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Income Inequality and Health: Strong Theories, Weaker Evidence

Abstract

Many researchers and advocates believe that income inequality affects individual health, but empirical evidence has been inconclusive. A large body of research has found that income inequality is negatively correlated with average life expectancy, partly because a transfer of income from the poor to the rich is likely to harm the health of the poor more than it improves the health of the rich. A smaller body of work has investigated socioeconomic *disparities* in life expectancy, which widened in many countries after 1980, at the same time that income inequality was increasing. These two lines of work should be seen as complementary, because high and rising income inequality is unlikely to affect the health of all socioeconomic groups equally.

Understanding the effects of income inequality on health requires attention to the mechanisms that affect the health of different income groups, changing average health, disparities in health, or (more likely) both. Rising income inequality can affect individuals in two ways. *Direct effects* change individuals' own income. *Indirect effects* change other people's income, which can then change a society's politics, customs, and ideals, altering even the behavior of those whose own income remains unchanged. Indirect effects can thus change both average health and the slope of the relationship between individual income and health.

Keywords

health disparities, health inequality, mortality gradient, life expectancy

Cover Page Footnote

This Frontiers article is a shorter version of the following article: The Health Effects of Income Inequality: Averages and Disparities by Beth C. Truesdale and Christopher Jencks. Click here to access the full article in the Annual Review of Public Health: <http://arevie.ws/2daF6wm>. No competing financial or editorial interests were reported by the authors of this paper.

INTRODUCTION

In 1992 Richard Wilkinson published a widely cited paper in the *British Medical Journal*, arguing that in rich countries higher levels of income inequality lowered average life expectancy.¹ Since then, a growing body of research has explored whether the level of income inequality in a society predicts average health or longevity. A second, separate body of research has explored income *disparities* in these outcomes. These two traditions should be seen as complementary, because understanding the effects of income inequality on individual health requires us to consider its relationship to both average health and disparities in health.

Three promising directions for research are suggested, all of which focus on understanding the mechanisms that link income inequality to average health and health disparities. First, we need more detailed investigation of *who* is affected by income inequality and *how* they are affected, since effects are unlikely to be uniform. Second, we need research that takes account of effects that unfold over time, since time lags can be long as well as short. If rising income inequality results in political capture by the rich, for instance, that will affect policy after lags of uncertain but varying duration, and policy changes will in turn affect individuals' health and mortality after lags of uncertain duration. Third, research must distinguish between direct and indirect effects of income inequality.

In this report, we describe direct and indirect effects and note prominent theories that predict such effects. We then summarize empirical evidence on the relationships among income inequality, average life expectancy, and socioeconomic disparities in life expectancy.

DIRECT AND INDIRECT EFFECTS OF INCOME INEQUALITY

Direct effects of income inequality operate through changes in individuals' own income. *Indirect effects* operate through changes in other people's income, which change a society's political and economic institutions, as well as its customs and ideals. Such broad social changes can, in turn, alter an individuals' incentives and behavior, even if their own incomes have not changed. Indirect effects can change either the average *level* of health or the *slope* of the relationship between individual income and health.

Direct effects. By definition, a rise in income inequality increases purchasing power disparities. If more income improves health, larger income gaps between the rich and poor should result in larger health gaps between rich and poor. In addition, the health of the rich benefits less than the health of the poor from each extra dollar of income. In other words, the line connecting income and health is concave downward. Thus, if all else is equal, transferring money from poorer groups to richer groups will reduce average health.

At least two theories relate direct effects of rising income inequality to average health and health disparities. First, rising income inequality at both the individual and the community level is likely to increase inequality in health-producing material resources, such as nutrition, housing conditions, and education.² Second, because material deprivation imposes a cognitive "bandwidth tax" that interferes with decision-making and long-term planning,³ rising income inequality may take a larger cognitive toll on those nearer the bottom of the income distribution.

