

Life and death during the Great Depression

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Recent events highlight the importance of examining the impact of economic downturns on population health. The Great Depression of the 1930s was the most important economic downturn in the U.S. in the twentieth century. We used historical life expectancy and mortality data to examine associations of economic growth with population health for the period 1920–1940. We conducted descriptive analyses of trends and examined associations between annual changes in health indicators and annual changes in economic activity using correlations and regression models. Population health did not decline and indeed generally improved during the 4 years of the Great Depression, 1930–1933, with mortality decreasing for almost all ages, and life expectancy increasing by several years in males, females, whites, and nonwhites. For most age groups, mortality tended to peak during years of strong economic expansion (such as 1923, 1926, 1929, and 1936–1937). In contrast, the recessions of 1921, 1930–1933, and 1938 coincided with declines in mortality and gains in life expectancy. The only exception was suicide mortality which increased during the Great Depression, but accounted for less than 2% of deaths. Correlation and regression analyses confirmed a significant negative effect of economic expansions on health gains. The evolution of population health during the years 1920–1940 confirms the counterintuitive hypothesis that, as in other historical periods and market economies, population health tends to evolve better during recessions than in expansions.

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News of the world economic crisis has been widespread since the fall of 2008, and comparisons of current financial and economic problems to those occurring during the Great Depression of the 1930s are common. There is abundant speculation on the consequences of the current economic crisis for a variety of outcomes, including health, but empirical examinations of the effects of economic recessions on population health remain rare. To gain insight into the possible consequences of the current economic crisis for health, we examined the evolution of health indicators in the United States during the Great Depression.

In economics, the terms “recession” and “depression” refer to a decline in economic activity, with “depression” implying a much more severe (longer and deeper) decline, involving high levels of unemployment. The term “Great Depression” is commonly used to refer to the period of widespread contraction of economic activity that started in mid-1929 and lasted until 1933 (1, 2). These years were followed by a period of expansion in the mid-1930s, but unemployment remained high throughout the decade, and economic activity declined sharply once again in 1938, leading some authors to argue that the Great Depression actually extended through the beginning of World War II (2). Therefore, in evaluating the population health impact of the Great Depression, although we reserve “Great Depression” specifically for the years 1930–1933, we examine the period 1920–1940. This 20-year period provides an appropriate time frame to compare the Great Depression to the immediately precedent 1920s, a period of strong economic growth, and to the economic expansion that followed in the mid-1930s.

The U.S. Economy During the 1920s and 1930s. The 1920s began with a major recession in which economic growth (measured by the rate of increase of the gross domestic product; GDP) was negative, and unemployment reached 11.3% in 1921 (Fig. 1). This was followed by a period of runaway economic growth, with GDP expanding at an annual rate of 12.5% in 1923. Economic growth oscillated around more modest levels during the rest of the decade, but it rose to 5.9% in 1926 and to 6.6% in 1929, and the unemployment rate remained below 5% from 1925 to the end of the 1920s.

Although signs of declining economic activity had been apparent since the summer of 1929, the onset of the Great Depression was marked by the stock market crash of October 1929 (1, 2). The collapse of Wall Street was followed by a steep decline in economic activity. Between 1929 and 1930, GDP “growth” was –9.0% (Fig. 1). The contraction of GDP continued for 3 more years, with GDP shrinking 6.5% in 1931, 14.0% in 1932, and 1.4% in 1933. Economic activity accelerated beginning in mid-1933 (1, 3), reaching very large rates of growth—around and over 10%—during the years 1934–1936. This was followed by a new downturn in 1938, with GDP declining 3.6% during that year. The unemployment rate increased sharply during the early 1930s (Fig. 1), reaching its historical maximum of 22.9% in the U.S. in 1932. It subsequently declined between 1933 and 1937, only to increase once again to 12.5% in 1938. Overall unemployment rates remained very high—always above 14% and 2 years above 20%—during the whole period 1931–1935 and oscillated between 9% and 12% the rest of the decade.

Life Expectancy at Birth and Age-Specific Mortality During the 1920s and 1930s. Life expectancy generally increased throughout the period of study (Fig. 1). However, it oscillated substantially throughout the 1920s and 1930s with important drops in 1923, 1926, 1928–1929, and 1936 coinciding with strong economic expansions. During the Great Depression, it rose from 57.1 in 1929 to 63.3 years in 1933. The rates of infant mortality and age-specific mortality for all age groups under 20 years (Fig. 2A) generally declined during the 1920s and 1930s. Superimposed on this general declining trend, peaks in both infant mortality and mortality for children aged 1–4, 5–9, 10–14, and 15–19 were observed in the years 1923, 1926, 1928–1929, and 1934–1936. These peaks all coincide with periods of strong economic growth (Fig. 1).

