1	1,152.2	1,217.2	1,787.8	2,741.3	19
16.6	43.9	82.2	147.6	260.5	460.2	834.0	1,112.6	1,279.4	1,806.3	2,980.6	20
0.4	0.9	1.8	4.2	8.6	15.9	28.5	53.6	97.5	158.2	271.7	21
0.4	0.8	2.2	4.3	8.6	16.4	30.1	56.2	96.3	161.7	261.0	22
0.4	1.0	1.9	4.2	8.7	16.5	31.9	61.3	97.3	166.1	295.1	23
0.4	1.0	2.1	4.7	9.3	18.6	36.1	61.8	103.2	167.8	293.1	24
0.4	1.0	2.4	4.6	10.5	18.2	32.1	55.8	97.1	147.3	234.0	25
0.4	0.7	2.5	4.5	9.6	19.2	33.5	56.8	96.1	154.6	217.5	26
0.2	1.0	2.1	4.4	9.8	19.1	33.0	63.2	89.9	151.0	239.2	27
0.2	1.1	2.1	5.5	10.4	21.5	36.4	63.7	100.7	151.7	249.0	28
0.1	0.3	0.5	2.2	4.5	10.3	20.9	46.5	93.9	168.7	300.7	29
0.1	0.4	0.8	2.1	4.9	10.7	22.8	50.1	92.8	168.1	295.3	30
0.2	0.3	0.9	2.1	4.8	10.2	23.2	53.6	98.2	179.4	354.8	31
0.1	0.3	0.8	2.2	5.0	10.3	28.5	53.2	102.9	182.1	339.5	32
2.6	4.5	7.0	13.9	24.9	35.3	54.0	84.7	121.7	102.7	159.2	33
2.2	3.0	7.4	12.0	24.6	32.1	57.4	88.7	119.5	138.5	167.8	34
1.8	4.5	6.5	18.3	25.1	40.4	76.5	115.3	128.9	131.6	132.8	35
2.3	5.3	9.1	12.8	26.5	49.9	84.0	111.9	111.0	140.5	145.5	36
1.2	2.3	4.1	10.2	16.6	31.9	51.9	90.2	129.3	143.7	228.9	37
0.9	2.9	6.3	14.5	19.7	34.5	50.7	92.4	126.9	151.4	208.5	38
1.1	2.8	4.5	9.9	21.2	36.7	80.1	105.5	127.0	146.9	182.5	39
1.7	2.6	6.6	13.8	25.5	50.1	78.1	117.0	122.9	142.1	215.3	40
1.7	3.2	5.8	10.5	16.4	25.8	39.6	62.1	92.1	132.6	204.1	41
1.7	3.4	6.7	10.8	17.9	27.3	42.4	62.3	95.9	141.4	198.2	42
1.8	3.8	6.8	10.7	18.4	29.8	44.0	67.6	94.5	138.2	232.4	43
1.7	3.9	7.2	11.8	19.7	30.5	49.5	74.3	102.4	144.9	246.1	44
0.8	1.6	3.4	7.0	12.9	22.0	33.8	51.4	77.2	109.9	143.7	45
0.6	1.6	3.8	8.0	13.2	23.4	35.9	52.2	80.3	105.1	139.6	46
0.7	1.7	3.7	7.8	14.5	24.8	35.8	56.8	77.8	105.1	151.7	47
0.7	1.7	4.5	8.3	14.2	24.9	38.5	61.5	81.9	107.6	160.4	48
0.4	0.8	2.6	4.6	8.4	14.4	26.5	48.8	85.4	132.6	218.9	49
0.6	1.1	2.4	4.5	9.1	15.5	27.5	49.6	88.0	144.7	214.5	50
0.5	1.3	2.8	4.6	8.2	16.2	28.2	51.8	88.1	145.5	269.5	51
0.5	1.3	2.9	5.0	10.2	16.7	32.5	59.0	97.6	154.4	280.6	52

Table 3. Death rates for Chronic ischemic heart disease and for four special four-digit categories of this disease, by age, color, and sex: United States, 1968-71--Con.

[Rates per 100,000 population in specified groups]

Eighth Revision number	Cause of death, color, sex, and year	Total <sup>1</sup>	Under 1 year	1-4 years	5-9 years	10-14 years	15-19 years	20-24 years	25-29 years	30-34 years
412.2 <sup>2</sup>	<u>Cardiovascular disease without mention of chronic ischemic heart disease with hypertensive disease--Con.</u>									
	All other male:									
1	1971-----	22.9	-	-	-	-	-	0.4	1.5	4.2
2	1970-----	24.6	-	-	-	-	0.1	0.1	2.5	4.2
3	1969-----	26.0	-	-	-	-	0.1	0.9	1.3	6.5
4	1968-----	27.9	-	-	-	-	0.1	0.3	1.7	4.1
	All other female:									
5	1971-----	25.4	0.7	-	-	0.1	0.1	0.1	0.7	1.7
6	1970-----	27.2	-	-	-	-	-	-	0.6	3.8
7	1969-----	28.3	-	-	-	-	0.2	0.2	1.6	4.3
8	1968-----	30.4	-	-	-	-	-	0.1	1.4	5.8
412.3 <sup>2</sup>	<u>Chronic ischemic heart disease with or without cardiovascular disease without mention of hypertensive disease</u>									
	Total:									
9	1971-----	107.4	0.0	0.0	0.0	0.1	0.1	0.2	0.5	2.0
10	1970-----	106.7	0.1	0.0	0.0	0.0	0.1	0.2	0.6	1.8
11	1969-----	106.9	0.2	0.0	0.0	0.0	0.1	0.1	0.5	1.6
12	1968-----	106.5	0.3	0.0	0.0	0.0	0.0	0.1	0.4	1.6
	White male:									
13	1971-----	119.4	-	0.0	0.0	0.1	0.1	0.2	0.7	2.6
14	1970-----	119.8	0.1	0.0	-	0.0	0.0	0.2	0.9	2.3
15	1969-----	119.4	0.3	0.0	-	0.0	0.1	0.1	0.7	2.2
16	1968-----	118.8	0.3	0.0	0.0	0.0	0.0	0.2	0.6	2.1
	White female:									
17	1971-----	106.9	-	-	0.0	0.0	0.0	0.1	0.2	0.8
18	1970-----	104.6	0.1	-	0.0	0.0	0.0	0.1	0.3	0.6
19	1969-----	105.1	0.3	-	-	0.0	0.1	0.1	0.1	0.5
20	1968-----	103.9	0.1	0.0	0.0	0.0	-	0.0	0.1	0.5
	All other male:									
21	1971-----	77.2	0.4	0.3	0.2	-	0.1	0.8	1.4	5.7
22	1970-----	79.3	-	-	-	-	0.1	0.5	1.3	5.7
23	1969-----	80.0	-	-	-	0.1	0.1	0.7	2.3	5.5
24	1968-----	81.4	0.3	0.1	0.1	-	0.1	0.6	2.1	4.5
	All other female:									
25	1971-----	59.2	-	-	0.1	-	0.3	0.1	0.7	2.2
26	1970-----	60.2	0.4	-	-	0.1	0.2	0.4	0.7	2.4
27	1969-----	61.6	-	-	0.1	-	0.2	-	1.1	1.7
28	1968-----	63.7	1.0	0.2	-	-	0.1	0.1	0.3	3.5
412.4 <sup>2</sup>	<u>Cardiovascular disease without mention of chronic ischemic heart disease without mention of hypertensive disease</u>									
	Total:									
29	1971-----	23.5	-	0.0	0.0	0.0	0.0	0.0	0.1	0.3
30	1970-----	22.3	-	0.0	0.0	-	0.0	0.0	0.1	0.2
31	1969-----	21.8	0.1	0.0	-	-	-	0.0	0.1	0.3
32	1968-----	21.2	0.1	0.0	0.0	-	0.0	0.0	0.1	0.2
	White male:									
33	1971-----	23.2	-	0.0	-	0.0	-	0.0	0.1	0.3
34	1970-----	22.2	-	0.0	0.0	-	0.0	0.0	0.1	0.2
35	1969-----	22.0	0.1	0.0	-	-	-	0.0	0.0	0.3
36	1968-----	21.3	-	-	-	-	-	0.0	0.1	0.2
	White female:									
37	1971-----	23.8	-	-	0.0	0.0	0.0	0.0	0.0	0.1
38	1970-----	22.5	-	-	-	-	-	-	0.0	0.1
39	1969-----	22.1	0.1	0.0	-	-	-	0.0	0.0	0.1
40	1968-----	21.5	0.1	0.0	-	-	-	-	0.0	0.0
	All other male:									
41	1971-----	25.9	-	-	-	-	0.1	0.1	0.1	1.0
42	1970-----	24.0	-	-	-	-	-	0.1	0.3	1.0
43	1969-----	21.9	-	-	-	-	-	-	0.3	1.6
44	1968-----	21.0	0.3	-	-	-	0.1	0.2	-	1.2
	All other female:									
45	1971-----	21.6	-	-	-	-	-	0.1	-	1.0
46	1970-----	20.3	-	-	-	-	0.1	0.2	0.1	0.1
47	1969-----	18.2	-	-	-	-	-	0.1	0.1	0.4
48	1968-----	18.4	-	-	0.1	-	-	-	-	0.4

<sup>1</sup> Figures for age not stated are included in total but not distributed among age groups.

<sup>2</sup> In anticipation of a possible change in the classification of these terms and for the benefit of those interested in doing further study, NCHS has created these special four-digit subcategories under category 412 that are used instead of those listed in the Eighth Revision ICDA. These special four-digit subcategories permit the separation of deaths due to cardiovascular disease without evidence of a disease of the coronary arteries from those due to other conditions classifiable to chronic ischemic heart disease with or without mention of cardiovascular disease. Subcategories 412.1 and 412.2 together are equivalent to ICDA category 412.0, and subcategories 412.3 and 412.4 together are equivalent to ICDA category 412.9.



Table 3. Death rates for Chronic ischemic heart disease and for four special four-digit categories at this disease, by age, color, and sex: United States, 1968-71—Con.

