



Income, Wealth and Health



1. Introduction

Few people would deny that there are many advantages of having more income or wealth. Nevertheless, apart from the well-known link between economic resources and being able to afford health insurance and medical care, their influence on *health* has received relatively little attention from the general public or policy-makers, despite a large body of evidence from studies documenting strong and pervasive relationships between income, wealth and health.^{1,2} The evidence tells us that these relationships are based not just on how economic resources can affect our access to medical care, but also on how they enable us to live in safer homes and neighborhoods, buy healthier food, have more leisure time for physical activity, and experience less health-harming stress. Understanding the importance of the links between income, wealth and health can inform policies aiming to achieve better health for all Americans while reducing social disparities in health.

This brief summarizes the evidence that health varies with income and wealth, provides an overview of what is currently known about the pathways and biological mechanisms that can explain the links between economic resources and health, and briefly discusses the implications for policy.





2. Economic resources: income and wealth

INCOME

Income—the most commonly used measure of economic resources in U.S. health research—may come from a variety of sources, including employment, government assistance, retirement plans and pension payments, and interest or dividends from investments or other assets. Income can fluctuate considerably from year to year and over a person’s lifetime, with often dramatic decreases related to unemployment, disability or retirement. Thus, income measured at a single point in time may provide only limited information about lifetime economic advantage or disadvantage, which could have a greater influence on a person’s health.^{3, 4}

MEASURING INCOME

In the United States, income is often reported as a percentage of the Federal Poverty Level (FPL), which has been defined as the amount of income providing a bare minimum of food, clothing, transportation, shelter and other necessities. Taking family size and age of family members into account, a household is assigned to a poverty category based on total before-tax income from all cash sources. Originally devised in the mid-1960s by the Social Security Administration to reflect a minimal but adequate standard of living, the thresholds have been adjusted annually for inflation using the Consumer Price Index.⁵ This method of defining poverty has been widely criticized for not reflecting changes over time in perceptions of what constitutes an acceptable standard of living in this country, and many experts believe that the official thresholds are too low, especially in regions with high costs of living.⁶⁻⁸

Based on the 2008 Federal Poverty Guidelines (a simplified version of the thresholds, used to determine eligibility for programs), a family of four living in the 48 contiguous states or District of Columbia is considered to be “poor” with an income of \$21,200 or less;⁹ a family whose income is below 200% (or sometimes 250%) of FPL is often considered to be “low-income.”⁷

WEALTH (ACCUMULATED ECONOMIC ASSETS)

Wealth, or economic assets accumulated over time, is less commonly measured in health surveys than income, in part because it may be more difficult for respondents to estimate without consulting records and more likely to be considered intrusive.¹⁰ The most common standard for measuring wealth involves subtracting outstanding debts and liabilities from the cash value of currently owned assets—such as houses, land, cars, savings accounts, pension plans, stocks and other financial investments, and businesses. Although families with higher earnings typically tend to accumulate more assets, families with the same income level may have dramatically different levels of wealth.¹¹ Compared with income, which is measured for a single period of time (typically a month or a year), accumulated assets provide more complete information about a person’s *cumulative* lifetime economic resources—his or her lifetime earnings and inherited wealth. Thus, classifying people based on income alone may provide a very misleading picture of their actual economic resources.

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HOW HAVE THE DISTRIBUTIONS OF INCOME AND WEALTH CHANGED OVER TIME?

The distribution of income has become increasingly concentrated among a smaller segment of people in the United States over the past decades. For example, in 1969 the highest-earning 20 percent of households had an average income over ten times higher than that of the lowest-earning 20 percent, compared to more than a 14-fold difference 40 years later.¹² Wealth is even more unequally distributed, with the richest one percent





of American households in 2007 holding one third—and the richest five percent holding more than half—of the nation’s total net worth, according to data from the Survey of Consumer Finances.¹³ Disparities in income and wealth are particularly striking when comparing black and white Americans (see the “Race, Socioeconomic Factors and Health” issue brief in this series). In 2004, for example, the median household income was approximately \$30,000 among blacks and nearly \$50,000 among whites.¹⁴ At every level of income, white families are also wealthier than black families: based on 2000 Census data, households in the lowest income quintile headed by whites on average had more than 400 times the wealth of those headed by blacks; even among households in higher income quintiles, whites were three to nine times wealthier than blacks.¹⁵

3. Health varies—often dramatically—with both income and wealth

THE LINKS BETWEEN INCOME AND HEALTH ARE WELL-DOCUMENTED

A large body of research documents the links between income and a wide array of health indicators across the life span, beginning even before birth. Figures 1-4 present a few examples of findings linking income with health. (Note: Although these data are not adjusted for health insurance coverage, findings from many other studies that did take insurance into account reveal the same basic patterns.)

