Health Inequalities

D. Dorling, University of Sheffield, Sheffield, UK
R. Mitchell, University of Glasgow, Glasgow, UK
S. Orford, Cardiff University, Cardiff, UK
M. Shaw, Bristol University, Bristol, UK
H. Tunstall, University of York, York, UK

Glossary

Common Identity It refers to similar residential location, occupation status, income, or similar trait of social significance.
Equality The quality of being the same in quantity, or measure, or value, or status.
Health Inequalities The lack of equality between the health status of social groups of people.
Home Counties Some of the most areas in Britain around Greater London where colonial officers in the past often returned home to.
Social Group A set of people that have some common identity.
Social Significance It is of importance to the organization of people that is not expressly stated but can be inferred – for instance in relation to health inequalities.

Introduction

Health inequalities, as one government minister in Britain recently stated, are 'the most important inequalities of all'. In the United States of America there remains great confusion and the rather more innocuous term 'variation' is often used. For instance typing 'health inequalities definition' into Google in May 2006 produces:

> This is the term commonly used in Europe to indicate the virtually universal phenomenon of variation of health by socioeconomic status, that is poorer people have poorer health. In the US, there is no single such term, and instead it is referred to as the socioeconomic status and health relationship. (http://depts.washington.edu/eqhlth/pages/academic_resources/glossary.html; accessed April 2009)

Health inequalities are essentially a lack of equality between the health status of social groups of people, where social groups have a common identity such as similar residential location, occupational status, income, ethnic group, or other similar trait of social significance. These inequalities can be found in many types of health status ranging from the chances of dying at a particular age to differences in the degrees of well-being measured in social surveys.

Measurement

To understand them, health inequalities need to be quantified or else they will remain a purely abstract notion. There are many ways in which health inequalities can be measured numerically. Researchers are beginning to conclude that the best way is to use the Slope Index of Inequality (SII) for measuring absolute differences between the status of groups and the Relative Index of Inequality (RII) for measuring relative differences. Low and Low provide more details on these measures. Note that the difference between absolute and relative is not simple when measuring health inequalities because some measures – such as life expectancy – do not lend themselves to be easily categorized. Furthermore, what is worth more: 10 years of life from age 80, or 5 years from age 40?

Social Inequalities

Health inequalities are partly a reflection of social inequalities more widely defined. They also greatly contribute to those inequalities. Illness prevents millions of working-age people from working in affluent countries and is often the precursor to absolute destitution and premature mortality in poorer countries. Nowhere can such inequalities be justified as emphasized by the dead body of a child at the foot of **Figure 1**.

The health inequalities suggested by this poster persist and are found across the social hierarchy. Health inequalities are not only a reflection of the poor health of the most disadvantaged people but also the apparently limitless health benefits associated with rising socioeconomic status. Most analysis of the associations between health and socioeconomic status suggests there is no threshold at which greater individual socioeconomic status is no longer associated with greater health. Even when people within high socioeconomic status groups in developed countries are compared, those with higher relative socioeconomic status have better health. For example, a long-running analysis of British civil servants,

