

Relation of Suicide Rates to Social Conditions

Evidence From U.S. Vital Statistics

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ACTS OF suicide may be attributed to the person committing the act or to his environment. Causes attributable to the person include, for example, the preexistence of mental illness or certain personality traits; causes attributable to the environment include the circumstances that precipitate the act.

Concerning the environmental determinants of suicide, three questions may be asked.

1. Are there any environmental determinants of suicide or does all suicide, as some have argued, "arise from within"?
2. If there are environmental determinants, what is their specific nature?
3. What quantitative estimate can be made of the proportion of the suicide rate attributable to environmental determinants?

The first question has been definitively answered by Durkheim and his successors. That suicide rates vary with social conditions not only indicates clearly that environment is influential but also leads to question 2 by suggesting that social conditions may be in this cause of death among the most relevant components of the environment. However, greater specificity than the broad rubric "social conditions" is still lacking with respect to identification of causal environments. The answer to question 3 must await more specific answers to question 2.

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One procedure which may assist in the formulation of hypotheses for subsequent test is the correlation of suicide rates over time and by place with variation in specific types of social circumstance. The classic works in this field are those of Durkheim (1) and Dublin and Bunzel (2). Although Dublin and Bunzel presented a number of analyses of U.S. data up to 1931, both works relied heavily on data from European countries, and there has been little utilization of U.S. data in this context.

We will consider data from U.S. vital statistics (3) on (a) the pattern of sex differences in suicide rates at various ages, (b) racial differences in different geographic regions of the country, (c) secular changes during the depression of the 1930's, and (d) secular changes during and after the Second World War.

Rates by Age and Sex

Average annual rates by age and sex for the white population of the United States during 1948-52 are shown in figure 1. That suicide rates for males are higher than those for females at all ages is well known, but less frequently remarked on is the fact that the sex differential varies with age. Thus, in these data, rates for males increased progressively throughout life; rates for females reached a peak in the age group 50-54 and thereafter declined with increasing age. This pattern appears to be characteristic of white persons in this country during the present century (fig. 2).

In order to assess the possibility that for some reason, perhaps related to choice of method of

suicide, the proportion of deaths by suicide that are so reported decreases with advancing age in females, but not in males, we present in the table rates in four categories of suicide method. Although the ratio resulting from dividing the rate in males by the rate in females varies markedly by age and by method of suicide used, the ratio increased with age over age 55 in each of the four categories. It seems unlikely that practices favoring under-reporting of females by comparison with males could operate in similar fashion for persons dying by such different mechanisms.

The extent of the difference also seems to make differential reporting by sex an unlikely explanation of the trends. If, in figure 1, the age trend for females is extrapolated parallel to the curve for males, the suicide rate for females aged 75 or more would be approximately 30 per 100,000. To explain the difference on the basis of reporting would therefore require the assumption that 70 percent of the suicides of females at that age were not reported. (Any degree of under-reporting for males in the same age group would, of course, increase the

Figure 1. Average annual death rates from suicide, by age and sex, white population, United States, 1948-52

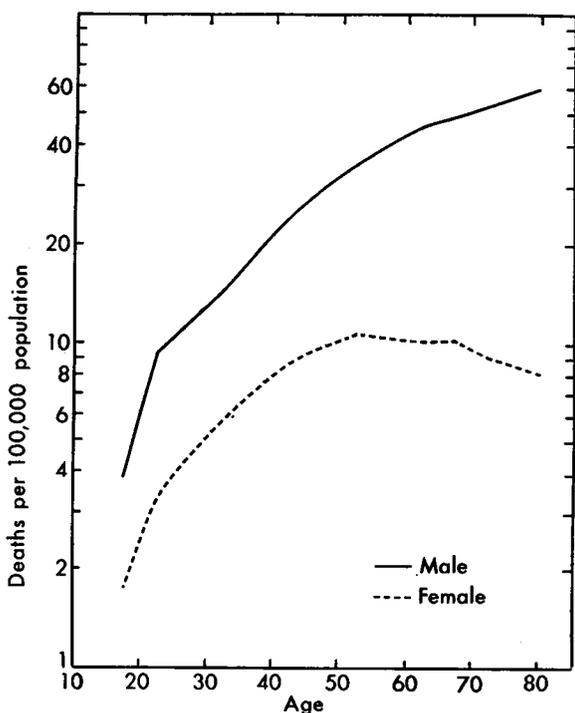
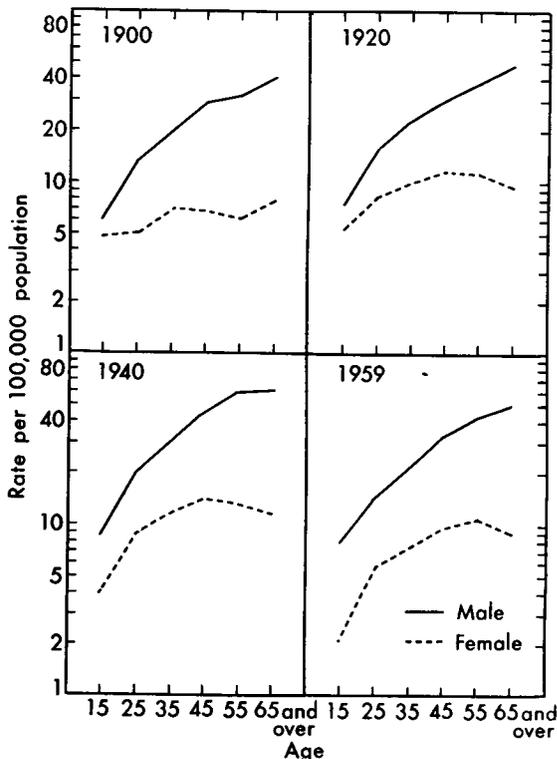