[Rates per 100,000 population in specified groups]

35-39 years	40-44 years	45-49 years	50-54 years	55-59 years	60-64 years	65-69 years	70-74 years	75-79 years	80-84 years	85 years and over	
10.7	17.6	32.1	56.6	79.7	103.3	138.9	180.6	186.0	224.7	263.3	1
8.6	22.7	42.4	54.1	82.4	110.1	147.1	181.3	219.5	255.6	245.4	2
11.7	24.2	40.5	56.8	95.7	127.0	164.3	254.8	227.3	244.7	237.7	3
11.0	24.4	39.8	63.6	99.5	138.8	198.1	283.8	231.5	221.6	280.0	4
8.8	18.7	26.9	49.8	67.9	96.0	127.7	197.7	235.9	249.5	359.2	5
11.0	16.5	33.2	50.6	81.9	101.3	140.6	193.5	247.4	319.7	341.9	6
9.5	21.5	35.3	51.2	79.4	132.0	190.4	245.8	217.8	242.9	327.5	7
9.3	23.1	37.1	56.5	86.8	128.1	218.4	242.2	241.8	283.2	381.9	8
5.5	14.0	27.1	50.3	92.0	162.2	279.8	518.7	965.6	1,759.7	3,840.4	9
5.8	13.2	27.5	51.4	92.8	165.9	294.6	529.0	984.0	1,783.4	3,554.7	10
5.5	12.5	24.9	50.5	93.2	170.7	303.1	561.3	958.3	1,782.4	4,123.4	11
4.8	12.2	25.2	50.0	93.7	174.6	305.7	574.9	977.7	1,783.8	4,114.6	12
7.8	21.3	42.5	77.3	139.6	240.1	400.7	697.0	1,229.1	2,156.1	4,371.4	13
8.3	19.7	42.9	78.2	142.9	244.5	420.4	707.6	1,249.8	2,155.0	3,914.3	14
8.2	19.1	39.1	77.1	140.1	250.2	414.6	738.6	1,219.6	2,095.6	4,347.3	15
7.3	18.4	37.7	76.1	138.7	254.8	415.5	756.5	1,224.0	2,089.9	4,328.0	16
1.7	4.3	8.5	18.6	39.4	83.7	170.5	376.3	802.7	1,602.7	3,818.6	17
1.5	3.7	8.5	19.9	38.6	82.7	178.5	385.1	817.0	1,628.9	3,614.7	18
1.5	3.5	6.9	18.5	39.4	84.2	184.6	403.3	800.7	1,662.0	4,469.3	19
1.4	3.6	8.0	17.6	39.5	86.3	185.1	414.2	825.1	1,669.0	4,407.0	20
17.6	33.8	64.7	110.2	188.1	280.5	417.7	713.0	1,042.6	1,358.9	2,151.0	21
18.8	38.3	67.7	111.8	178.9	308.9	457.8	743.3	1,069.6	1,333.9	1,912.6	22
17.9	35.0	69.9	120.3	196.3	331.4	547.4	938.9	1,007.0	1,244.7	1,629.5	23
13.1	35.6	70.6	119.3	209.3	327.4	555.3	974.4	1,006.3	1,225.7	1,865.5	24
5.2	15.6	27.9	54.5	92.6	155.8	278.2	504.9	724.6	993.2	1,942.1	25
6.7	16.0	29.2	55.0	91.9	176.5	296.7	500.6	734.8	1,097.7	1,806.3	26
4.3	14.0	25.4	55.1	104.2	199.7	379.1	631.3	658.0	1,100.0	1,716.3	27
4.5	13.4	31.5	59.9	112.7	215.4	423.6	594.2	702.4	1,071.6	1,831.9	28
0.8	2.3	5.6	11.0	19.7	34.8	58.4	111.7	207.2	390.2	887.1	29
0.8	2.1	4.8	9.9	18.8	32.7	57.6	106.2	207.0	393.9	786.5	30
0.8	2.0	5.1	10.2	17.6	32.4	58.1	110.1	197.9	370.6	896.1	31
0.8	2.1	4.6	9.7	17.8	31.4	56.2	108.8	194.1	374.1	878.7	32
0.9	2.5	6.9	15.1	26.7	44.6	73.1	132.9	239.5	433.3	926.2	33
0.9	2.7	6.4	12.8	24.2	40.9	67.4	126.5	233.6	453.1	818.8	34
0.9	2.7	7.4	13.6	23.2	42.1	68.8	130.1	231.5	408.4	901.9	35
1.2	2.7	6.5	13.1	23.0	38.2	67.8	130.7	224.3	403.4	883.1	36
0.4	0.9	2.1	4.1	8.5	17.2	34.2	78.4	173.3	364.4	890.2	37
0.3	0.6	1.8	4.0	8.1	17.2	36.4	75.7	177.6	360.4	800.7	38
0.2	0.7	1.6	4.3	8.8	16.1	35.6	81.7	168.4	352.5	971.6	39
0.1	0.7	1.5	3.7	7.9	16.9	34.7	79.7	168.1	361.8	941.5	40
2.4	9.7	20.4	35.7	61.2	96.7	145.3	253.2	334.9	476.7	751.0	41
2.9	7.8	16.0	32.8	61.3	90.6	148.0	240.1	337.3	384.2	546.7	42
3.2	6.3	16.3	34.3	48.2	89.2	154.4	272.6	285.9	353.9	465.6	43
2.5	7.6	13.8	29.1	53.0	90.1	145.5	260.6	250.4	337.8	494.5	44
1.5	4.8	10.5	16.9	28.7	64.4	104.3	194.7	266.5	335.0	698.7	45
1.3	3.3	7.2	18.1	32.6	62.5	106.0	172.6	255.6	361.0	594.9	46
1.7	3.0	7.0	14.6	26.3	63.5	125.6	169.7	214.4	298.0	515.0	47
1.1	4.7	6.9	17.4	35.5	66.6	113.9	159.2	212.4	309.5	551.4	48

## APPENDIX I

### COMPONENTS OF COMPARABILITY RATIOS FOR 15 LEADING CAUSES OF DEATH AND THEIR MAJOR SUBCATEGORIES

Data shown in table I are for the most part previously unpublished statistics from a study of the comparability between the Seventh and Eighth Revisions of the International Classification of Diseases. Provisional estimates of selected comparability ratios and a brief summary of the statistical design of the comparability study have been published in *Monthly Vital Statistics Report*, Vol. 17, No. 8, Supplement, October 25, 1968.

The set of comparability ratios shown below was computed to assess the degree of discontinuity between 1967 and 1968 for the 15 leading causes of death and their subcategories shown in tables 1 and 2. For each of these causes and subcategories a comparability ratio was especially computed for the present report by dividing the estimated number of 1966 deaths assigned to the Eighth Revision category numbers corresponding to the title shown in the stubs of tables 1 and 2 by the number of 1966 deaths assigned to the nearly comparable category numbers of the Sixth and Seventh Revisions shown in the last column of tables 1 and 2.

This particular set of category numbers according to the Sixth and Seventh Revisions was used in the construction of these comparability ratios because trend data for 1950-67 were available for the titles corresponding to these category numbers. It turns out that, with few exceptions (which are designated by a footnote 2 in the table below), this set of category numbers for the Sixth and Seventh Revisions is the same as the set used to compute for these same Eighth Revision titles the above-mentioned published provisional comparability ratios.

It will be observed that even for those Eighth Revision titles for which the set of Sixth

and Seventh Revision categories used for the present report are identical with the set used for the published provisional ratios, the provisional ratios are sometimes slightly lower than the ratios shown in this report. This difference results from a better computational procedure used to compute the ratios for the present report.

The ratios shown below in column (6) of table I were computed by dividing the estimated number of 1966 deaths assigned to the particular cause using the Eighth Revision ICDA (column (2)) by the number of 1966 deaths assigned to the equivalent cause or combination of causes using the Seventh Revision (column (5)). Adjustment for differences in revisions is made by merely multiplying the original figures by the appropriate ratio.

Due to the changes in interpretations and coding rules for classifying causes of death from one revision to another, deaths assigned to an Eighth Revision cause or group of causes rarely had been coded to only one Seventh Revision cause. That is, in most instances, some deaths now assigned to a particular ICDA cause had been coded according to the ICD to causes other than the selected comparable causes. Thus, the difference between the total estimated number of deaths assigned to a particular Eighth Revision cause or group of causes (column (2)) and the estimated number of deaths assigned to this particular Eighth Revision cause that had been coded to the selected comparable Seventh Revision cause (column (3)) is simply the estimated number of deaths that had been previously assigned to Seventh Revision causes other than the selected comparable causes and are now coded to the particular Eighth Revision cause.

Table I. Components of comparability ratios for 15 leading causes of death and their major subcategories for comparing assignments by Eighth Revision with those by Seventh Revision, based on deaths occurring in 1966

Eighth Revision			Seventh Revision		
Cause of death and category number (1)	Estimated number of deaths in 1966 (2)	Estimated number of deaths in col. (5) that went to (2) (3)	Cause of death and category number (4)	Number of deaths in 1966 (5)	Ratio: col. (2) ÷ col. (5) (6)
1. Diseases of heart-----390-398,402,404,410-429	730,261	719,550	Diseases of heart-----400-402,410-443	727,002	1.0045
		449	Rheumatic fever-----400-402	456	
		14,436	Chronic rheumatic heart disease-----410-416	14,556	
		5,666	Diseases of mitral valve-----410	5,718	
		1,693	Diseases of aortic valve specified as rheumatic-----411	1,713	
		773	Diseases of pulmonary valve and other endocarditis, specified as rheumatic-----413,414	773	
		6,304	Other rheumatic heart diseases-----412,415,416	6,352	
		570,220	Arteriosclerotic heart disease, including coronary disease-----420	573,191	
		158,012	Arteriosclerotic heart disease so described-----420.0	158,802	
		411,920	Heart disease specified as involving coronary arteries-----420.1	414,101	
		288	Angina pectoris without mention of coronary disease-----420.2	288	
		3,560	Chronic endocarditis not specified as rheumatic-----421	3,785	
		157	Of mitral valve, specified as nonrheumatic-----421.0	166	
		2,261	Of aortic valve, not specified as rheumatic-----421.1	2,311	
		1,142	Of other valves, not specified as rheumatic-----421.2-421.4	1,308	
		49,175	Other myocardial degeneration-----422	49,796	
		41,464	With arteriosclerosis-----422.1	41,935	
		7,711	Without mention of arteriosclerosis-----422.0,422.2	7,861	
		28,277	Other diseases of heart-----430-434	31,042	
		706	Acute and subacute endocarditis-----430	737	
		1,051	Acute myocarditis and acute pericarditis, not specified as rheumatic-----431,432	1,065	
		7,693	Functional disease of heart-----433	10,008	
		18,827	Other and unspecified diseases of heart-----434	19,212	
		53,433	Hypertensive heart disease-----440-443	54,176	
		11,345	Hypertensive heart disease with arteriolar nephrosclerosis-----442	11,606	
		42,088	Other hypertensive heart disease-----440,441,443	42,570	
Active rheumatic fever and chronic rheumatic heart disease-----390-398	17,293	14,724	Rheumatic fever and chronic rheumatic heart disease-----400-402,410-416	15,012	<sup>2</sup> 1.1519
		443	Rheumatic fever-----400-402	456	
		14,281	Chronic rheumatic heart disease-----410-416	14,556	
		5,600	Diseases of mitral valve-----410	5,718	
		1,686	Diseases of aortic valve specified as rheumatic-----411	1,713	
		759	Diseases of pulmonary valve and other endocarditis, specified as rheumatic-----413,414	773	
		6,236	Other rheumatic heart diseases-----412,415,416	6,352	

See footnotes at end of table.