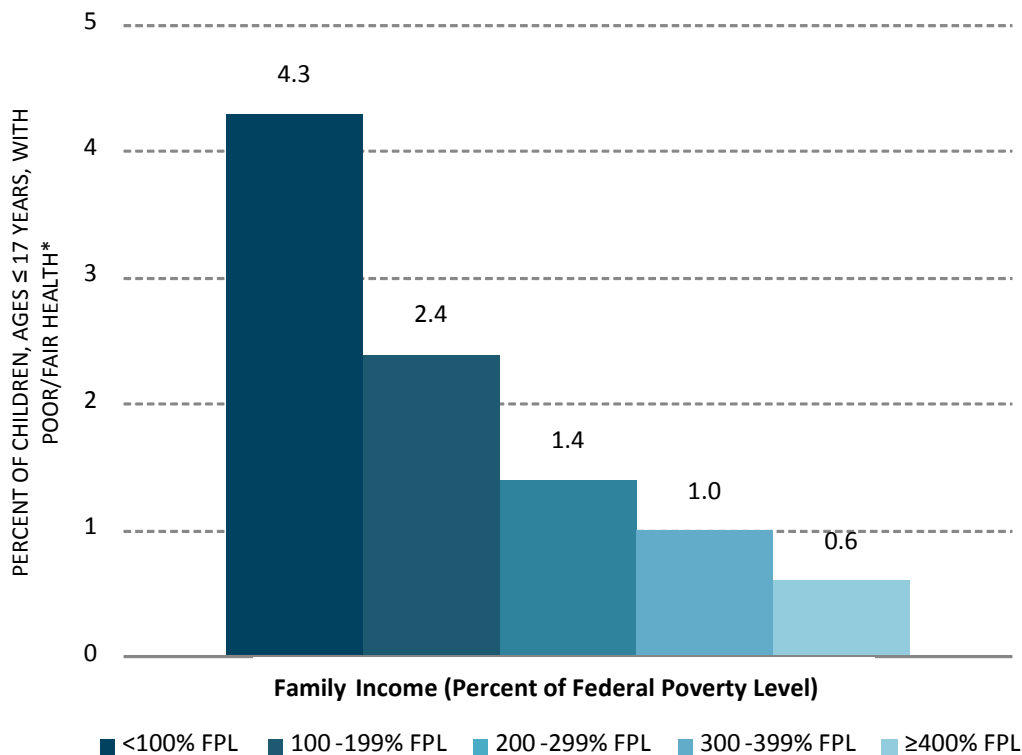


Figure 1. Higher family income, healthier children.

Source: National Health Interview Survey, 2001 -2005 *Age-adjusted



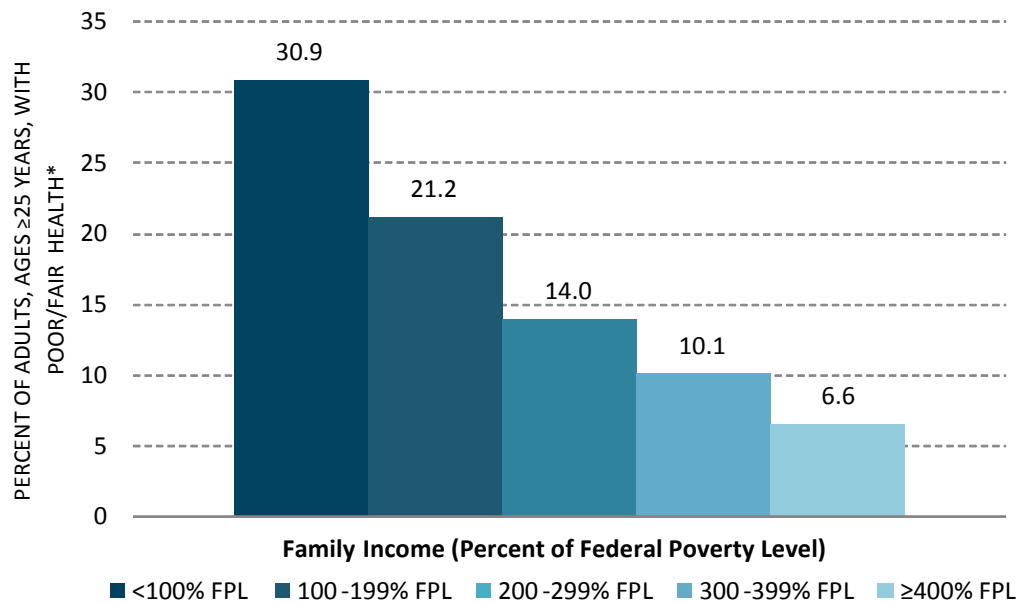


Figure 2. Higher income, healthier adults. Even adults with middle-class incomes are less healthy than those with higher incomes.

Source: National Health Interview Survey, 2001 -2005 *Age-adjusted

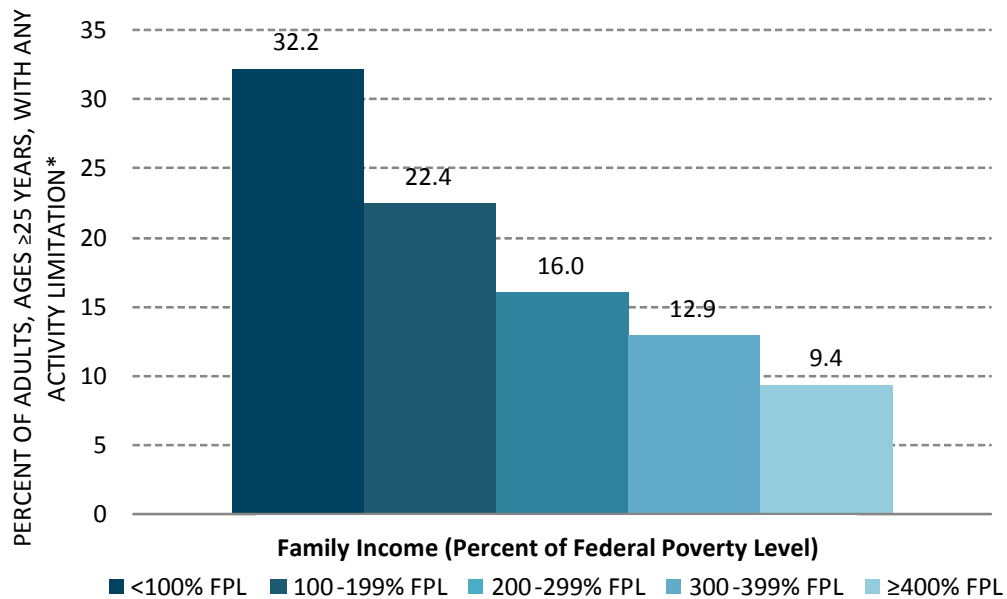


Figure 3. Higher income, less activity limitation due to chronic illness.

