

The Health Effects of Social and Economic Policy: The Promise and Challenge for Research and Policy

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The United States faces a growing paradox between its declining levels of population health relative to other wealthy nations—and even to some developing ones—and its burgeoning spending on health insurance and medical care. By an increasing margin each year, the United States spends a larger percentage of its gross domestic product (GDP) on health care than any other nation, with health care expenditures now totaling \$1.9 trillion per year and large increases projected over coming decades (Chernew, Hirth, and Cutler 2003).

Scholars, policy makers, and citizens debate the marginal value and cost-effectiveness of these expenditures. Specific advances—for example, neonatal intensive care, highly active antiretroviral therapy (HAART), improved cardiac care, and new outpatient pharmaceuticals—bring gains in longevity and well-being which meet standard benchmarks for cost-effectiveness (Cutler 2004). Yet other care is of uncertain effectiveness or low quality (Institute of Medicine 2001a, 2001b). Moreover, increasing medical expenditures create serious challenges for individuals, employers, and all levels of government. Expenditure growth threatens the continued availability and affordability of health insurance and medical services, and creates fiscal strains at the federal, state, and local levels which reduce nonmedical assistance to needy people and spending in other non-health areas such as education and infrastructure (Baicker 2001).

Paradoxically, despite marked growth in medical-care spending, the United States's standing on major indicators of population health such as life expectancy at birth and infant mortality has declined relative to other wealthy nations, as well as relative to some much less affluent ones (Organization for Economic Co-Operation and Development [OECD] 2005; United Nations Development Programme 2005). As shown in table 1.1, while rising in rank over the past half century in per-

TABLE 1.1 / U.S. Rank Among Thirty OECD Developed Nations on Indicators of Population Health and Percent GDP Spent on Health

Year	U.S. Rank on Life Expectancy at Birth	U.S. Rank on Infant Mortality	Percentage of GDP Spent on Health		
			United States Rank	United States Spending	Average Spending Among All Other OECD Countries
1960	15.5	12	2	5.1%	3.7%
1970	19	14	3, tied	7.0	5.0
1980	14	18	1	8.8	6.7
1990	18	21	1	11.9	6.8
2000	22	25	1	13.3	7.6
2003	23	27	1	15.2	8.6

Source: Authors' compilation from OECD Health Statistics (2006).

cent of GDP spent on health, the United States has fallen during this time period from being among the top nations in life expectancy and infant mortality to a ranking near the bottom among the thirty nations of the Organization for Economic Co-operation and Development or OECD. Only Mexico, Turkey, and three relatively new OECD members from the former Soviet bloc (Hungary, the Czech Republic, and the Slovak Republic) consistently rank below the United States on such indicators.

Most current political and policy analysis related to health in the United States focuses on medical-care and insurance expenditures, incentives, and prices. Much less attention is paid to levels of population health beyond the worry that controls and reductions necessary to constrain spending growth may adversely affect overall health or health within specific vulnerable groups. Much can be done to enhance the quality and cost-effectiveness of American health care, and many contributors to this volume have actively addressed these challenges in other venues.

However, this chapter and the research presented throughout this book pursue a different agenda: to address neglected opportunities for improving population health via social and economic policy outside of the traditional domains of preventive and curative health care. The concentration in so many health policy discussions on medical services as the *sine qua non* for improving population health neglects historical knowledge about the causes of major changes in the health of populations. It also neglects real opportunities outside the domain of medical care to improve population health.

It may seem paradoxical and impossible that a society could achieve better population health without explicitly increasing health care expenditures, but this is only if we assume that health care is the major determinant of health. As dramatic and consequential as medical care is for individual cases and for specific conditions, much evidence suggests that such care is not, and probably never has been, the major determinant of levels or changes in population health. This evidence is

consistent with data suggesting a low to near-zero correlation between health care expenditures and levels of population health across wealthier OECD nations, as well as with data that show declining rates of return to health from growing health care expenditures over time in the United States (Cutler, Rosen, and Vijan 2006). Rather, economic, social, psychological, behavioral, and environmental factors are increasingly recognized as the major determinants of population health (McGinnis and Foege 1993; McKeown 1979; McKinlay and McKinlay 1977; Preston 1977; Bunker, Frazier, and Mosteller 1994; Bengtsson 2001; Kaplan, Everson, and Lynch 2000; McGinnis, Williams-Russo, and Knickman 2002). If health care, whether therapeutic or preventive, is not the major determinant of health, then health policy must move beyond a single-minded focus on the delivery and financing of health care. We must understand through research and practice the health effects of the wide range of social and economic policies that are, arguably, major determinants of the level and distribution of health in populations.

UNDERSTANDING NONMEDICAL DETERMINANTS OF HEALTH

A brief historical perspective is necessary to understand why and how social and economic policies may be equally or more important than health policies in maintaining and improving population health. Within the United States and many developed and developing nations, the scientific success of the germ theory of disease between the mid-nineteenth and mid-twentieth centuries fostered hegemony of a solely biomedical perspective on the health of individuals and populations. The general decline, and in some cases eradication, of feared infectious diseases suggested that understanding microbiological bases of life and disease provided a golden pathway to improved population health. Bacteriology, virology, genetics, and basic molecular, cellular, and developmental biology—together with their translation into the practice of health care—allowed continual advances and improvements in health. Many scientists and most policy makers and citizens continue to share this biomedical perspective, which shone brightly in the mid-twentieth century, epitomized by the discovery of polio vaccines and their use to virtually eradicate the disease.

However, the rise of modern “epidemics” of chronic disease—particularly heart disease and cancer—within an aging population began to cloud this picture by the late 1950s. The dramatic increase in these diseases in the mid-twentieth century virtually arrested the long-term rise in life expectancy from the late 1950s to the late 1960s, and revitalized several strands of medical and public health research which recognize the important, and sometimes dominant, role of socioeconomic, psychosocial, and behavioral determinants of health.

One scientific strand was derived from the early research of Walter Cannon (1932), Hans Selye (1956), and others showing that perturbations in the relation between organisms and their psychosocial as well as their physical-chemical-biological environments (created by physical, social, or psychological challenges or

stressors) led to adaptive arousal of biological and physiological systems in the form of heightened heart rate, blood pressure, hormonal secretions, and depressed immune response. These are perhaps best known collectively under Selye's rubric of stress. These physiological changes could, if prolonged, lead to long-term dysregulation of homeostatic and adaptive systems, physical diseases (including hypertension, infection, and autoimmune disorders), and even death. This work led to burgeoning new fields of psychoneuroendocrinology and psychoneuroimmunology (Ader, Felten, and Cohen 1991) and showed how a broad range of socioeconomic and psychosocial factors could "get under the skin" and produce physical illness (Taylor, Repetti, and Seeman 1997).

Between the mid-eighteenth and mid-nineteenth centuries, and accelerating in the first half of the twentieth century, human life expectancy in Europe and North America grew more than in all of prior human history (Coale 1974; Fogel 2004). Although this dramatic improvement in human health roughly coincided in time and space with the development of modern biomedical science and its translation into health care practice, and hence might be presumed to have been caused by these developments, taking off from the work of McKeown (1979, 1988), historical demography and economics showed that most of the improvement for many diseases occurred prior to and independently of the discovery of the causative bacterial or viral agents or the application of this knowledge via preventive (for example, vaccination) or therapeutic (for example, pharmacologic treatment) medical practice (McKinlay and McKinlay 1977; Preston 1977).

John Bunker, Howard Frazier, and Frederick Mosteller (1994) have estimated that only about five years of the almost thirty-year increase in United States life expectancy over the twentieth century were due to preventive or therapeutic medical practice. This is consistent with more recent estimates that medical care likely accounts for 10 to 20 percent of the variation in population health in the United States and other developed countries (McGinnis, Williams-Russo, and Knickman 2002; McGinnis and Foege 1993).