Table I. Components of comparability ratios for 15 leading causes of death and their major subcategories for comparing assignments by Eighth Revision with those by Seventh Revision, based on deaths occurring in 1966—Con.

Eighth Revision			Seventh Revision		
Cause of death and category number (1)	Estimated number of deaths in 1966 (2)	Estimated number of deaths in col. (5) that went to (2) (3)	Cause of death and category number (4)	Number of deaths in 1966 (5)	Ratio: col. (2) + col. (5) (6)
<b>1. Diseases of heart—con.:</b>					
Hypertensive heart disease with or without renal disease-----402,404	21,350	20,435 9,672 10,763	Hypertensive heart disease-----440-443 Hypertensive heart disease with arteriolar nephrosclerosis-----442 Other hypertensive heart disease-----440,441,443	54,176 11,606 42,570	0.3941
Ischemic heart disease-----410-413	656,691	569,715 157,749 411,678 288	Arteriosclerotic heart disease, including coronary disease-----420 Arteriosclerotic heart disease so described-----420.0 Heart disease specified as involving coronary arteries-----420.1 Angina pectoris without mention of coronary disease-----420.2	573,191 158,802 414,101 288	<sup>2</sup> 1.1457
Chronic disease of endocardium and other myocardial insufficiency-----424,428	9,768	8,688 1,469 129 283 1,057 6,983 236	Nonrheumatic chronic endocarditis and other myocardial degeneration-----421,422 Chronic endocarditis not specified as rheumatic-----421 Of mitral valve, specified as nonrheumatic-----421.0 Of aortic valve, not specified as rheumatic-----421.1 Of other valves, not specified as rheumatic-----421.2-421.4 Other myocardial degeneration without mention of arteriosclerosis-----422.0,422.2 Other myocardial degeneration with arteriosclerosis-----422.1	53,581 3,785 166 2,311 1,308 7,861 41,935	<sup>2</sup> 0.1823
All other forms of heart disease-----420-423,425-427,429	25,156	23,375 654 892 4,344 17,485	Other diseases of heart-----430-434 Acute and subacute endocarditis-----430 Acute myocarditis and acute pericarditis, not specified as rheumatic-----431,432 Functional disease of heart-----433 Other and unspecified diseases of heart-----434	31,042 757 1,065 10,008 19,212	0.8104
<b>2. Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues-----140-209</b>					
	304,262	301,920 6,744 143 1,614 2,205 2,782	Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues-----140-205  Malignant neoplasm of buccal cavity and pharynx-----140-148 Of lip-----140 Of tongue-----141 Of other and unspecified parts of buccal cavity-----142-144 Of pharynx-----145-148	303,736  6,800 150 1,629 2,224 2,797	<sup>2</sup> 1.0017

See footnotes at end of table.

Table I. Components of comparability ratios for 15 leading causes of death and their major subcategories for comparing assignments by Eighth Revision with those by Seventh Revision, based on deaths occurring in 1966--Con.

Eighth Revision			Seventh Revision		
Cause of death and category number (1)	Estimated number of deaths in 1966 (2)	Estimated number of deaths in col. (5) that went to (2) (3)	Cause of death and category number (4)	Number of deaths in 1966 (5)	Ratio: col. (2) ÷ col. (5) (6)
2. Malignant neoplasms, etc.—con.:		94,559	Malignant neoplasm of digestive organs and peritoneum, not specified as secondary-----150-156A,157-159	95,079	
	5,461		Of esophagus-----150	5,505	
	17,623		Of stomach-----151	17,623	
	652		Of small intestine, including duodenum-----152	693	
	32,616		Of large intestine, except rectum-----153	32,811	
	4,568		Cecum, appendix, and ascending colon-----153.0	4,605	
	1,397		Transverse colon, including hepatic and splenic flexures-----153.1	1,472	
	1,151		Descending colon-----153.2	1,151	
	5,814		Sigmoid colon-----153.3	5,814	
	78		Multiple parts of large intestine-----153.7	78	
	18,117		Large intestine (including colon), part unspecified-----153.8	18,155	
	1,491		Intestinal tract, part unspecified-----153.9	1,536	
	10,538		Of rectum-----154	10,663	
	6,543		Of biliary passages and of liver (stated to be primary site)-----155	6,584	
	2,112		Liver-----155.0	2,112	
	4,431		Other and multiple sites of biliary passages-----155.1,155.8	4,472	
	3,149		Of liver not stated whether primary or secondary <sup>3</sup> -----156A	3,149	
	16,286		Of pancreas-----157	16,360	
	1,691		Of peritoneum and of unspecified digestive organs-----158,159	1,691	
	54,841		Malignant neoplasm of respiratory system, not specified as secondary-----160-164	54,934	
	2,623		Of larynx-----161	2,623	
	20,891		Of bronchus and trachea, and of lung specified as primary-----162	20,913	
	30,519		Of lung, unspecified as to whether primary or secondary-----163	30,565	
	808		Of other parts of respiratory system-----160,164	833	
	27,377		Malignant neoplasm of breast-----170	27,533	
	40,175		Malignant neoplasm of genital organs-----171-179	40,378	
	7,614		Of cervix uteri-----171	7,665	
	5,697		Of other and unspecified parts of uterus-----172-174	5,731	
	9,145		Of ovary, fallopian tube, and broad ligament-----175	9,163	
	850		Of other and unspecified female genital organs-----176	865	
	15,856		Of prostate-----177	15,941	
	1,013		Of all other and unspecified male genital organs-----178,179	1,013	
	14,073		Malignant neoplasm of urinary organs-----180,181	14,166	
	5,827		Of kidney-----180	5,841	
	8,246		Of bladder and other urinary organs-----181	8,325	

See footnotes at end of table.

Table I. Components of comparability ratios for 15 leading causes of death and their major subcategories for comparing assignments by Eighth Revision with those by Seventh Revision, based on deaths occurring in 1966—Con.

Eighth Revision			Seventh Revision		
Cause of death and category number (1)	Estimated number of deaths in 1966 (2)	Estimated number of deaths in col. (5) that went to (2) (3)	Cause of death and category number (4)	Number of deaths in 1966 (5)	Ratio: col. (2) ÷ col. (5) (6)
2. Malignant neoplasms, etc.—con.:					
		34,667	Malignant neoplasm of other and unspecified sites-----156B,165,190-199	35,032	
		4,545	Of skin-----190,191	4,560	
		358	Of eye-----192	358	
		7,152	Of brain and other parts of nervous system-----193	7,355	
		1,008	Of thyroid gland-----194	1,008	
		1,792	Of bone-----196	1,792	
		1,318	Of connective tissue-----197	1,318	
		1,408	Of other specified sites, not stated to be secondary-----195,199A	1,422	
		17,086	Of unspecified sites-----156B,165,198,199B	17,219	
		13,926	Leukemia and aleukemia-----204	14,012	
		15,558	Lymphosarcoma and other neoplasms of lymphatic and hematopoietic tissues-----200-203,205	15,802	
		7,548	Lymphosarcoma and reticulosarcoma-----200	7,563	
		3,398	Hodgkin's disease-----201	3,412	
		4,612	Other neoplasms of lymphatic and hematopoietic tissues-----202,203,205	4,827	
Malignant neoplasms of buccal cavity and pharynx-----140-149	7,205	6,638	Malignant neoplasm of buccal cavity and pharynx-----140-148	6,800	1.0596
		126	Of lip-----140	150	
		1,603	Of tongue-----141	1,629	
		2,194	Of other and unspecified parts of buccal cavity-----142-144	2,224	
		2,715	Of pharynx-----145-148	2,797	
Malignant neoplasms of digestive organs and peritoneum-----150-159	91,848	90,664	Malignant neoplasm of digestive organs and peritoneum, not specified as secondary-----150-156A,157-159	95,079	<sup>2</sup> 0.9660
		5,461	Of esophagus-----150	5,505	
		17,547	Of stomach-----151	17,623	
		652	Of small intestine, including duodenum-----152	693	
		32,418	Of large intestine, except rectum-----153	32,811	
		4,494	Cecum, appendix, and ascending colon-----153.0	4,605	
		1,397	Transverse colon, including hepatic and splenic flexures-----153.1	1,472	
		1,151	Descending colon-----153.2	1,151	
		5,774	Sigmoid colon-----153.3	5,814	
		478	Multiple parts of large intestine-----153.7	78	
		18,078	Large intestine (including colon), part unspecified-----153.8	18,155	
		1,446	Intestinal tract, part unspecified-----153.9	1,536	
		10,455	Of rectum-----154	10,663	
		6,398	Of biliary passages and of liver (stated to be primary site)-----155	6,584	
		2,008	Liver-----155.0	2,112	
		4,390	Other and multiple sites of biliary passages-----155.1,155.8	4,472	
		3	Of liver not stated whether primary or secondary <sup>3</sup> -----156A	3,149	
		16,248	Of pancreas-----157	16,360	
		1,485	Of peritoneum and of unspecified digestive organs-----158,159	1,691	

See footnotes at end of table.

Table I. Components of comparability ratios for 15 leading causes of death and their major subcategories for comparing assignments by Eighth Revision with those by Seventh Revision, based on deaths occurring in 1966--Con.