Source: National Health Interview Survey, 2001 -2005 *Ageadjusted



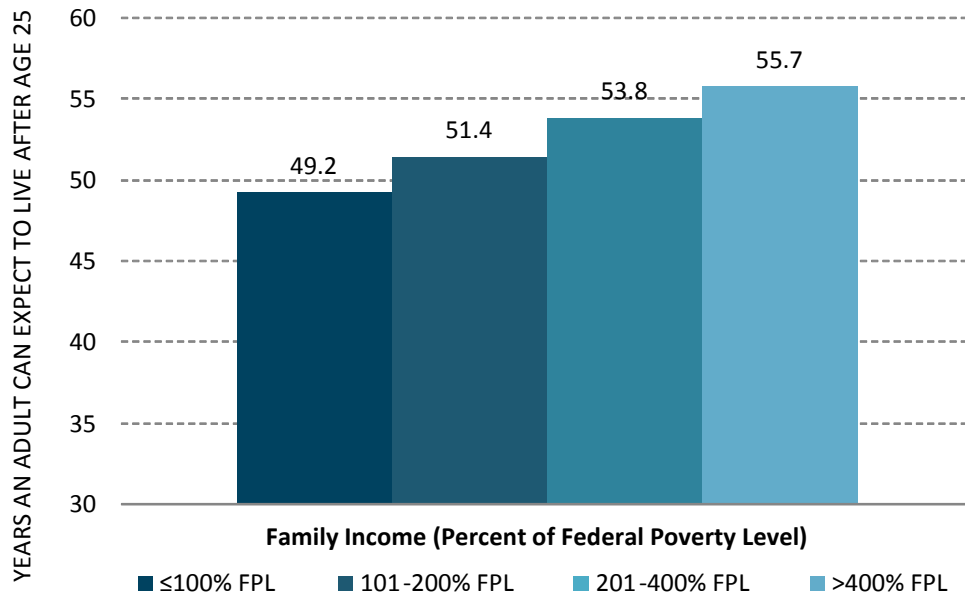


Figure 4. Higher income, longer life.

Source: National Longitudinal Mortality Study, 1988-1998

- The links between income and health begin early in life: Rates of low birth weight, which has been linked to child development and to chronic conditions later in life, are highest among infants born to low-income mothers.^{16, 17} As shown in Figure 1, children in poor families are about seven times as likely to be in poor or fair health as children in families with incomes at or above 400% of the federal poverty level (FPL).¹⁸ Other findings (not shown) indicate that lower-income children experience higher rates of asthma, heart conditions, hearing problems, digestive disorders and elevated blood lead levels.^{19, 20}
- Higher income is also linked with better health and longer life among adults. As seen in Figures 2 and 3, poor adults are nearly five times as likely to report being in poor or fair health as adults with family incomes at or above 400% of FPL²¹ and more than three times as likely to have activity limitations due to chronic illness. As seen in Figure 4, among adults at age 25, those in the highest-income group can expect to live more than six years longer than their poor counterparts; similar disparities by income are seen for both men and women and across racial/ethnic groups (not shown).^{18, 21, 22}

WEALTH AND HEALTH ALSO HAVE BEEN LINKED

Although the relationship between accumulated wealth and health has been less frequently studied, the available evidence indicates that greater levels of wealth are also linked with better health—including self-rated health, obesity and other cardiovascular risk factors—and lower mortality.^{10, 22-25} As seen in Figure 5, for example, one recent study found that mortality risk decreased with increasing levels of wealth among white adult men, even after taking income and insurance status into account.²⁴



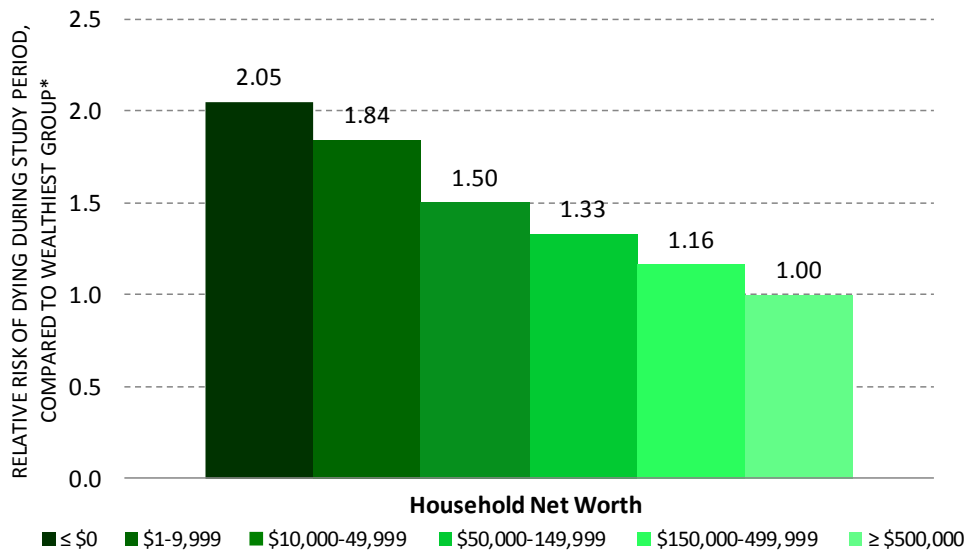


Figure 5. Greater wealth, lower risk of dying.

*Among non-Hispanic white adults. Adjusted for age, education, region, general health status, marital status, income and insurance status. Source: Haiat et al.. Am J Epidemiol 2010 (web tables)

WHAT DO THE PATTERNS TELL US?

As illustrated in Figures 1-5, the relationships between economic resources (particularly as measured by income) and most but not all health outcomes typically follow a stepwise gradient pattern: Increases in levels of income or wealth generally correspond with improvements in health, and—while those at the bottom of the economic ladder typically experience the worst health outcomes—even those who would be considered middle-class by most standards are less healthy than those who are most affluent. Not surprisingly, the income-health gradient generally has appeared less striking later in life, when most people are no longer employed and therefore have diminished incomes; as might also be expected, however, the links between accumulated wealth (contrasted with income) and health appear stronger among the elderly.

The stepwise patterns linking income and wealth with health do not necessarily follow a straight line; for example, increases in income are linked with greater health improvements at the lower end of the income scale, and may not necessarily correspond to better health among the most affluent. Although it is important to note that poor health can also lead to loss of economic resources through reduced employment opportunities and/or the burden of medical care expenses, considerable evidence indicates that this does not fully explain the observed connections between income or wealth and health.

While those at the bottom of the economic ladder typically experience the worst health outcomes, even those who would be considered middle-class by most standards are less healthy than those who are most affluent.