The exact nonmedical factors responsible for the great historical rise in life expectancy are impossible to identify retrospectively in a definitive way, but general socioeconomic development and benefits facilitated by it—most notably improvements in nutrition, public and household sanitation, housing, clothing, and general conditions of life—played a central role. Some of these developments were also influenced by biomedical science (for example, sanitation) or were not always entirely salutary (for example, urbanization) (Bengtsson 2001). Their spread and effectiveness also varied as a function of different political and cultural contexts, being, for example, greater in nations with strong central governments (Kunitz and Pesis-Katz 2005; Kunitz 2006).

Concurrently, the rise of chronic diseases produced a major shift in the epidemiologic conception of and search for their causes—a shift from identifying a single necessary, proximate causal agent to identifying multiple contingent causal forces or risk factors. None of these risk factors are necessary to produce disease, but each interacts with others, increasing the likelihood of developing major chronic diseases and the pathogenic physiology underlying them (Kannel 1971; Aronowitz

1998). Epidemiology initially focused on biological risk factors such as blood pressure, blood lipids (especially cholesterol), respiratory flow and volume, and electrocardiographic abnormalities.

However, research leading to the first Surgeon General's Report on Smoking and Health (Advisory Committee to the Surgeon General 1964) showed that behaviors were also key risk factors for chronic diseases, with tobacco use being the leading cause of the twentieth century epidemic of lung and respiratory cancers, and a major contributor to rising rates of other cancers and cardiovascular disease. Other behaviors such as immoderate eating, alcohol use, and a sedentary lifestyle were similarly identified as major disease risk factors (Berkman and Breslow 1983). Health research and policy targeted smoking, and now obesity as well (with its key determinants of diet and nutrition, and of calorie expenditure and physical activity), as key—and still growing in the case of obesity—threats to adult and child health (McGinnis and Foege 1993).

For both smoking and obesity, much effort has been focused on understanding the pathophysiological mechanisms producing adverse health effects, as well as the individual-level factors that influence initiation, maintenance, and cessation of these behaviors. Intensive research on tobacco-related health hazards and on smoking cessation has entered its sixth decade. Despite basic scientific advances in these areas, it is now widely recognized that trends in smoking and other health risk behaviors are driven primarily by economic and social developments, and by policies that once fostered and now limit individuals' opportunity and motivation to buy and smoke tobacco products (Warner 2001; Levy, Bauer, and Lee 2006).

Using epidemiological methods similar to those that identified blood pressure, cholesterol, cardiovascular and respiratory function, smoking, diet and nutrition, alcohol consumption, and physical inactivity as major risk factors for the newly epidemic chronic diseases, social epidemiology has over the last several decades identified a growing range of economic, social, environmental, and psychological variables that are comparably potent risk factors for health. These include social relationships and supports, chronic and acute stress, psychological and personality dispositions, engagement with productive social roles and organizations, and the social as well as physical-chemical-biological environments in which people live and work (House 2002; House and Kaplan 2004; Kaplan 1985, 1992; Berkman and Kawachi 2000).

Perhaps the most striking and important development in social epidemiology over the last quarter century has been the discovery (or rediscovery) of large, persistent, and even increasing disparities in health by socioeconomic position and race-ethnicity (Marmot, Kogevinas, and Elston 1987; Pappas et al. 1993; Wilkinson 1996; Kaplan and Lynch 1997; House and Williams 2000; Kaplan et al. 1987). These disparities are dramatic and important in several ways. First, the sheer size of the disparities is striking: there are many years, and even decades, of difference in life expectancy and the ages at which people come to develop major health problems and associated limitations or disability (House and Williams 2000). Second, the disparities are pervasive across almost all specific causes and indicators of morbidity, limitations and disability, and mortality (U.S. Department of Health and

Human Services 2000), and across vast expanses of historical time and geographical space, even as the specific causes of morbidity, limitations and disability, and mortality vary and change over time and space (Link and Phelan 1995, 2000). Finally, as might be expected from the foregoing patterns, socioeconomic position and race-ethnicity (or actually the way that race and ethnicity came to be socially defined and enacted) shape people's experience of and exposure to almost all risk factors for health—psychosocial, biomedical, and environmental (Marmot, Bobak, and Smith 1995; Lynch et al. 1996; House and Williams 2000).

MOVING UPSTREAM AND DOWNSTREAM IN UNDERSTANDING PSYCHOSOCIAL, ENVIRONMENTAL AND BIOMEDICAL DETERMINANTS OF HEALTH

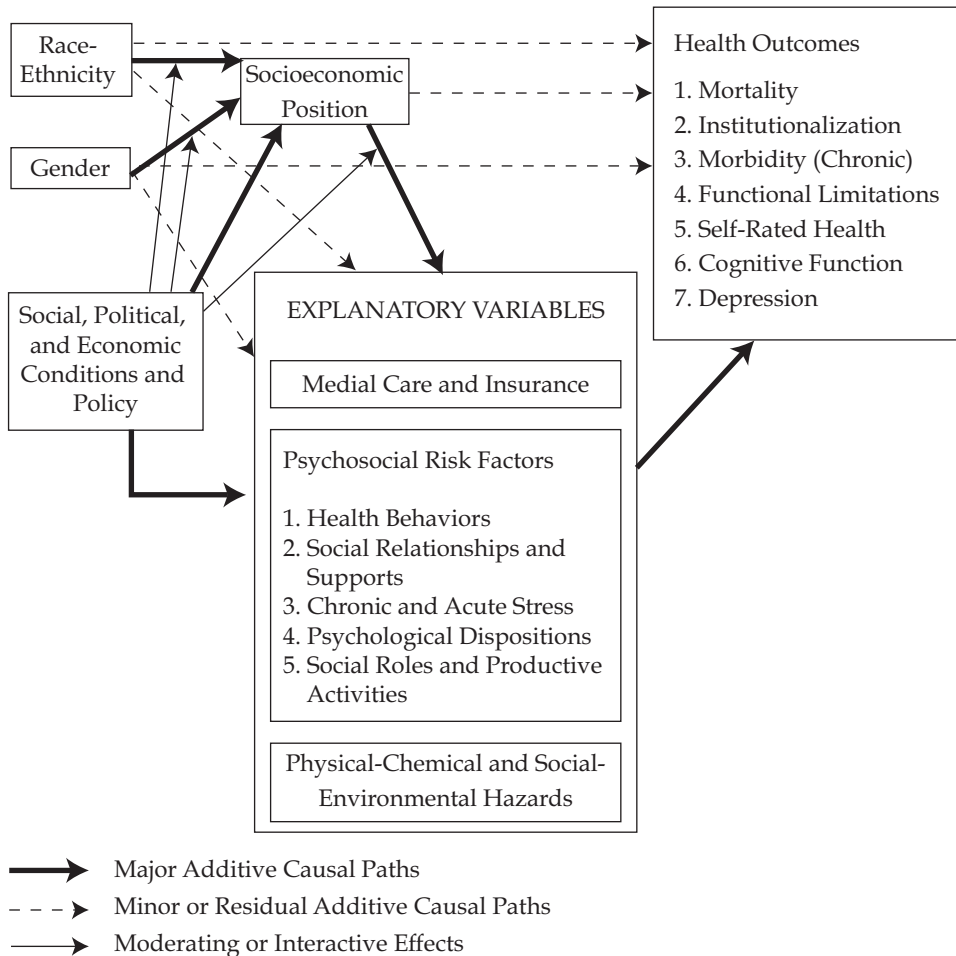
Current research on psychosocial, biomedical, and environmental determinants of health has moved in two directions. The more common direction has been “downstream,” understanding the psychophysiological mechanisms and processes by which psychosocial risk factors “get under the skin” to affect physical as well as mental health (Taylor, Repetti, and Seeman 1997; Steptoe and Marmot 2002). This downstream approach explicitly or implicitly leads in the direction of identifying biomedical approaches to mitigate the health impact of social and economic risk factors for health (for example, finding pharmacological or other treatments to mitigate the impact of social deprivations, stress, isolation, and other factors on health).