Figure 2. Annual death rates from suicide, by age and sex, white population, U.S. Death Registration Area, 1900 and 1920, United States, 1940 and 1959



required percentage of unreported female suicides.) Although these arguments do not preclude reporting practices as explanatory of the sex differences observed, they do suggest the possibility that the causal factors which increase with age in both sexes up to age 55 continue to increase for males beyond that age but decline for females.

It is of interest then to inquire if such factors might be related to differences between males and females in physiological or other biological changes with age or to the social circumstances imposed on males and females differentially by the community. One approach is to examine the patterns in various countries, since changes with age in the biological functions of the sexes ought to vary less from country to country than differences in the social pressures to which the sexes are subjected.

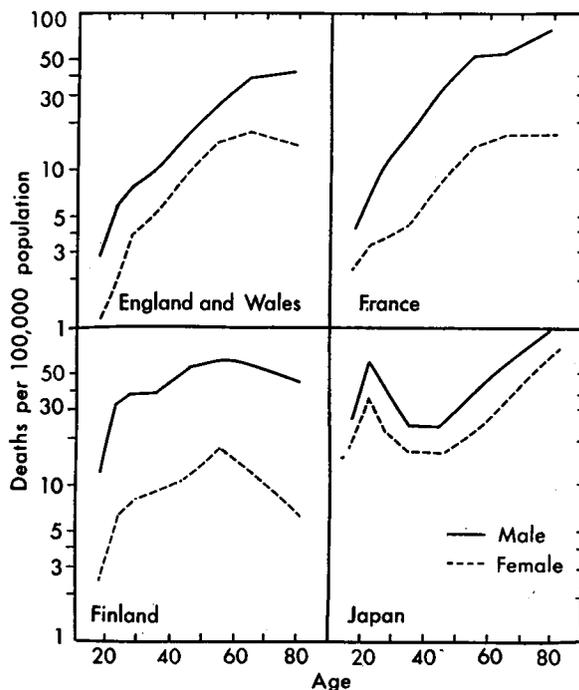
Age and sex trends for suicide for England and Wales, France, Finland, and Japan, drawn from rates published by the World Health Or-

ganization (4), are shown in figure 3. We are not concerned here so much with the overall differences in rates between countries, which have been considered by Dreyer (5), as with the pattern of sex differences within countries. The four patterns illustrated are representative of a number of others that would have served the purpose equally well. In England and Wales, France, and also in the Netherlands and Denmark (not shown) the curves diverge with age, as in the United States, although in England and Wales the rates for females do not decline until the over 70 age group, and in France and the Netherlands they do not decline at all. In Finland, and also in Norway and Sweden, rates for both sexes decrease after age 60. The most striking pattern is that for Japan. Here there is a distinct bimodality in which the male and female curves remain closely parallel throughout life. Since the pattern noted for the United States is characteristic of, although not peculiar to, this country, it seems highly unlikely that the divergence in risks of suicide between U.S. males and females as age advances is dependent on any innate biological difference between the sexes.

Racial Differences

It is well known that rates of suicide among U.S. Negroes are lower than among white persons. Dublin and Bunzel pointed out that in

Figure 3. Average annual death rates from suicide, by age and sex, in four selected countries, 1952-54



SOURCE: Reference 4.