Mortality rates of men and women aged 25–44 years (Fig. 2B) declined sharply during the recession of 1920–1921, but were either stagnant or increasing during the rest of the 1920s, reaching peaks either in 1928 or 1929, a year of strong economic growth, in all age strata. In all these demographic groups, mortality declined during the early 1930s, coinciding with the Great Depression, and then rose during the strong economic growth of the mid-1930s.

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expansions is clearly related to accelerated economic activity. Economic expansions are also associated with increases in atmospheric pollution, which has well-documented short-term effects on cardiovascular and respiratory mortality (24, 38–40).

Other mechanisms involving increases in social isolation, lack of home care, and decreases in social support during economic expansions as a result of greater employment, increased work demands, and work-related migration could also play a role (11, 41–43).

Extrapolations from our results and those of others (16, 21, 23–26, 44–46) suggest that periods of accelerated economic growth could lead to a slowing or even a reversal of long-term trends of improvements in health. For example, our results indicate that for conditions such as infant mortality, which experienced a secular decline over the period of study, this decline slowed or reversed during expansions but accelerated during recessions. At first glance, our findings appear to contradict the observations that in many countries the long-term rise in GDP per capita has coincided with long-term declines in mortality (47). The extent to which this relationship is causal however is questionable (48, 49).

The long-term changes in GDP may be simply correlated with a set of health-enhancing social changes (such as increased access to improved nutrition, smaller family size, etc.), which are quite distinct from the short-term consequences of economic expansions we investigate here. Many countries in the world experienced major improvements in health with little or no economic growth. For example, in India and China, there is a negative correlation between decadal rates of economic growth and reductions in child mortality (50), and almost all of China's post-World War II reduction in infant mortality occurred before the accelerated economic growth during the 1980s–1990s, during which there was relatively little progress in child health. Nevertheless, a detailed investigation of the long-term relationship between secular trends in the economy and in health would require data and analyses very different from the ones we report here.

Although social science is not physics, regularities in the past allow us at least some confidence in forecasting the future. Historical experience tells us that no particular increase of mortality is to be expected as a consequence of a recession beyond an increase in suicides which, although clearly important, is of small magnitude compared to the reduced number of fatalities from other causes.

While economic expansions bring with them increases in employment, greater optimism, and higher incomes (although not always and not for all sectors of the population), recessions are periods of pessimism, shrinking revenues, and social malaise. The Great Depression of the 1930s was a major crisis of social

life, in which many people suffered reductions in income and deprivation, and consequent social unrest was widespread. Nevertheless, this was not associated with major declines in population health, which suggests that other mechanisms more than compensate the possible detrimental health impact of high unemployment and economic disruption. A better understanding of the beneficial effects of recessions on health may perhaps contribute to the development of economic policies that enhance health and minimize or buffer adverse impacts of economic expansions.

Data and Methods. Economic and health data were obtained from historical statistics (51). Population health was indexed by life expectancy at birth and mortality rates. We examined age-specific rates and rates due to six causes of death contributing 64.4% of total mortality in 1930: Cardiovascular and renal diseases (36.7%), cancer (8.6%), influenza and pneumonia (9.1%), tuberculosis (6.3%), motor vehicle traffic injuries (2.4%), and suicide (1.4%). In addition to descriptive analyses, statistical models were used to examine associations between the dynamic conditions of the economy and the evolution of health indicators. We calculated correlations between the change in health, measured by the annual change in life expectancy or in a mortality rate, and the change in economic conditions, measured by GDP growth or the annual change in unemployment. GDP growth at year t was defined as the change in the logarithm of real GDP (i.e., GDP measured in inflation-adjusted dollars) between year t and year $t - 1$.

We also fit distributed lag models (52), in which the annual gain in life expectancy (or the percentage decrease in a mortality rate) between year t and year $t - 1$ (Δh_t) is regressed on GDP growth the same year (g_t) and prior years (g_{t-i}), that is,

$$\Delta h_t = \alpha + \sum_{i=0}^k \beta_i \cdot g_{t-i} + \epsilon_t$$

where α is a constant, β_i is the effect of economic conditions as indexed by GDP growth at the year $t - i$, and ϵ_t is the error term. The annual change in life expectancy, the annual percentage change in age-specific mortality, and the rate of growth of GDP are all mean-stationary and variance-stationary series, therefore it is possible to use them in regression models without risk of spurious results due to trends (52). In other words, these analyses estimate associations over and above any correlations generated by parallel long-term trends.

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