An “upstream” approach is most pertinent to the work collected in this book. This approach seeks to understand broader aspects of social life, and planned and unplanned changes therein, that shape exposure to and experience of psychosocial and environmental risk factors for health (House and Williams 2000; Kaplan 1995). Figure 1.1 provides an integrative schematic framework for considering the full range of determinants of health. Our focus here will be on the social, political, and economic conditions—and particularly public policies—that may importantly affect health by shaping exposure to and experience of major risk factors. Many public policies strongly impact health because they strongly impact the socioeconomic, psychosocial, and environmental determinants of health. We consider primarily domestic social and economic policies, but this approach could be extended to other policy areas such as environmental protection and aspects of international policy.

Socioeconomic position is central to figure 1.1 and to more basic theories of human capital and status attainment (Blau and Duncan 1967; Becker 1964). Socioeconomic position provides a rubric for a series of interconnected human capital resources, including education, occupation, income, and wealth (House and Williams 2000; Lynch and Kaplan 2000). All of these resources have been shown to be important correlates of health.

Socioeconomic position is determined by characteristics of individuals, their biological and family background, and the educational, occupational, social, and

FIGURE 1.1 / A Conceptual Framework for Understanding Determinants of Social Inequalities in Health and Aging



Source: House (2002).

Note: As indicated in the text, health outcomes can affect socioeconomic position and explanatory variables. For the sake of graphic simplicity and clarity, such effects are not explicitly indicated above.

economic contexts in which they live and work. Although not depicted on the simplified schematic of figure 1.1, health status also feeds back to socioeconomic position, with health shocks causing interruptions in human capital accumulation and reducing labor market earnings.

Enhancing the social and economic factors that are components of socioeconomic position is the putative object of public (and private) policies under the

purview at the federal level of the Departments of Education, Labor, Commerce, Treasury, Housing and Urban Development, and the human services side of the Department of Health and Human Services, along with analogous agencies in state and local government. These factors also are influenced by the policies pursued by private educational, work, economic, and voluntary organizations, as a function both of their own objectives and of public policies which may stimulate or inhibit private sector activities such as affirmative action, education and training, growth and development of occupations and professions, the nature and level of wages, salaries and fringe benefits, and patterns of savings and investment (Hacker 2002). To date, very few of these public and private socioeconomic policies have considered health in either formulating or justifying policies or evaluating their impacts. This volume seeks to change this state of affairs.

THE PROMISE AND CHALLENGES IN RESEARCH AND PRACTICE ON HEALTH EFFECTS OF SOCIAL AND ECONOMIC POLICY

In essence, we believe that health research and policy in the United States must move toward models recently advocated and adopted in Canada (Health Canada 1998), Sweden (Swedish National Institute of Public Health 2003; Stahl et al. 2006), and the broader European Union (Stahl et al. 2006) that consistently consider evaluating the health impact of *all* policy—not just health policy (Raphael and Bryant 2006; Navarro 2007). This is similar to the way that we have come to think about and evaluate the environmental impact of policy beyond explicitly environmental policy (Irwin and Scali 2005).

The Promise

A greater and more explicit focus on the actual and potential health effects of social and economic policy could strengthen scientific understanding of the social and economic determinants of health and their amenability to change via public (and private) policy. It could also help to extricate health policy and more general public policy from America's growing paradox of unparalleled levels and growth of health care spending, yet declining standing in population health relative to other developed countries.

Much evidence strongly suggests that social and economic factors and policy may powerfully influence individual and population health. However, policy makers—who are often from backgrounds in economics, political science, law, or public policy—reasonably ask whether and how epidemiologic evidence that a given social or economic variable (such as education) is associated with and even predicts health translates into a conclusion that policies which increase individual or population education will necessarily improve individual or population health. Crucial evidence on this issue can come from evaluating the health consequences

or impacts of education or income policies. Thus we need greater attention to health in all aspects of the policy planning and evaluation process. Such attention will provide crucial scientific evidence as to whether, how, and to what extent education, income, and other social and economic factors and policies affect health.

Existing research suggests that a wide range of social and economic policy should significantly and substantially affect health. To the extent that such policy-based research confirms this pattern, we can consider a broad range of public and private policies beyond the realm of health care as mechanisms for promoting health and preventing or alleviating disease. These social and economic policies may have additional beneficial consequences for health that are equally or more important than the consequences they were formulated to produce. In addition, social and economic policies may be more cost-effective for maintaining and improving health than increased spending on health care, and hence even constitute alternatives to some current health care spending (Lleras-Muney and Cutler, chapter 2, this volume).

Considering their health impact can also benefit the development and implementation of policies which target dimensions of individual well-being and social performance other than health. For example, an education intervention may have larger than expected effects on labor market outcomes because the increase in education has the unintended effect of improving health status, which in turn makes workers more productive or able to provide additional work hours, and hence to receive higher pay. In the public or private sector, deciding whether, when, and how to implement new policies is often influenced by cost-benefit calculation. Given the potential range and size of both positive and negative health outcomes that flow from policy changes, even if totally unintended, health effects can be central factors in decisions about the nature of contemplated changes in public or private policy seemingly unrelated to health. It is therefore increasingly hard to justify not considering potential health impacts in the design, implementation, and evaluation of any contemplated policy change, even in areas which may superficially seem far removed from issues of health and health policy.

The Challenges

However, realizing this promise of increased research and policy on the health effects of social and economic policy requires confronting a number of challenges, which have shaped the organization of this book and the conference from which it derives. We characterize these challenges as the three Cs: causality, cost-effectiveness, and can we do it?

Causality Concern about causality in the relationship between social and economic factors and health has increased markedly in recent years in the statistical, biostatistical, social, and policy sciences. The essence of the concern is the belief that the only way to establish a causal connection or relationship is via a randomized experiment or the closest possible nonexperimental analog to it (Heckman 1992, 2000;

Heckman and Vytlačil 2005; Rubin 1974; Pearl 2000; for a somewhat different perspective, see Marini and Singer 1988). According to this view, the value and validity of any given piece or body of empirical evidence depends on how closely it approximates the ideal of the randomized experimental trial. Thus, for example, where randomized social policy experiments are not available or possible, as is typically the case, economics and public policy have often utilized naturally occurring variations or changes (also known as *shocks*) that are essentially random because they are accidental (such as the social security “notch,” an accidental variation of benefits for people born at different times), arbitrary (such as cutoff dates for age at school enrollment), random (such as lottery winnings), or otherwise exogenous to the variables of interest (such as the demise of the Communist Soviet regime of Eastern Europe from 1989 to 1991). However, too often this search for the closest approximation to an experiment neglects or deemphasizes consideration of the fidelity in either the nature or magnitude of the exogenous shock to the broader phenomenon of interest, such as the normal processes that generate income or education or variations therein and their putative effects on health.

A different tradition and conception of causality characterizes broader and more substantively focused social and epidemiological science. Here causal inferences and models derive their validity and power less from adherence to specific research designs and statistical methods, but rather from the accretion and consistency of a broad range of research and evidence, drawn from diverse methods and sources. Thus, epidemiological scientists (Broadhead et al. 1983; Lilienfeld and Lilienfeld 1980) have traditionally drawn inferences about the causal or risk-factor status of a given variable relative to a given health outcome from the accumulating body of evidence showing strength and consistency of statistical associations across a wide range of studies, temporal ordering or prediction from cause to effect, a gradient of response (which may be nonlinear), experimental data on animals and humans consistent with nonexperimental human data, and a plausible theory of biological mechanisms explaining observed associations.