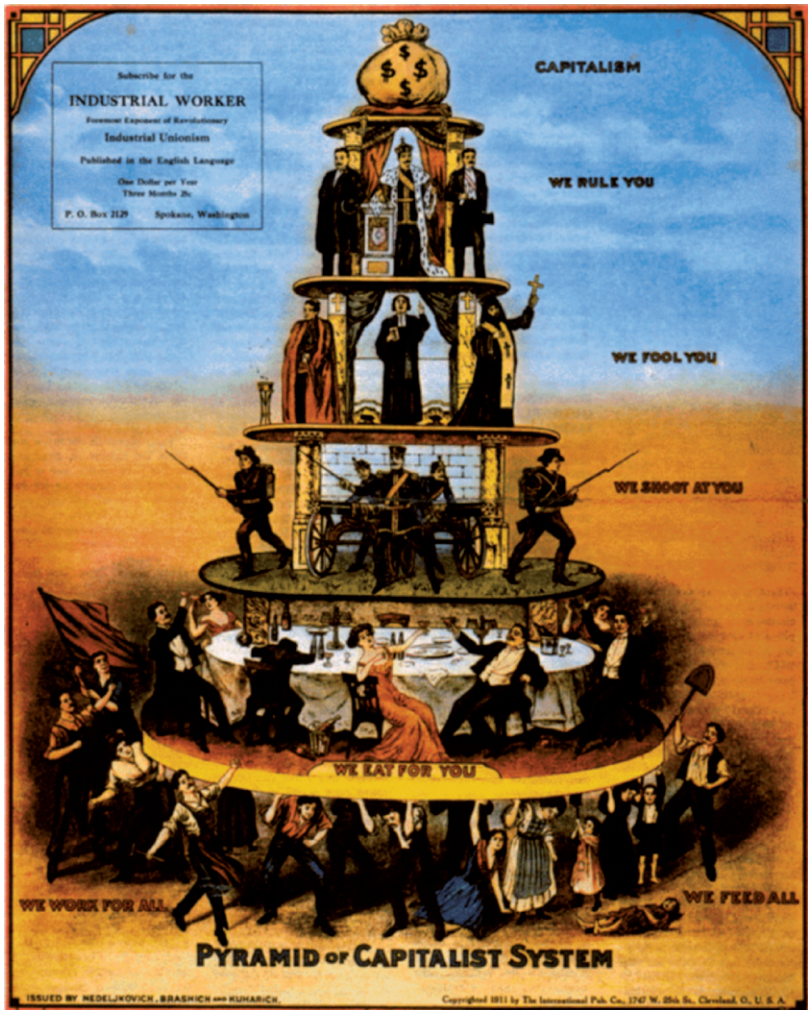

Figure 1 Pyramid of the capitalist system.

the 'Whitehall Studies', has found that employment grade among these professionals is a strong predictor of health outcomes across all levels of their hierarchy.

Income Inequalities

One current debate concerning the causes of health inequalities in rich nations is the extent to which such inequalities are a reflection of income inequalities. It is argued that health inequalities are not simply reducible to income inequalities and that they may also be further exacerbated by them. (See the article by Wilkinson and Pickett in the 'Further reading' section and Figure 2 for an example of the possible contextual effects of income inequality.)

In Figure 2, metropolitan areas of the United States are categorized by their average per capita income into four quartile groups; the relationship with mortality is such that higher income is associated with lower mortality rates, although the relationship is not linear as the rates for the lowest income group (green) are actually higher than those for the 2nd quartile (blue). When income inequality is also considered, we can see that within all income quartiles higher-income inequality is associated with higher death rates. Hence, it is not only absolute income that matters for health, but also the distribution of income within society.

Area Inequalities

Stark inequalities are found when comparing health between different countries. See the 'Further reading' section and especially the WHO *The World Health Report* and its annex for many of the statistics of inequality worldwide.

A significant amount of research from geography, epidemiology, and public health shows that where people live greatly affects their health outcomes. This work also includes comparisons of inequalities within regions of the

