Jeffrey D. Milyo and Jennifer M. Mellor

IS INEQUALITY BAD FOR OUR HEALTH?

ABSTRACT: *A number of recent studies suggest that income and social inequality (as opposed to poverty itself) have detrimental consequences on people's health. These studies argue that while the poor may suffer the most from inequality, the rich also suffer. On closer inspection, however, it emerges that the basic arguments and evidence that inequality has a causal effect on health are wanting in many respects.*

In a flurry of recent publications in high-profile journals, several prominent scholars have argued that inequality, and in particular income inequality, is a primary cause of poor health in developed countries. This "inequality hypothesis" has fast become conventional wisdom among many medical sociologists and public-health scholars. For example, in *Unhealthy Societies: The Afflictions of Inequality*, Richard G. Wilkinson (1996) argues that income inequality is "one of the most powerful determinants of health" and "the most important limitation on the quality of life in modern societies." Others echo these claims, albeit with a bit more reserve. Ichiro Kawachi, et al. (1997) describe income inequality as an "important public health problem," while Leyui Shi, et al. (1999) state that "there is little doubt that social conditions in general, and income inequalities in particular, are key determinants of health."

The academic world is by no means immune to fads, but the sudden popularity of the inequality hypothesis is quite remarkable. The

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Jeffrey D. Milyo, Harris Graduate School of Public Policy Studies, University of Chicago, Chicago, IL 60637, e-mail <jdmilyo@uchicago.edu>, and Jennifer M. Mellor, Department of Economics, The College of William and Mary, Williamsburg, VA 23105, e-mail <jmmell@wm.edu>, invite comments from readers.

first published studies to argue for a causal connection between income inequality and individual health appeared in 1992; these were followed, in short order, first by Wilkinson's book, and then by well over two dozen research studies and commentaries in leading journals.[1] Many of these studies provide evidence that is consistent with the inequality hypothesis, but the enthusiasm of many researchers goes well beyond what might be warranted by the weight of the evidence alone.

It may be that some part of the appeal of the inequality hypothesis is attributable to its policy implications. The possibility that inequality has important health consequences opens a new front in the public debate over distributive policy. Egalitarians have long been frustrated by what they consider to be only cursory attempts at redistribution in most developed countries, especially in the United States (e.g., Frank 1999). It is therefore relevant to note that there is some evidence that Americans are less tolerant of inequality in access to health care than they are of inequality in income or wealth (Schlesinger and Lee 1993). As the ongoing policy debate over health-care reform in the United States demonstrates, many Americans consider health and health care to be basic human rights. Consequently, concerns over market-driven differences in health seem to have more traction among the general public than concerns over market-driven differences in income or wealth. The notion that income inequality is detrimental to population health is thus a novel and perhaps more compelling argument for redistribution.

Policy makers and others have begun to take notice. For example, Tony Blair has stated that "there is no doubt that the published statistics show a link between inequality and health." The World Bank has dedicated a web page to the inequality hypothesis (www.worldbank.org/poverty/inequal/abstracts/health) and, in the United States, the National Institutes of Health (Persons 1997) and the Federal Reserve Bank of San Francisco (Daly and Duncan 1998) have jumped on the bandwagon; Harvard's School of Public Health even offers a graduate course on inequality and health. Not surprisingly, the mainstream press has also picked up on this story; for example, favorable articles on the inequality hypothesis have appeared in the *New York Times* (Pear 1996) and the *Washington Post* (Lardner 1998 and Trafford 1999). But a review of the arguments and evidence for the inequality hypothesis reveals that skepticism is in order.

The Inequality Hypothesis

Few would argue with the notion that an improvement in the material well-being of the poor will produce better health outcomes for that group, but the inequality hypothesis says something very different. The basic claim is that living in a society marked by strong economic and social gradations is akin to being exposed to an environmental pollutant, so that all people, regardless of their wealth or social position, run a greater risk of illness. Of course, just as in the case of air pollution, though all individuals are exposed to some extent, the poor may well suffer the most; nevertheless, according to the hypothesis, it is not deprivation but inequality as such that is unhealthy, and not just for those who are poor.