As Figure 1 shows, direct effects depend on whether income inequality grows at the top or the

bottom of the income distribution. An increase in income inequality at the top of the income distribution will have relatively small direct effects, while an increase in income inequality at the bottom of the distribution will have much larger direct effects.

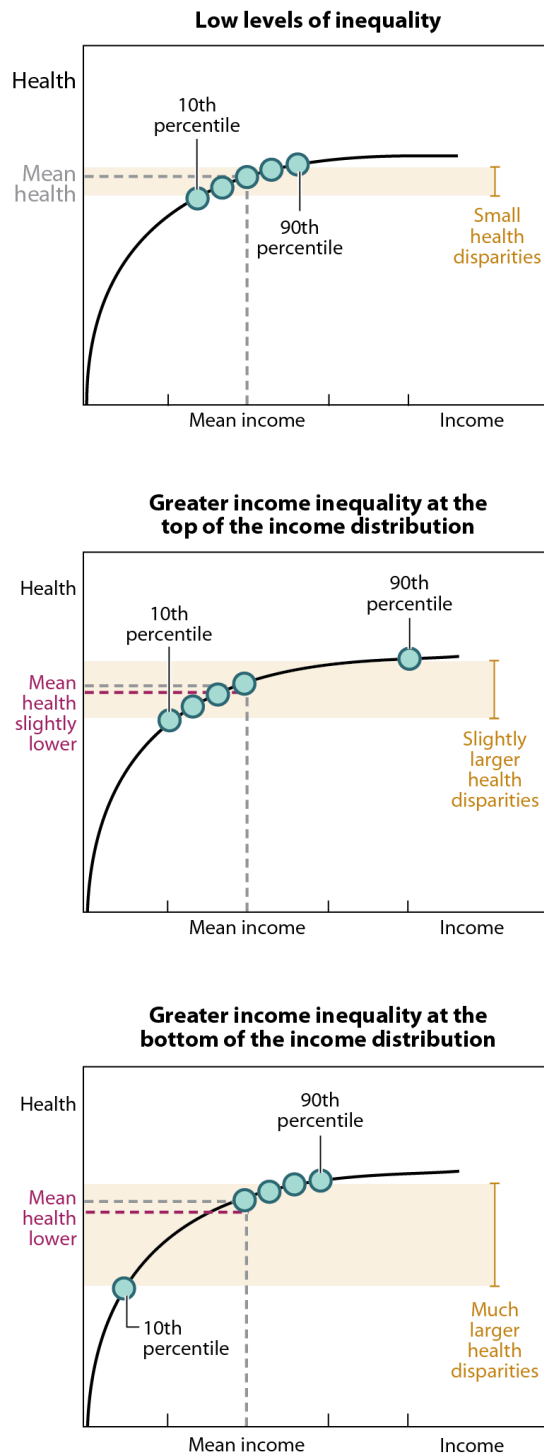


Figure 1. Direct concavity effects are greater when income inequality rises at the bottom of the income distribution than when it rises at the top of the income distribution.

Image credit: Annual Reviews¹⁰

Indirect effects of rising income inequality arise when economic inequality causes social changes that alter the relationship between individual income and individual health. Changes in income inequality might, for instance, affect the enforcement of laws banning unsafe consumer products, the benefits and costs of higher education, the social bonds among relatives and neighbors, or the distribution of political influence. Indirect effects of income inequality can affect individuals in at least two ways, which we call *level effects* and *slope effects*.

Level effects change outcomes equally for all income groups. (In a less strict variant, level effect change outcomes in the same direction for all income groups but not by the same amount.) Theories about the decay of social capital suggest level effects. If income inequality frays the social fabric and reduces mutual trust, resulting in stress or a decline in public investment, the health of both rich and poor may suffer.⁴⁻⁶ Level effects may or may not increase health disparities.

Slope effects alter the strength of the relationship between individual income and individual outcomes. As Figure 2 shows, when the line connecting income and health becomes steeper, disparities in health between higher and lower income groups widen. Rising income inequality may increase health disparities by improving the health of the rich, harming the health of the poor, or both. Slope effects may or may not change average health.