Both of these traditions or perspectives have value, and ideally they will come to convergent conclusions. In the language of research design, the former approach focuses more on maximizing the internal validity of research and evidence for causal inference; the latter focuses more on maximizing the external validity of the causal inferences, or their generalizability to the real world and phenomena of ultimate interest.

We see increased engagement and interchange between these different approaches to causality as critical to future progress in research and policy regarding the health effects of social and economic policy. Thus, we have tried to represent a balance of researchers and research from the social epidemiologic perspective and from the perspectives of economics and public policy for each of the six policy areas in this book. This has produced, both within and across chapters and disciplinary boundaries, constructive engagement and interchange around issues of causal inference that we hope will serve as a model for future work on the health impacts of social and economic policy.

In the end, both scientific inferences and policy decisions must be drawn based on the full range of available evidence, even if, as is often the case, it cannot in

some ways be considered definitive. For example, we illustrate how, in the area of cigarette smoking and health, social and health research and policy have grappled, generally successfully, with scientific issues of causality and the formulation of public policy on the basis of available evidence, even if imperfect.

Cost-Effectiveness Even if the impact of a social or economic factor on health passes the causal test, one could contend that it would be too costly in monetary or other ways relative to its putative effects, and hence is not cost-effective. Precise cost-benefit analysis is made more difficult in an area such as health, which is not easily measured in terms of a dollar metric. However, estimates of economic or other costs in relation to increases in the length or quality of life are possible and increasingly used (Drummond et al. 1997; Cutler 2004). Large scale changes or interventions in terms of social research and policy are complicated, difficult, and expensive, but so are the development, implementation, and utilization of major innovations and new procedures and technologies in medical care.

The cost-effectiveness of potential innovations in social and economic policy needs to be evaluated not only absolutely, but also relative to the cost-effectiveness of not implementing them, or of implementing them half-heartedly. They also must be evaluated relative to alternative changes and increases in health care, many of which may show real impacts in a clinical trial but only limited impacts, or even countervailing adverse impacts, from the perspective of overall population health, and some of which lack a strong evidentiary foundation (Institute of Medicine 2001a, 2001b, 2005).

Can We Do It? Even if a non-health policy, intervention, or practice is recognized as causal and potentially cost-effective with respect to health, the objection will be raised that we simply cannot do it because it is politically, ethically, organizationally, or technically unfeasible in some way. Obviously any economic or social policy must be feasible to be successful in achieving its goals, but it is important to carefully scrutinize and evaluate both *a priori* and *ex ante* assertions of infeasibility and to reevaluate them as social, economic, and political conditions change. Health-directed social and economic policy may in the long run prove as feasible and as cost-effective as more traditional health policy.

Cigarette Smoking and Health as an Illustration of Overcoming the Three Challenging Cs The case of cigarette smoking and health provides an apt and salient example of how a behavior and related policies outside the area of health came, over time, to avoid or transcend the challenges and potential pitfalls of the three Cs and substantially affect population health, although the process took more than a century. Tobacco has a long and complex history in American and other societies (Kluger 1997; Warner 2001; Brandt 2007). The original development, marketing, social taxation, and regulation of cigarettes as a consumer good had little or nothing to do with health or health policy; it had a great deal to do with economics, agriculture, commerce, and related areas of policy. Yet even as cigarette consumption rapidly increased in the United States and parts of Europe in the first half of the twentieth century, evidence began to accumulate in medical prac-

tice and science that the growth of cigarette production and consumption might be a major cause of rising epidemics of chronic disease—initially and most notably respiratory cancer, but then also cardiovascular disease and a broader range of cancers.

It took, however, several decades to achieve some scientific and policy consensus that cigarette smoking was causally deleterious to health, initially crystallized in the first Surgeon General's Report on Smoking and Health (Advisory Committee to the Surgeon General 1964). Substantive disagreements with this conclusion continued to be expressed over subsequent decades by skeptics ranging from distinguished scientists (for example, Ronald A. Fisher (1958)) to cigarette producers, marketers, and users. These views were fueled by the absence of definitive randomized trials on human subjects, which were ethically impossible in this context, yet remained the scientific gold standard of proponents of stricter causal inference.

Even as causality was increasingly accepted, many doubted that it was technically, economically, politically, ethically, or legally possible to limit or reduce the consumption of cigarettes, at least in cost-effective ways. Nevertheless, shifting coalitions of public health, political, economic, and policy actors worked toward policies to restrict or eliminate the marketing, sale, or consumption of tobacco and cigarettes. Biomedical and health research and policy focused on trying to understand, and hence interdict, the harmful aspects of cigarette smoke and smoking as well as the psychophysiological and behavioral processes involved in initiation, management, and ultimate cessation of smoking.

In the end, the efforts outside of the traditional health research and health care sector, ranging from taxation to restrictions on when and where people could buy or smoke tobacco products, proved far more feasible and cost-effective in reducing smoking than efforts via the health care system, much less efforts to somehow block the adverse health effects of tobacco smoke. The consequent declines in smoking-related disease and death provided further evidence consistent with the causal impact of smoking and health, without any definitive approximation of a randomized experiment or clinical trial on humans. Although advances have been made in understanding how and why cigarette smoking is so harmful to health, these advances have not produced corresponding clinical advances to reduce mortality and morbidity among continued smokers. Survival curves for smokers diagnosed with lung cancer have remained quite stable since the 1970s. Virtually the entire observed decline in lung cancer mortality is therefore attributable to smoking cessation. There is no reason that science and policy regarding a variety of other social and economic determinants of health cannot mirror developments in the science and policy of smoking and health.

IMPROVING THE INTERFACE BETWEEN THE SCIENCE AND POLICY OF SOCIAL AND ECONOMIC DETERMINANTS OF HEALTH

Overcoming the challenges of the three Cs and realizing the promise of social and economic determinants of health requires some adjustments to existing strategies

of both research on social determinants of or disparities in population health, and of translating research into policy or practice. There is now a well-established paradigm and a supportive institutional structure for basic biomedical science and its translation into health policy and practice. Prototypically, the process begins with publicly and privately supported basic research on the determinants and processes of health and disease. It then moves to development of clinical or public health interventions via pharmacologic, surgical, or other methods. Then, it proceeds to randomized clinical trials of these methods. Where trials show a favorable balance of efficacy and potential benefit to safety and potential risk, the process proceeds to application in clinical and public health practice.

We realize that we present an idealized process. Proponents (and critics) of evidence-based medicine note that too few medical practices and procedures have been validated through randomized clinical trials (Timmermans and Mauck 2005; Cutler 2004). Medical care and public health face many serious challenges in the design and implementation of such trials, as well as to the application of the resulting insights within clinical care. Nevertheless, nothing approaching this paradigmatic process exists for social and economic determinants of health, with deleterious consequences for both scientific understanding and their potential value for policies that improve health.

Two issues seem most problematic here. First, even where basic research from animals and humans provides strong evidence of the health impact of socioeconomic and psychosocial factors, there is no publicly or privately supported infrastructure for systematically translating this research into policy and practice. The professions of public policy, business administration, public health, social work, education, law, and related organizations in the public and private sectors provide some similar infrastructure for the translation of more basic research from the social and behavioral sciences into policy and practice. However, compared with the biomedical sphere, the foundations of these professions are less strongly and less explicitly grounded in basic science, deriving more heavily and inductively from clinical intuition and practice. Most of these fields also have little focus on physical health as a major object of their practice, except, of course for public health, which nevertheless remains more focused on biological and biomedical pathways than on the socioeconomic and psychosocial factors that influence these pathways. Thus, a more explicit focus by these professions in research, training, and practice on the relevance and consequences for health of their central substantive concerns could foster development of new interventions, policies, and practices relevant to health, and could also broaden development of these professional fields.