Investigation of what might causally link inequality and poor health has not progressed much beyond conjecture. In time this may change, but for now two separate mechanisms have been posited, though these are by no means mutually exclusive.

The first is fairly straightforward; Wilkinson (1996) argues that people judge their lot in life by comparing their situation to that of others around them. The greater are income and social inequalities, the more aware are the less well-to-do of their low social status. This creates stress, which is in turn associated with a greater incidence of cardiovascular disease, depression, and so forth. In this way, inequality is a cause of health problems among the poor; however, to the extent that stress and depression make individuals more likely to be involved in accidents or more likely to commit violent crimes, the detrimental effects of inequality may well spill over to the population at large.

Ichiro Kawachi and Bruce P. Kennedy (1999) suggest a more complicated connection between income inequality and health; they argue that inequality hinders the formation of social capital, which in turn is thought to have profound implications for health outcomes. Loosely speaking, social capital is a catch-all term for the level of trust, public mindedness and cohesion in a community; activities such as voting, participation in voluntary organizations, and support for social spending have all been cited as the product of social capital.[2] To the extent that inequality highlights actual or perceived differences across individuals, it may reduce trust and hamper cooperation. This breakdown in community cohesion may, in turn, influence political decision making, leading to inadequate investment in public goods (e.g., education) and little so-

cial provision for the well-being of the poor. Moreover, a dearth of social capital may leave people feeling isolated and vulnerable, which may also lead to increased stress or psychological depression. So, once again, inequality has a more direct effect on the poor, but spillover effects for the whole community may occur through the pathway of inferior public education, as well as by means of accidents and crime.

While theoretical explanations for the inequality hypothesis are still somewhat amorphous and speculative, they are not so implausible that the hypothesis should be dismissed out of hand. Therefore, our next step is to review the empirical evidence for a psychosocial connection between inequality and health. This evidence is comprised of three distinct types of claim that, when taken together, appear to provide fairly strong support for the income-inequality hypothesis.

First, some scholars argue that social and economic characteristics such as education, and especially income, exert a powerful and independent influence on individual health. This alone is insufficient to establish inequality as detrimental to health, but to the extent that such factors are proxies for social status, they may exert a baneful influence on the health of those at the bottom of racial, educational, and income hierarchies. On the other hand, it may simply be that such factors determine an individual's material welfare, and that it is material welfare that influences health through the causal pathways of lifestyle and access to care. It is therefore crucial to the inequality hypothesis that relative differences in material well-being, not just the absolute levels, affect health.

Evidence for the causal effect of relative rather than absolute differences comes from three types of studies. First, Wilkinson (1992 and 1996) argues that differences in national income do not correlate with differences in population health in developed countries. This would seem to suggest that absolute material standards are not the primary cause of differences in population health within the developed world. It is then quite plausible to conclude that the observed differences in health across socioeconomic groups within any given country must be the product of relative rather than absolute differences.

The second type of research that suggests the importance of relative factors consists of studies such as those that document health differences within the British civil service. These studies consistently demonstrate that health outcomes are better for individuals in the upper tiers of that particular social hierarchy. Similar patterns have been found to exist across dominant and subordinate animals in groups of laboratory mon-

keys, as well as among wild baboons. Of course, this alone doesn't demonstrate that social rank affects health, but it is consistent with that possibility.

The final variety of empirical research provides the most direct support for the inequality hypothesis, while at the same time offering the only evidence that inequality is detrimental to the health of all members of society, not just the poor. According to this research, income inequality, measured across countries, states, or metropolitan areas, is correlated with poorer population health. By itself, this observation is not very compelling, since it is possible that the correlation between inequality and health is spurious, not causal. But in concert with the aforementioned findings, it lends credence to the view that inequality has important psychosocial affects on people's health.

The arguments and evidence that we have thus far laid out present the case for the inequality hypothesis. Below we examine the evidence and the inferences drawn from it more closely.

