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FROM THE
NATIONAL CENTER FOR HEALTH STATISTICS

Mortality in Persons 15-44 Years of Age, United States, 1960 and 1968

There had been a fairly steady reduction in death rates for nearly all sex, color, and age groups for several decades before 1960. Data available for the 8 years following the low point of 1960, however, suggest that for young to middle-aged adults of all races, death rates have stabilized or begun to increase. This report documents these changes for all and selected causes of death.

Table 1 depicts the trends in mortality for the resident U.S. population aged 15-64 years from 1940 to 1968. The 1945 peak for young white males is probably attributable to selective overseas migration of healthy individuals in the Armed Forces. In each year white persons had lower rates than did all others and females had lower rates than males. For both white and all other females aged 15-44 years, an

Figure 1. AGE-ADJUSTED DEATH RATES¹ BY COLOR, SEX, AND CAUSE, AGES 15-44: UNITED STATES, 1960 AND 1968

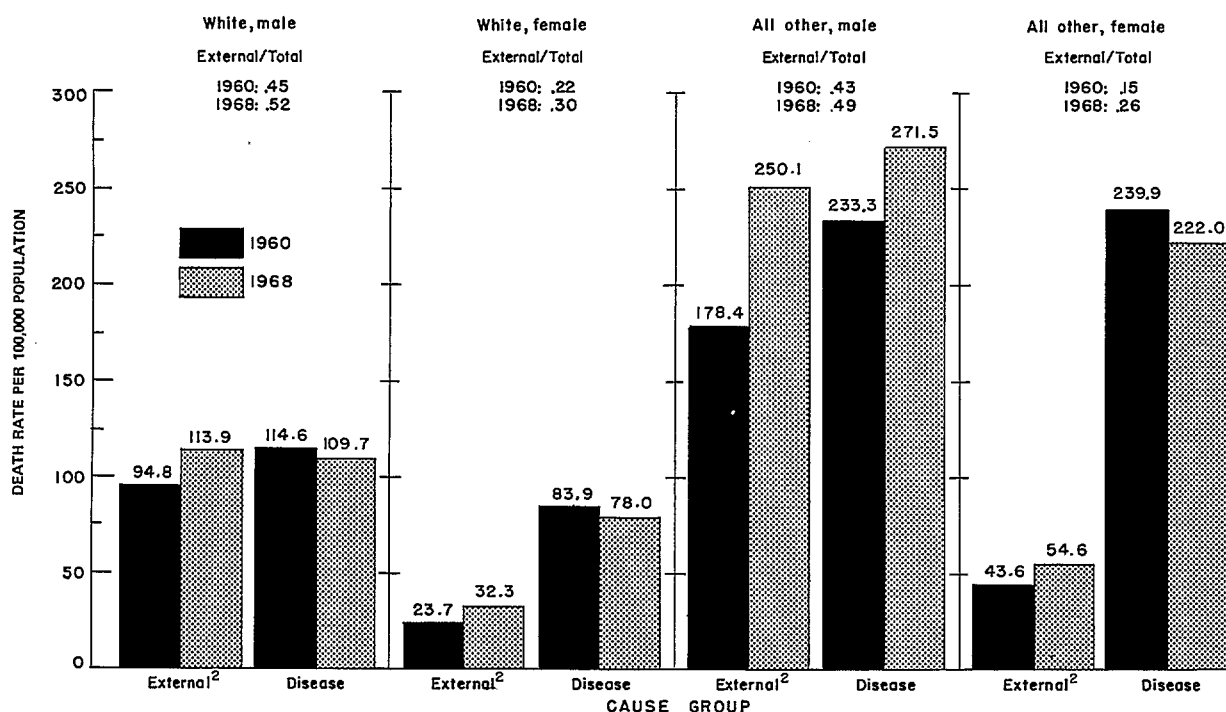


Table 1. DEATH RATES PER 1,000 POPULATION BY AGE, COLOR, AND SEX: UNITED STATES, 1940-68

Color and sex	15-24 years	25-34 years	35-44 years	45-54 years	55-64 years
WHITE, MALE					
1940-----	2.0	2.8	5.1	11.4	25.2
1945-----	2.5	3.0	4.9	10.7	24.4
1950-----	1.5	1.9	3.8	9.8	23.0
1955-----	1.6	1.7	3.4	9.1	21.8
1960-----	1.4	1.6	3.3	9.3	22.3
1965-----	1.5	1.7	3.4	9.0	22.2
1968-----	1.7	1.7	3.5	9.1	22.7
WHITE, FEMALE					
1940-----	1.4	2.2	3.7	7.5	16.8
1945-----	1.1	1.7	3.1	6.5	14.9
1950-----	0.7	1.1	2.4	5.5	12.9
1955-----	0.6	0.9	2.0	4.6	11.2
1960-----	0.5	0.9	1.9	4.6	10.8
1965-----	0.6	0.9	1.9	4.6	10.2
1968-----	0.6	0.8	2.0	4.7	10.4
ALL OTHER, MALE					
1940-----	5.0	8.5	13.2	24.5	37.1
1945-----	4.3	7.2	10.9	20.8	32.3
1950-----	2.9	5.0	8.6	18.6	34.8
1955-----	2.4	4.1	7.2	15.9	31.9
1960-----	2.1	3.9	7.3	15.5	31.5
1965-----	2.2	4.4	8.1	15.9	31.3
1968-----	2.8	5.2	9.2	17.0	33.8
ALL OTHER, FEMALE					
1940-----	5.0	7.4	11.7	21.1	33.2
1945-----	3.6	5.5	9.4	17.2	28.1
1950-----	2.2	3.9	7.5	15.5	27.6
1955-----	1.3	2.8	5.8	12.9	24.4
1960-----	1.1	2.6	5.5	11.4	24.1
1965-----	1.0	2.5	5.4	10.4	22.2
1968-----	1.1	2.5	5.5	10.3	21.5

earlier declining death rate leveled off during the 1960's. Mortality for males aged 15-44 years, however, increased in 1965 and 1968 above the 1960 rates. Although the increases were small for white males, the mortality for all other males increased in 1968 by as much as one-third over that for 1960. The rise in male death rates during the 1960's was a gradual one; 1965 and 1968 were not isolated years in this respect. Among persons aged 45-64 years, only all other males experienced a consistent mortality increase during 1960-68.