An equal or greater need is to foster social and economic analogs of clinical trials—a climate and technology for experimental introduction and testing of potential new policies and practice in terms of their health effects. Experimental introduction and evaluation of policy interventions (on the model of the Negative Income Tax Experiments of the 1970s (Pechman and Timpane 1975), the numerous social experiments led by the MDRC over the past three decades (accessed at <http://www.mdrc.org>), or the field experiments conducted by scholars at the Abdul Latif Jameel Poverty Action Lab at MIT (accessed at <http://www.povertyactionlab.org>)) provides the best and closest analog to the randomized clinical trial

for economic and social determinants of health, and hence can provide important new information for basic science as well as an empirical basis for further policy decisions and action.

When such economic and social policy experiments have been done, they have been implemented with a dominant focus on specific outcomes important in the income-support and welfare-reform debate (for example, welfare program participation, employment, wages, and marital dissolution). These experiments were therefore less valuable than they might have been in exploring other outcomes of equal moment, including health, (Munnell 1986). Despite such limitations, the chapters included in this volume highlight cases where some attempt has been made to evaluate the health effects of experimental or actual interventions in social and economic areas of public policy. Because the evaluation of health effects of these policies is most often not included at the onset in the design of evaluation of these policies, only rudimentary health measures are typically available, or the health measures are only collected on follow-up surveys.

Randomized evaluations are often informative and sometimes contradict widely accepted causal accounts from nonexperimental data. The recent experience of the Women's Health Initiative (Writing Group for the Women's Health Initiative Investigators 2002) randomized trial of postmenopausal estrogen therapy illustrated how such a clinical trial can contradict plausible accepted inferences from purely observational and other nonexperimental studies. However, Ross Prentice and colleagues (2005) also suggest, in line with discussion above, that the differing samples and follow-up periods in the randomized trials versus observational studies may account for many of the differing results. Thus, as stressed by Morenoff and colleagues (chapter 11, this volume) there is also a continuing need for and a value of nonexperimental research. Increased inclusion of health measures in major social and economic studies (such as the Current Population Survey, the National Longitudinal Surveys, and the Panel Study of Income Dynamics) and of social and economic data in major health studies (such as the National Health Interview Survey and the National Health and Nutrition Examination Survey) would also greatly accelerate progress in understanding social and economic determinants of health and the potential role of social and economic policy in health.

In sum, advancing research and policy regarding the health effects of social and economic factors and policies requires the same kind of investment in basic research and in the translations of this research into policy and practice that have been so successfully made in terms of the biomedical determinants of health over the past half century. The payoff in terms of improved health could be great and could help to achieve a more cost-effective health policy, even helping to restrain the current, apparently inexorable, and increasingly problematic rise in expenditures for health care.

GOALS AND MEANS OF THIS BOOK

This book seeks to stimulate increased research and practice on the health impacts of social and economic policy. We have chosen to focus on six policy domains for

which there is an epidemiologically well-supported linkage to health, though as might be expected the nature and extent of such linkages varies somewhat across areas. There is also completed and ongoing research in each area that provides some tentative assessment of the health impact of major policies usually undertaken for reasons having little or nothing to do with health. In each area, we brought together two sets of authors, one more grounded in the social epidemiology or demography of health, and one more heavily grounded in policy analysis or basic social science fields (for example, economics or psychology). Constructively engaged communication and collaborations across these domains of research and practice will encourage a broader and less health care focused science and policy of health. In sum, our work has three overall goals:

1. To stimulate greater research on the health impact of social and economic policies, including greater efforts to incorporate health measures into the evaluation of a broad range of policy in areas other than health and with motivating objectives other than health
2. To encourage more explicit efforts to formulate social and economic policy, interventions, and practices with health impacts as one of their primary objectives
3. To stimulate the development of a model of health policy formulation and evaluation that includes not only the traditional biomedical players, but also representatives of major social and economic policy areas that influence health

We seek to advance these general objectives by focusing on six key areas of social and economic policy with potentially sizable effects on health: education policy, income-support policy, civil-rights policy, macroeconomic and employment policy, welfare policy, and housing and neighborhood policy. These domains capture only a portion of the full array of policies affecting the socioeconomic position of individuals over the life course. However, each of the six areas affects the socioeconomic position of key populations of medical and public health concern. In each area, we commissioned leading social scientists and public health researchers to examine the linkage of these ostensibly “non-health” policy areas and interventions to population health.

Education

The impact of education on health and health disparities remains one of the most widely researched topics in social epidemiology and public health. Epidemiologists have long documented that educated men and women are healthier than their fellow citizens. Many potential explanations have been proposed to explain how, whether, and why education strongly matters for health, and thus how, whether, and why public educational policies might improve population health.

Adriana Lleras-Muney and David Cutler (chapter 2, this volume) document large education-health relationships from both observational studies and

natural experiments, and trace out several of the key causal pathways. The better jobs and higher income of the more highly educated partially account for these differences (Lantz et al. 1998, 2001). However, other evidence and new analyses indicate that educated people are more likely than others to wear seat belts, to exercise, to eat low-fat diets, to utilize preventive care, and to avoid smoking. Educational attainment is also associated with future-oriented behaviors, which increases individuals' motivation to invest in personal health and acquire skills that lower the costs of learning pertinent health information. Overall, there is a considerable potential impact of education on health, with such effects greatly enhancing the cost-effectiveness of policy investments in education.

From a policy perspective, Daniel Keating and Sharon Simonton (chapter 3, this volume) consider human development and educational policies focused on children. A wide array of such policies, ranging from Head Start to paid job-protected maternal leave, have beneficial effects for health and human capital and well-being more generally. The expansion of human development policies has the potential to improve child health outcomes while reducing racial and socioeconomic health disparities in the United States.

Income-Support Policies

The positive cross-sectional and predictive relationship of income to health is widely recognized. However, the health impact of economic transfer programs remains controversial. Pamela Herd, James House, and Robert Schoeni (chapter 4, this volume) examine income-support policies and health among the elderly, particularly the impact of the Supplemental Security Income (SSI) program. Using cross-state, cross-time benefit changes to estimate the effect of SSI generosity on disability, they produce a striking finding: increased generosity of state SSI benefit policies is associated with significantly reduced probability of experiencing mobility limitations. This association was strongest within the bottom quartile of the income distribution—those most likely to take up SSI coverage and for whom increases in income are likely to be most consequential for health.

Examining a different type of income-support policy, Janet Currie and Enrico Moretti (chapter 5, this volume) use detailed California natality data from the 1960s to examine the incidence of adverse birth outcomes before and after implementation of the Federal Food Stamp Program. Their most striking finding was negative: introduction of the program did not bring about any large, obvious reduction in the incidence of low birth weight (which was their key measure of adverse birth outcomes), perhaps due to other countervailing influences on individual and population health during the period of introduction of the Food Stamp Program. At the same time, the authors do not preclude the possibility that the Food Stamp Program had more subtle positive effects for infants or improved other health outcomes.

Civil Rights

Given the known strong disparities in health between racial-ethnic groups, most importantly through socioeconomic position, but also independent of it (House and Williams 2000), public policies directed at reducing de facto or de jure racial discrimination and racial disadvantage provide a social policy arena that has potentially large implications for individual and population health. Such policies, and accompanying social practices, construct categories of race-ethnicity and, more importantly, their implications for socioeconomic attainment, places of residence and work, and access to health care (Anderson, Bulatao, and Cohen 2004; Bulatao and Anderson 2004).

One of the most profound and far-reaching transformations of public policy and social life in America during this century has occurred via legislation, judicial decisions, and administrative actions in the area of civil rights, especially since the 1960s. Such large social, political, and economic changes deserve study in their own right, but also for the implications they have for the nature and quality of life and health among minority populations.