Social and Economic Determinants of Individual Health

Even a casual review of the *American Journal of Public Health* reveals that much of the content of this journal is devoted to the study of social and economic determinants of individual health. From segregation in housing to spending on elementary education and even campaign finance reform, there are few social problems that have not been described as having some indirect health effects.

This literature is vast, so we will not attempt to provide a comprehensive review of its findings. Instead, we will accept that for the most part that these studies confirm that material well-being and social status, by any measure, are strongly correlated with health; in general, the more well-to-do a person is, the better is his health. This tends to be true whether one measures health by life expectancy, age-adjusted risk of specific causes of death, or self-reported health status.

One reason for this observed relationship, however, is the failure to control adequately for a variety of observable factors directly correlated with wealth. For example, the wealthy can afford better health insurance and higher-quality health care. At the same time, the wealthy may be more able to enhance their health by consuming more nutritious diets, driving safer cars, demanding better working conditions, living in less polluted or dangerous neighborhoods, and enjoying more opportu-

nity for exercise or stress release. Similarly, higher-income and better-educated individuals may have easier access to information about the health consequences of certain behavior (e.g., smoking or a sedentary lifestyles). For all of these reasons, there is no controversy over whether improvements in absolute living standards produce improvements in population health (although there is disagreement over the extent of such improvements).

While socioeconomic indicators are thus likely to correspond to absolute levels of material well-being, they may also be informative about relative well-being. It is therefore possible that the well-established relationship between socioeconomic status and health is, as the inequality hypothesis claims, primarily a manifestation of the importance of relative factors (e.g., psychosocial consequences of inequality), and not absolute factors (e.g., poor nutrition, inadequate shelter, lack of access to medical care).

Another reason for the association between economic or social status and health, however, is that poor health may hinder one's educational and career opportunities and income and wealth accumulation. James P. Smith (1999) describes two ways by which poor health can affect wealth: illness can increase out-of-pocket medical expenses, and it may also limit earning capacity. Though identifying the size of the health effect on wealth requires complex methodologies, the available evidence lends support to the view that poor health adversely affects socioeconomic status, not the other way around.

Yet another explanation for the observed correlation between socioeconomic status and health is that both are caused by some underlying third factor that is difficult to observe or measure. For example, it may be that individuals with great self-control and foresightedness both choose to acquire more education and are more successful in school; this heightened awareness of future outcomes could translate into both better income-earning potential and reduced propensities to engage in unhealthful behavior such as smoking (see, e.g., Farrell and Fuchs 1986; Evans and Montgomery 1996). Foresight may similarly reduce the probability that an individual chooses to overeat, abuse alcohol or drugs, or otherwise jeopardize her health. In this conception, the poor tend to have poor health because of the personality traits that make them poor, not because they are poor.

Thus, there are at least four possible explanations for the frequently observed correlation between socioeconomic variables and measures of health: wealth effects, psychosocial effects of relative deprivation, reverse

causality, and spurious correlation attributable to underlying third variables. It is therefore not surprising that socioeconomic factors are correlated with health measures. Unfortunately, little effort has been made at discerning which explanation is most responsible for the link between socioeconomic status and health. A handful of researchers are now taking on the issue of causality in this context (e.g., Ettner 1996, Ellen 1999, Levy 1999, and Meara 2000), but for the present, the vast literature on social and economic determinants of individual health is by itself quite uninformative about the extent to which these factors are causally related to health, let alone whether relative socioeconomic status is more important than absolute material well-being.

Other Evidence on Absolute versus Relative Factors

Wilkinson (1992 and 1996) argues that the salutary effects of improvements in absolute living standards have been exhausted in the developed world. He acknowledges that economic growth may still be important for population health in less developed countries, but contends that because of diminishing marginal returns, this is no longer true in developed countries. As evidence for this claim, Wilkinson shows that there is no correlation between gross domestic product and age-adjusted mortality across several developed countries. From this finding, he concludes that absolute material living standards are not responsible for the association between individual income and health; rather, he contends, this association is attributable to the psychosocial effects of relative deprivation. But even if wealth-related factors do not explain the link between socioeconomic status and health, there are other possible explanations (reverse causality and third factors). And there is a more fundamental problem with Wilkinson's claim: it is contradicted by a host of more comprehensive and sophisticated statistical studies (e.g., Pritchett and Summers 1996). Wilkinson has already been taken to task for his idiosyncratic analysis of the statistics (Smith 1999), so we will only remark that while it is true that the health benefits of economic growth are more dramatic in less developed countries, it is incorrect to assert that economic growth is unrelated to population health in developed countries. This does not mean that relative factors are unimportant to population health, but that absolute wealth is important, too.