Eighth Revision			Seventh Revision		
Cause of death and category number (1)	Estimated number of deaths in 1966 (2)	Estimated number of deaths in col. (5) that went to (2) (3)	Cause of death and category number (4)	Number of deaths in 1966 (5)	Ratio: col. (2) ÷ col. (5) (6)
<b>2. Malignant neoplasms, etc.--con.:</b>					
Malignant neoplasms of respiratory system-----160-163	56,668	54,584	Malignant neoplasm of respiratory system, not specified as secondary-----160-164	54,934	1.0316
		2,597	Of larynx-----161	2,623	
		20,801	Of bronchus and trachea, and of lung specified as primary-----162	20,913	
		30,403	Of lung, unspecified as to whether primary or secondary-----163	30,565	
		783	Of other parts of respiratory system-----160,164	833	
Malignant neoplasms of breast-----174	27,293	27,221	Malignant neoplasm of breast-----170	27,533	0.9913
Malignant neoplasms of genital organs-----180-187	40,516	39,969	Malignant neoplasm of genital organs-----171-179	40,378	1.0034
		7,562	Of cervix uteri-----171	7,665	
		5,680	Of other and unspecified parts of uterus-----172-174	5,731	
		9,092	Of ovary, fallopian tube, and broad ligament-----175	9,163	
		835	Of other and unspecified female genital organs-----176	865	
		15,806	Of prostate-----177	15,941	
		994	Of all other and unspecified male genital organs-----178,179	1,013	
Malignant neoplasms of urinary organs-----188,189	14,408	13,987	Malignant neoplasm of urinary organs-----180,181	14,166	1.0171
		5,787	Of kidney-----180	5,841	
		8,200	Of bladder and other urinary organs-----181	8,325	
Malignant neoplasms of all other and unspecified sites-----170-173,190-199	35,774	31,296	Malignant neoplasm of other and unspecified sites-----156B,165,190-199	35,032	<sup>2</sup> 1.0212
		4,498	Of skin-----190,191	4,560	
		358	Of eye-----192	358	
		7,137	Of brain and other parts of nervous system-----193	7,355	
		1,008	Of thyroid gland-----194	1,008	
		1,698	Of bone-----196	1,792	
		1,318	Of connective tissue-----197	1,318	
		1,367	Of other specified sites, not stated to be secondary-----195,199A	1,422	
		13,912	Of unspecified sites-----156B,165,198,199B	17,219	
Leukemia-----204-207	13,976	13,834	Leukemia and aleukemia-----204	14,012	0.9974
Other neoplasms of lymphatic and hematopoietic tissues--200-203,208,209	16,602	15,478	Lymphosarcoma and other neoplasms of lymphatic and hematopoietic tissues---200-203,205	15,802	<sup>2</sup> 1.0506
		7,497	Lymphosarcoma and reticulosarcoma-----200	7,563	
		3,398	Hodgkin's disease-----201	3,412	
		4,583	Other neoplasms of lymphatic and hematopoietic tissues-----202,203,205	4,827	

See footnotes at end of table.

Table I. Components of comparability ratios for 15 leading causes of death and their major subcategories for comparing assignments by Eighth Revision with those by Seventh Revision, based on deaths occurring in 1966--Con.

Eighth Revision			Seventh Revision		
Cause of death and category number (1)	Estimated number of deaths in 1966 (2)	Estimated number of deaths in col. (5) that went to (2) (3)	Cause of death and category number (4)	Number of deaths in 1966 (5)	Ratio: col. (2) + col. (5) (6)
3. Cerebrovascular diseases----430-438	202,894	200,325	Vascular lesions affecting central nervous system-----330-334	204,841	0.9905
		8,287	Subarachnoid hemorrhage-----330	8,531	
		109,400	Cerebral hemorrhage-----331	111,446	
		62,937	Cerebral embolism and thrombosis-----332	63,943	
		19,701	Other vascular lesions affecting central nervous system-----333,334	20,921	
4. Accidents-----E800-E949	108,683	106,455	Accidents-----E800-E962	113,563	0.9570
		1,000	Railway accidents-----E800-E802	1,027	
		52,456	Motor vehicle accidents-----E810-E835	53,041	
		51,373	Motor vehicle traffic accidents-----E810-E825	51,923	
		1,757	Motor vehicle traffic accident involving collision with railway train-----E810	1,800	
		8,612	Motor vehicle traffic accident to pedestrian-----E812	8,675	
		22,297	Other motor vehicle traffic accidents involving collision-----E811, E813-E819	22,641	
		14,202	Motor vehicle noncollision traffic accidents-----E820-E824	14,291	
		4,505	Motor vehicle traffic accident of unspecified nature-----E825	4,526	
		1,083	Motor vehicle nontraffic accidents-----E830-E835	1,108	
		292	Other road vehicle accidents-----E840-E845	292	
		1,630	Water transport accidents-----E850-E858	1,630	
		1,486	Aircraft accidents-----E860-E866	1,510	
		1,806	Accidental poisoning by solid and liquid substances-----E870-E888	2,283	
		1,523	Accidental poisoning by gases and vapors-----E890-E895	1,648	
		16,906	Accidental falls-----E900-E904	20,066	
		5,312	Fall from one level to another-----E900-E902	5,772	
		4,839	Fall on same level-----E903	5,593	
		6,755	Unspecified falls-----E904	8,701	
		1,432	Blow from falling or projected object or missile-----E910	1,459	
		1,989	Accident caused by machinery-----E912	2,070	
		1,025	Accident caused by electric current-----E914	1,025	
		7,813	Accident caused by fire and explosion of combustible material-----E916	8,084	
		337	Accident caused by hot substance, corrosive liquid, steam, and radiation-----E917, E918	409	
		2,189	Accident caused by firearm-----E919	2,558	
		1,672	Inhalation and ingestion of food or other object causing obstruction or suffocation-----E921, E922	1,831	
		5,431	Accidental drowning-----E929	5,687	
		430	Excessive heat and insolation-----E931	531	
		1,129	Complications due to nontherapeutic medical and surgical procedures, therapeutic misadventure, and late complications of therapeutic procedures-----E940-E959	1,411	
		5,909	All other accidents-----E911, E913, E915, E920, E923-E928, E930, E932-E936, E960-E962	7,001	



Table I. Components of comparability ratios for 15 leading causes of death and their major subcategories for comparing assignments by Eighth Revision with those by Seventh Revision, based on deaths occurring in 1966—Con.

Eighth Revision			Seventh Revision		
Cause of death and category number (1)	Estimated number of deaths in 1966 (2)	Estimated number of deaths in col. (5) that went to (2) (3)	Cause of death and category number (4)	Number of deaths in 1966 (5)	Ratio: col. (2) ÷ col. (5) (6)
4. Accidents—con.:					
Motor vehicle accidents---E810-E823	52,622	52,250 51,243 1,757 8,570 22,274 14,158 4,484 1,007	Motor vehicle accidents-----E810-E835 Motor vehicle traffic accidents-----E810-E825 Motor vehicle traffic accident involving collision with railway train-----E810 Motor vehicle traffic accident to pedestrian-----E812 Other motor vehicle traffic accidents involving collision-----E811,E813-E819 Motor vehicle noncollision traffic accidents-----E820-E824 Motor vehicle traffic accident of unspecified nature-----E825 Motor vehicle nontraffic accidents-----E830-E835	53,041 51,933 1,800 8,675 22,641 14,291 4,526 1,108	0.9921
All other accidents-----E800-E807,E825-E949	55,983	53,771 1,000 292 1,630 1,486 1,806 1,523 16,878 5,312 4,839 6,727 1,405 1,936 1,025 7,788 337 2,189 1,672 5,431 430 1,129 5,814	Other accidents-----E800-E802,E840-E962 Railway accidents-----E800-E802 Other road vehicle accidents-----E840-E845 Water transport accidents-----E850-E858 Aircraft accidents-----E860-E866 Accidental poisoning by solid and liquid substances-----E870-E888 Accidental poisoning by gases and vapors-----E890-E895 Accidental falls-----E900-E904 Fall from one level to another-----E900-E902 Fall on same level-----E903 Unspecified falls-----E904 Blow from falling or projected object or missile-----E910 Accident caused by machinery-----E912 Accident caused by electric current-----E914 Accident caused by fire and explosion of combustible material-----E916 Accident caused by hot substance, corrosive liquid, steam, and radiation---E917,E918 Accident caused by firearm-----E919 Inhalation and ingestion of food or other object causing obstruction or suffocation-----E921,E922 Accidental drowning-----E929 Excessive heat and insolation-----E931 Complications due to nontherapeutic medical and surgical procedures, therapeutic misadventure, and late complications of therapeutic procedures-----E940-E959 All other accidents-----E911,E913,E915,E920,E923-E928,E930,E932-E936,E960-E962	60,522 1,027 292 1,630 1,510 2,283 1,648 20,066 5,772 5,593 8,701 1,459 2,070 1,025 8,084 409 2,558 1,831 5,687 531 1,411 7,001	0.9250
5. Influenza and pneumonia-----470-474,480-486	66,413	61,058 2,683 58,375 8,565 31,949 5,409 12,452	Influenza and pneumonia, except pneumonia of newborn-----480-493 Influenza-----480-483 Pneumonia, except pneumonia of newborn-----490-493 Lobar pneumonia-----490 Bronchopneumonia-----491 Primary atypical pneumonia-----492 Pneumonia, other and unspecified-----493	63,615 2,830 60,785 8,864 33,276 5,729 12,916	<sup>2</sup> 1.0440

See footnotes at end of table.

Table I. Components of comparability ratios for 15 leading causes of death and their major subcategories for comparing assignments by Eighth Revision with those by Seventh Revision, based on deaths occurring in 1966—Con.

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Cause of death and category number (1)	Estimated number of deaths in 1966 (2)	Estimated number of deaths in col. (5) that went to (2) (3)	Cause of death and category number (4)	Number of deaths in 1966 (5)	Ratio: col. (2) + col. (5) (6)
5. Influenza and pneumonia—con.:			Influenza-----480-483	2,830	0.9572
Influenza-----470-474	2,709	2,676	Pneumonia, except pneumonia of newborn-----490-493	60,785	<sup>2</sup> 1.0480
Pneumonia-----480-486	63,704	58,375	Lobar pneumonia-----490	8,864	
		8,565	Bronchopneumonia-----491	33,276	
		31,949	Primary atypical pneumonia-----492	5,729	
		5,409	Pneumonia, other and unspecified-----493	12,916	
		12,452			
6. Certain causes of mortality in early infancy-760-769.2,769.4-772,774-778	47,425	46,706	Certain diseases of early infancy-----760-776	51,644	<sup>2</sup> 0.9183
		191	Pneumonia of newborn-----763	2,477	
		5	Diarrhea of newborn-----764	250	
		46,510	Remainder of Certain diseases of early infancy-----760-762,765-776	48,917	
7. Diabetes mellitus-----250	34,496	33,870	Diabetes mellitus-----260	34,597	0.9971
8. Arteriosclerosis-----440	34,873	32,083	General arteriosclerosis-----450	38,907	0.8963
9. Bronchitis, emphysema, and asthma-----490-493	29,841	28,602	Asthma, Bronchitis, chronic and unqualified, and Emphysema without mention of bronchitis-----241,501,502,527.1	29,740	1.0034
		4,089	Asthma-----241	4,324	
		4,894	Bronchitis, chronic and unqualified-----501,502	5,164	
		19,619	Emphysema without mention of bronchitis-----527.1	20,252	
Chronic and unqualified bronchitis-----490,491	5,484	4,851	Bronchitis, chronic and unqualified-----501,502	5,164	1.0620
Emphysema-----492	21,350	19,555	Emphysema without mention of bronchitis-----527.1	20,252	1.0542
Asthma-----493	3,007	2,623	Asthma-----241	4,324	0.6954
10. Cirrhosis of liver-----571	26,839	26,203	Cirrhosis of liver-----581	26,692	1.0055
		16,962	Without mention of alcoholism-----581.0	17,320	
		9,241	With alcoholism-----581.1	9,372	

See footnotes at end of table.

