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Income Inequality and Mortality Risk in the United States: Is There a Link?

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Rapid growth in income inequality in the United States over the past 20 years has raised numerous concerns among policymakers. One of the more disturbing is the possible link between income inequality and mortality. The U.S. income distribution is currently among the most unequal in the industrialized world, and life expectancy in the U.S. lags behind that of any developed countries. Recent research suggests that these two occurrences may be linked—that the unequal distribution of income in the U.S. affects the health of the populace.

This *Economic Letter* discusses the mechanisms by which inequality may affect life expectancy, reviews briefly the empirical literature on income inequality and mortality, and reports on recent research by Daly, Duncan, Kaplan, and Lynch (hereafter DDKL), which highlights the importance of using disaggregated measures of income inequality and comparisons over time to describe fully the link between income inequality and health in the United States.

Although the literature on this topic is relatively new, a few patterns have emerged. Overall, the evidence suggests that there is an association between inequality and mortality across states in the U.S. However, data that follow states over time indicate that the association may be weaker than is indicated by point-in-time estimates. In addition, the correlation appears to be based almost entirely on inequality induced by deterioration at the bottom of the income distribution rather than by improvements at the top.

Why income inequality might affect life expectancy

Repeated examinations of empirical evidence have shown that an association exists between the level of inequality in the distribution of society's resources and the mortality risk in that society. However, the reasons for this association are not at all certain.

For the most part, the explanations for the observed association fall into two categories: economic and psychosocial. The economic explanations rest on the premise that at the individual level, the relationship between mortality and income is nonlinear; that is, if inequality in the income distribution produces unequal access to commodities—such as education, health care, and police protection—the negative effects on those at the bottom of the distribution will not be offset by positive outcomes for those at the top of the distribution. Moreover, the negative health outcomes of an unequal income distribution may not be limited to the portion of the population with fewer resources. Differential access to resources and services may result in less effective preventive health care (e.g., childhood vaccinations), more costly disease control (e.g., tuberculosis treatments), or higher crime rates, affecting the health and mortality risk of the entire population.

The psychosocial hypothesis suggests that it is relative income position itself that matters for life expectancy. Under this hypothesis, income inequality and mortality risk are linked through the effects of emotional and psychological stress on health. The theory posits that levels of depression, isolation, insecurity, and anxiety, which are known correlates of mortality, are associated with relative economic position. In addition, some argue, the psychology of inequality damps many of the behaviors that may reduce stress and anxiety, such as participation in voluntary organizations or community groups and investment in ongoing education and training.

Which of these two pathways, if either, connects aggregate income inequality to individual health outcomes is an empirical question that researchers are only beginning to investigate. To date, empirical research on mortality and inequality has been focused less on identifying the causal pathways and more on establishing a basic relationship between the two.

Empirical evidence of an association

The potential connection between income inequality and mortality is best known from the work of Richard Wilkinson. In a series of papers he related income inequality to life expectancy across OECD countries and found striking negative associations that persisted even after controlling for cross-country differences in median income (e.g., Wilkinson 1996). Following Wilkinson, a number of scholars (Kaplan, et al., 1996, Kennedy, et al., 1996, and Lynch, et al., 1998) documented significant associations between mortality rates and inequality across states and metropolitan areas within the U.S. Like Wilkinson, these researchers found significant associations between income inequality and health even after controlling for income level.

Although the results from these studies point to a strong link between income inequality and mortality risk, a number of unanswered questions remain. One of the most important is whether researchers have successfully isolated an independent effect of income inequality. Although cross-sectional correlations typically include controls for population characteristics, such as average household size, per capita income, and racial composition, there are many more potentially important variables that are not easily measured or easily included in the analysis. If these important variables are omitted from the analysis, cross-sectional correlations may overstate the linkage between inequality and mortality. One way to control for these unmeasured factors is to estimate a “fixed effects” model in which changes in inequality within states are related to changes in mortality within those states. Models of this type difference out effects of persistent characteristics (both measurable and unmeasurable) that may lead to spurious results.