A key component of the inequality hypothesis is that relative differences in income and social status increase the stress levels of those in

the lower tiers of the social hierarchy, while stress is, in turn, associated with hypertension and mental illness. The landmark Whitehall study collected data on the health of 17,000 British civil servants; this is an interesting group from which to infer the effects of socioeconomic inequality on health, because the civil servants examined have arguably similar education and income levels, as well as similar access to medical care.

From these data, it has been well documented that lower-grade officials have much higher age-adjusted mortality rates than their superiors, even after controlling for different health risks from smoking and the like (e.g., Marmot 1996). Wilkinson (1996) and others have therefore cited analyses of the Whitehall study as particularly compelling evidence that relative social status has dramatic effects on individual health. However, this inference ignores the fact that an individual's place within the ranks of the British civil service is not random. Poor health itself could influence an individual's initial placement in the hierarchy, as well as affecting future placement by limiting the potential for promotion. Further, some third factor (e.g., prudence) may be responsible for both an individual's rank in the hierarchy and that individual's mortality risk. So while the Whitehall study offers fairly convincing evidence that rank in a social hierarchy is correlated with poorer individual health, it does not demonstrate that either rank in the hierarchy or the existence of a social hierarchy is a cause of poorer health.

But suppose that rank in a social hierarchy really does influence health; the mere fact that high-grade civil servants are more healthy than their low-grade counterparts does not imply that the effect of the hierarchy is the one predicted by the inequality hypothesis. The same observed correlation would arise if the existence of a hierarchical structure were actually good for everyone's health, but *particularly* good for those in the top tiers. Like the legendary rising economic tide that lifts the boats of the poor even if it lifts those of the rich higher, social hierarchy may be differentially good for everyone.

One shortcoming of the Whitehall study is that it is impossible for researchers to manipulate the social hierarchy under controlled conditions and thereby isolate the posited causal effects. But this can be done with animals. Wilkinson (1996) claims that studies of monkeys and baboons confirm that social rank causes health consequences. While it is true that studies of lower primates suggest that rank in a social hierarchy is associated with certain physiological responses (e.g., Sapolsky et al. 1997), experiments that explicitly manipulate primate hierarchies do

not consistently support the inequality hypothesis. For example, Coral A. Shively and Thomas B. Clarkson (1994) find that artificially lowering the social rank of female monkeys (by adding more dominant females) did increase arteriosclerosis in the formerly high-ranking females, but increases in coronary disease were found in monkeys that were artificially moved up in the social hierarchy, as well. This study might therefore be interpreted as evidence that social engineering (rather than social hierarchy) is harmful to health. Nevertheless, Kawachi, Kennedy and Wilkinson (1999) view this research as important corroborating evidence for the inequality hypothesis.

Income Inequality and Health

It has long been recognized that there is a negative statistical association between income inequality and aggregate health outcomes across countries (e.g., Rodgers 1979), but only more recently did researchers begin to argue that this correlation is evidence of a causal relationship (Waldmann 1992 and Wilkinson 1992). It is also well known that in international comparisons, the association between inequality and population health is not robust when different measures of inequality or health are used, different time periods are examined, or other control variables are included (e.g., Le Grand 1987, Judge 1995, Mellor and Milyo forthcoming). However, concerns about the quality of international income-inequality data are such that probably not much weight should be placed on any of these findings, one way or the other.