Table I. Components of comparability ratios for 15 leading causes of death and their major subcategories for comparing assignments by Eighth Revision with those by Seventh Revision, based on deaths occurring in 1966—Con.

Eighth Revision			Seventh Revision		
Cause of death and category number (1)	Estimated number of deaths in 1966 (2)	Estimated number of deaths in col. (5) that went to (2) (3)	Cause of death and category number (4)	Number of deaths in 1966 (5)	Ratio: col. (2) ÷ col. (5) (6)
11. Suicide-----E950-E959	20,158	20,046	Suicide-----E963,E970-E979	21,281	0.9472
		5,192	Suicide by poisoning-----E970-E973	5,588	
		2,825	Suicide by hanging and strangulation-----E974	2,863	
		10,072	Suicide by firearm and explosive-----E976	10,407	
		1,957	Suicide by all other means-----E963,E975,E977-E979	2,423	
12. Congenital anomalies-----740-759	18,529	17,453	Congenital malformations-----750-759	18,158	1.0204
		1,125	Spina bifida and meningocele-----751	1,151	
		1,655	Congenital hydrocephalus and other congenital malformations of nervous system and sense organs-----752,753	1,756	
		8,819	Congenital malformations of circulatory system-----754	9,020	
		5,853	Other congenital malformations-----750,755-759	6,231	
13. Homicide-----E960-E978	11,570	11,395	Homicide-----E964,E980-E985	11,606	0.9969
		6,773	Assault by firearm and explosive-----E981	6,855	
		2,300	Assault by cutting and piercing instruments-----E982	2,330	
		2,023	Assault by other means-----E964,E980,E983	2,122	
		298	Injury by intervention of police-----E984	298	
		1	Execution-----E985	1	
14. Nephritis and nephrosis-----580-584	10,227	9,955	Nephritis and nephrosis-----590-594	11,540	0.8862
		462	Acute nephritis-----590	485	
		593	Nephritis with edema, including nephrosis-----591	679	
		8,900	Chronic and unspecified nephritis and other renal sclerosis-----592-594	10,376	
15. Peptic ulcer-----531-533	10,172	9,429	Ulcer of stomach and duodenum-----540,541	10,321	0.9856
		4,896	Ulcer of stomach-----540	5,599	
		4,533	Ulcer of duodenum-----541	4,722	

<sup>1</sup> There were no deaths in the sample assigned to the Seventh Revision title Angina pectoris without mention of coronary disease (ICD No. 420.2). NCHS nosologists state, however, that with a possible few exceptions these deaths would be assigned by the Eighth Revision to Angina pectoris (ICDA No. 413). The exceptions, if any, resulted from the dropping of the preference in the Seventh Revision of angina pectoris over cardiovascular diseases.

<sup>2</sup> For reasons described in appendix I, the set of Seventh Revision category numbers used to construct this ratio is different from the set used to construct the previously published provisional comparability ratio for this same Eighth Revision title.

<sup>3</sup> In computing the above-mentioned published comparability ratio for Malignant neoplasms of digestive organs and peritoneum (ICDA Nos. 150-159), the Seventh Revision title Malignant neoplasm of liver not stated whether primary or secondary (ICD No. 156A) was not included in the set of titles most nearly comparable to Malignant neoplasms of digestive organs and peritoneum. Category number 156A was thus excluded because deaths assigned to this category by the Seventh Revision were removed by the Eighth Revision from under the title for the system of the body attacked by the neoplasm (in this case, from under digestive organs and peritoneum) and placed under the following subsection of "Section II. Neoplasms": Malignant neoplasm of other and unspecified sites (ICDA Nos. 190-199). More specifically, these deaths were transferred to the new Eighth Revision title: Malignant neoplasm of liver, unspecified (ICDA No. 197.B).

<sup>4</sup> There were no deaths in the sample assigned to the Seventh Revision title Malignant neoplasm of multiple parts of large intestine (ICD No. 153.7). NCHS nosologists state, however, that these deaths would be distributed by the Eighth Revision over the four-digit categories under Malignant neoplasm of large intestine, except rectum (ICDA No. 153).

## APPENDIX II

### TECHNICAL NOTES

#### Death Statistics

Tabulations of deaths used in this report are based on information obtained from copies of death certificates. These copies were received from the registration offices of all States, certain cities, and the District of Columbia. The statistical information on these records was edited, classified, transferred to a tape for computer processing, and tabulated in the National Center for Health Statistics (NCHS).

The rates shown in this report are based on deaths tabulated by place of occurrence, that is, all deaths occurring in the death-registration States from 1900 to 1932, and all deaths occurring in the continental United States thereafter, with Alaska added in 1959 and Hawaii in 1960. Deaths among armed forces overseas and U.S. nationals living abroad are excluded for all years.

#### Race

The category "white" includes, in addition to persons reported as "white," persons reported to be Mexican or Puerto Rican. The categories "races other than white" or "all other" consist of persons reported as Negro, American Indian, Chinese, and Japanese; other numerically small racial groups; and persons of mixed white and other races.

#### Population Bases

Rates were computed on the bases of population statistics made available by the U.S. Bureau of the Census. Rates for decennial years are based on the populations enumerated in censuses of those years, which are taken as of April 1. Rates for all other years are based on

midyear (July 1) estimates. Sources of the populations used, published by the Bureau of the Census, are given below.

*Vital Statistics Rates in the United States, 1900-1940*, Washington, U.S. Government Printing Office, 1943.

#### *Current Population Reports, Series P-25:*

- No. 98. "Estimates of the population of the United States and of the components of change, by age, color, and sex: 1940 to 1950," 1954.
- No. 265. "Estimates of the population of the United States, by age, color, and sex: July 1, 1950 to 1962," 1963.  
(Used only for data years 1961 and 1962.)
- No. 276. "Estimates of the population of the United States, by age, color, and sex: July 1, 1963," 1963.
- No. 310. "Estimates of the population of the United States and components of change, by age, color, and sex: 1950 to 1960," 1965.
- No. 321. "Estimates of the population of the United States, by age, color, and sex: July 1, 1960 to 1965," 1965.  
(Used only for data years 1964 and 1965.)

- No. 352. "Estimates of the population of the United States, by age, color, and sex: July 1, 1966," 1966.
- No. 385. "Estimates of the population of the United States, by age, color, and sex: July 1, 1964 to 1967," 1968.  
(Used only for data year 1967.)
- No. 416. "Estimates of the population of the United States, by age, color, and sex: July 1, 1968," 1969.
- No. 441. "Estimates of the population of the United States, by age, color, and sex: July 1, 1969," 1970.

The population estimates by color used for 1962 and 1963 exclude New Jersey. Birth,

death, and fetal death records of the State of New Jersey did not contain the race item in the beginning of 1962, and the certificate revision without this item was used for most of 1962 as well as for 1963. Therefore the National Center for Health Statistics estimated a population base by color for these years which excluded New Jersey. The estimates for 1963 are shown in table 6-5, Part A, Volume II, of *Vital Statistics of the United States, 1963*. Those for 1962 are shown in the comparable report for that year.

#### Rates

All rates are shown per 100,000 population. In many cases the rates are shown beyond the last significant figure, not because they can be interpreted with that degree of accuracy, but merely for convenience in computation and publication.

APPENDIX III  
THE UNITED STATES STANDARD CERTIFICATE OF DEATH,  
1968 REVISION

Standard certificates of death issued by the National Center for Health Statistics and its predecessor offices have served for many years as the principal means of attaining uniformity in the content of documents used to collect information on deaths. They have been modified in each State to the extent necessitated by the particular needs of the State or by special provisions of State vital statistics laws. The certificates of most States, however, conform closely in content and arrangement to the standard certificates.

The most recent revision of the standard certificate of death is shown on page 81. It was prepared in close collaboration with State health officers and registrars; Federal agencies concerned with vital statistics; national, State, and county medical societies; and others working in the fields of public health, social welfare, demography, and insurance. It was recommended to the States for adoption as of January 1, 1968.

CERTIFICATE OF DEATH

TYPE, OR PRINT IN  
PERMANENT INK  
SEE HANDBOOK FOR  
INSTRUCTIONS

LOCAL FILE NUMBER

STATE FILE NUMBER

**DECEASED**

USUAL RESIDENCE  
WHERE DECEASED  
LIVED. IF DEATH  
OCCURRED IN  
INSTITUTION, GIVE  
RESIDENCE BEFORE  
ADMISSION.

