Social Equity and Population Health: Cross-National Evidence and Policy Implications

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ABSTRACT: More equal societies exhibit longer life expectancy than less equal societies, a relationship that holds across the spectrum of levels of national income per capita. This implies that societies can become healthier through reductions in inequality, but the individual-level mechanisms through which this can be accomplished are not obvious. A model of how societal inequality affects individual health is necessary as a first step toward guiding appropriate policy formation. It is argued below that inequality affects health mainly through its relationship to the character of the workplace, and that the character of the workplace must change in order to both reduce inequality and promote population health. A long tradition of research on social structure and personality has taught us that (external) work conditions affect the worker's (inner) self; parallel research on worker autonomy has more recently shown how such conditions are correlated with health outcomes. It is reasonable to surmise that working conditions thus affect health through their effects on the self; this suggests that the appropriate location for policy intervention is the workplace.
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INTRODUCTION

Most researchers now agree that there exists a broad ecological correlation between income inequality and population health at the national level. Reviews of the literature on the link between equity and health, whether dismissive (Deaton 2003), skeptical (Lynch, Smith, Harper, Hillemeier, Ross, Kaplan et al., 2004), or enthusiastic (Wilkinson & Pickett, 2006) all agree that more equal societies exhibit better average health outcomes than less equal societies. In fact, the correlation is a relatively strong $r = .35$, which means that, even after controlling for national income per capita, income inequality explains about one-eighth of the cross-national variability in life expectancy (variance explained is equal to the correlation squared). There is less than a one in a thousand chance ($p < .001$) that a linear statistical relationship as strong as that depicted in Figure 1 could arise by chance if there were no underlying relationship between income inequality and life expectancy. This result is all the more remarkable when one considers just how poorly income inequality is measured cross-nationally: there is no international standard method for the measurement of income inequality, and existing statistical compilations are badly inconsistent and incomplete (Babones and Alvarez-Rivadula 2007). Without doubt, societies that are more equitable also tend to be healthier.

[Figure 1 about here]

What is in doubt is the correct interpretation of this observed correlation. Do high levels of income inequality in the societies in which people live actually depress life expectancy in those societies, while relative equity in other societies actually lengthens people's lives? If so, is this beneficial effect of equity direct (operating through psychosocial pathways) or indirect (operating through material pathways)? Or, on the other hand, is the observed correlation between equity and health not causal at all, resulting instead from the correlation of both income inequality and life...
expectancy with some other, unobserved variable or variables? Establishing causality in the relationship between two variables requires that three conditions be met: correlation (the two variables must be correlated), temporal precedence (the causal variable must precede the caused variable) and non-spuriousness (both variables must not share some other, common cause). The correlation between equity and health is clear from Figure 1. Figure 2 offers some circumstantial evidence of temporal precedence. Figure 2 reports the results of a series of statistical models regressing life expectancy in 1995 on national income (measured using GDP per capita and social equity (measured using the Gini coefficient of inequality and reversing the sign). The power of equity to predict life expectancy is strongest for equity measured two to eleven years before life expectancy is measured, then drops off (life expectancy does not seem to predict equity). This is despite the fact that life expectancy does, to some extent, seem to predict national income per capita. Non-spuriousness, the third criterion for causality, is much more difficult to establish. Over a hundred studies (see the reviews cited above) have attempted to establish the exact causal nature of the relationship between equity and health; it is likely to remain an open question for some time.

[Figure 2 about here]

What is not in doubt is that some sort of relationship exists between inequality and health, and that it is both scientifically and politically important. Given this, what are the policy implications? Getting from health science to health policy requires first that the ecological model connecting societal inequality to population health must be located within the individual's relationship to society. Second, public policy options that intervene at the level of the individual's lived reality must be formulated. Third, and too often overlooked in policy work, ways to engage society in promoting positive change must be identified. Each of these tasks is undertaken below.

LOCATING THE INDIVIDUAL IN SOCIETY

It is a simple matter to argue that national-level variables like income inequality might affect individual health outcomes, and even to demonstrate heuristically the mechanisms through which
this might occur. It is a whole different enterprise to confirm empirically the actual operation of these mechanisms. With some national-level variables, like national income (GDP) per capita, the connection with individual health is so obvious and so strong as to be beyond reasonable doubt. Nonetheless, formal statistical tests of the effects of national income per capita on individual health still in some cases fail to yield statistically significant results, as in some of the models reported by Beckfield (2004). Such statistical difficulties arise from the mismatch in units of analysis between the cause (national income per capita) and the effect (individual health). The multilevel models typically used to make the connection between national and individual level data are of very low power; they require particularly high signal to noise (effect to error) ratios to detect significant relationships (Babones 2007). Where national income per capita is concerned people generally do not question the connection with health, but where inequality is concerned they often do. Though both variables are measured using countries as the unit of analysis, there is an important qualitative difference between them. National income is an aggregate variable: it represents the sum of a large number of individual incomes. Being conceptually decomposable in a straightforward way into a multitude of individual incomes, it can be unproblematically divided by the population of a country to give national income per capita, a measure of the average level of economic output per person in a country. Since average life expectancy, like national income per capita, is an aggregate variable, it is easy to visualize (and to model) the connection between them: more money means more health.