BOTH INDIVIDUAL AND COMMUNITY-LEVEL ECONOMIC RESOURCES ARE LINKED WITH HEALTH

While much of the research on economic resources and health has focused on income or wealth measured at the individual or household level, increasing attention has been paid to the role of economic resources at the neighborhood or community level. Many (but not all) studies that have included community-level measures of economic resources have found associations with illness and mortality independent of individual-level economic measures. While the degree of income inequality within a society has also been linked with health, the nature of this association remains controversial.





4. Income and wealth can influence health through multiple pathways

- **Access to health-promoting goods and services.** Economic resources can influence health through so-called “material” pathways, that is, by providing access to health-promoting goods and services, including but not limited to medical care. For example, higher income and greater wealth make it easier to pay for insurance premiums, deductibles, copayments and medicines, which can be particularly important when people become ill. Perhaps more importantly, greater economic resources also increase people’s access to conditions that help prevent illness in the first place, enabling them to eat more nutritious food, stay physically active, and live in safe homes and neighborhoods. Conversely, limited economic resources can mean serious obstacles to good health, limiting a person’s opportunities—and sometimes motivation—to adopt healthier behaviors.^{29, 40}
- **Psychosocial effects linked with economic resources.** Income is closely tied to occupation, and the work environment has been a particular focus of research on psychosocial factors affecting health.^{41, 42} For example, variations in the degree of control that people feel they have over their working conditions, particularly in the face of high external demands, may be a major explanation for health differentials across occupations—with lower-paid workers typically facing higher demands while experiencing lower control^{43, 44}(see the “Stress and Health” issue brief in this series). Persons with less income and/or wealth are also more likely to report experiencing traumatic life events and the health-damaging psychosocial effects of neighborhood violence or disorder, residential crowding, and struggles to meet daily challenges with inadequate resources.⁴⁵⁻⁴⁸ In addition, recent evidence indicates that chronic stress may play an important role in the pathways linking income and wealth with health; for example, the health effects of economic hardship may occur in part through “stress proliferation,” or the negative impact of financial hardships on family and social relationships, parenting, self-esteem and other factors that can affect health.⁴⁹
- **Cumulative effects over time and at critical periods.** Findings from longitudinal studies indicate that health can be shaped by the *cumulative* effects of economic advantage and disadvantage over a person’s lifetime.^{19, 49-51} For example, results of a study that followed residents of Alameda County, CA, for more than three decades suggest that combined financial hardships, average income and changes in income over people’s lives affected a range of health-related outcomes, including physical and cognitive functioning, psychological well-being, diabetes and mortality.⁵²⁻⁵⁶ Research also has revealed that there are certain critical periods of life—e.g., during gestation, from birth to age 5—when economic adversity and its material and psychosocial consequences can have particularly powerful effects.¹⁷

Greater economic resources increase people’s access to conditions that help prevent illness in the first place, enabling them to eat more nutritious food, stay physically active, and live in safe homes and neighborhoods.

LINKS BETWEEN ECONOMIC RESOURCES AND HEALTH ACROSS LIFETIMES AND GENERATIONS

A compelling body of research indicates that children’s economic circumstances can influence their health as adults—even when their economic circumstances as adults are taken into account.^{17, 57-62} From birth on, children in families with limited economic resources experience poorer health, increasing their risks of poorer health later in life. Babies born to low-income women are more likely to be born too small or too early, which in turn is a powerful risk factor not only for infant mortality and cognitive, behavioral and physical problems in childhood but also for serious chronic diseases—including heart disease, hypertension and diabetes—as adults.^{17, 63-65} Low-income





children are more likely to be exposed to hazardous conditions in their homes and neighborhoods, with lasting effects on health; for example, lead poisoning due to unsafe lead levels in inadequate housing can result in irreversible neurologic damage.⁶⁶ Parents' income has also been linked with nutrition among children,^{67, 68} again with potential long-term health effects.⁶⁹⁻⁷¹ Low-income children are also more likely to be obese,⁷² increasing their risks of obesity and related chronic illness as adults.⁷³

Economic circumstances during childhood can shape health later in life in other ways as well. Parents with limited economic resources face greater obstacles—including lack of knowledge, skills and time—to creating healthy home environments and modeling healthy behaviors for their children. Families struggling to make ends meet are less able to provide their children with cognitive stimulation, enriching materials and experiences and help with homework,^{68, 74-76} with implications for academic achievement, educational attainment and future employment opportunities and earnings. One study found that, compared with children in families earning near the median family income (between \$35,000 and \$49,999 at that time), children growing up in families earning less than \$15,000 per year were more than 12 times less likely to graduate from high school⁶⁰ (see the “Education and Health” issue brief in this series). Fewer than one in six children whose parents were in the bottom 20 percent of the income distribution attain the U.S. median household income by middle age.¹

Thus, children in economically disadvantaged families grow up in poorer health and with more limited educational opportunities, both of which diminish their chances for good health and economic and social advantage as adults. In addition, both health and economic disadvantage compound over a person's lifetime, creating increasing obstacles to good health. These obstacles in turn are transmitted across generations, as disadvantaged children become adults with limited economic resources and poorer health who are less able to provide health-promoting environments for their own children. Conversely, economic advantages can accumulate over lifetimes and generations to produce better health.

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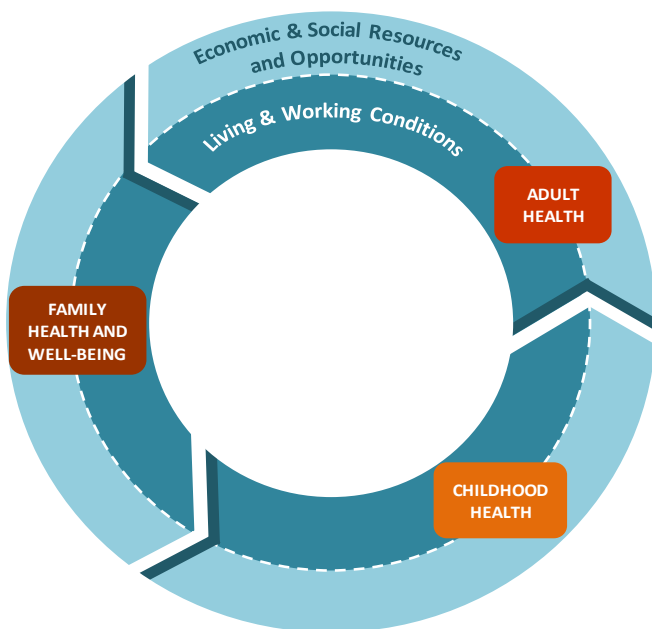


Figure 6. Social and economic advantage and health across lifetimes and generations.