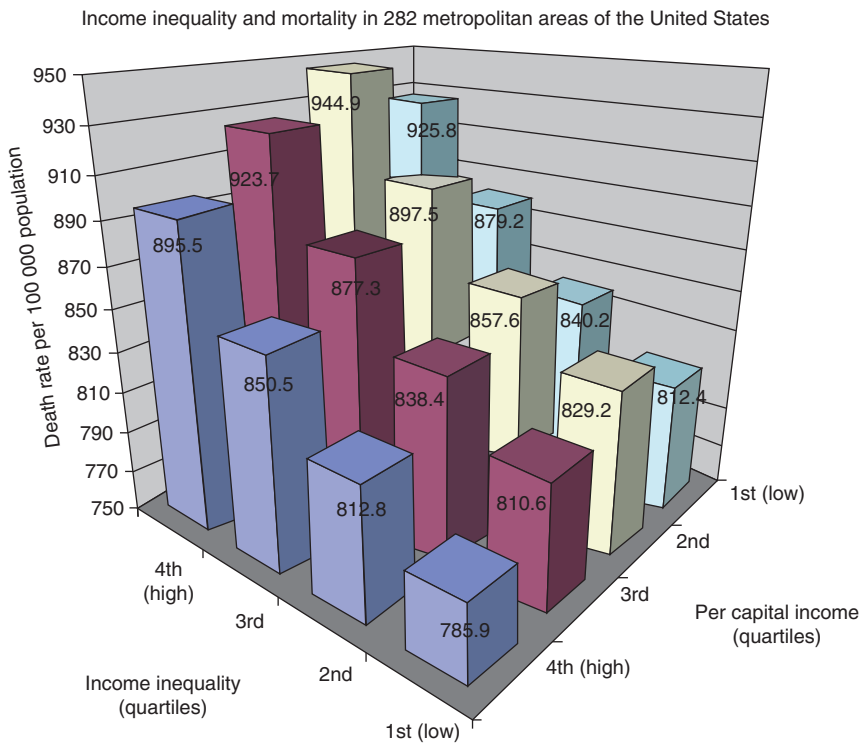

Figure 2 Income inequality and mortality in the United States. Source: Lynch, J. W., Kaplan, G .A., Pamuk, E. R. *et al.* (1998) Income inequality and mortality in metropolitan areas of the United States. *American Journal of Public Health* 88(7), 1074–1080.

world, reports of within-country inequalities in health outcomes, and inequalities in health outcomes within specific localities.

Geographical studies have historically concerned themselves with the spread of infectious diseases or the possibly harmful effects of proximity to potentially health-damaging sites of pollution exposure. However, in recent years more research has focused upon chronic diseases. This is mainly because chronic diseases are the main cause of premature death within affluent countries and affluent countries fund almost all research on chronic diseases. The key exception has been HIV/AIDS research upon which funding was concentrated until it was realized that the pandemic was unlikely to have its worse consequences within rich nations.

Geographical analysis of health has to deal with methodological uncertainties as well as social and political priorities. Methodological uncertainties are caused by issues of ecological fallacy, scale, the modifiable areal unit problem (MAUP), and spatial autocorrelation. The ecological fallacy refers to problems inherent in the inference of group or area characteristics as individual. An example of this would be to assume that in an area of high levels of illness containing many teenage mothers, that teenage mothers in that area will have high levels of illness.

There are also issues of scale that need to be born in mind when considering health inequalities. These are related to both the size of the units of analysis – whether they are local, regional, or national – and to aspects of the MAUP referring to the choice of such units and how this reflects the relations observed. Spatial autocorrelation simply refers to the fact that many phenomena are spatially dependent – ill people tend to be located near other ill people. All these issues can be summarized as (1) making assumptions about people given their locality, (2a) being concerned about the size of places in studies, or (2b) how places are constructed, and (3) how they are interrelated.

Recently, methodological debate has revolved around research seeking to separate 'area effects' from those 'compositional' effects of simply aggregate population characteristics. The debate over the importance of income inequalities referred to above is one example of such research. Often the statistical technique of multilevel modeling has been used. Unfortunately, characteristics of places are typically distilled in this kind of analysis to simply a few limited variables; 'area effects' are sometimes not obvious and when found, tend to be small. This analysis of 'area effects' frequently fails to conceptualize 'area' – is it home, street, neighborhood, workspace, society, or where? Also, what is meant by 'effects' is often left ambiguous – what are the causal pathways by which place effects health? Place is often considered a black box (of varying sizes and shapes) in which unidentifiable 'nonindividual' processes take place.

Spatial Sorting

Geographical inequalities in health can be exacerbated by spatial sorting. That is, if the population migrates in such a way that people with better health move toward areas where better health is enjoyed and those with poor health remain, then health inequalities between areas will grow, especially over the course of many years. Figure 3 shows an image of the propensity of people to migrate by social class between different parts of Britain a generation ago.