George Kaplan, Nalini Ranjit, and Sarah Burgard (chapter 6, this volume) explore the consequences of postwar civil rights gains for a broad range of health outcomes and causal pathways. They document striking improvements in cardiovascular health among African American women between 1964 and 1974, particularly in the South. The strongest of these improvements in health status coincided in space and time with the most dramatic social, legal, and economic changes brought about through civil rights policies, consistent with a recent line of economic research (Almond, Chay, and Greenstone 2006).

Macroeconomic and Employment Policy

The relationship between macroeconomic conditions and health is another key area of research and scholarly debate. Researchers and policymakers have long noted that economic recession heightens specific health risks (depression and suicide risk, physical health problems, and even perhaps mortality) among those who become unemployed. Researchers have also known that long-term increases in national wealth are correlated with improved population health, not least because such wealth provides resources for key public health investments. They have traditionally assumed that cyclical economic fluctuations would display a similar correlation with population health.

Christopher Ruhm (chapter 7, this volume) challenges these assumptions and shows that economic booms bring their own characteristic health risks, perhaps because good times increase demand for cigarettes, alcohol, and (other) intoxicating substances, thus increasing risk of traumatic injury. Economic booms also foster other potential health risks, such as those associated with increased overtime work. Ruhm underscores that both recessions and economic booms bring distinctive

threats to population health which may be susceptible to policy influence through sin taxes, unemployment benefit policies, and other interventions. Intriguingly, Ruhm finds weaker correlations between cyclical economic conditions and health within societies that feature strong economic safety nets, hence perhaps mitigating the impact of macroeconomic cycles on personal disposable income and consumption.

Richard Price and Sarah Burgard (chapter 8, this volume) consider the potential adverse health implications of changing economic and organizational policies in the American and global economies that increase job losses or transitions, reduce job security, or increase “nonstandard” work that is temporary, contractual, part-time, or without fringe benefits. Existing research suggests adverse health effects on individuals experiencing either unemployment or job insecurity, and they provided initial suggestive evidence on the relationships between nonstandard work and health and well-being. They also describe a long-term program of randomized trials that shows the positive health and labor force effects of a training program for unemployed people.

Welfare Policy

The 1990s witnessed fundamental changes in American income supports for low-income families beginning with authorization of state waivers from federal guidelines and culminating in the 1996 welfare reform that abolished Aid to Families with Dependent Children (AFDC)—arguably the most substantial and significant change in social welfare policy for decades. The sixty-year-old AFDC cash entitlement for low-income mothers and their children was replaced with Temporary Assistance for Needy Families (TANF), a program that provides only transitional support. The decade also witnessed major increases in in-kind transfers, such as the Earned Income Tax Credit, and in expanded health insurance coverage for poor and near-poor children. It is a difficult task to evaluate the health impact of these major and manifold changes in state and national social welfare policy.

Marianne Bitler and Hilary Hoynes (chapter 9, this volume) explore the impact of welfare programs, focusing on policies adopted in selected states—Connecticut, Florida, Iowa, Minnesota, and Vermont—during the early and mid-1990s. These data are derived from experimental designs that allow the authors to estimate unbiased causal effects of reform on health insurance coverage, health care utilization, employment, and health status. Drawing from a survey of the literature as well as the new analyses of the experimental data, they suggest that welfare reform had modest and mixed impacts on health outcomes. While the results from the early 1990s waiver period may not generalize to TANF, they suggest that welfare-to-work programs need not have large negative health effects.

Jean Knab, Sara McLanahan, and Irv Garfinkel (chapter 10, this volume) choose a different focus and explore the impact of welfare reform and child support policies on maternal health. Unique data from the Fragile Families study following the 1996 reforms shows that increases in welfare generosity are associated with im-

proved maternal mental health status. However, the impact is not linear: marginal increases in welfare generosity are associated with *reduced* mental health among women who are already in settings with relatively generous benefits. Additionally, increases in the stringency of child support enforcement are associated with decreases in mental health. These findings are in many ways surprising and worrisome, and justify the need for additional investigation using alternative data and methods.

Housing and Neighborhood Policy

The likely important, but causally complex, issue of neighborhood effects highlights a fundamental empirical challenge in linking public policies and health. Where one lives, with whom one lives, the physical and social properties of one's local environment, including proximity to economic resources or to specific sources of risk are all associated with one's health. At the same time, people are not randomly assigned across space. People sort or are sorted into neighborhoods and communities based on personal preferences, opportunities, and constraints, and community features develop around particular individuals because of their demands and characteristics. Differences in health status and well-being across these neighborhoods and communities may therefore reflect the sorting process rather than the causal impact of these locations themselves.

Jeffrey Morenoff and colleagues (chapter 11, this volume) explore whether policy initiatives aimed at changing features of the residential environment can measurably improve health, focusing on residential environments and obesity using recent detailed data from the Chicago Community Adult Health Study. Controlling for individual-level factors, they find notable variation across neighborhoods in body mass index and in obesity-related risk factors. They provide "suggestive, though far from conclusive evidence" that the physical and social environment of neighborhoods influences levels of physical activity, especially among women. These authors make a particular contribution by reviewing both the strengths and limitations of observational and randomized study designs in exploring neighborhood effects.

Jeanne Brooks-Gunn and Rebecca Fauth (chapter 12, this volume) review data on neighborhood effects on adult and child health, especially from two mobility experiments: Moving to Opportunity (MTO) and the Yonkers Project in Yonkers, New York. They note striking gender patterns in outcomes from MTO. Girls appeared to derive more favorable long-term gains than boys did from movements to low-poverty areas. These authors also note favorable impacts for adult mental health and emotional well-being (though not on adult substance-use patterns) from such MTO moves. In the Yonkers Project, these authors find that movement to low-poverty areas improved some simple indicators of adult physical health. They find little benefit for indicators of child health associated with movement to low-poverty areas.

CONCLUSION

A growing body of evidence suggests that upstream social and economic determinants of health are of major health importance, and hence that social and economic policy and practice may be the major route to improving population health. The present volume seeks to assess where we are and where we might most fruitfully go next to understand whether, how, and why six major policy arenas impact health; and whether, how, and to what extent public and private policies in these areas can be modified in ways that will improve health. The work reviewed and presented in this volume provides a foundation for a more comprehensive health policy intimately connected with the broad social and economic factors that affect population health (Kaplan 2001). It also promises to help our nation escape the dubious distinction of having the highest health care expenditures in the world coupled with the worst public health outcomes of any major industrial democracy.

REFERENCES

- Ader, Robert, David L. Felten, and Nicholas Cohen, editors. 1991. *Psychoneuroimmunology*, 2nd edition. San Diego, Calif.: Academic Press.
- Advisory Committee to the Surgeon General. 1964. "Smoking and Health." Washington: U.S. Department of Health, Education and Welfare.
- Almond, Douglas, Kenneth Y. Chay, and Michael Greenstone. 2006. "Civil Rights, the War on Poverty, and Black-White Convergence in Infant Mortality in the Rural South and Mississippi." MIT Working Paper N. 07-04. Boston, Mass.: Massachusetts Institute of Technology.
- Anderson, Norman B., Rodolfo A. Bulatao, and Barney Cohen. 2004. *Critical Perspectives on Racial and Ethnic Differences in Health in Late Life*. Washington: The National Academies Press.
- Aronowitz, Robert A. 1998. *Making Sense of Illness: Science, Society, and Disease*. New York: Cambridge University Press.
- Baicker, Kate. 2001. "Government Decision-Making and the Incidence of Federal Mandates." *Journal of Public Economics* 82(2): 147–94.
- Becker, Gary. 1964. *Human Capital*. Chicago, Ill.: University of Chicago Press.
- Bengtsson, Tommy. 2001. "Mortality: The Great Historical Decline." In *International Encyclopedia of the Social and Behavioral Sciences*, edited by Neil J. Smelser and Paul B. Baltes. Oxford: Elsevier.
- Berkman, Lisa F., and Lester Breslow. 1983. *Health and Ways of Living: The Alameda County Study*. London: Oxford University Press.
- Berkman, Lisa F., and Ichiro Kawachi. 2000. *Social Epidemiology*. New York: Oxford University Press.
- Blau, Peter, and Otis Dudley Duncan. 1967. *The American Occupational Structure*. New York: John Wiley and Sons.