SETTING THE STAGE FOR THE REST OF LIFE: THE IMPORTANCE OF EARLY CHILDHOOD EXPERIENCES

Considerable evidence suggests that the conditions associated with economic disadvantage are most damaging for young children (see the “Early Childhood Experiences and Health” issue brief in this series). Nobel-Laureate economist James Heckman has called the impact of poverty on a child’s future chances “a market failure due to an accident of birth.”⁷⁷ In addition to its direct effects on health, economic disadvantage—especially in the first five years of a child’s life—is strongly linked with cognitive development and school readiness,^{60, 76, 78} with predictable consequences for later educational attainment, employment opportunities and income, which are also key determinants of adult health.

Evidence suggests that high quality early-childhood development programs can improve the life chances of children from low-income families;^{79, 80} high-risk children randomly assigned into intensive programs and followed into adulthood had higher earnings and employment, as well as lower rates of contact with the criminal justice system.⁸¹ Providing access to such programs can be a critical strategy for interrupting the transmission of both socioeconomic and related health disadvantage; sustaining support throughout childhood and early adulthood is also likely to be important.⁸²

5. Opportunities to address the effects of income and wealth on health

SUCCESSFUL MODELS ALREADY EXIST IN THE UNITED STATES

The idea of enacting policies to lift people out of poverty is neither new nor revolutionary. What is new, however, is awareness of the *health* implications of reducing the extent of economic disadvantage. Many current policies are intended to increase income and wealth, especially among vulnerable populations. While exploring their relative merits is beyond the scope of this brief, many such policies have been successful—for example, Social Security, Medicare and Medicaid (through its coverage of long-term care) have greatly reduced poverty among the elderly. Following are a few examples of programs designed to improve economic resources for low-income families, particularly those with children. Although none of these programs was designed with health effects as a primary goal, if they are effective in improving economic resources for low-income families, based on the findings reviewed in this brief, they could have major health effects.

- *Earned Income Tax Credit (EITC)*: The EITC, which refunds federal taxes to low-income working families, has been shown to increase employment and lift around 4.4 million people — more than half of them children—out of poverty annually.⁸³
- *Child Tax Credit*: Eligible working families can claim a credit of up to \$1,000 for each dependent child under 17 years of age. Although in 2009 and 2010 the American Recovery and Reinvestment Act expanded eligibility for this credit based on family income, expiration of this modified threshold in 2011 would prevent many low-income working families from receiving this support.⁸⁴
- *Unemployment insurance*: Although estimated to have prevented 3.3 million unemployed persons from joining the 46.3 million people already living in poverty in 2009,⁸⁵ millions of others who are unemployed are not currently eligible for unemployment insurance.⁸⁶
- *Minimum wage laws*: The current federal minimum wage for covered nonexempt employees (effective July 24, 2009) is \$7.25 per hour—representing a level of income that places many families in poverty.

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- *Paid parental leave:* Although a 1993 federal law mandated that full-time employees of businesses with more than 50 workers be eligible for 12 weeks of unpaid leave following the birth or adoption of a child, workers in smaller businesses are not covered, and very few states have implemented *paid* family leave benefits as well.⁸⁷
- *Safety net programs that make income go further:* Child care and housing subsidies, supplemental food assistance programs (e.g., SNAP [formerly food stamps], WIC, and school nutrition programs), and free or subsidized health insurance can help a low-income family to more adequately cover the basic necessities.
- *Job training and job creation programs:* Even when jobs are available, low-skilled workers often cannot escape poverty. Many experts have called for greater investment in human capital—for example, training, education, substance abuse and mental health services, help with child and elder care responsibilities that conflict with work, and minimum wage legislation—to help workers achieve a living wage and become fully functional members of the workforce.⁸⁸ For example, the TANF Emergency Contingency Fund, created as part of the American Recovery and Reinvestment Act of 2009 and in effect through September 2010, enabled states to create more than 250,000 subsidized jobs.⁸⁹
- *High-quality early child development programs,* accompanied by services for families, have been repeatedly demonstrated to lead to higher educational attainment, which is crucial for escaping poverty.⁸¹

HOW STRONG IS THE EVIDENCE THAT INCOME AND WEALTH AFFECT HEALTH?

Not everyone is convinced that lower levels of income or wealth actually lead to poorer health; several economists have pointed out that poorer health can be the cause of low income rather than the other way around. Most economists accept that severe material deprivation due to extreme poverty can play a causal role in poor health outcomes,²⁹ but some question the notion that income has a major influence on health for those who are not poor. In addition, many people assume that the connections between economic resources and health are explained by access to health insurance and medical care.

Some frequently-raised questions about the links between income, wealth and health are noted below, along with a summary of relevant evidence supporting the conclusion that our economic resources do in fact shape our health, above and beyond our access to medical care.

Question 1: The role of medical insurance. Aren't the links between greater income and wealth and better health explained primarily by the fact that having more money allows a person to obtain medical care by purchasing medical insurance and/or paying out-of-pocket for medical expenses not covered by insurance?

Answer 1: No. The ability to pay for medical care undoubtedly contributes to health, but the evidence indicates that this does not fully explain the links between economic resources and health.

- Strong and consistent stepwise gradient patterns linking health and socioeconomic advantage—with health improvements seen with every step up the socioeconomic ladder—have been observed in western European countries including the United Kingdom, France and the Netherlands, despite universal medical care insurance coverage.⁹⁰⁻⁹⁴
- A number of studies in the United States have observed strong associations between income or wealth and different health indicators even after taking insurance coverage into account.⁹⁵⁻¹⁰¹





CONTINUED:

Question 2: Reverse causation: Are the links between income or wealth and health actually explained by the fact that poorer health leads to reduced income, rather than lower income leading to worse health?