The map in Figure 3 shows all the main migratory flows that occurred between the wards of England and Wales between the years 1980 and 1981. A line is drawn between any wards between which individuals and families moved and the width of that line is drawn in proportion to the number of people who moved. A population cartogram is used as the base map and thus the amount of color is proportional to the numbers migrating. The lines are colored according to the main social class of those moving: blue for affluent toward red for poor. The blue lines tend to be longest – for instance, from around the Home Counties down to the Southwest of England as generally healthier affluent retirement migration flowed. Often the red and orange lines are constrained within the boundaries of what are local authorities as many people moved then within what was called council housing – and did not leave their borough upon retirement if they could not afford to.

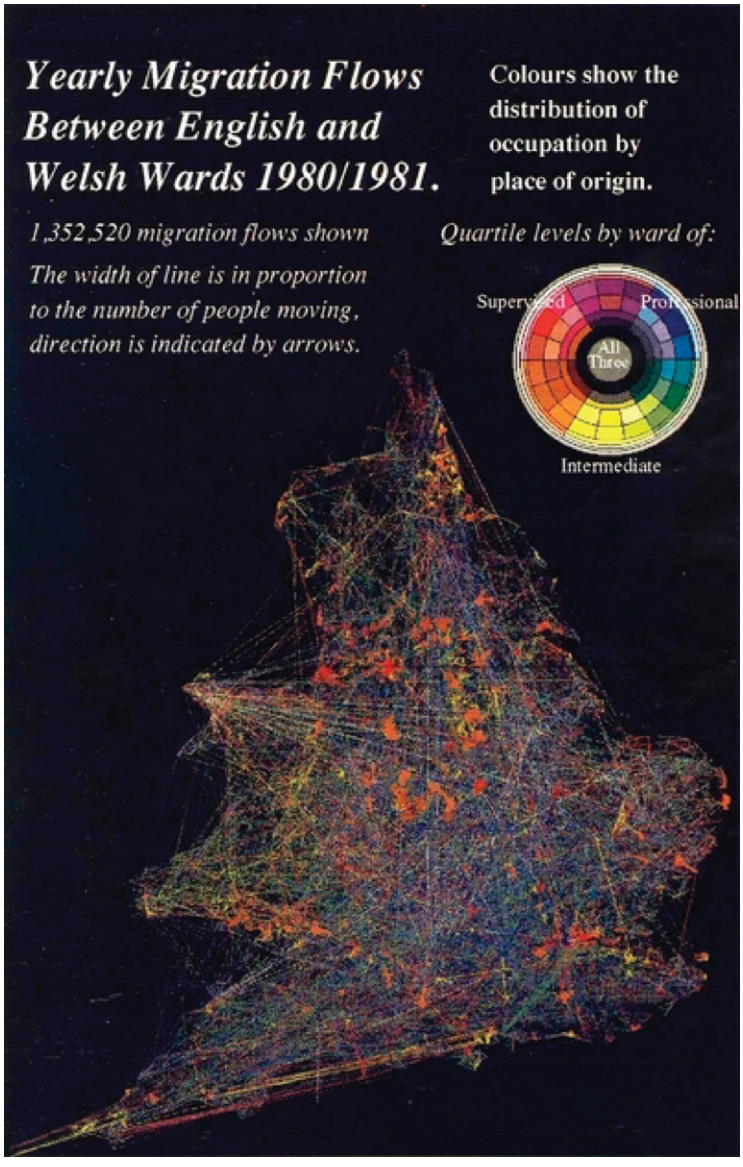

Figure 3 Yearly migration flows in population space by occupation, England and Wales 1981 (color, wax crayon original, cut by computer).

Conclusion

Health inequalities are the most important inequalities of all. Inequalities are best studied through numerical measurement. Discussion of inequalities in the abstract is an interesting area of philosophy to which geographers can contribute little. A few researchers with geographical backgrounds contribute to the debate on health inequalities. Despite its importance, the vast majority of well-referenced work on geographical health inequalities is not produced under the auspices of the study of geography. Thus, if you want to learn more about the geography of inequalities in health, it is important not to constrain yourself to searching the geographical literature.

See also: Health and Development; Health Geography; Migration.

Further Reading

Curtis, S. (2004). *Health and Inequality: Geographical Perspectives*. London: Sage.

