

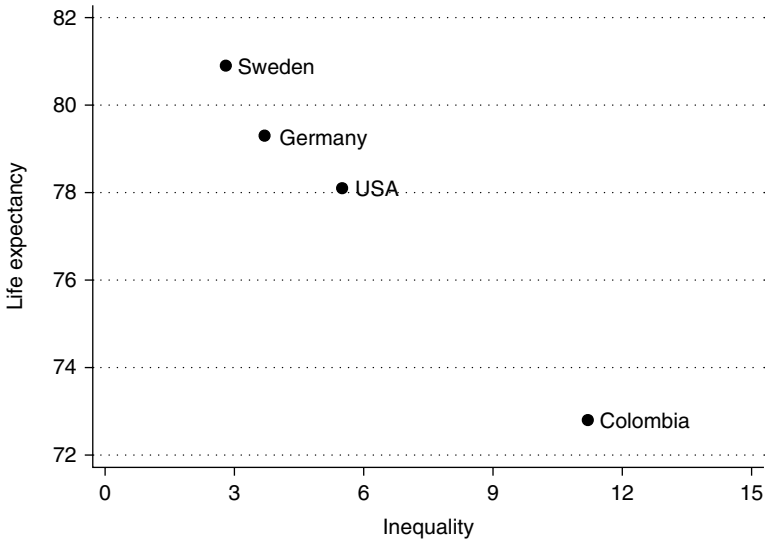
1. Introduction

Imagine a household so poor that 90 per cent of all households in the same country have higher disposable incomes. By how much would the income of this particular household have to increase to place it among the top 10 per cent of households? The answer depends on the country in which the household resides. In Sweden, its disposable income would have to triple to move from the lowest 10 per cent to the highest 10 per cent. This may sound like a large change, but by international standards, Sweden is a nation with very little income inequality. The household's income would have to be multiplied by four in Germany and by six in the USA. In Colombia, the household's income would have to be increased by a factor of 11 to move from the bottom tenth percentile to the top tenth. In other words, the extent of income inequality varies drastically across countries.

There are also large differences in life expectancy across countries. Life expectancy at birth is 81 years in Sweden, 79 in Germany, 78 in the USA and only 73 in Colombia. If the data for these countries are plotted in a graph with income inequality on the horizontal axis and life expectancy on the vertical, a pattern arises: people in societies with greater income inequality tend to live shorter lives (see Figure 1.1).

The correlation in Figure 1.1 certainly provides food for thought. Do people in societies with higher levels of income inequality always have shorter life expectancies? Do people who earn exactly the same incomes but live in different countries have different health statuses? Do these patterns mean that income inequality is unhealthy? To what degree does being significantly poorer than the other three countries reduce life expectancy in Colombia? Do these patterns hold if we measure health and income inequalities differently? These topics will all be addressed in this book.

A few decades ago, a group of scholars set out to investigate the idea that social comparisons are determinants of individual health in wealthy countries. This idea formed the basis for a series of studies



Note: The measure of income inequality is the P90/P10 measure from the Luxembourg Income Study. The measure of life expectancy is from the World Development Indicators (WDI). In Chapter 2, we detail various measures of population and individual health, while we review and discuss additional measures of income inequality in Chapter 3.

Figure 1.1 Life expectancy and income inequality in four countries in 2005

on the health of officials at Whitehall, which houses various British government agencies (Marmot et al., 1984, 1991). The researchers initially believed that the tough pace of work and the demanding responsibilities of the senior employees would lead to high stress and decreased health. However, the opposite results were obtained: the health of those at the bottom of the hierarchy suffered the most. These results could not be explained by behavioural patterns, such as smoking or other deleterious habits; rather, one's relative position within the work-related hierarchy was a key factor determining health.

These studies spurred others to inquire further about socioeconomic gradients in health. Economic historian and epidemiologist Richard Wilkinson explored a related but distinct hypothesis that income inequality in a society is harmful to *everyone's* health

regardless of whether they are located at the top or at the bottom of the income distribution. Together with Kate Pickett, Wilkinson received worldwide attention for the book *The Spirit Level* (Wilkinson and Pickett, 2009). They argue that in rich countries, the income distribution plays a larger role in health outcomes than does the actual level of income and that those differences in income cause bad health.¹

Scientific research on the relationship between income distribution and various measures of health has grown impressively large: hundreds of studies and reports address this question, spanning academic fields, in particular, medicine (social medicine, epidemiology), sociology and economics.² Despite these efforts, and perhaps contrary to the impression one forms from the public debate, research in this area is progressing, although consensus has not been reached on several central issues: How persuasive is the evidence of an inequality effect? If this effect exists, how large is it? Is the relationship causal, or are there other factors that explain why high inequality and adverse health outcomes tend to be associated? Does the relationship between inequality and health exist in every type of society, and what kinds of health issues are affected? Which mechanisms cause an unequal income distribution to lead to poor health? How is health affected in a society if everyone grows richer as income inequality increases?