1926-30, the rate for whites was two and a half times as high as that for Negroes. This situation is illustrated in figure 4, which shows that in the two southern regions of the United States (in which the nonwhite population is almost exclusively Negro), rates for whites were be-

Average annual rates of suicide per 100,000 by age and sex, in four categories of suicide method, United States, 1948-52

Age	Poisoning			Hanging and strangulation ¹			Firearms and explosives ¹			All other means ¹			All suicides		
	Rates		Ratio M/F	Rates		Ratio M/F	Rates		Ratio M/F	Rates		Ratio M/F	Rates		Ratio M/F
	Male	Female		Male	Female		Male	Female		Male	Female		Male	Female	
15-24.....	1.2	1.1	1.1	1.2	0.2	6.1	3.8	0.9	4.1	0.5	0.3	1.6	6.7	2.6	2.6
25-34.....	3.1	2.1	1.5	1.9	.7	2.8	7.1	1.8	4.0	1.1	.7	1.5	13.1	5.1	2.6
35-44.....	5.0	3.5	1.4	3.4	1.4	2.4	11.3	2.0	5.8	2.0	1.1	1.9	21.6	8.0	2.7
45-54.....	6.6	4.1	1.6	6.4	2.3	2.7	15.9	2.0	7.8	3.3	1.7	1.9	32.4	10.2	3.2
55-64.....	7.1	3.5	2.0	11.0	3.2	3.4	19.6	1.4	13.8	5.3	2.2	2.4	42.9	10.3	4.2
65-74.....	6.7	3.2	2.1	13.2	3.0	4.4	24.2	1.1	21.6	7.4	2.6	2.9	50.5	9.7	5.2
75 and over....	6.7	2.6	2.6	16.6	2.3	7.2	28.5	.7	40.7	9.3	2.4	3.8	59.7	8.1	7.4
All ages....	4.5	2.8	1.6	5.3	1.6	3.4	12.3	1.5	8.0	2.8	1.3	2.2	24.9	7.2	3.5

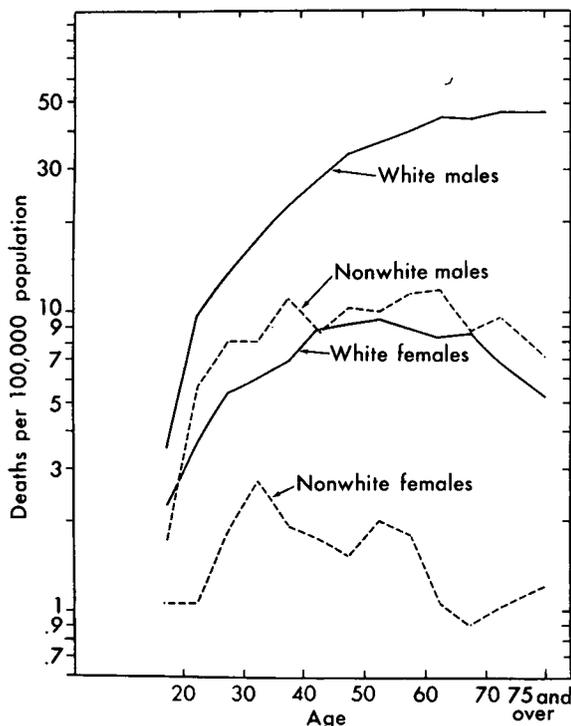
¹ Based on 1949-52 statistics.

tween two and four times as high as those for Negroes at all ages and for both sexes.

However, in two northern regions which also have substantial and almost exclusively Negro nonwhite populations, rates for nonwhites up to age 35 are as high as those for whites, and the differences after that age are not as great as in the south (fig. 5). Negro males show a somewhat greater tendency to approach rates of suicides in whites than do Negro females.

There are many possible explanations of these observations; they may relate to differences in the social and economic pressures experienced by Negroes in the north compared with those in the south, or they may be interpretable in terms of the known higher rates of suicide among migrants in general, since a large proportion of the northern Negro population has migrated within a lifetime. However, whatever the specific explanation, the findings indicate that the difference between rates of suicide in Negroes and whites depends, at least in part, on environmental factors and not on any innate personal characteristics.