Answer 2: No. We know that the pathways linking health and economic resources operate in both directions—income affects health, and health affects income. This question arises particularly when studies examine only a single point or short period in people’s lives. Based on well-designed studies that have followed people over time, however, it is clear that substantial changes in health and important health-related risk factors occur *following* changes in economic resources; this means that the changes cannot be due only to effects of health on income.¹⁰²⁻¹⁰⁴

Question 3. Other factors that haven’t been considered: Could the links between income/wealth and health be due to other factors?

Answer 3: It is doubtful. The case supporting the health effects of economic resources is strengthened by evidence from several randomized studies and natural experiments,² and by knowledge of plausible pathways:

Evidence from randomized controlled studies

- In the New Hope Project conducted from 1994 to 1998 in two inner-city areas of Milwaukee, WI, participants who were willing to work full-time were randomly assigned either to receive a three-year package of benefits including an earnings supplement to raise their income above the poverty level or to a control group that received no benefits. After five years, participants receiving the benefits package reported lower rates of poverty, better physical health and fewer depressive symptoms compared with the control group; in addition, their children showed improved academic performance compared with children in the control group. After eight years, children in the benefits group were more engaged and receiving better grades in school, and less likely to repeat grades or be placed in special education; they also had more positive social behavior and attitudes about work.¹⁰⁵
- An experiment conducted in Gary, IN, from 1971 to 1974 randomly assigned participating low-income African-American families to one of four income supplement plans (using income tax credits) or a control group. Three years into the study, improvements in birth weight were seen for infants born to women in the highest-risk experimental groups relative to the control group; these differences did not appear to be related to prenatal care.¹⁰⁶

Evidence from natural experiments

- Persons who received the maximum state Supplementary Security Income (SSI) benefit between 1990 and 2000 were significantly less likely to have mobility limitations, compared with those who received lower SSI benefits; the strongest effects were seen among the poorest individuals (in the lowest income quartile).¹⁰⁷
- A study in Sweden found that each 10 percent increase in income from lottery winnings was associated with a statistically significant gain in health status, equivalent to an estimated additional 5-8 weeks in life expectancy, on average.¹⁰⁸





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The Robert Wood Johnson Foundation Commission to Build a Healthier America was a national, independent, non-partisan group of leaders that released 10 recommendations to dramatically improve the health for all Americans. www.commissiononhealth.org

ABOUT THIS ISSUE BRIEF SERIES

This issue brief is one in a series of twelve on the social determinants of health. The series began as a product of the Robert Wood Johnson Foundation Commission to Build a Healthier America.

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REFERENCES

1. Kaplan GA. *The Poor Pay More--Poverty's High Cost to Health*. Princeton, NJ: Robert Wood Johnson Foundation; 2009.
2. Kawachi I, Adler NE, Dow WH. Money, schooling, and health: Mechanisms and causal evidence. *Ann N Y Acad Sci*. 2010;1186:56-68.
3. Backlund E, Sorlie PD, Johnson NJ. The shape of the relationship between income and mortality in the United States. Evidence from the National Longitudinal Mortality Study. *Ann Epidemiol*. 1996;6(1):12-20; discussion 21-2.
4. Bond Huie SA, Krueger PM, Rogers RG, Hummer RA. Wealth, race, and mortality. *Soc Sci Q*. 2003;84(3):667-684.
5. Fisher GM. The development and history of the poverty thresholds. *Soc Secur Bull*. 1992;55(4):3-14.
6. Citro CF, Michael RT, editors. *Measuring Poverty: A New Approach*. Washington, DC: National Academy Press; 1995.
7. Holzer HJ, Schanzenbach DW, Duncan GJ, Ludwig J. *The Economic Costs of Poverty in the United States: Subsequent Effects of Children Growing Up Poor*. Washington, D.C.: Center for American Progress; 2007 January 24.
8. Smith D. *Measure by Measure: The Current Poverty Measure v. the National Academy of Sciences Measures*. Washington, DC: CLASP; 2009 November.
9. U.S. Department of Health and Human Services. *The 2008 HHS Poverty Guidelines*. Available at: <http://aspe.hhs.gov/poverty/08poverty.shtml>. Accessed December 6, 2010.
10. Pollack CE, Chideya S, Cubbin C, Williams B, Dekker M, Braveman P. Should health studies measure wealth? A systematic review. *Am J Prev Med*. 2007;33(3):250-64.
11. Braveman PA, Cubbin C, Egerter S, Chideya S, Marchi KS, Metzler M, et al. Socioeconomic status in health research: one size does not fit all. *JAMA*. 2005;294(22):2879-88.
12. U.S. Census Bureau. *Selected Measures of Household Income Dispersion: 1967 to 2009*. Available at: <http://www.census.gov/hhes/www/income/data/historical/inequality/ta2.pdf>. Accessed April 5, 2011.
13. Kennickell AB. *Ponds and Streams: Wealth and Income in the U.S., 1989 to 2007*. Washington, DC: Federal Reserve Board; 2009. Report No.: 2009-13.
14. U.S. Census Bureau. *The American Community—Blacks: 2004*. American Community Survey Reports. Available at: <https://www.census.gov/prod/2007pubs/acs-04.pdf>. Accessed December 11, 2009.
15. Orzechowski S, Sepielli P.. *Net Worth and Asset Ownership of Households: 1998 and 2000*. Current Population Reports. Washington, DC: U.S. Census Bureau 2003.
16. Blumenshine P, Egerter S, Barclay CJ, Cubbin C, Braveman PA. Socioeconomic disparities in adverse birth outcomes: a systematic review. *Am J Prev Med*. 2010;39(3):263-72.
17. Braveman P, Barclay C. Health disparities beginning in childhood: a life-course perspective. *Pediatrics*. 2009;124 Suppl 3:S163-75.
18. Braveman PA, Cubbin C, Egerter S, Williams DR, Pamuk E. Socioeconomic disparities in health in the United States: What the patterns tell us. *Am J Public Health*. 2010 14(1):20-35.
19. Case A, Lubotsky D, Paxson C. Economic status and health in childhood: The origins of the gradient. *American Economic Review* 2002;92:1308-1334.
20. Pamuk E, Makuc D, Keck K, Reuban C, Lochner K. *Socioeconomic Status and Health Chartbook*. Health, United States, 1998. Hyattsville, MD: National Center for Health Statistics; 1998.
21. Braveman P, Egerter S. *Overcoming Obstacles to Health: Report from the Robert Wood Johnson Foundation to the Commission to Build a Healthier America*. Washington, DC: Robert Wood Johnson Foundation Commission to Build a Healthier America; 2008.
22. Krueger PM, Rogers RG, Hummer RA, LeClere FB, Huie SAB. Socioeconomic status and age: The effect of income sources and portfolios on U.S. adult mortality. *Sociological Forum*. 2003;18(3):465-482.