Income inequality, on the other hand, is an ecological variable: it is an indivisible property of the whole. It makes no sense to speak of 'inequality per capita'. Unlike aggregate variables, ecological variables tend to be difficult to define, operationalize, and measure. To take income inequality as an example, there are at least half a dozen widely used definition of income inequality that satisfy the generally agreed properties of a good income inequality measure (Babones and Turner 2003); for each of these different and incompatible operationalizations are used in different countries and even within the same country at different points in time (Babones and Alvarez-Rivadula 2007); and even when comparable definitions and operationalizations are used,
measurement is highly inconsistent, with measurement error accounting for as much as 5% of total cross-national variability in measured income inequality (Babones 2008). Given these difficulties, one might think it miraculous that ecological variables like income inequality have any observed predictive power at all.

It can be difficult to visualize (and to model) the connection between an ecological variable like income inequality and an aggregate variable like average life expectancy, because such a connection requires the formulation of some kind of mode of transmission from the ecological level (income inequality) to the individual level (health). The social gradient model is one such mode of transmission, but it is virtually impossible to connect shifts in the slopes of social gradients cross-nationally to differences in income inequality. For starters, the income gradient in health has only been plotted quantitatively for a few countries for a few operationalizations of health. Moreover, the difficulty of reliably converting currencies across economies makes the comparison of income gradients across countries virtually impossible. Nonetheless, the observed ecological correlation between inequality and health implies that in at least some people are less healthy in less equal societies. Social epidemiologists working cohort data, most famously the Whitehall studies of British civil servants, have shown that social structure affects health throughout the range of levels in the social stratification hierarchy, even controlling for health behaviors, health knowledge, access to healthcare, etc. This suggest that the impact of inequality on the social gradient in health is likely to occur across the full range of incomes, as depicted in Figure 3.

[Figure 3 about here]

INEQUALITY, HEALTH POLICY, AND SOCIAL JUSTICE

The cross-national correlation between equity and health suggests that a reduction in income inequality would improve life expectancy and other health outcomes. The sad fact, however, is that income inequality is not declining in most countries of the world, and is in fact increasing rapidly in some important cases, notably China, the former Soviet bloc, and the United States. Coburn (2004)
takes the position that the spread of social democratic welfare regimes might reduce both income and health inequalities, but despite the hopeful prognoses of Boswell and Chase-Dunn (2000), there is no sign of such a development. If anything, it seems the opposite is occurring: global policymakers increasingly seem to accept the creed of economic rationalization uncritically, with perhaps some sadness over the fate of new economy 'losers' but little action in terms of concrete, funded policies to mitigate the negative effects of economic rationalization. The two great forces of global economic rationalization have been the boom in long-distance trade and the information technology (IT) revolution. Cheap trans-oceanic container shipping has made it possible to locate manufacturing wherever in the world costs are lowest, which, in today's economy, mainly means China and southeast Asia. Similarly, low-cost, high-capacity communications and computing have made it possible to locate many service industries anywhere in the world, with the transfer of call centers and IT support operations to India the archetypical example. The magnitude of these international developments notwithstanding, the effect of transportation and IT on the workplace within countries has perhaps been even greater.

Low-cost transportation and sophisticated IT, for example, have completely transformed the retail industry in developed countries, especially the United States. Small, specialist shops have all but disappeared, retreating to high and low end niches. A corollary of this change in the retail shopping experience is the change in the retail workplace. Generalist workers in 9-5 small businesses have been replaced by specialist workers in 24-hour operations. Parallel changes have occurred in virtually every other industry. It would be incredible if such dramatic changes in the organization of work did not result in changes in people's psychological, and ultimately physical, health. Of particular importance for the line of argument being developed here, Kivimaki et al (2005) reports that perceptions of organizational justice strongly and robustly predict coronary heart disease. When people have the experience of working in a just organization, when they feel they are treated fairly and consistently, listened to and praised, they are healthier. This effect survives all appropriate statistical controls, even controls for other well-known coronary heart disease risk
factors. As workplaces come to be increasingly rationalized and depersonalized, the impact on health is likely to be severe.