The denominator for each of the rates given is the midyear population for the particular year. It was possible that those estimated for the between census years, 1965 and 1968, were underestimates, thereby factitiously raising the death rates for those years. To investigate this, the Census Bureau's estimate for 1970 was checked against the enumerated

figures. For both white and all other persons (both sexes and all ages) the estimate differed from the enumeration by 0.7 percent. Thus, although certain age-color-sex subgroups may show somewhat greater differences, it seems unlikely that an error in the estimate of the population at risk is responsible for any but a small part of the change in rates noted.

To study the reasons behind the change in the mortality trend, deaths were divided into two broad underlying cause categories of the *Eighth Revision, International Classification of Diseases, Adapted* (ICDA): (a) those in which the cause of death was "external"—Accidents, Suicide, and Homicide (E800-E999) and (b) those due to diseases (000-796). The death rates attributable to these categories for persons 15-44 years of age for 1960 and 1968 are shown in figure 1. In both years the proportion of all deaths due to external causes was considerably higher for

males than for females and slightly higher for white persons than for all other persons. For external causes, the mortality in each color-sex group for 1968 exceeded that for 1960. Only a decrease in mortality from the disease categories prevented the overall female rates from rising. This decrease was present for white males as well, but was not of sufficient magnitude to offset the increase in the external category. Only for all other males did increases in both external and disease categories occur.

The breakdown of death rates due to external causes for 1960 and 1968 is presented in table 2. Because of differences between the Seventh and Eighth Revisions of the ICD, the figures given for the 2 years are not entirely comparable. The Eighth Revision

lists a cause of death, "Other external causes," which is not present in the Seventh Revision and which accounts for a small percentage of total external deaths. Under the Seventh Revision, these deaths would have been coded as suicide, other accidents, etc. Thus the data presented slightly underestimate the increases that have occurred. Among white persons, the majority of deaths in the external category were due to Motor vehicle accidents; among all other persons, although Motor vehicle accident death rates were about the same as those for white persons, death rates from Homicide were higher still. Table 2 shows that all causes in the external group have contributed to the increase between 1960 and 1968. In three of the four race-sex groups, Motor

Table 2. DEATH RATES PER 100,000 POPULATION¹ BY COLOR AND SEX, FOR SPECIFIED EXTERNAL CAUSES OF DEATH, AGES 15-44 YEARS: UNITED STATES, 1960 AND 1968