Davey, S. G., Dorling, D., Mitchell, R. and Shaw, M. (2002). Health inequalities in Britain: Continuing increases up to the end of the 20th century. *Journal of Epidemiology Community Health* 56, 434–435.

Davey, S. G., Dorling, D. and Shaw, M. (2001). *Poverty, Inequality and health in Britain: 1800–2000 – A Reader*. Bristol: Policy Press.

Donkin, A., Goldblatt, P. and Lynch, K. (2002). Inequalities in life expectancy by social class, 1972–1999. *Health Statistics Quarterly* 15(autumn), 5–15.

Dorling, D. (ed.) (2007). Health, in Compass Closer to equality? Assessing New Labour's record on equality after 10 years in government. London: Compass. http://clients.squareeye.com/uploads/compass/closer%20to%20equality.pdf

Dorling, D., Shaw, M. and Davey, S. G. (2006). HIV and global health: Global inequality of life expectancy due to AIDS. *BMJ* 332, 662–664.

Low, A. and Low, A. (2004). Measuring the gap: Quantifying and comparing local inequalities. *Journal of Public Health* 26, 388–395.

Lynch, J. W., Smith, G. D., Kaplan, G. A. and House, J. S. (2000). Income inequality and mortality: Importance to health of individual income, psychosocial environment, or material conditions. *BMJ* 320, 1200–1204.

Mackenback, J. P. (2006) Health Inequalities: Europe in Profile, Independent report commissioned by the UK Presidency of the EU (http://www.fco.gov.uk/Files/kfile/HI_EU_Profile,0.pdf).

Moser, K., Shkolnikov, V. and Leon, D. (2005). World mortality 1950–2000: Divergence replaces convergence from the late 1980s. *Bulletin of the World Health Organisation* 83, 202–209.

Nakaya, T. and Dorling, D. (2005). Geographical inequalities of mortality by income in two developed island countries: A cross-national comparison of Britain and Japan. *Social Science and Medicine* 60, 12, 2865–2875.

Pearce, J. and Dorling, D. (2006). Increasing geographical inequalities in health in New Zealand, 1980–2001. *International Journal of Epidemiology* 35, 597–603.

Shaw, M., Davey, S. G. and Dorling, D. (2005). Health inequalities and new labour: How the promises compare with real progress. *BMJ* 330, 1016–1021.

Shaw, M., Dorling, D., Gordon, D. and Davey, S. G. (1999). *The Widening Gap: Health Inequalities and Policy in Britain*. Bristol: Policy Press.

Shaw, M., Orford, S., Brimblecombe, N. *et al*. (2000). Widening inequality in mortality between 160 regions of 15 countries of the European Union. *Social Science and Medicine* 50, 1047–1058.

Singh, G. K. and Siahpush, M. (2006). Widening socioeconomic inequalities in US life expectancy, 1980–2000. *International Journal Epidemiology* 35, 969–979.

Tunstall, H. V. Z., Shaw, M. and Dorling, D. (2004). Places and health. *Journal of Epidemiology and Community Health* 58, 6–10.

Wagstaff, A., Paci, P. and Van Doorslaer, E. (1991). On the measurement of inequalities health. *Social Science and Medicine* 33, 545–557.

Wilkinson, R. (2005). *The Impact of Inequality: How to Make Sick Societies Healthier*. New York: The New Press.

Wilkinson, R. G. and Pickett, K. E. (2006). Income inequality and population health: A review and explanation of the evidence. *Social Science and Medicine* 62, 1768–1784.

World Health Organization (1985). *Targets for Health for All*. Copenhagen: World Health Organization.

World Health Organization (1998). Health in Europe 1997. Copenhagen: World Health Organization (www.euro.who.int/document/e60594.pdf).

World Health Organization (2006). The World Health Report 2006 – Working Together for Health, Copenhagen: World Health Organization (http://www.who.int/whr/2006/whr06_en.pdf).

Relevant Websites

www.euro.who.int
The WHO; health in Europe (1997).

http://www.who.int
The WHO The World Health Report and its annex the statistics of inequality worldwide.

depts.washington.edu
UW Departments Web Server.

www.worldmapper.org
Worldmapper.