- Brandt, Allan M. 2007. *The Cigarette Century: The Rise, Fall, and Deadly Persistence of the Product That Defined America*. New York: Basic Books.
- Broadhead, W. Eugene, Berton H. Kaplan, Sherman A. James, Edward H. Wagner, Victor J. Schoenbach, Roger Grimson, Siegfried Heyden, Gösta Tibblin, and Stephen H. Gehlbach. 1983. "The Epidemiological Evidence for a Relationship Between Social Support and Health." *American Journal of Epidemiology* 117(5): 521–37.
- Bulatao, Rodolfo A., and Norman B. Anderson. 2004. *Understanding Racial and Ethnic Differences in Health in Late Life: A Research Agenda*. Washington: The National Academies Press.
- Bunker, John P., Howard S. Frazier, and Frederick Mosteller. 1994. "Improving Health: Measuring Effects of Medical Care." *The Milbank Quarterly* 72(2): 225–58.
- Cannon, Walter B. 1932. *The Wisdom of the Body*. New York: W. W. Norton and Company, Inc.
- Chernew, Michael E., Richard A. Hirth, and David M. Cutler. 2003. "Increased Spending on Health Care: How Much Can the United States Afford?" *Health Affairs* 22(4): 15–25.
- Coale, Ansley. 1974. "The History of the Human Population." *Scientific American* 231(3): 41–51.
- Cutler, David M. 2004. *Your Money or Your Life: Strong Medicine for America's Health Care System*. New York: Oxford University Press.
- Cutler, David M., Allison B. Rosen, and Sandeep Vijan. 2006. "The Value of Medical Spending in the United States, 1960–2000." *New England Journal of Medicine* 355(9): 920–7.
- Drummond, Michael F., Bernard O'Brien, Greg L. Stoddart, and George W. Torrance. 1997. *Methods for the Economic Evaluation of Health Care Programmes*. 2nd edition. New York: Oxford University Press.
- Fisher, Ronald A. 1958. "Cancer and Smoking." *Nature* 182(4635): 596–7.
- Fogel, Robert William. 2004. *The Escape from Hunger and Premature Death*. Cambridge: Cambridge University Press.
- Hacker, Jacob S. 2002. *The Divided Welfare State: The Battle over Public and Private Social Benefits in the United States*. Cambridge: Cambridge University Press.
- Health Canada. 1998. *Taking Action on Population Health*. Ottawa, Ont.: Health and Welfare Canada.
- Heckman, James J. 1992. "Randomization and Social Policy Evaluation." In *Evaluating Welfare and Training Programs*, edited by Charles Manski and Irwin Garfinkel. Cambridge, Mass.: Harvard University Press.
- . 2000. "Causal Parameters and Policy Analysis in Economics: A Twentieth Century Retrospective." *Quarterly Journal of Economics* 115(1): 45–97.
- Heckman, James J., and Edward J. Vytlačil. 2005. "Econometric Evaluation of Social Programs." In *Handbook of Econometrics*, edited by James J. Heckman and Edward Leamer. Amsterdam: Elsevier.
- House, James S. 2002. "Understanding Social Factors and Inequalities in Health: 20th Century Progress and 21st Century Prospects." *Journal of Health and Social Behavior* 43(2): 125–42.
- House, James S., and George A. Kaplan. 2004. "The Psychosocial Nature of Physical Health." In *A Telescope on Society: Survey Research and Social Science at the University of Michigan and Beyond*, edited by James S. House, F. Thomas Juster, Robert L. Kahn, Howard Schuman, and Eleanor Singer. Ann Arbor, Mich.: University of Michigan Press.
- House, James S., and David R. Williams. 2000. "Understanding and Reducing Socioeconomic and Racial/Ethnic Disparities in Health." In *Promoting Health: Intervention Strate-*

Making Americans Healthier

- gies from Social and Behavioral Research*, edited by Brian D. Smedley and S. Leonard Syme. Washington: National Academies Press.
- Institute of Medicine. 2001a. *Crossing the Quality Chasm*. Washington: National Academies Press.
- . 2001b. *To Err is Human: Building a Safer Health System*. Washington: National Academies Press.
- . 2005. *Informing the Future*. Washington: National Academies Press.
- Irwin, Alec, and Elena Scali. 2005. "Action on the Social Determinants of Health: Learning from Previous Experiences, A Background Paper Prepared for the WHO Commission on Social Determinants of Health." Geneva: Commission on Social Determinants of Health, World Health Organization.
- Kannel, William B. 1971. "Habits and Heart Disease Mortality." In *Prediction of Lifespan*, edited by Erdman Palmore and Frances C. Jeffers. Lexington, Mass.: Heath.
- Kaplan, George A. 1985. "Psychosocial Aspects of Chronic Illness: Direct and Indirect Associations with Ischemic Heart Disease Mortality." In *Behavioral Epidemiology and Disease Prevention*, edited by Robert M. Kaplan and Michael H. Criqui. New York: Plenum Publishing Corporation.
- . 1992. "Health and Aging in the Alameda County Study." In *Aging, Health Behaviors and Health Outcomes*, edited by K. Warner Schaie, Dan Blazer, and James S. House. Mahwah, N.J.: Lawrence Erlbaum Associates.
- . 1995. "Where Do Shared Pathways Lead? Some Reflections on a Research Agenda." *Psychosomatic Medicine* 57(3): 208–12.
- . 2001. "Economic Policy is Healthy Policy: Findings from the Study of Income, Socioeconomic Status, and Health." In *Income, Socioeconomic Status, and Health: Exploring the Relationships*, edited by James A. Auerbach and Barbara K. Krimgold. Washington: National Policy Association.
- Kaplan, George A., and John W. Lynch. 1997. "Whither Studies on the Socioeconomic Foundations of Population Health (Editorial)." *American Journal of Public Health* 87(9): 1409–11.
- Kaplan, George A., Susan A. Everson, and John W. Lynch. 2000. "The Contribution of Social and Behavioral Research to an Understanding of the Distribution of Disease: A Multilevel Approach." In *Promoting Health: Intervention Strategies from Social and Behavioral Research*, edited by Brian D. Smedley and S. Leonard Syme. Washington: National Academies Press.
- Kaplan, George A., Mary N. Haan, S. Leonard Syme, M. Minkler, and M. Winkleby. 1987. "Socioeconomic Status and Health." In *Closing the Gap: The Burden of Unnecessary Illness*, edited by Robert W. Amler and H. Bruce Dull. New York: Oxford University Press.
- Kluger, Richard. 1997. *Ashes to Ashes: America's Hundred-Year Cigarette War, the Public Health, and the Unabashed Triumph of Philip Morris*. New York: Vintage Books.
- Kunitz, Stephen J. 2006. *The Health of Populations: General Theories and Particular Realities*. New York: Oxford University Press.
- Kunitz, Stephen J., and Irena Pesis-Katz. 2005. "Mortality of White Americans, African Americans, and Canadians: The Causes and Consequences for Health of Welfare State Institutions and Policies." *The Milbank Quarterly* 83(1): 5–39.
- Lantz, Paula M., James S. House, James M. Lepkowski, David R. Williams, Richard P. Mero, and Jieming Chen. 1998. "Socioeconomic Factors, Health Behaviors, and Mortality: Results from a Nationally Representative Prospective Study of U.S. Adults." *Journal of the American Medical Association* 279(21): 1703–8.
- Lantz, Paula M., John W. Lynch, James S. House, James M. Lepkowski, Richard P. Mero,