Color, sex, and cause of death (Eighth Revision, International Classification of Diseases, Adapted, 1965)	1968	1960	Change, 1960 to 1968	
			Amount	Percent
WHITE, MALE				
All external causes-----	² 113.9	94.8	19.1	20.1
Motor vehicle accidents-----	56.7	44.4	12.3	27.7
Other accidents-----	31.0	30.3	0.7	2.3
Suicide-----	16.9	14.7	2.2	15.0
Homicide-----	9.3	5.3	4.0	75.5
WHITE, FEMALE				
All external causes-----	² 32.3	23.7	8.6	36.3
Motor vehicle accidents-----	16.4	11.4	5.0	43.9
Other accidents-----	6.0	5.2	0.8	15.4
Suicide-----	7.3	5.2	2.1	40.4
Homicide-----	2.6	1.9	0.7	36.8
ALL OTHER, MALE				
All external causes-----	² 250.1	178.4	71.7	40.2
Motor vehicle accidents-----	67.3	48.9	18.4	37.6
Other accidents-----	65.1	55.4	9.7	17.5
Suicide-----	11.8	9.9	1.9	19.2
Homicide-----	105.8	64.1	41.7	65.1
ALL OTHER, FEMALE				
All external causes-----	² 54.6	43.6	11.0	25.2
Motor vehicle accidents-----	16.6	10.8	5.8	53.7
Other accidents-----	12.6	12.7	-0.1	-0.8
Suicide-----	4.0	2.8	1.2	42.9
Homicide-----	21.4	17.3	4.1	23.7

¹ Rates adjusted for difference in age composition within each color-sex group between 1960 and 1968.

² Total excludes data for "Other external causes."

vehicle accident deaths were the largest source; this appears to be directly related to an increase in nationwide vehicle mileage.¹ Homicide deaths constituted a large part of the total difference among all other persons, and in percentage terms, Homicide death rates rose substantially for both color groups.

As previously shown in figure 1, all other males aged 15-44 years experienced an increase in mortality for external causes as well as for diseases. Most of the change in the disease category occurred in the age groups 25-34 years and 35-44 years, and was examined in these groups for selected causes of death for 1960 and 1968 (table 3). The increases shown by all other males compared to the other three color-sex groups were present for many of the causes listed, but particularly striking differences were noted in the following:

1. Deaths from Major cardiovascular-renal diseases. In the age group 35-44 years, all other males were the only group whose rate rose between 1960 and 1968. Among all other males 25-34 years of age mortality declined by 5 per 100,000. Nonetheless, this decrease was smaller than that for white males and for all other females. Although the decline was the same for white females, it was considerably less in percentage terms. Death rates from rheumatic heart disease fell in all groups. Thus the above differences resulted from relatively higher rates among all other males from other causes (primarily hypertensive-arteriosclerotic) in the major cardiovascular-renal disease category.
2. Causes of death related to alcohol:
 - (a) In the category Mental, psychoneurotic, and personality disorders (290-315, Eighth Revision) all other males were the only group to show large increases between 1960 and 1968. The two subcategories accounting for the majority of deaths were Alcoholic psychosis (291) and Alcoholism (303).
 - (b) Death rates from Cirrhosis of liver rose in all color-sex groups, but more so among all other males.
 - (c) Apart from Cirrhosis of liver, for digestive diseases other than Peptic ulcer, Appendicitis,

and Hernia and intestinal obstruction, mortality among all other males was alone increased. Some of the important components of this category, pancreatitis and gastritis, are likely associated with alcohol ingestion.

3. Deaths from Respiratory diseases. Although all color-sex groups experienced an increase in this category, the change was greatest for all other males.

A source of error in the data presented arises from the fact that deaths in 1960 were coded according to the Seventh Revision (ICD), whereas deaths in 1968 were coded according to the Eighth Revision (ICDA). The comparability of the two for specific causes of death is not known. Comparability ratios (for any cause of death category, Eighth Revision assignments divided by Seventh Revision assignments given the identical set of death certificates)² given in table 3 are provisional estimates, acknowledged to be minor to moderate underestimates, depending on cause of death, of the actual (unknown) ratios. The failure to take this factor into account, however, probably had little effect on the observed variation, since:

1. For the causes of death selected, 1967 rates (coded under the Seventh Revision) agree much more closely with those for 1968 (coded under the Eighth Revision) than those for 1960.
2. The comparability ratios between the most recent ICD Revisions for which the data were available (Fifth and Sixth Revisions) showed only minor variations among color-sex groups. The comparison of mortality differences among color-sex groups is affected only by this variation, not by the size of the ratios *per se*.