Another important question is whether increases in inequality reduce life expectancy even if the inequality increase is due to the “rich getting richer” rather than the “poor getting poorer.” For example, in theory, increasing the affluence of the rich could have either detrimental or beneficial health consequences for the remainder of the population. Beneficial consequences could arise from positive externalities created by wealthy individuals, such as advanced medical technology, better schooling, or more crime prevention. In contrast, increasing the wealth of richer families could negatively affect health outcomes by increasing economic segregation and crowding out the concerns of the poor. Given that most of the recent increase in inequality in the United States has been associated with income growth among the middle and upper levels of the income distribution, rather than with income losses among the poor, documenting how and when income inequality affects mortality is important.

Recent research on the inequality-mortality link

Recent research by DDKL provides evidence on the relevance of these issues in evaluating the mortality-inequality linkage. DDKL, like others, examine correlations between state-level income inequality and mortality using data from the National Center for Health Statistics Compressed Mortality File and the 1980 and 1990 decennial censuses. All analyses are age-adjusted and control for the median level of household income in the state. As a measure of overall income inequality, DDKL compute the ratio of the 90th to 10th percentiles of state household income. The goal of the analysis is to document the difference between state-level correlations obtained from point-in-time versus over-time estimation, as well as from overall measures of inequality versus disaggregated ones. The remainder of the *Letter* summarizes their results.

Isolating the effect of inequality

In keeping with previous research, DDKL find a strong correlation between state-level income inequality and age-adjusted state mortality rates in both 1980 and 1990. The average correlation for these two years is shown in the first bar of [Figure 1](#). However, as noted previously, these simple point-in-time estimates may not accurately reflect the independent role of income inequality. A stricter test of the inequality-mortality association is represented by the second bar which reports the correlation between *changes* in inequality and mortality, by state, from 1980 to 1990. As the figure indicates, controlling for potentially unmeasured state-specific characteristics reduces the correlation between income inequality and mortality by about one-third. This suggests that some portion of the inequality-mortality association captured in the cross-sectional analysis most likely is attributable to a third factor, such as industrial structure, for which inequality is a good proxy.

Disaggregating inequality

To decompose the effect of overall inequality into inequality associated with deprivation at the bottom versus affluence at the top, DDKL use two detailed measures of dispersion. The first is an affluence-sensitive indicator that measures inequality at the high end of the income distribution as the ratio of the 90th percentile to the 50th percentile of state household income. The second detailed measure is a poverty-sensitive indicator and is computed as the ratio of the 50th percentile to the 10th percentile.

The remaining two bars in the figure report the results of over-time estimates of the correlation between changes in state-level mortality and changes in the disaggregated measures of household income inequality. Comparing the last two bars in the figure indicates that the strength of the association between income inequality and mortality is driven by income dispersion in the lower half of the income distribution. The poverty sensitive measure of income inequality is strongly associated with higher state mortality rates, implying that the deeper the poverty in a state, the higher the state mortality rate. In contrast, the affluence-sensitive measure shows that dispersion in the upper half of the income distribution has almost no association with state mortality rates.

In general, these results support the economic hypothesis of the link between income inequality and

mortality. The fact that mortality correlations are stronger for measures that stress the depth of poverty rather than the height of affluence suggests that actual deprivation, not relative economic position, determines the relationship. However, these results do not imply that the effects of prolonged inequality are confined to those in the lower part of the income distribution. In fact, these findings support theories that emphasize spillover effects of increased poverty—for example, if the health care system becomes overburdened or if the general health of the population is affected by increased anti-social behavior that might accompany the deepening poverty.

Conclusions

Rapid growth in income inequality in the United States over the past two decades has prompted many to question the wisdom of allowing an unequal income distribution to persist in an industrialized nation. A growing literature on the links between income inequality and mortality has enhanced such concerns. Although more research is required to understand fully how income inequality affects mortality, the results presented here suggest that policies targeted at increasing the incomes of the poor are likely to have a larger effect on mortality risk than policies designed to reduce inequality more generally.

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