Studies of income distribution among U.S. states that confirm a negative association between inequality and health are more reliable (e.g., Kaplan et al. 1996 and Kennedy et al. 1996). Initially, it was thought that this statistical association between inequality and health was quite robust across different measures of income inequality and health outcomes (Kawachi and Kennedy 1997). However, subsequent research has revealed that this association may disappear altogether depending on the year examined and the inclusion of other control variables (Daly et al. 1999, Deaton 1999, Deaton and Paxson forthcoming, Meara 1999, and Mellor and Milyo 1999 and forthcoming).

Two regularities emerge from this literature. First, while few studies explicitly test whether inequality has a more pronounced effect on the health of the poor, of those that do, the results are at best mixed (e.g., Daly et al. 1999, Kennedy et al. 1998, and Mellor and Milyo 1999a).

Second, of those studies that employ data on individual health outcomes, it is consistently found that controlling for individual characteristics (such as income, education, and race) attenuates or eliminates the association between inequality and health (Daly et al. 1999, Kennedy et al. 1998, Meara 1999, Mellor and Milyo 1999a, and Soobadeer and LeClere 1999). Neither of these findings bodes well for the inequality hypothesis.

One possible line of defense for the hypothesis is that inequality affects health indirectly, by lowering individual incomes and educational attainment (e.g., Mayer 1999), which, in turn, affects health. We address this modified inequality hypothesis in Mellor and Milyo forthcoming. In that study, we argue that if inequality is bad for your health, then changes in inequality should produce corresponding changes in your health. We examine the effects of 10- and 20-year changes in income inequality on age-adjusted mortality across U.S. states. In order to answer the defense of the inequality hypothesis, we do not control for other socioeconomic or demographic characteristics of states. We find no *significant* relationship between inequality and mortality in general, while for homicide mortality we find no *consistent* relationship. And for several causes of death that might be associated with stress or depression (cardiovascular disease, suicide, accidents, and cirrhosis) we tend to find that greater inequality *reduces* age-adjusted mortality.

In a forthcoming study, Angus Deaton and Christina Paxson deviate from the existing literature in an important aspect: they measure inequality within birth cohorts, rather than across states or other geographical units. The rationale for this approach is that people may be more likely to judge their social status by comparison to others at the same stage of life, rather than by comparing themselves to their neighbors. Measuring inequalities within birth cohorts does not, however, improve matters for the inequality hypothesis; Deaton and Paxson actually find a strong salutary effect of inequality on mortality.

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Several prominent scholars have argued that there is overwhelming evidence that inequality is detrimental to health; however, the nature of this evidence is far more ambiguous than has been supposed. The frequently observed correlation between socioeconomic factors and health may be attributable to several causes, so this should not be construed as strong support for the inequality hypothesis. In fact, the association between socioeconomic factors and health outcomes is as much

evidence that inequality improves the health of the rich as that it harms the health of the poor. Nor do studies of social hierarchies, whether among civil servants or lower primates, demonstrate a clear causal effect of hierarchy on health. Finally, studies that examine the association between income inequality and health produce results that are, at best, mixed. Indeed, given some of the contrary findings in recent work, one could argue that inequality is as likely to improve people's health as harm it.

Wilkinson, Kawachi, Kennedy, et al. have offered reasons why one might expect inequality to cause poorer health outcomes, but could just the opposite be true? It certainly seems plausible that more egalitarian societies are not without stress; equality of outcomes necessitates unequal treatment of individuals, which people may consider unjust. People may bristle at progressive taxes, affirmative action, or other redistributive policies as "unfair." In addition, it is plausible that inequality within a political unit may lead to the greater provision of public goods, particularly if politicians are more responsive to the needs of the well-to-do. For example, if rich and poor use the same schools and hospitals, then the rich may lobby for improved quality of education and medical care, thereby improving the health of all. We raise these concerns only to emphasize that the inequality hypothesis has not been well established on either theoretical or empirical grounds.

NOTES

1. Several of these studies have been reprinted, along with related articles, in Kawachi, Kennedy, and Wilkinson 1999.
2. Glaser, Laibson, and Soutter 1999 discusses the problems of measuring social capital.

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