Could selective overseas migration of healthy young males serving in the Armed Forces (as in World War II) be responsible for the 1960-68 mortality increases? This hypothesis would not ap-

¹National Center for Health Statistics: "Motor Vehicle Accident Deaths in the United States, 1950-67." *Vital and Health Statistics*. PHS Pub. No. 1000-Series 20-No. 9. Public Health Service. Washington, U.S. Government Printing Office, Dec. 1970.

²National Center for Health Statistics: "Provisional Estimates of Selected Comparability Ratios Based on Dual Coding of 1966 Death Certificates by the Seventh and Eighth Revisions of the International Classification of Diseases." *Monthly Vital Statistics Report*, Vol. 17, No. 8. Supplement. Public Health Service. Washington, D.C., Oct. 25, 1968.

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pear to account for more than a small part of the change since: (a) the mortality rise seems to have started about 1961 or 1962 before the military buildup and (b) all other male death rates rose not only for the age group 15-24 years, but for the age groups 25-34 and 35-44 years as well. Only a very small fraction of the men in the latter age groups had gone overseas.

This report has documented, for persons aged 15-44 years, a recent rise in death rates from several causes. For males, and particularly all other males, these increases have brought about an overall increase in the mortality rate. Whether this upward trend will continue, or is merely a temporary change in the previously downward trend, remains to be seen.

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Table 3. DEATH RATES AND DIFFERENCE OF RATES PER 100 000 POPULATION FOR SPECIFIED DISEASES, BY AGE, COLOR, AND SEX:
UNITED STATES, 1960 AND 1968