23. Hajat A, Kaufman JS, Rose KM, Siddiqi A, Thomas JC. Do the wealthy have a health advantage? Cardiovascular disease risk factors and wealth. *Soc Sci Med*. 2010;71(11):1935-42.
24. Hajat A, Kaufman JS, Rose KM, Siddiqi A, Thomas JC. Long-term effects of wealth on mortality and self-rated health status. *Am J Epidemiol*. 2010.
25. Robert S, House JS. SES differentials in health by age and alternative indicators of SES. *J AgingHealth*. 1996;8(3):359-388.
26. Minkler M, Fuller-Thomson E, Guralnik JM. Gradient of disability across the socioeconomic spectrum in the United States. *N Engl J Med*. 2006;355(7):695-703.
27. Deaton A, Paxton C. Aging and inequality in health and income. *Am Econ Rev*. 1998;88(2):248-253.
28. Dowd JB, Albright J, Raghunathan TE, Schoeni RF, Leclere F, Kaplan GA. Deeper and wider: income and mortality in the USA over three decades. *Int J Epidemiol*. 2010;40(1):183-8.
29. Subramanian SV, Kawach I. Being well and doing well: on the importance of income for health. *Int J Soc Welfare*. 2006;15:S13-S22.
30. Goldman N. Social inequalities in health disentangling the underlying mechanisms. *Ann N Y Acad Sci*. 2001;954:118-39.
31. McDonough P, Duncan GJ, Williams D, House J. Income dynamics and adult mortality in the United States, 1972 through 1989. *Am J Public Health*. 1997;87(9):1476-83.
32. Muennig P. Health selection vs. causation in the income gradient: what can we learn from graphical trends? *J Health Care Poor Underserved*. 2008;19(2):574-9.
33. Diez Roux AV, Mair C. Neighborhoods and health. *Ann N Y Acad Sci*. 2010;1186:125-45.
34. Kawachi I, Berkman LF, editors. *Neighborhoods and health*. New York: Oxford University Press; 2003.
35. Pickett KE, Pearl M. Multilevel analyses of neighbourhood socioeconomic context and health outcomes: a critical review. *J Epidemiol Community Health*. 2001;55(2):111-22.
36. Robert SA. Community-level socioeconomic status effects on adult health. *J Health Soc Behav*. 1998;39(1):18-37.
37. Wilkinson RG, Pickett KE. Income inequality and population health: a review and explanation of the evidence. *Soc Sci Med*. 2006;62(7):1768-84.
38. Lynch J, Smith GD, Harper S, Hillemeier M. Is income inequality a determinant of population health? Part 2. U.S. National and regional trends in income inequality and age- and cause-specific mortality. *Milbank Q*. 2004;82(2):355-400.
39. Lynch J, Smith GD, Harper S, Hillemeier M, Ross N, Kaplan GA, et al. Is income inequality a determinant of population health? Part 1. A systematic review. *Milbank Q*. 2004;82(1):5-99.
40. Braveman PA, Egerter SA, Mockenhaupt RE. Broadening the focus: The need to address the social determinants of health. *Am J Prev Med*. 2011;40(1S1):S4-S18.
41. Stansfeld S, Bosma H, Hemingway H, Marmot M. Psychosocial work characteristics and social support as predictors of SF-36 health functioning: The Whitehall II Study. *Psychosom Med*. 1998;60(3):247-55.
42. Stansfeld S, Shipley M, Marmot M. Work characteristics predict psychiatric disorders: prospective results from the Whitehall II study. *Occup Environ Med*. 1999;56.
43. Karasek RA, Theorell T. *Healthy work: stress, productivity and the reconstruction of working life*. New York: Basic Books; 1990.
44. Marmot M, Bosma H, Hemingway H, Brunner E, Stansfeld S. Contribution of job control and other risk factors to social variations in coronary heart disease incidence. *Lancet*. 1997;350:235-239.
45. Baum A, Garofalo JP, Yali AM. Socioeconomic status and chronic stress. Does stress account for SES effects on health? *Ann N Y Acad Sci*. 1999;896:131-44.