**PARENTS**

**CAUSE**

**CERTIFIER**

**BURIAL**

1. DECEASED—NAME FIRST MIDDLE LAST		2. SEX	3. DATE OF DEATH (MONTH, DAY, YEAR)		
4. RACE WHITE, NEGRO, AMERICAN INDIAN, ETC. (SPECIFY)	5a. AGE—LAST BIRTHDAY (YEARS)	5b. UNDER 1 YEAR MOS. DAYS	5c. UNDER 1 DAY HOURS MIN.	6. DATE OF BIRTH (MONTH, DAY, YEAR)	7. COUNTY OF DEATH
8. CITY, TOWN, OR LOCATION OF DEATH		9. HOSPITAL OR OTHER INSTITUTION—NAME (IF NOT IN EITHER, GIVE STREET AND NUMBER)			
10. STATE OF BIRTH (IF NOT IN U.S.A., NAME COUNTRY)	11. CITIZEN OF WHAT COUNTRY	12. MARRIED, NEVER MARRIED, WIDOWED, DIVORCED (SPECIFY)	13. SURVIVING SPOUSE (IF WIFE, GIVE MAIDEN NAME)		
14. SOCIAL SECURITY NUMBER		15. USUAL OCCUPATION (GIVE KIND OF WORK DONE DURING MOST OF WORKING LIFE, EVEN IF RETIRED)		16. KIND OF BUSINESS OR INDUSTRY	
17a. RESIDENCE—STATE	17b. COUNTY	17c. CITY, TOWN, OR LOCATION	17d. INSIDE CITY LIMITS (SPECIFY YES OR NO)	17e. STREET AND NUMBER	
18. FATHER—NAME FIRST MIDDLE LAST		19. MOTHER—MAIDEN NAME FIRST MIDDLE LAST			
20. INFORMANT—NAME			21. MAILING ADDRESS (STREET OR R.F.D. NO., CITY OR TOWN, STATE, ZIP)		
22. PART I. DEATH WAS CAUSED BY: [ENTER ONLY ONE CAUSE PER LINE FOR (a), (b), AND (c)]					23. APPROXIMATE INTERVAL BETWEEN ONSET AND DEATH
24. IMMEDIATE CAUSE					25. CONDITIONS, IF ANY, WHICH GAVE RISE TO IMMEDIATE CAUSE (a), STATING THE UNDERLYING CAUSE LAST
(a) DUE TO, OR AS A CONSEQUENCE OF:					
(b) DUE TO, OR AS A CONSEQUENCE OF:					
(c) DUE TO, OR AS A CONSEQUENCE OF:					
26. PART II. OTHER SIGNIFICANT CONDITIONS: CONDITIONS CONTRIBUTING TO DEATH BUT NOT RELATED TO CAUSE GIVEN IN PART I (a)				27. AUTOPSY (YES OR NO)	28. IF YES WERE FINDINGS CONSIDERED IN DETERMINING CAUSE OF DEATH
29. ACCIDENT, SUICIDE, HOMICIDE, OR UNDETERMINED (SPECIFY)	30. DATE OF INJURY (MONTH, DAY, YEAR)	31. HOUR	32. HOW INJURY OCCURRED (ENTER NATURE OF INJURY IN PART I OR PART II, ITEM 18)		
33. INJURY AT WORK (SPECIFY YES OR NO)	34. PLACE OF INJURY AT HOME, FARM, STREET, FACTORY, OFFICE BLDG., ETC. (SPECIFY)	35. LOCATION (STREET OR R.F.D. NO., CITY OR TOWN, STATE)			
36. CERTIFICATION—PHYSICIAN: I ATTENDED THE DECEASED FROM		37. MONTH DAY YEAR TO	38. AND LAST SAW HIM/HER ALIVE ON MONTH DAY YEAR	39. I DID/DID NOT VIEW THE BODY AFTER DEATH.	40. DEATH OCCURRED AT THE PLACE, ON THE DATE, AND, TO THE BEST OF MY KNOWLEDGE, DUE TO THE CAUSE(S) STATED.
41. CERTIFICATION—MEDICAL EXAMINER OR CORONER: ON THE BASIS OF THE EXAMINATION OF THE BODY AND/OR THE INVESTIGATION, IN MY OPINION, DEATH OCCURRED ON THE DATE AND DUE TO THE CAUSE(S) STATED.		42. HOUR OF DEATH	43. THE DECEDENT WAS PRONOUNCED DEAD	44. MONTH DAY YEAR	45. HOUR
46. CERTIFIER—NAME (TYPE OR PRINT)		47. SIGNATURE	48. DEGREE OR TITLE	49. DATE SIGNED (MONTH, DAY, YEAR)	
50. MAILING ADDRESS—CERTIFIER		51. STREET OR R.F.D. NO.	52. CITY OR TOWN	53. STATE	54. ZIP
55. BURIAL, CREMATION, REMOVAL (SPECIFY)	56. CEMETERY OR CREMATORY—NAME		57. LOCATION CITY OR TOWN STATE		
58. DATE (MONTH, DAY, YEAR)	59. FUNERAL HOME—NAME AND ADDRESS (STREET OR R.F.D. NO., CITY OR TOWN, STATE, ZIP)				
60. FUNERAL DIRECTOR—SIGNATURE	61. REGISTRAR—SIGNATURE		62. DATE RECEIVED BY LOCAL REGISTRAR		

PHS-797-1 REV., 1-68 DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE—PUBLIC HEALTH SERVICE—NATIONAL CENTER FOR HEALTH STATISTICS 1968 REVISION

## APPENDIX IV

### BRIEF SUMMARY OF STATISTICAL DESIGN

#### General Plan for Deaths at All Ages

The strata, corresponding to the causes or groups of causes of death according to the Seventh Revision, into which the total number of deaths in 1966 are divided for the purposes of this report, are designated by  $L$ ; the total number of deaths in 1966, by  $N$ ; and the number of deaths in the general or  $h$ th stratum, by  $N_h$ . Therefore,

$$N = \sum_h^L N_h = N_1 + N_2 + \dots + N_h \dots + N_L. \quad (1)$$

Similarly, the strata according to the Eighth Revision are designated by  $L'$ ; and the number of deaths in the general or  $h'$ th stratum, by  $N'_{h'}$ . Thus, according to the Eighth Revision, the total number of deaths in 1966 may be represented as follows:

$$N = \sum_{h'}^L N'_{h'} = N'_1 + N'_2 + \dots + N'_{h'} \dots + N'_{L'}. \quad (2)$$

Let the number in the stratum according to the Eighth Revision to which the  $h$ th stratum according to the Seventh Revision is most nearly comparable be designated by  $N'_{h'}$ . Then the equation for the comparability ratio (designated by  $R_{h'}$ ) that is to be estimated is:

$$R_{h'} = \frac{N'_{h'}}{N_h} \quad (3)$$

Let the estimate of  $R_{h'}$  be denoted by  $r_{h'}$ ; and the estimate of  $N'_{h'}$  be denoted by  $x'_{h'}$ . Inasmuch as  $N_h$  is known, the problem of obtaining an estimate of  $R_{h'}$  reduces to the problem of

obtaining an estimate of  $N'_{h'}$ . This estimate  $r_{h'}$  may be defined as follows:

$$r_{h'} = \frac{x'_{h'}}{N_h} \quad (4)$$

To obtain the estimate  $x'_{h'}$ ,  $L$  random subsamples were drawn by the computer from the  $L$  strata into which the total number of deaths in 1966 were divided according to classification by the Seventh Revision. These  $L$  random subsamples were then classified according to the Eighth Revision.

The size of the random subsample drawn from the  $h$ th stratum of  $N$  is denoted by  $n_h$ ; and the size of the stratified random sample drawn from all deaths in 1966, classified according to the Seventh Revision is:

$$n = \sum_h^L n_h. \quad (5)$$

The number of deaths in the stratum according to the Eighth Revision to which the  $h$ th stratum of the stratified random sample  $n$ , according to the Seventh Revision, is most nearly comparable, is designated by  $n'_{h'}$ ; and the total number of deaths at all ages drawn in the stratified random sample, classified according to the Eighth Revision, is designated by  $n'$ . Thus,  $n'$  may be represented as follows:

$$n' = \sum_{h'}^L n'_{h'} \quad (6)$$

where  $L'$  designates the strata in the sample according to the Eighth Revision.



*Estimator of the numerator.*—Inasmuch as the denominators of these comparability ratios (defined in equation 3) are the total counts of deaths in the stratum in 1966 according to the Seventh Revision, the only values estimated from the stratified random sample ( $n$ ) are, as stated above, the numerators—the numbers of deaths that would be assigned to each of the strata if all deaths in 1966 were classified by the Eighth Revision. The estimator of these numerators is represented as follows:

$$x'_{h'} = \frac{N_h x_h}{n_h} + \sum_{j \neq h} \frac{N_j x_j}{n_j} \quad (7)$$

where  $x_h$  is the number of deaths in the  $h$ th stratum of the sample—the stratum according to the Seventh Revision selected as most nearly comparable to the  $h'$ th stratum of the Eighth Revision, and where  $x_j$  represents the number of deaths in any except the  $h$ th stratum of the stratified random sample that were coded to the  $h'$ th stratum by the Eighth Revision. The total number of strata other than the  $h$ th that contained deaths that were assigned to the  $h'$ th stratum by the Eighth Revision is represented by  $J$ .

In equation 7  $x_h = \sum_{i=1}^{n_h} x_{hi}$ , where  $x_{hi}$  takes on the value 1 if the death it represents was assigned by the Eighth Revision to stratum  $N'_{h'}$ ; and takes on the value 0 if the death it represents was not assigned to stratum  $N'_{h'}$ .

Similarly, in equation 7  $x_j = \sum_{i=1}^{n_j} x_{ji}$ , where  $x_{ji}$  takes on the value 1 if the death it represents was assigned to stratum  $N'_{h'}$ ; and takes on the value 0 if the death it represents was not assigned to stratum  $N'_{h'}$ .