Cause of death (Eighth Revision, International Classification of Diseases, Adapted, 1965)	25-34 years				35-44 years				Provi- sional compara- bility ratio
	Male		Female		Male		Female		
	White	All other	White	All other	White	All other	White	All other	
All diseases (000-796):									
1960-----	74.3	182.7	63.2	210.5	244.2	532.8	165.0	494.7	---
1968-----	63.6	209.6	53.0	185.3	242.6	640.9	161.5	477.4	---
Difference-----	-10.7	26.9	-10.2	-25.2	-1.6	108.1	-3.5	-17.3	---
Infective and parasitic diseases (000-136):									
1960-----	2.8	14.0	3.1	15.2	6.0	36.3	4.5	22.4	---
1968-----	1.6	9.7	1.6	8.2	3.0	24.3	2.5	15.3	.933
Difference-----	-1.2	-4.3	-1.5	-7.0	-3.0	-12.0	-2.0	-7.1	---
Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissues (140-209):									
1960-----	18.8	18.2	18.8	29.6	46.3	71.7	66.6	98.3	---
1968-----	17.2	18.2	16.2	25.0	50.7	80.3	65.1	92.0	.988
Difference-----	-1.6	0.0	-2.6	-4.6	4.4	8.6	-1.5	-6.3	---
Diabetes mellitus (250):									
1960-----	2.6	3.5	1.8	3.3	4.7	9.1	2.9	12.9	---
1968-----	2.6	5.1	2.0	5.0	5.4	10.4	3.6	13.1	.994
Difference-----	0.0	1.6	0.2	1.7	0.7	1.3	0.7	0.2	---
Anemias (280-285):									
1960-----	0.2	2.7	0.4	3.6	0.2	1.8	0.5	1.9	---
1968-----	0.2	3.6	0.2	3.0	0.3	2.5	0.4	2.6	.944
Difference-----	0.0	0.9	-0.2	-0.6	0.1	0.7	-0.1	0.7	---
Mental disorders (290-315):									
1960-----	1.2	9.5	0.5	4.1	3.3	13.8	1.2	5.8	1.---
1968-----	1.3	13.3	0.4	4.3	4.3	27.3	1.6	10.5	.940
Difference-----	0.1	3.8	-0.1	0.2	1.0	13.5	0.4	4.7	---
Diseases of the nervous system and sense organs (320-389):									
1960-----	3.6	9.4	2.3	5.0	4.9	12.8	4.3	7.0	---
1968-----	3.2	8.6	1.9	5.6	4.7	18.6	4.3	9.5	1.940
Difference-----	-0.4	-0.8	-0.4	0.6	-0.2	5.8	0.0	2.5	---
Major cardiovascular diseases (390-448):									
1960-----	25.9	65.8	15.3	65.2	128.4	248.2	45.3	209.3	---
1968-----	17.3	60.8	10.3	47.4	115.5	260.0	40.0	172.3	.999
Difference-----	-8.6	-5.0	-5.0	-17.8	-12.9	11.8	-5.3	-37.0	---
Diseases of the respiratory system (460-519):									
1960-----	5.1	17.8	4.0	16.6	12.1	49.2	7.3	29.4	---
1968-----	5.2	24.5	4.5	17.0	12.9	61.6	9.0	37.3	.995
Difference-----	0.1	6.7	0.5	0.4	0.8	12.4	1.7	7.9	---
Peptic ulcer (531-533):									
1960-----	1.0	2.2	0.3	0.8	3.6	6.6	1.0	2.3	---
1968-----	0.6	2.4	0.2	0.5	2.0	6.3	0.8	2.6	.979
Difference-----	-0.4	0.2	-0.1	-0.3	-1.6	-0.3	-0.2	0.3	---
Appendicitis (540-543):									
1960-----	0.3	0.9	0.1	0.5	0.5	1.0	0.3	1.6	---
1968-----	0.2	0.4	0.1	0.7	0.3	1.4	0.1	0.6	1.940
Difference-----	-0.1	-0.5	0.0	0.2	-0.2	0.4	-0.2	-1.0	---
Hernia and intestinal obstruction (550-553,560):									
1960-----	0.4	1.5	0.4	1.3	1.0	3.2	1.1	4.0	---
1968-----	0.3	1.1	0.3	1.0	0.6	2.2	0.8	2.5	.757
Difference-----	-0.1	-0.4	-0.1	-0.3	-0.4	-1.0	-0.3	-1.5	---
Cirrhosis of liver (571):									
1960-----	2.3	9.3	1.8	9.0	13.4	23.8	8.2	18.5	---
1968-----	3.0	21.2	1.8	14.2	18.8	55.7	10.4	38.8	1.003
Difference-----	0.7	11.9	0.0	5.2	5.4	31.9	2.2	20.3	---
Other diseases of digestive system, excluding those above (520-577):									
1960-----	2.3	5.1	2.0	5.2	4.9	11.3	4.1	8.7	---
1968-----	2.0	9.6	1.9	6.0	5.6	19.5	4.3	9.8	1.940
Difference-----	-0.3	4.5	-0.1	0.8	0.7	8.2	0.2	1.1	---
Nephritis and nephrosis (580-584):									
1960-----	3.7	6.9	2.0	6.4	4.5	16.4	2.9	11.9	---
1968-----	1.4	4.7	0.9	4.8	2.6	13.0	1.8	11.6	.880
Difference-----	-2.3	-2.2	-1.1	-1.6	-1.9	-3.4	-1.1	-0.3	---
Infections of kidney (590):									
1960-----	0.5	2.0	0.8	3.2	1.2	5.2	1.6	8.6	---
1968-----	0.3	0.7	0.5	1.7	0.7	3.2	1.0	6.4	1.026
Difference-----	-0.2	-1.3	-0.3	-1.5	-0.5	-2.0	-0.6	-2.2	---
Symptoms and ill-defined conditions (780-796):									
1960-----	1.8	11.5	1.4	8.1	4.1	19.9	2.2	15.2	---
1968-----	2.0	13.7	1.4	9.7	4.9	28.0	2.8	18.6	.994
Difference-----	0.2	2.2	0.0	1.6	0.8	8.1	0.6	3.4	---
Total, specified causes:									
1960-----	72.5	180.3	55.0	177.1	239.1	530.3	154.0	457.8	---
1968-----	58.4	197.6	44.2	154.1	232.3	614.3	148.5	443.5	---
Difference-----	-14.1	17.3	-10.8	-23.0	-6.8	84.0	-5.5	-14.3	---
All other diseases (Residual):									
1960-----	1.8	2.4	8.2	33.4	5.1	2.5	11.0	36.9	---
1968-----	5.2	12.0	8.8	31.2	10.3	26.6	13.0	33.9	---
Difference-----	3.4	9.6	0.6	-2.2	5.2	24.1	2.0	-3.0	---

¹ Ratio for this category is not given in reference; .940 is the value given to "All other diseases."

Handwritten notes:
1. 100 - 700

EXPLANATION OF SYMBOLS USED IN TABLES

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--	*

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U.S. DEPARTMENT OF
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Public Health Service

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