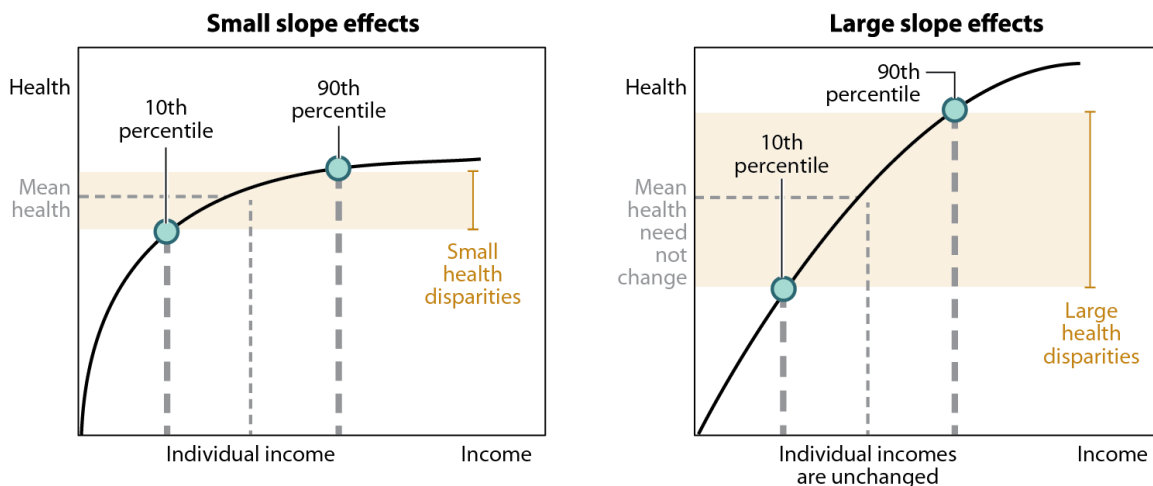


Figure 2. Indirect slope effects change the relationship between individual income and health, increasing health disparities even if an individual's income does not change.

Image credit: Annual Reviews¹⁰

A number of theories suggest slope effects that operate through political, technological, or psychological pathways, including the following three. First, rising income inequality may allow the wealthy to capture the political agenda.^{7,8} If the policy preferences of the very rich reduce public goods that provide health benefits (such as education, policing, sanitation, and space for recreation), this may harm the health of the poor. Similarly, rising income inequality can lead to political polarization and gridlock, restricting the provision of public goods. Second, high income inequality may slow the diffusion of health innovations. Advances in knowledge or technology that require individual action (such as washing one's hands, quitting smoking, or seeking new medical treatments) are typically adopted first by the rich or more educated,

increasing health disparities.⁹ When income inequality is high, diffusion to the poor or less educated may be slower. Finally, relative deprivation theories suggest that social comparison to higher-ranking friends and neighbors can cause worse health among people who are poorer than their reference group,^{4,6} at least when the negative effect of stressful comparisons outweighs the positive effect of having richer neighbors who pay for better neighborhood amenities.

EMPIRICAL EVIDENCE ON THE EFFECTS OF INCOME INEQUALITY

If income inequality affects both average health and health disparities, we would expect to see six empirical relationships. These are shown in Table 1, which summarizes our review of the literature using longitudinal, cross-sectional, and panel data to predict averages and disparities in life expectancy and age-adjusted all-cause mortality.