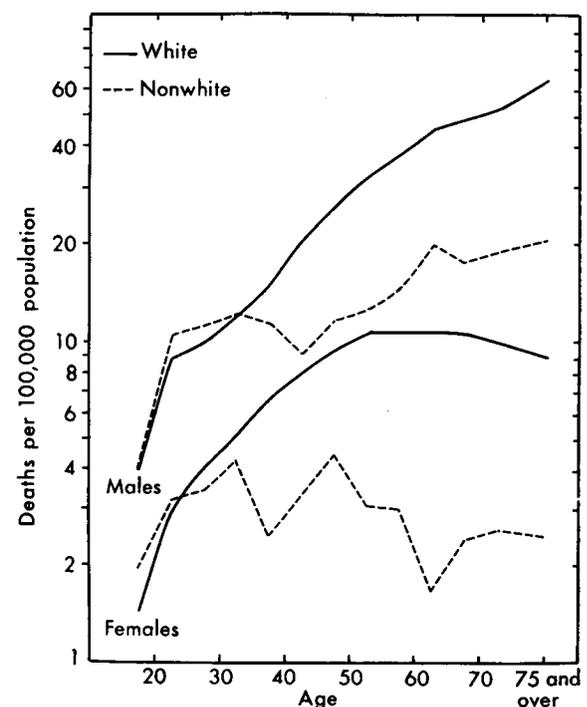
Figure 4. Average annual death rates from suicide, by age, sex, and race, South Atlantic and East South-Central States, 1948-52



Changes During the Great Depression

Examination of secular changes in mortality rates in the United States prior to 1933 is complicated by the expansion of the Death Registration Area. Furthermore, the mortality data for individual States, which would allow a group of States to be followed throughout a given period, are given in different age groups in different time periods and, in some years, without separation of racial groups. From 1920 to 1932, however, the Bureau of the Census published as an appendix to the mortality data a table showing deaths separated by cause, race, sex, and age for the group of 34 States that constituted the Death Registration States of 1920. These data were used to calculate the rates for the years 1920-32 shown in figures 6 and 7. From 1933 on, the rates are those for the entire continental United States. Any sudden change between 1932 and 1933 would therefore have to be considered as possibly due to the change in geographic area covered by the data. No such change is evident, however; the

Figure 5. Average annual death rates from suicide, by age, sex, and race, Middle Atlantic and East North-Central States, 1948-52



change that does occur between 1932 and 1933 appears to be part of a more long-term pattern.

The numerators of these rates are the mortality data published by the National Office of Vital Statistics, now the National Center for Health Statistics (3); they include deaths in the Armed Forces in the United States but not those abroad. For the years 1940-49, suitable denominator populations that also exclude the Armed Forces abroad have been published by the Bureau of the Census (6). For 1920-39 and 1950-59 the denominators used are from routine census data and, unlike the numerators, include the Armed Forces abroad; however, the error involved is probably negligible. For example, in the age group 20-24, which consistently has a larger proportion of its members in the Armed Forces abroad than any other age group, the percentage abroad in 1940 was 1.4 and in 1949 it was 3.2; these contrast with the 45.2 percent of this age group abroad in 1945.

The two figures illustrate an upward and then downward trend with a peak in the early 1930's. The pattern is much more marked for