The purpose of this book is to discuss the state of the research addressing the relationship between inequality and health. In particular, we wish to explain the difficulties involved in identifying the effect of inequality on health and to present the ways in which one can measure this effect robustly. We provide a comprehensive review of the latest cross-disciplinary academic literature, identifying common patterns that offer at least partial answers to the above questions and provide directions for fruitful future research.

This book is structured as follows. After this introduction, eight chapters are followed by a lengthy appendix that provides an

¹ *The Spirit Level* was not the first book published by Wilkinson on the relationship between inequality and health. The same theme is explored in *Mind the Gap: Hierarchies, Health and Human Evolution* (2000) and in *Unhealthy Societies: The Affliction of Inequality* (1996). Wilkinson's hypothesis in all of these works is that inequality in society is detrimental to everyone – not just the poor.

² In a recent article, Pickett and Wilkinson (2015) note that as many as 300 peer-reviewed studies (including both population studies using aggregate data and studies using individual-level data) examine the income inequality hypothesis (IIH).

extensive list of articles covered in the literature review. The first two chapters address measurement. Chapter 2, *Measuring health*, and Chapter 3, *Measuring inequality*, discuss the most commonly used measures of health and income inequality used by scholars today. We discuss the concepts that these measures are meant to capture and evaluate how well they do so.

In the next three chapters, we carefully analyse how researchers can demonstrate the connection between inequality and health. Chapter 4 – *How can economic inequality influence health?* – identifies some of the central theoretical mechanisms that could explain a negative correlation between inequality and health. The nature of each mechanism differs: some focus on psychosocial processes, some stress the importance of money, while others focus on politics, crime or other societal processes. Chapter 5, *Correlation or causality? Interpreting scatter plots and regressions*, provides a review of the empirical methods used by most scholars addressing this topic. Concepts such as correlation and causality are examined, as are the requirements for empirically deducing statistically significant causal relationships between inequality and health. To illustrate these methods, the authors present a statistical analysis intended to help readers who are not familiar with statistics to understand the basics of the research being discussed. Chapter 6 – *The ecological fallacy: what conclusions can be drawn from group averages?* – argues that basing one's analysis on aggregate data, which are often national averages, is insufficient; it is also crucial to access data based on individuals. Most previous studies have used only aggregate data, which significantly reduces their usefulness. This limitation is discussed further below.

Chapter 7 – *Income inequality and health: what does the literature tell us?* – presents an extensive summary of the state of the current research. We establish that the body of literature on inequality and health is sizeable. The number of relevant articles is significantly smaller, however, if you limit yourself to studies that analyse this relationship using individual-level data. The summary separates the studies into categories based on their measure of health (objective or subjective health), time perspective (immediate or delayed effects), geographic area (within countries or cross-national) and distributional differences (everyone in society is affected or the poor are primarily affected). The chapter closes with a discussion of the main conclusions one can draw from evaluating the current

research. Chapter 8 – *Searching for the inequality effect: what tools are appropriate?* – discusses the reasons behind the often-conflicting results reported in the literature and suggests that the field would benefit from a closer correspondence between the mechanisms examined and the measure of inequality used to evaluate the results. In Chapter 9, *Conclusion*, the book is summarized, and the authors outline some crucial points on the overall question of whether differences in income make us sick.

A particular challenge in writing a book like this is that the alleged inequality effect has been analysed by scholars working in a variety of scientific disciplines – in both medical and social sciences. For example, focusing on the income distribution may be viewed as restrictive. Some cross-national social scientists argue that income inequality is merely an indicator that captures important aspects of the ecological setting of a society; this ecology rather than the income inequality itself either fosters or harms individual health. As we stress in this book, the relevant mechanisms may be several and complex, working through different channels and dimensions of inequality. In fact, this issue is so important that we devote an entire chapter to discussing which mechanisms may mediate a potential relationship between inequality and health.

Cross-disciplinary differences may also become visible in the use of statistical methods for assessing the inequality effect. Most scholars, regardless of discipline, tend to interpret their results in causal terms; however, we argue that such claims require that researchers use statistical techniques that identify causal effects.

Overall, we strongly believe that different research traditions can offer valuable insights and that we may learn a great deal from each other's methods and results. The encompassing approach of this book and the research summary examines the results of studies from all relevant fields, and we hope that it will make a constructive contribution to our understanding of one of the most important issues in our societies.