*Variance of the numerator.*—The variance of  $x'_{h'}$ , the estimated total of deaths that are coded by the Eighth Revision to the category numbers comprising  $N'_{h'}$ ,<sup>11</sup> is:

$$\sigma_{x'_{h'}}^2 = N_h^2 (1 - f_h) \frac{S_h^2}{n_h} + \sum_{j \neq h} N_j^2 (1 - f_j) \frac{S_j^2}{n_j} \quad (8)$$

where  $f_h$  is the sampling fraction ( $n_h/N_h$ ), and  $f_j$  is the sampling fraction ( $n_j/N_j$ ). For a variate, such as in this study, that takes on only the value 0 or 1,

$$S_h^2 = N_h P_h Q_h / (N_h - 1), \quad (9)$$

where  $P_h$  is the proportion of deaths in  $N_h$  that would take on the value 1, that is, that would be assigned to  $N'_{h'}$ , if coded by the Eighth Revision, and where  $Q_h = 1 - P_h$ . The sample variance for stratum  $h$  may be expressed as follows:

$$s_h^2 = (n_h p_h q_h) / (n_h - 1). \quad (10)$$

Similarly, the sample variance for the general term among all the strata in the stratified random sample that include deaths assigned to stratum  $h'$  by the Eighth Revision may be written:

$$s_j^2 = (n_j p_j q_j) / (n_j - 1). \quad (11)$$

Substituting the right-hand members of equations 10 and 11 for  $S_h^2$  and  $S_j^2$ , respectively, in equation 8 gives the following as the estimate

from the sample of  $x'_{h'}$ :

$$s_{x'_{h'}}^2 = \frac{N_h (N_h - n_h)}{n_h - 1} (p_h q_h) + \sum_{j \neq h} \frac{N_j (N_j - n_j)}{n_j - 1} (p_j q_j). \quad (12)$$

Inasmuch as  $p_h = (x_h/n_h)$ ;  $q_h = 1 - p_h$ ;  $p_j = (x_j/n_j)$ ; and  $q_j = 1 - p_j$ , we have

$$s_{x'_{h'}}^2 = \frac{N_h (N_h - n_h)}{n_h} \left( \frac{x_h}{n_h - 1} - \frac{x_h^2}{n_h (n_h - 1)} \right) + \sum_{j \neq h} \frac{N_j (N_j - n_j)}{n_j} \left( \frac{x_j}{n_j - 1} - \frac{x_j^2}{n_j (n_j - 1)} \right). \quad (13)$$

*Standard error of the estimate of the ratio.*—Inasmuch as the variance of a constant times a random variable is the constant squared

times the variance of the random variable, it follows that

$$s_{r_h'}^2 = \left(\frac{1}{N_h}\right)^2 s_{x_h'}^2 \quad (14)$$

Taking the square root of the above equation gives the estimated standard error of  $r_h'$ , denoted  $s_{r_h'}$ :

$$s_{r_h'} = \left(\frac{1}{N_h}\right) \left(s_{x_h'}^2\right)^{1/2} = s_{x_h'} \left(\frac{1}{N_h}\right) \quad (15)$$

*Confidence interval for the ratio.*—Once the standard error of the estimate of the comparability ratio (denoted  $s_{r_h'}$ ) is known, confidence intervals for  $R_h'$ , the true value of the comparability ratio as defined in equation 3 may be computed. The required degree of confidence that a range will cover the true value of  $R_h'$  has been specified for this study to be 95 percent.

Employing the usual notation in the table for the normal distribution<sup>12</sup> it may be stated

that for given percentage  $p$  (equal to 5 percent in the present study) the  $p\%$  value  $\lambda p$  of the normal distribution is defined by the condition:

$$\text{Probability } (|r_h' - R_h'| > \lambda p s_{r_h'}) = \frac{p}{100} \quad (16)$$

With the 5-percent value  $\lambda p$  of the normal distribution equal to 1.9600 this gives:

$$r_h' - 1.9600 s_{r_h'} < R_h' < r_h' + 1.9600 s_{r_h'}$$

To illustrate, let  $r_h' = 1.1852$ ; and  $s_{r_h'} = 0.0406$ . This gives the relation:

$$(r_h' - 1.9600 s_{r_h'}) < R_h' < (r_h' + 1.9600 s_{r_h'});$$

$$\text{or } 1.1056 < R_h' < 1.2648.$$

Thus, we have two positive numbers (1.1056, 1.2648) such that the probability that the true value of  $R_h'$  is included in the interval defined by them is 95 percent.

## APPENDIX V

### COMPARABILITY RATIO FOR MAJOR CARDIOVASCULAR DISEASES

A comparability ratio frequently requested is that for Major cardiovascular diseases (ICDA Nos. 390-448). This group title includes all of the titles in "Section VII. Diseases of the circulatory system" of the Eighth Revision except the following one: Diseases of veins and lymphatics and other diseases of circulatory system (ICDA Nos. 450-458).

The most nearly comparable group title in the Seventh Revision is Diseases of cardiovascular system (ICD Nos. 330-334, 400-468).

Both of these group titles include the first and third leading causes of death—Diseases of heart (ICDA Nos. 390-398, 402, 404, 410-429) and Cerebrovascular diseases (ICDA Nos. 430-438). They also both include Diseases of arteries, arterioles, and capillaries (ICDA Nos. 440-448). The comparable title in the Seventh Revision for these latter diseases is Diseases of arteries (ICD Nos. 450-456). But the group title

Diseases of cardiovascular system (ICD Nos. 330-334, 400-468) in the Seventh Revision includes also the title Diseases of veins and other diseases of circulatory system (ICD Nos. 460-468). These diseases of veins and other diseases of circulatory system (assigned by the Eighth Revision to ICDA Nos. 450-458) are not included, however, under the Eighth Revision group title Major cardiovascular diseases (ICDA Nos. 390-448).

The exclusion of these diseases (ICDA Nos. 450-458) from the Eighth Revision group title Major cardiovascular diseases is the primary reason that the comparability ratio for these two major group titles is less than 1.00.

The comparability ratio of

$$\frac{\text{8th ICDA Nos. 390-448}}{\text{7th ICD Nos. 330-334, 400-468}} = 0.9853.$$

## APPENDIX VI

### NOTES FOR USE IN PRIMARY MORTALITY CODING FOR THE EIGHTH REVISION<sup>6</sup>

When a condition in one of the categories shown in the following list is reported as a cause of death, the provisions of the relevant note should be applied. Notes dealing with the linkage of conditions appear at the categories from which the combination is excluded.

**011** *Pulmonary tuberculosis*

Excludes with conditions in 515 (Pneumoconiosis due to silica and silicates) **(010)**.

**012.3** *Tuberculous laryngitis*

**012.9** *Other respiratory tuberculosis*

**013-017** *Tuberculosis of other organs*

Excludes with conditions in 011 (Pulmonary tuberculosis) **(011)** unless reported as the underlying cause of and with a specified duration exceeding that of the condition in 011.

**018** *Disseminated tuberculosis*

Excludes with conditions in:

**011** (Pulmonary tuberculosis) **(011)**

**013** (Tuberculosis of meninges and central nervous system) **(013)**

**035** *Erysipelas*

**037** *Tetanus*

**038** *Septicaemia*

Code to these diseases when they follow vaccination or a slight injury (any condition in N910-N918, prick, splinter, minor cut, puncture (except of trunk), bruise or contusion of superficial tissues or external parts, burn of first degree); when they follow a more serious injury, code to the injury.

**196** *Secondary and unspecified malignant neoplasm of lymph nodes*

**197** *Secondary malignant neoplasm of respiratory and digestive systems*

**198** *Other secondary malignant neoplasm*

Not to be used if the site of the primary neoplasm is known.

**292-294** *Psychosis associated with physical conditions*

**309** *Mental disorders not specified as psychotic associated with physical conditions*

**310-315** *Mental retardation*

Not to be used if the underlying physical condition is known.

**303** *Alcoholism*

Excludes with conditions in 571.9 (Other cirrhosis of liver) **(571.0)**.

323 *Encephalitis, myelitis, and encephalomyelitis*

Not to be used if the antecedent condition is known:

- postchickenpox encephalitis (052)
- postmeasles encephalitis (055)
- otitic encephalitis (381.9)
- influenzal encephalitis (474)

345 *Epilepsy*

Includes accidents resulting from epilepsy.

Excludes epilepsy due to trauma (code to appropriate N and E categories; if the nature of injury is not known, code to N854).

379 *Blindness*

388 *Deaf mutism*

389 *Other deafness*

Not to be used if the antecedent condition is known.

397 *Diseases of other endocardial structures*

Excludes with condition in:

- 394 (Diseases of mitral valve) (394)
- 395 (Diseases of aortic valve) (395)
- 396 (Diseases of mitral and aortic valves) (396)

400-404 *Hypertensive disease*

Excludes with conditions in 410-414 (Ischaemic heart disease) (410-414 with 4th digit .0).

401-404 *Hypertensive disease not specified as malignant*

Excludes with conditions in 400 (Malignant hypertension) (400).

401 *Essential benign hypertension*

Excludes with conditions in:

- 430-438 (Cerebrovascular disease) (430-438 with 4th digit .0)
- 427 (Symptomatic heart disease) (402)
- 428 (Other myocardial insufficiency) (402)
- 429 (Ill-defined heart disease) (402)
- 580-583 (Nephritis and nephrotic syndrome) (580-583)
- 584 (Renal sclerosis unqualified) (403)

and when reported as the underlying cause of conditions in 424 (Chronic disease of endocardium) (424)

402 *Hypertensive heart disease*

Excludes with conditions in:

- 403 (Hypertensive renal disease) (404)
- 584 (Renal sclerosis unqualified) (404)

403 *Hypertensive renal disease*

Excludes with conditions in:

- 402 (Hypertensive heart disease) (404)
- 427 (Symptomatic heart disease) (404)
- 428 (Other myocardial insufficiency) (404)
- 429 (Ill-defined heart disease) (404)

411 *Other acute and subacute forms of ischaemic heart disease*

412 *Chronic ischaemic heart disease*

- 413 *Angina pectoris*  
Excludes with conditions in 410 (Acute myocardial infarction) (410)
- 424 *Chronic disease of endocardium*  
When more than one valve is mentioned, priority in classification is in the order mitral, aortic, other.
- 426 *Pulmonary heart disease*  
Not to be used if the underlying pulmonary condition is known (except for the term "kyphoscoliotic heart disease").
- 427 *Symptomatic heart disease*
- 428 *Other myocardial insufficiency*
- 429 *Ill-defined heart disease*  
Excludes with:  
malignant hypertension (400.1)  
hypertension, benign or unspecified (402)  
conditions in 410-414 (Ischaemic heart disease) (410-414)
- 428 *Other myocardial insufficiency*  
Excludes with arteriosclerosis (412)
- 429 *Ill-defined heart disease*  
Excludes with conditions in 519.1 (Acute oedema of lung) (427.1)
- 430-438 *Cerebrovascular disease*  
Excludes with malignant hypertension (400.2)
- 437 *Generalized ischaemic cerebrovascular disease*  
Excludes with conditions in 430-434 (Cerebral haemorrhage and infarction) (430-434)  
and when reported as the underlying cause of conditions in 342 (Paralysis agitans) (342).
- 440 *Arteriosclerosis*  
Excludes with conditions in:  
400-404 (Hypertensive disease) (400-404)  
410-414 (Ischaemic heart disease) (410-414)  
430-438 (Cerebrovascular disease) (430-438)  
428 (Other myocardial insufficiency) (412)  
445.9 (Gangrene not elsewhere classified) (445.0)  
and when reported as the underlying cause of conditions in:  
342 (Paralysis agitans) (342)  
424 (Chronic disease of endocardium) (424)  
441-444 } (Other diseases of arteries and arterioles,  
446 } except gangrene) (441-444, 446)  
584 (Renal sclerosis unqualified) (403)  
and of the terms nephritis (chronic) (interstitial) and Bright's disease (chronic) in 582, 583 (403).
- 460 *Acute nasopharyngitis*
- 465 *Acute upper respiratory infection of multiple or unspecified sites*  
Excludes when reported as the underlying cause of serious conditions such as meningitis (320), brain abscess (322), otitis media, mastoiditis (381-383), influenza (470-474), pneumonia (480-486), bronchitis (490, 491), acute nephritis (580).
- 490 *Bronchitis, unqualified*  
Excludes with conditions in 492 (Emphysema) (491).