It was long assumed that the prevalence of heart disease in developed countries, especially the United States, was an unfortunate consequence of affluent lifestyles. This perspective puts the onus of prevention on the individual: the prescription is for individuals to exercise more, eat healthier, and relax. Locating a major cause of coronary heart disease in the structure of the workplace, and thus ultimately in the rationale of the economic system that creates such workplaces, shifts at least some of the responsibility for prevention from the individual to the society. The current US healthcare system, in which different groups are covered by employer-provided insurance, Medicare, Medicaid, the Veterans Health Administration, state-created groups, and private insurance, perhaps does more to undermine than to promote a sense of social solidarity in the US population. Perhaps not coincidentally, despite spending more on healthcare (both in absolute terms and as a proportion of national income) than any other country, the US has the worst health outcomes of any major developed country.

THE ROLE OF SOCIETY IN PROMOTING POSITIVE CHANGE

The link between equity and health implies that social structures - and not just material resources - are important for health. The link between social structure and health may be direct or indirect: while it is possible to imagine that life in an equitable society is simply healthier than life in an unequal society (the psychosocial argument made by Wilkinson 1996), it is also possible that, for example, that people in highly equitable societies spend more on healthcare, have better diets, or smoke less than people in unequal societies. While such indirect materialist causal paths cannot be definitively ruled out, it is becoming increasingly clear that, as argued by Marmot (2004, 2006) and others, social reality in itself is an important determinant of human health in both rich and poor countries. If it can be shown that an individual's place in society, regardless of material factors, has a direct biological effect on health through such pathways as its effect on the endocrine system, then
it is only a small step further to suggest that entire societies may be more stressful, less healthy social environments than other societies. If the character of one's place in a society affects one's health, then the character of one's society surely does as well.

Changing the character of a society, however, may be more a complicated matter than simply redistributing income. If income inequality is just an indicator of a broader syndrome of the 'unhealthy society' (to use Wilkinson's term), then reducing inequality might not have much if any effect on population health after all. Reforming society root and branch is a difficult proposition. More promising, though, are the prospects for changing the workplace, most likely a major source of the relationship between social structure and health. In general, low levels of control or autonomy in the workplace are associated with poor health (Marmot and Davey Smith 1997; LaMontange et al 2006). Social epidemiologists, however, seem to be largely unaware that the social psychology literature has long recognized that job conditions affect individuals' personalities, levels of intellectual flexibility, and even intelligence (Kohn and Schooler 1982). This social psychology literature emphasizes the positive effects for the individual of self-directedness of workers' activities on the job. Sadly, however, the rise of information technology, once predicted to liberate workers from the ball-and-chain of cubicle and desk, seems more likely to reduce personal autonomy as it dramatically increases the ability of management to measure and control workers' activities on a second-by-second basis. It is possible that the only workers who will experience increased autonomy in the workplace of the future are those who already experience the most autonomy today: senior executives and top-level professionals.

How then can the benefits of life in more equitable societies be extended to those who have the misfortune to live in less equitable societies? One way would be through the incremental improvement of the largely corporatist structures in which most people in the industrialized world are employed - and in which most people in the industrializing world will be employed. Unfortunately, despite pollyannaish management theorizing to the contrary, greater workplace autonomy for the masses seems less likely as a vision of the future than 1984-style corporatist
totalitarianism. Perhaps greater workplace autonomy will come about through wholesale societal change: the move from capitalist to socialist organization of the workplace forecast by Boswell and Chase-Dunn (2000) and others. While waiting for Godot, though, we might want to take more modest, more practical steps to improve health. Although individuals can take some initiative to assert greater control over their own work lives, any systematic response will have to be based on changing the regulatory environment in which employers operate. An even more workable alternative to the health-depressing qualities of the modern rationalized workplace might simply be to reduce the relative importance of the workplace in modern life though such basic progressive policy solutions as family leave laws, more generous unemployment compensation, effective job retraining programs, working hour limitations, and the like. The best antidote to the loss of control of one's working conditions might be a gain in control over the terms under which one works at all.

REFERENCES


Coburn, David. 2004. 'Beyond the Income Inequality Hypothesis: Class, Neo-Liberalism, and Health Inequalities'. *Social Science and Medicine* 58:41-56.


Figure 1. Income Inequality and Life Expectancy (cross-section of 136 countries)
Figure 2. Lag Periods for Inequality and National Income's Effects on Life Expectancy in 1995
(constant panel of 106 countries)
Figure 3. Affect of Societal Inequality on the Social Gradient in Individual Health (Schematic)