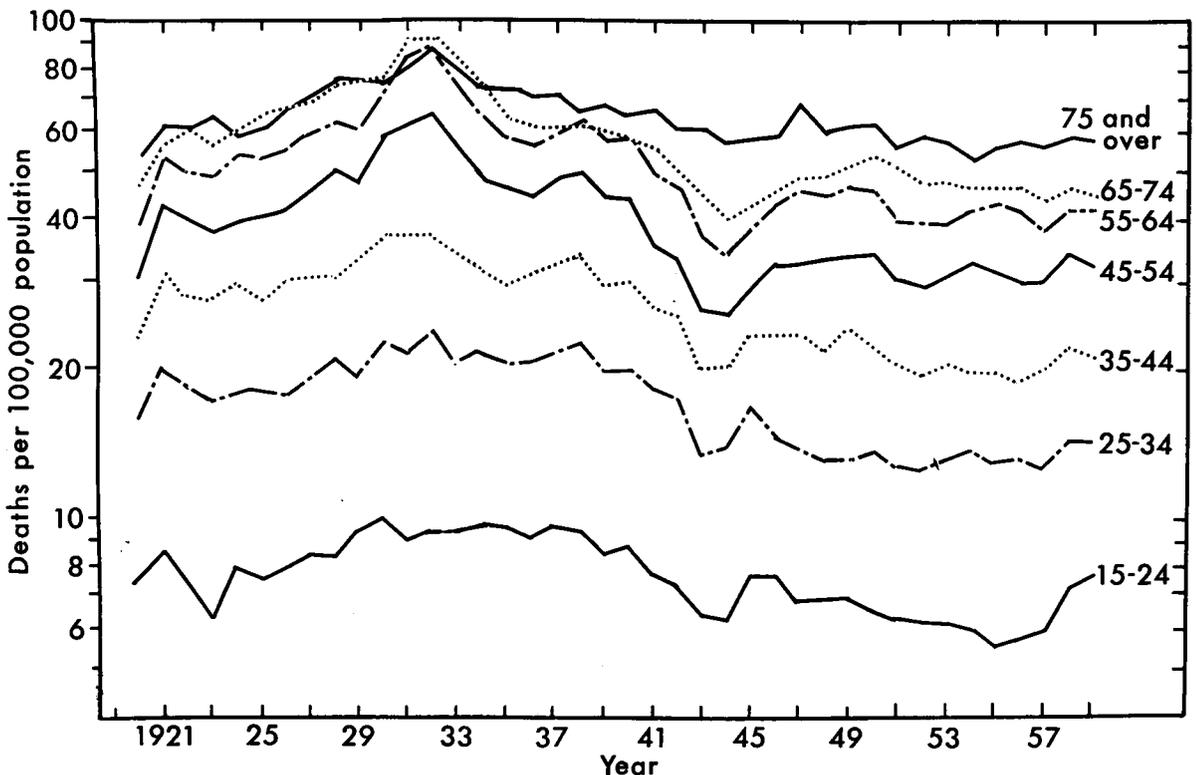
males than for females, if indeed it can be said to exist at all for females. Also this peak becomes more marked among males with increasing age, except for the age group 75 and over; the peak in the early 1930's is pronounced only for males between 45 and 74, but in each of the three age groups in this range it is striking.

The correlation is closer with general economic conditions than with any dramatic event such as the stock market crash of 1929. If the suicide rate was high among financiers in 1929, it was not high enough, or the group at risk was not large enough, to be reflected in national rates.

Changes During and After World War II

During the period of the Second World War there was no remarkable change in suicide rates for females, but a trough in the rates for males is evident (figs. 6 and 7). That such troughs tend to be associated with wars and that they are generally restricted to males is well known. Some authors have suggested that this phenom-

Figure 6. Annual age-specific death rates from suicide, white males, U.S. Death Registration States of 1920, 1920-32, and United States, 1933-59



enon is the result of a high frequency of "concealed" suicide in the Armed Forces (?). Clearly this explanation is inadequate for the U.S. experience for these reasons: (a) the trough is evident for all ages except the group 75 years and over and is most striking in the two age groups 45-54 and 55-64, groups minimally involved in the Armed Forces; and (b) the decrease actually began in 1939, at the outbreak of the European conflict when, even in the age group 20-24, only 3 percent of U.S. males were in the Armed Forces.