Table 1. Strength of evidence for an effect of income inequality on averages and disparities in life expectancy

| | Average life expectancy | Disparities in life expectancy |
|--|--|--|
| <i>Longitudinal.</i> In a single country, do changes in income inequality predict changes in either average life expectancy or SES disparities in life expectancy? | Weak. Although little research has addressed this question, data from the US suggest that growth in average life expectancy was no faster when inequality was falling (1947-1968) than when it was increasing (1968-2010). Lagged effects are plausible but impossible to test convincingly without specific hypotheses about how long the lags are likely to be. | Stronger. Both income inequality and income-related disparities in life expectancy have increased in many rich democracies since the 1980s. In single-country studies, increased disparities in life expectancy are consistently found where income inequality is high and growing (US, UK) and where it has increased rapidly (Finland). Trends in health disparities are less consistent in France, where income inequality is lower than in the US or UK and has not increased much. |
| <i>Cross-sectional.</i> At a single point in time, does the level of income inequality in different countries (or smaller areas) predict either average life expectancy or the size of SES disparities in life expectancy? | Moderate. Many cross-sectional studies (especially within the US but sometimes internationally) find a negative bivariate correlation between income inequality and average life expectancy. This relationship is often partly or wholly attenuated by a control for individual income (reflecting the direct concavity effects of income inequality). | Weak. There is no clear relationship between income inequality and life expectancy disparities in European nations. Other characteristics of countries outweigh the effects of income inequality. We have found no comparable research comparing US states or localities. |
| <i>Panel.</i> In multiple countries observed over multiple years, are larger changes in income inequality typically followed by larger changes in average life expectancy or SES disparities in life expectancy? | Weak. Most studies using panel data find no relationship. Again, lagged effects are plausible but hard to test, since the length of the lag could vary by country. | Weak. We find no relationship between changes in income inequality and changes in mortality disparities in European nations. We have found no comparable research comparing US states or localities. |

Evidence for a relationship is strongest in two of the six categories in Table 1. First, previous research often finds that states or nations with higher income inequality have lower average life expectancy. The association is frequently attenuated by a control for individual income, suggesting that the negative cross-sectional relationship between income inequality and mortality is at least partly and perhaps wholly due to the direct concavity effects of income inequality (see Figure 1) rather than to indirect effects of income inequality on customs or institutions. However, although most theories about how income inequality affects health imply that the lags are likely to be long and variable, empirical studies mostly focus on short-term effects of income inequality, so they may underestimate lifetime effects.

Second, both income inequality and relative disparities in life expectancy have increased in many rich democracies since the 1980s. However, disparities in life expectancy in the US and UK increased more over the last 30 years than the direct concavity effect of rising economic inequality on individual income alone would predict. The slope of the relationship between income and life expectancy must therefore have also become steeper. The increased slope may result from rising income inequality, medical advances that benefit the rich and more educated more than the poor and less educated, or differential health effects of changing social, political, and cultural contexts more broadly.

Even if rising income inequality has *not* changed the slope of the relationship between income and life expectancy, the level of income inequality is likely to influence the size of the increase in health disparities. As Figure 2 suggests, if income inequality is low, an increase in the slope will lead to a relatively small increase in health disparities between the rich and poor. If income inequality is high, an identical change in the slope will lead to a larger increase in health disparities. In other words, the level of income inequality can influence the effect of other social changes on health disparities. Indeed, higher income inequality can have a feedback effect whenever other social changes increase what money can buy.

SUMMARY BOX

What is already known about this topic? A large body of research has examined the association between income inequality and average health. A separate body of research has explored income disparities in health. These two traditions should be seen as complementary, because high and rising income inequality is unlikely to affect the health of all socioeconomic groups equally.

What is added by this report? Although plausible theories suggest that rising income inequality can affect both average health and health disparities, empirical tests provide only modest support for some of these theories. We argue that understanding the effects of income inequality on health requires attention to mechanisms that affect the health of different income groups, thus changing average health, disparities in health, or both.

What are the implications for public health practice, policy, and research? Progress is likely to require disentangling *direct effects* of rising income inequality, which operate through changes in an individual's own income, from *indirect effects*, which operate through changes in other people's income. Indirect effects of rising income inequality may change a society's political and economic institutions, social cohesion, culture, and norms of behavior, all of which can then affect individuals' health even if their income remains unchanged.

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