492 *Emphysema*

Excludes with conditions in 490, 491 (Bronchitis, chronic or unqualified) (491).

493 *Asthma*

Excludes with condition in:

- 466 (Acute bronchitis and bronchiolitis) (466)
- 490 (Bronchitis, unqualified) (490)
- 491 (Chronic bronchitis) (491)
- 492 (Emphysema) (492).

515 *Pneumoconiosis due to silica and silicates*

Excludes with conditions in 011 (Pulmonary tuberculosis) (010).

519.1 *Acute oedema of lung*

Excludes with conditions in:

- 429 (Ill-defined heart disease) (427.1)
- 782.4 (Acute heart failure, undefined) (427.1).

580-584 *Nephritis and nephrosis*

Excludes with malignant hypertension (400.3).

580 *Acute nephritis*

Excludes when reported as the underlying cause of conditions in 582 (Chronic nephritis) (582).

584 *Renal sclerosis unqualified*

Excludes with conditions in:

- 401 (Essential benign hypertension) (403)
- 402 (Hypertensive heart disease) (404)
- 403 (Hypertensive renal disease) (403).

593.2 *Other renal disease*

Excludes renal disease NOS and renal failure NOS with:  
hypertension, benign or unspecified (403).

606 *Sterility, male*

628 *Sterility, female*

Not to be used if the causative condition is known.

630 *Infections of genital tract during pregnancy*

631 *Ectopic pregnancy*

Includes deaths from these causes even though delivery occurred before death.

632 *Haemorrhage of pregnancy*

Excludes deaths occurring after onset of labour (651). If there is no information as to delivery before death, it may be assumed that delivery occurred and that the condition complicated delivery.

633 *Anaemia of pregnancy*

635-639 *Urinary infections and toxæmias of pregnancy and the puerperium*

Includes deaths from these causes even though delivery occurred before death.

636 *Renal disease arising during pregnancy and the puerperium*

Excludes with conditions in:

637.0 (Pre-eclampsia) (637.0)

637.1 (Eclampsia) (637.1).

640 *Abortion induced for medical indications*

Not to be used if the complication of pregnancy or other condition requiring induction is known.

655 *Delivery complicated by foetopelvic disproportion*

Excludes with conditions in 654 (Delivery complicated by abnormality of bony pelvis) (654).

656 *Delivery complicated by malpresentation of foetus*

Excludes with conditions in 655 (Delivery complicated by foetopelvic disproportion) (655).

711 *Acute non-pyogenic arthritis*

Not to be used if the antecedent condition is known.

735 *Curvature of spine*

Excludes with conditions in:

427.0 (Congestive heart failure) (426)

427.1 (Left ventricular failure) (426)

429 (Ill-defined heart disease) (426)

782.4 (Acute heart failure, undefined) (426).

764-768 *Difficult labour*

Excludes residual cerebral paralysis at age 4 weeks or over (343).

When more than one type of difficult labour is mentioned, priority in classification is in the order 764-768.

770 *Conditions of placenta*

771 *Conditions of umbilical cord*

772 *Birth injury without mention of cause*

774 *Haemolytic disease of newborn with kernicterus*

Excludes residual cerebral paralysis at age 4 weeks or over (343).

776 *Anoxic and hypoxic conditions not elsewhere classified*

Excludes residual cerebral paralysis at age 4 weeks or over (343).

Excludes with conditions in 760-771 (Maternal conditions, Difficult labour, Conditions of placenta and cord) (760-771).

777 *Immaturity, unqualified*

778.1 *Post-maturity*

779.0 *Maceration*

Not to be used if any other cause of perinatal mortality is reported.



**782.4 Acute heart failure, undefined**

Excludes with conditions in 519.1 (Acute oedema of lung) (427|1).

**792 Uraemia**

Excludes with malignant hypertension (400.3).

**E930, E931 Complications and misadventures in therapeutic procedures**

Not to be used if the condition for which the treatment was given is known.

**N800-N803 Fracture of skull**

When more than one site is mentioned, priority in classification is in the order base, vault, other.

**N995 Certain early complications of trauma**

Not to be used if the nature of the antecedent injury is known.

**N997-N999 Complications of medical care**

Not to be used if the medical care was for purposes of treatment and the condition for which the treatment was given is known.

## APPENDIX VII

### ASSIGNMENT BY THE EIGHTH REVISION OF DEATHS THAT BY THE SEVENTH REVISION WERE ASSIGNED TO MALIGNANT NEOPLASM OF OTHER AND UNSPECIFIED SITES (ICD NO. 199)

During the period in which the Seventh Revision was in use (1958-67) NCHS divided the above title into two parts: (1) Malignant neoplasm of other specified sites, not specified as secondary (category number 199A), and (2) Malignant neoplasm with primary site not indicated (category number 199B).

In accordance with the procedures in effect with the Eighth Revision, it is assumed that most of the deaths assigned to 199A by the Seventh Revision went into the new four-digit category title Malignant neoplasms of ill-defined sites, other (ICDA No. 195.9).

The listed inclusion terms (arm NOS, chest wall NOS, ear NOS, etc.) under Eighth Revision ICDA No. 195.9 (Malignant neoplasms of ill-defined sites, other) are also shown under the Seventh Revision title Malignant neoplasm of other specified sites, not specified as secondary (category number 199A). Consistent with the assumption that the above-described transfer was made with few, if any, exceptions is the fact that in 1967 there were 980 deaths assigned to the Seventh Revision title corresponding to category number 199A, and in 1968 there were 905 deaths assigned to the Eighth Revision title corresponding to ICDA No. 195.9.

On the other hand, deaths assigned to category number 199B by the Seventh Revision were distributed by the Eighth Revision over a number of titles. For the purpose of this analysis these titles have been divided into five groups.

The first four of these, together with the number of deaths in 1968 that were assigned to them by the Eighth Revision (including those transferred to them from 199B), are as follows:

(1) Malignant neoplasm without specification of site (ICDA No. 199), 9,743 deaths; (2) Other secondary malignant neoplasms (ICDA No. 198), 2,304 deaths; (3) two components under the title Malignant neoplasm of ill-defined sites (ICDA No. 195)—Abdomen, intra-abdominal cancer (ICDA No. 195.0), 1,439 deaths; and Pelvis, pelvic viscera, rectovaginal septum (ICDA No. 195.1), 347 deaths; and (4) four components under Secondary malignant neoplasms of respiratory and digestive systems (ICDA No. 197)—Small intestine, including duodenum, specified as secondary (ICDA No. 197.4), 7 deaths; Large intestine and rectum, specified as secondary (ICDA No. 197.5), 41 deaths; Peritoneum, specified as secondary (ICDA No. 197.6), 108 deaths; and Other digestive organs, specified as secondary (ICDA No. 197.9), 42 deaths. Based on a comparison of coding procedures and inclusion terms in the Seventh and Eighth Revisions, it is believed that most of the deaths assigned by the Eighth Revision to these four groups of titles had been assigned by the Seventh Revision to Malignant neoplasm with primary site not indicated, category number 199B.

The fifth group of causes into which Malignant neoplasm with primary site not indicated (category number 199B) was assigned by the Eighth Revision is a group of additional titles scattered over titles for other malignant neoplasms. The broad groups under which these titles are included, together with the estimated number of additional deaths from 199B assigned to them, are summarized below.

The assumption made in obtaining this esti-

Cause of death (Eighth Revision, International Classification of Diseases, Adapted, 1965)	Estimated additional deaths from category number 199B		
	1966		1968
	Number	Percent	
<b>Total .....</b>	<b>1,928</b>	<b>100.0</b>	<b>2,272</b>
Malignant neoplasms of buccal cavity and pharynx.....140-149	415	21.5	489
Malignant neoplasms of digestive organs and peritoneum.....150-159	727	37.7	857
Malignant neoplasms of breast .....174	44	2.3	52
Malignant neoplasms of genital organs.....180-187	208	10.8	245
Malignant neoplasms of urinary organs.....188,189	193	10.0	227
Malignant neoplasms of all other and unspecified sites.....170-173,190-193	341	17.7	402

mate of 2,272 deaths was that this group of additional deaths constituted about the same percentage of the total deaths in 1968 that would have been assigned to Malignant neoplasm with primary site not indicated (category number 199B) as was the proportion estimated in the comparability study for 1966 (13.93 percent). It was further assumed, as indicated above, that the percentage distribution over broad groups of malignant neoplasms of these 2,272 deaths was about the same as the distribution of the 1,928 deaths in the comparability study.

In the above estimates based on the sample study, no deaths assigned by the Seventh Revision to category number 199B are shown to have been transferred to Malignant neoplasms of respiratory system (ICDA Nos. 160-163). There is considerable evidence that few, if any, deaths in 1966 assigned by the Seventh Revision to ICD No. 199B were assigned by the Eighth Revision to ICDA Nos. 160-163. (It should be noted, however, that two instances in a sample of 99 deaths in 1966-71 have been recorded of cer-

tificates coded to ICD No. 199B by the Seventh Revision and to ICDA No. 162 by the Eighth Revision.<sup>13</sup>)

In 1968 a total of 815 deaths were assigned to secondary malignant neoplasm of respiratory system (classified to ICDA Nos. 197.0-197.3). Most of these deaths could have come only from Malignant neoplasm of thoracic organs (secondary) (ICD No. 165) and from ICD No. 199B. Inasmuch as there were 2,116 deaths assigned to ICD No. 165 in 1967, it may be assumed that about the same number would have been assigned to this category in 1968 if the Seventh Revision had been in use. Moreover, in 1968 only 815 deaths were assigned to ICDA Nos. 197.0-197.3. Most, if not all, of these deaths must have been assigned by the Seventh Revision to ICD No. 165 or 199B. It follows, therefore, that the difference between 2,116 and 815 (1,301 deaths) is the estimated minimum number of deaths in 1968 that were coded by the Seventh Revision to ICD No. 165 and by the Eighth Revision to ICDA Nos. 160-163.

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