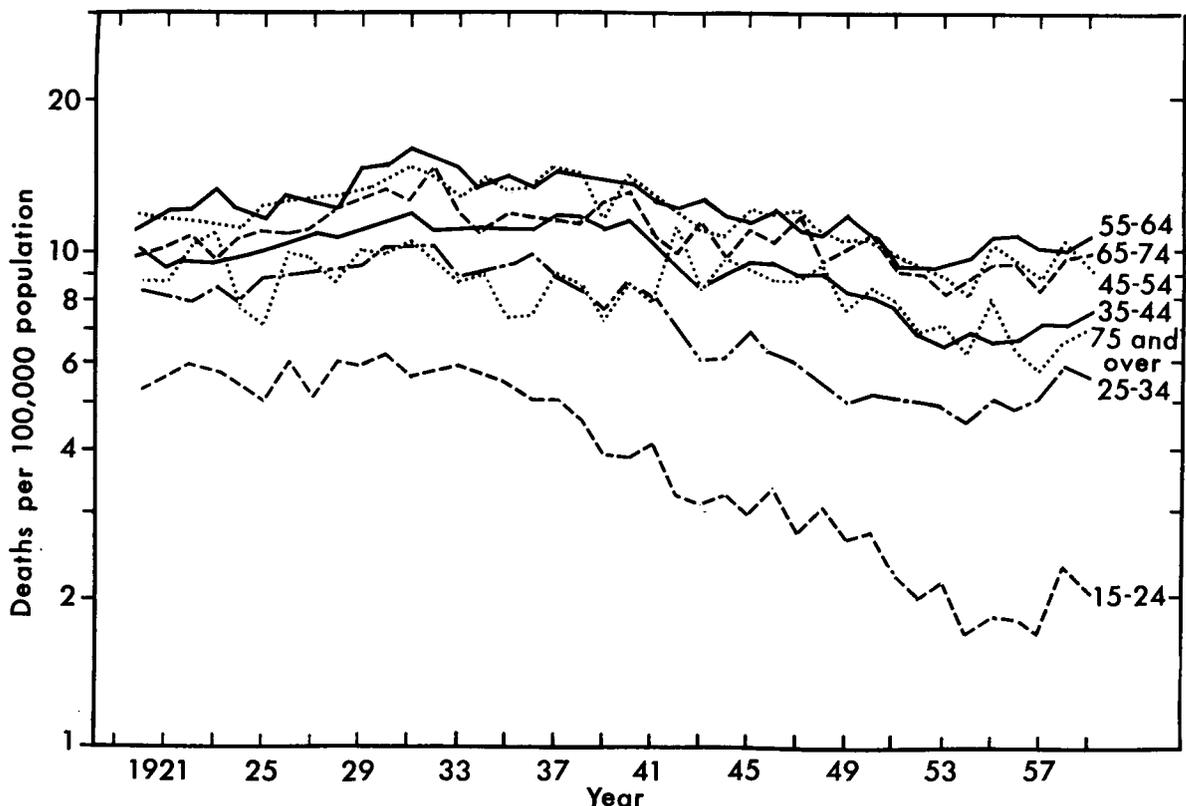
During the postwar period, after an initial rise in 1945 affecting all ages, the trend for males varied with age. For the two youngest age groups examined (15-24 and 25-34) the trend was downward; for the age group 35-44 rates remained fairly constant for a period of 4 years; but for all age groups over 45 years the trend was persistently upward until the outbreak of the Korean war in 1951.

An attempt was made to localize more precisely the rapid increase in 1945, compared with

1944. Deaths by month and cause are published only for all ages, races, and sexes combined. For the years 1943-48 these are illustrated in figure 8. In 1943 and 1944 the usual seasonal distribution of suicides, with a peak in the spring and early summer, is seen. In 1945 the usual seasonal peak occurred, but the rates remained high throughout the latter part of the year. In 1946 and subsequent years the usual seasonal distribution becomes superimposed on the new high base level. The new base level, established in the second half of 1945, is about 20 percent higher than that of 1943 and 1944—an increase too great to be accounted for by the increase in population occurring as the result of the returning forces. These data suggest therefore that, as might be expected from knowledge that the war terminated in the middle of the year, the sudden increase in 1945 was localized to the second half of the year. It is unfortunate that the seasonal trend in 1945 cannot be localized by age and sex.

Although these marked changes are in a sense

Figure 7. Annual age-specific death rates from suicide, white females, U.S. Death Registration States of 1920, 1920-32, and United States, 1933-59



“associated” with the Second World War, two features, the onset of the marked decline as early as 1939 and the changes in the period 1945–50, suggest that they do not result from factors directly related to military operations or mobilization of the Armed Forces. The changes seem to correlate more closely with changing business and employment prospects. Thus, the beginning of the decline, coinciding with the outbreak of the war in Europe, came at a time of industrial rather than military mobilization in the United States. An obvious explanation of the increase in suicide rates in older males following the war is that the return of the younger males led to increasing competition for employment. The increase in suicide rates during this period became more striking with increasing age (as employment competition would be expected to do), except for the age group 75 and over whose members are generally beyond such competition.

Two additional features of figures 6 and 7, although not strictly relevant to the present thesis, are worthy of comment: females aged