- Marc Musick, and David R. Williams. 2001. "Socioeconomic Disparities in Health Change in a Longitudinal Study of U.S. Adults: The Role of Health Risk Behaviors." *Social Science and Medicine* 53(1): 29–40.
- Levy, David T., Joseph E. Bauer, and Hye-ryeon Lee. 2006. "Simulation Modeling and Tobacco Control: Creating More Robust Public Health Policies." *American Journal of Public Health* 96(3): 494–8.
- Lilienfeld, Abraham M., and David E. Lilienfeld. 1980. *Foundations of Epidemiology*. New York: Oxford University Press.
- Link, Bruce G., and Jo C. Phelan. 1995. "Social Conditions as Fundamental Causes of Disease." *Journal of Health and Social Behavior* 35(Extra Issue): 80–94.
- . 2000. "Evaluating the Fundamental Cause Explanation for Social Disparities in Health." In *Handbook of Medical Sociology*, 5th edition, edited by Chloe E. Bird, Peter Conrad, and Allen Fremont. Upper Saddle River, N.J.: Prentice Hall.
- Lynch, John W., and George A. Kaplan. 2000. "Socioeconomic Position." In *Social Epidemiology*, edited by Lisa F. Berkman and Ichiro Kawachi. New York: Oxford University Press.
- Lynch, John W., George A. Kaplan, Richard D. Cohen, Jaakko Tuomilehto, and Jukka T. Salonen. 1996. "Do Cardiovascular Risk Factors Explain the Relation Between Socioeconomic Status, Risk of All-Cause Mortality, Cardiovascular Mortality, and Acute Myocardial Infarction?" *American Journal of Epidemiology* 144(10): 934–42.
- Manpower Demonstration Research Corporation (MDRC). No Date. Web site. Accessed September 11, 2007, at <http://www.mdrc.org>.
- Marini, Margaret M., and Burton Singer. 1988. "Causality in the Social Sciences." In *Sociological Methodology* 18: 347–409.
- Marmot, Michael G., Martin Bobak, and George Davey Smith. 1995. "Explanations for Social Inequalities in Health." In *Society and Health*, edited by Benjamin C. Amick III, Sol Levine, Alvin R. Tarlov, and Diana C. Walsh. New York: Oxford University Press.
- Marmot, Michael G., Manolis Kogevinas, and Mary Alan Elston. 1987. "Social/Economic Status and Disease." *Annual Review of Public Health* 8: 111–35.
- Massachusetts Institute of Technology, Abdul Latif Jameel Poverty Action Lab. No date. Web site. Accessed September 11, 2007, at <http://www.povertyactionlab.com>.
- McGinnis, J. Michael, and William H. Foege. 1993. "Actual Causes of Death in the United States: Dying." *Journal of the American Medical Association* 270(18): 2225–43.
- McGinnis, J. Michael, Pamela Williams-Russo, and James R. Knickman. 2002. "The Case for More Active Policy Attention to Health Promotion." *Health Affairs* 21(2): 78–93.
- McKeown, Thomas. 1979. *The Role of Medicine: Dream, Mirage or Nemesis*. Princeton, N.J.: Princeton University Press.
- . 1988. *The Origins of Human Disease*. London: Blackwell Publishing.
- McKinlay, John B., and Sonja J. McKinlay. 1977. "The Questionable Contribution of Medical Measures to the Decline of Mortality in the United States in the Twentieth Century." *Milbank Memorial Fund Quarterly* 55(3): 405–28.
- Munnell, Alice H., editor. 1986. *Lessons from the Income Maintenance Experiments*. Boston, Mass.: Federal Reserve Bank of Boston.
- Navarro, Vicente. 2007. "What Is a National Health Policy?" *International Journal of Health Services* 37(1): 1–14.
- Organization for Economic Co-Operation and Development (OECD). 2005. *Health at a Glance: OECD Indicators 2005*. Paris: OECD.

Making Americans Healthier

- Pappas, Gregory, Susan Queen, William Hadden, and Gail Fisher. 1993. "The Increasing Disparity in Mortality Between Socioeconomic Groups in the United States, 1960 and 1986." *New England Journal of Medicine* 329(2): 103–9.
- Pearl, Judea. 2000. *Causality: Models, Reasoning and Inference*. Cambridge: Cambridge University Press.
- Pechman, Joseph A., and P. Michael Timpane, editors. 1975. *Work Incentives and Income Guarantees: The New Jersey Negative Income Tax Experiment*. Washington: Brookings Institute.
- Prentice, Ross L., Robert Langer, Marcia L. Stefanick, Barbara V. Howard, Mary Pettinger, Garnet Anderson, David Barad, J. David Curb, Jane Kotchen, Lewis Kuller, Marian Limacher, and Jean Wactawski-Wende. 2005. "Combined Postmenopausal Hormone Therapy and Cardiovascular Disease: Toward Resolving the Discrepancy between Observational Studies and the Women's Health Initiative Clinical Trial." *American Journal of Epidemiology* 162(5): 404–14.
- Preston, Samuel H. 1977. "Mortality Trends." *Annual Review of Sociology* 3: 163–78.
- Raphael, Dennis, and Toba Bryant. 2006. "The State's Role in Promoting Population Health: Public Health Concerns in Canada, USA, UK, and Sweden." *Health Policy* 78(1): 39–55.
- Rubin, Donald B. 1974. "Estimating Causal Effects of Treatments in Randomized and Non-randomized Studies." *Journal of Educational Psychology* 66(5): 688–701.
- Selye, Hans. 1956. *The Stress of Life*. New York: McGraw-Hill.
- Stahl, Timo, Matthias Wismar, Eeva Ollila, Eero Lahtinen, and Kimmo Leppo, editors. 2006. *Health in All Policies: Prospects and Potentials*. Helsinki, Finland: Ministry of Public Health and Affairs.
- Stephens, Andrew, and Michael Marmot. 2002. "The Role of Psychobiological Pathways in Socioeconomic Inequalities in Cardiovascular Disease Risk." *European Heart Journal* 23(1): 13–25.
- Swedish National Institute of Public Health. 2003. *Sweden's New Public Health Policy: National Public Health Objectives for Sweden*. Stockholm: National Institute of Public Health.
- Taylor, Shelley E., Rena L. Repetti, and Teresa Seeman. 1997. "Health Psychology: What Is an Unhealthy Environment and How Does It Get Under the Skin?" *Annual Review of Psychology* 48: 411–47.
- Timmermans, Stefan, and Aaron Mauck. 2005. "The Promises and Pitfalls of Evidence-Based Medicine." *Health Affairs* 24(1): 18–28.
- United Nations Development Programme. 2005. *Human Development Report 2005: International Cooperation at a Crossroads*. New York: United Nations Development Programme.
- U.S. Department of Health and Human Services. 2000. *Healthy People 2010*. Washington: United States Department of Health and Human Services.
- Warner, Kenneth E. 2001. "Smoking and Health." In *International Encyclopedia of Social and Behavioral Sciences*, edited by N. J. Smelser and P. B. Baltes. New York: Elsevier.
- Wilkinson, Richard G. 1996. *Unhealthy Societies: The Afflictions of Inequality*. New York: Routledge.
- Writing Group for the Women's Health Initiative Investigators. 2002. "Risks and Benefits of Estrogen Plus Progestin in Healthy Post-Menopausal Women, Principal Results from the Women's Health Initiative Randomized Controlled Trial." *Journal of the American Medical Association* 288(3): 321–33.