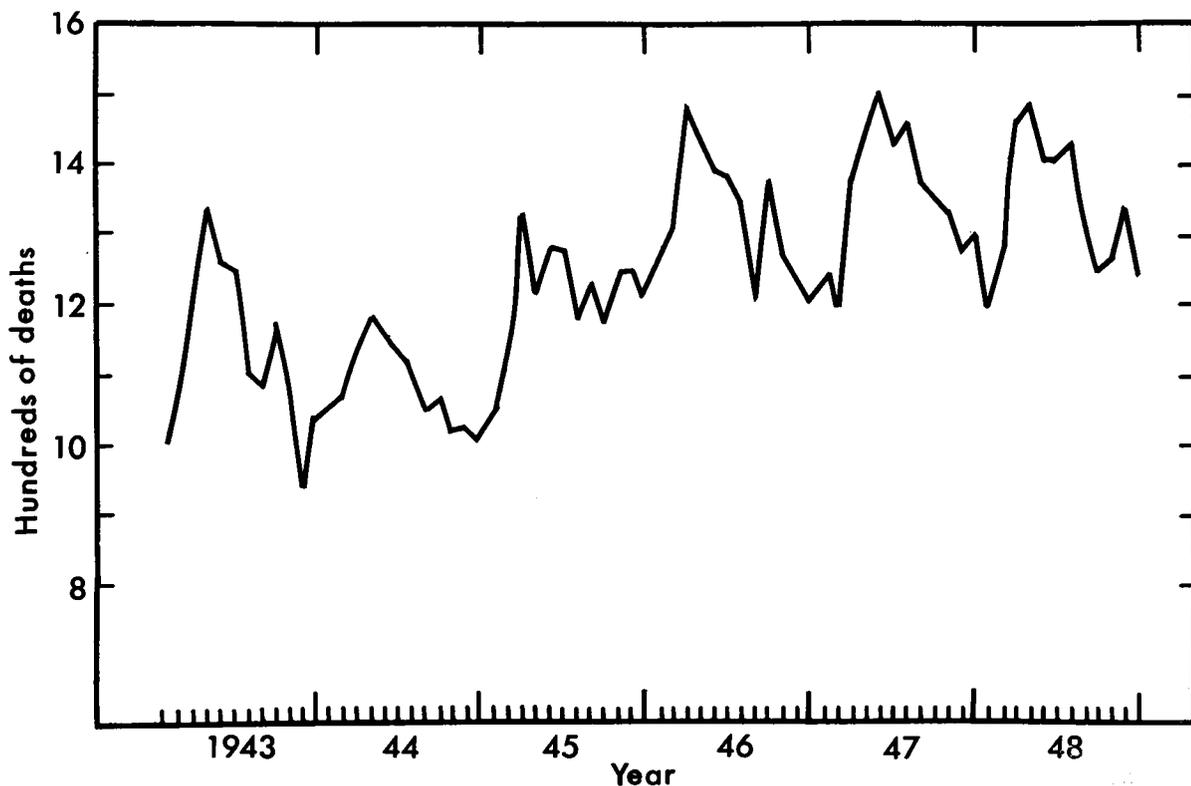
15–24 experienced a striking decline in suicide rates, having rates in 1959 about one-third of those in 1933, and in almost all age groups and for both sexes, rates show some evidence of increase after 1955.

Discussion

Several of these observations—the divergence of male and female rates with age after middle age, the more striking secular fluctuations in rates for males than for females, and the greater similarity of rates among Negro and white males than among Negro and white females in the north—suggest that the social role of the male is an important determinant of suicide rates among that sex. The social role of the male is predominantly occupational, and the observations on rate changes during the depression and after the Second World War indicate that during periods in which this occupational role may be particularly stressful suicide rates tend to rise.

This relationship is illustrated in figure 9.

Figure 8. Deaths from suicide by month, U.S. totals, 1943–48



Suicide rates for males in the 45-54 year age group show a remarkable correlation with total unemployment rates in the same year. (Rates of unemployment specific for age are not available.) Numerous previous writers have examined the relationship of cycles of business conditions to suicide rates. The earlier literature has been reviewed by Weiss (9). Henry and Short, in particular, using U.S. data up to 1947 showed a close correlation of business conditions with suicide rates of white males (10). It is of interest that this correlation has continued during the period 1948-59 when the fluctuations of business conditions have been much smaller than in previous times.

The correlation illustrated in figure 9 and a similar correlation between unemployment percentages and suicide rates of males noted for Great Britain between 1923 and 1947 by Swinscow (11) is so close that one is tempted to suggest that the specific variable unemployment, here used only as an index of economic conditions, may in fact be the specific component of those conditions most directly relevant to the changes in suicide rates. This hypothesis is supported by two observations:

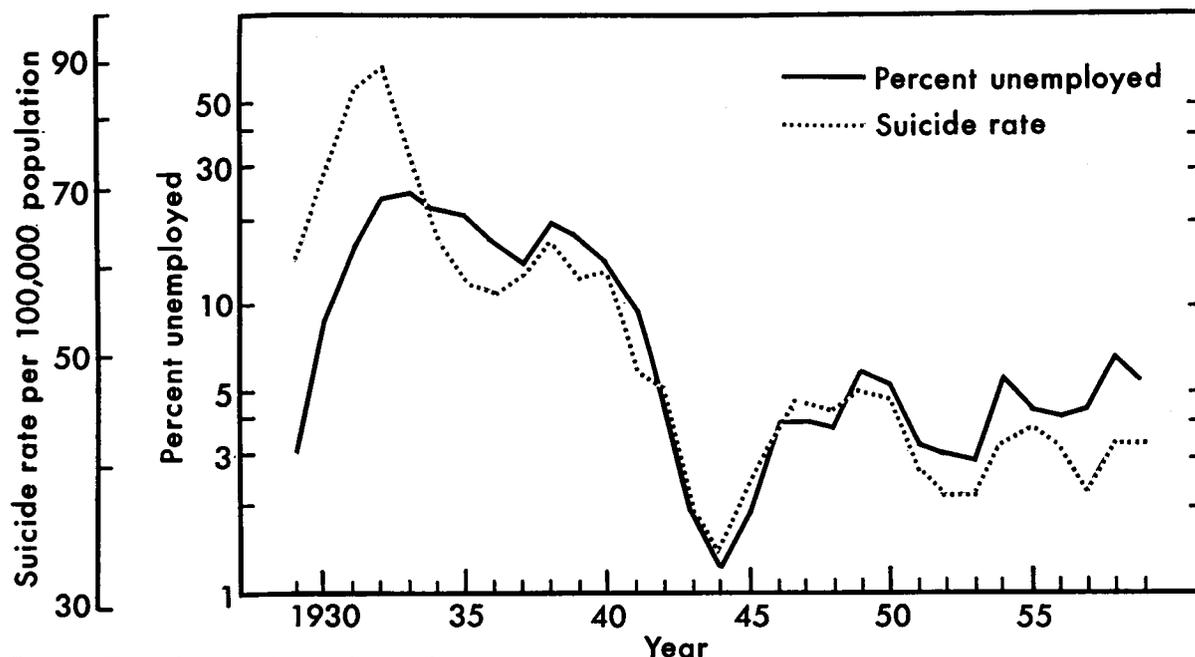
- Both in Britain and in the United States

the correlation with economic conditions is much lower for suicide rates of females than for suicide rates of males. Females share with males the privations of unfavorable economic circumstances but not, to the same extent, the psychological trauma of unemployment.

- The correlation is closest in those age groups of men that would be expected to be most heavily involved in an employment cut-back during a business recession.

Although several authors have studied the frequency of unemployment among series of cases of suicide, few have taken the precaution of including control series. To our knowledge the only attempt to estimate a rate of suicide among the unemployed is that of Sainsbury (12). In five London boroughs during 1936-38 the annual suicide rate among the insured unemployed aged 15-65 was 73.4 per 100,000. This is stated by Sainsbury to be significantly higher than the rate in the general population (14.1 per 100,000). However, the general population is, of course, not strictly comparable with the insured population, even without the additional factor of limitation of the age range. The apparent absence of a sex breakdown of the insured unemployed population and even the

Figure 9. Secular trend in suicide rates for white males aged 45-54 and percent of the labor force unemployed, United States, 1929-59



SOURCE: Unemployment data, reference 8.

absence of a statement of the total insured population makes more meaningful comparisons difficult. In addition, no consideration is given to the characteristics of the age distribution of the unemployed population.

A quantitative estimate of the significance of unemployment in the etiology of suicide will require more direct studies of rates among employed and unemployed groups.

Summary

Among males in the United States, death rates from suicide increase consistently with age throughout life, but among females, rates decline after the age group 50-54. This difference is seen in only a few other countries and possibly reflects pressures exerted on the sexes differentially by a particular type of social system.

Although rates for Negroes in general in this country are lower than those for whites, among Negroes up to age 35 living in the north rates are as high as those of whites living in the same region; over age 35 the differences are less than those observed in the south. Presumably, therefore, the difference between rates for Negroes and whites results from environmental differences in living conditions.

Age and sex specific trends in suicide rates for whites are examined for the period 1920-59. The trends for females show no marked fluctuations, but since the early 1930's they have been generally downward, most strikingly in the age group 15-24 where rates in 1959 were about one-third of those in 1933. For males, however, several major fluctuations occurred. Rates for all age groups, but particularly in the range 45-74, reached a peak at the height of the depression (1933) and declined as the depression receded. During World War II rates declined in all age groups. Subsequent to World War

II trends in the age groups 35-74 have followed closely trends in the percentage of the labor force unemployed. The data strengthen the hypothesis that unemployment may be an important determinant of suicide rates among males, particularly in the age groups in the 35-74 range.

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