46. Braveman P, Marchi K, Egerter S, Kim S, Metzler M, Stancil T, et al. Poverty, near-poverty, and hardship around the time of pregnancy. *Matern Child Health J.* 2009;14(1):20-35.
47. Lynch M. Consequences of children's exposure to community violence. *Clin Child Fam Psychol Rev.* 2003;6(4):265-74.
48. Matthews KA, Gallo LC, Taylor SE. Are psychosocial factors mediators of socioeconomic status and health connections? A progress report and blueprint for the future. *Ann N Y Acad Sci.* 2010;1186:146-73.
49. Kahn JR, Pearlin LI. Financial strain over the life course and health among older adults. *J Health Soc Behav.* 2006;47(1):17-31.
50. Currie J, Stabile M. Socioeconomic status and child health: Why Is the relationship stronger for older children? *Am Econ Rev.* 2003;93(5):1813-1823.
51. Luo Y, Waite LJ. The impact of childhood and adult SES on physical, mental, and cognitive well-being in later life. *J Gerontol B Psychol Sci Soc Sci.* 2005;60(2):S93-S101.
52. Beebe-Dimmer J, Lynch JW, Turrell G, Lustgarten S, Raghunathan T, Kaplan GA. Childhood and adult socioeconomic conditions and 31-year mortality risk in women. *Am J Epidemiol.* 2004;159(5):481-90.
53. Kaplan GA, Shema SJ, Leite CM. Socioeconomic determinants of psychological well-being: the role of income, income change, and income sources during the course of 29 years. *Ann Epidemiol.* 2008;18(7):531-7.
54. Lynch JW, Kaplan GA, Shema SJ. Cumulative impact of sustained economic hardship on physical, cognitive, psychological, and social functioning. *N Engl J Med.* 1997;337(26):1889-95.
55. Maty SC, James SA, Kaplan GA. Life-course socioeconomic position and incidence of diabetes mellitus among blacks and whites: the Alameda County Study, 1965-1999. *Am J Public Health.* 2009;100(1):137-45.
56. Turrell G, Lynch JW, Leite C, Raghunathan T, Kaplan GA. Socioeconomic disadvantage in childhood and across the life course and all-cause mortality and physical function in adulthood: evidence from the Alameda County Study. *J Epidemiol Community Health.* 2007;61(8):723-30.
57. Bauer AM, Boyce WT. Prophecies of childhood: how children's social environments and biological propensities affect the health of populations. *Int J Behav Med.* 2004;11(3):164-75.
58. Case A, Fertig A, Paxson C. The lasting impact of childhood health and circumstance. *J Health Econ.* 2005;24(2):365-389.
59. Davey-Smith G, Hart C, Blane D, Hole D. Adverse socioeconomic conditions in childhood and cause specific adult mortality: prospective observational study. *BMJ.* 1998;316(7145):1631-5.
60. Duncan GJ, Yeung WJ, Brooks-Gunn J, Smith JR. How much does childhood poverty affect the life chances of children? *Am Soc Rev.* 1998;63(3):406-423.
61. Hayward MD, Gorman BK. The long arm of childhood: the influence of early-life social conditions on men's mortality. *Demography.* 2004;41(1):87-107.
62. Kittleson MM, Meoni LA, Wang NY, Chu AY, Ford DE, Klag MJ. Association of childhood socioeconomic status with subsequent coronary heart disease in physicians. *Arch Intern Med.* 2006;166(21):2356-61.
63. Barker DJ. The developmental origins of adult disease. *J Am Coll Nutr.* 2004;23(6 Suppl):588S-595S.
64. Institute of Medicine, Committee on Understanding Premature Birth and Assuring Healthy Outcomes, Board on Health Sciences Policy. *Preterm Birth: Causes, Consequences, and Prevention.* Washington, DC: The National Academies Press; 2007.
65. Morley R. Fetal origins of adult disease. *Semin Fetal Neonatal Med.* 2006;11(2):73-8.
66. Centers for Disease Control and Prevention. Blood lead levels--United States, 1999-2002. *MMWR Morb Mortal Wkly Rep.* 2005;54(20):513-516.
67. Bhattacharya J, Currie J, Haider S. Poverty, food insecurity, and nutritional outcomes in children and adults. *J Health Econ.* 2004;23(4):839-62.





68. Bradley RH, Corwyn RF. Socioeconomic status and child development. *Annu Rev Psychol.* 2002;53:371-99.
69. Joint WHO/FAO Expert Consultation. *Diet, Nutrition, and the Prevention of Chronic Diseases.* Geneva, Switzerland: World Health Organization; 2003.
70. Lynch J, Smith GD. A life course approach to chronic disease epidemiology. *Annu Rev Public Health.* 2005;26:1-35.
71. Wadsworth ME. Health inequalities in the life course perspective. *Soc Sci Med.* 1997;44(6):859-69.
72. Singh GK, Siahpush M, Kogan MD. Rising social inequalities in US childhood obesity, 2003-2007. *Ann Epidemiol.* 2010;20(1):40-52.
73. Power C, Lake JK, Cole TJ. Measurement and long-term health risks of child and adolescent fatness. *Int J Obes Relat Metab Disord.* 1997;21(7):507-26.
74. Evans GW. The environment of childhood poverty. *Am Psychol.* 2004;59(2):77-92.
75. Hertzman C, Power C. Health and human development: understandings from life-course research. *Devel Neuropsychol.* 2003;24(2&3):719-44.
76. Votruba-Drzal E. Income changes and cognitive stimulation in young children's home learning environments. *J Marriage Family.* 2003;65(2):341.
77. Heckman JJ. Role of income and family influence on child outcomes. *Ann N Y Acad Sci.* 2008;1136:307-23.
78. Dearing E. Psychological costs of growing up poor. *Ann N Y Acad Sci.* 2008;1136:324-32.
79. Currie J. Health disparities and gaps in school readiness. *Future Child.* 2005;15(1):117-138.
80. Engle PL, Black MM. The effect of poverty on child development and educational outcomes. *Ann N Y Acad Sci.* 2008;1136:243-56.
81. Braveman P, Egerter S. Issue Brief 1: Early Childhood Experiences and Health. Princeton, NJ: Robert Wood Johnson Foundation; 2008.
82. Keating DP, Simonton SZ. Health effects of human development policies. In: Schoeni RF, House JS, Kaplan GA, Pollack H, editors. *Making Americans Healthier: Social and Economic Policy as Health Policy.* New York: Russell Sage Foundation; 2008.
83. Arno PS, Sohler N, Viola D, Schechter C. Bringing health and social policy together: the case of the earned income tax credit. *J Public Health Policy.* 2009;30(2):198-207.
84. Kneebone E. The Child Tax Credit after ARRA: How Would Expiration Affect Metropolitan Families? Available at: http://www.brookings.edu/papers/2010/0708_child_tax_credit_kneebone.aspx. Accessed December 22, 2010.
85. Institute for Policy Studies. Leading Poverty Experts Assess New Census Data. Available at: http://www.ips-dc.org/pressroom/leading_poverty_experts_assess_new_census_data. Accessed October 4, 2010.
86. Bhargava D, Casey T, Cavanagh J, Dolan K, Edelman P, Ehrenreich B, et al. *Battered by the Storm: How the Safety Net is Failing Americans and How to Fix It.* Washington, D.C.: Institute for Policy Studies, Center for Community Change, Legal Momentum, and Jobs with Justice; 2009.
87. Fass S. Paid Leave in the States: A Critical Support for Low-Wage Workers and Their Families. Available at: http://www.nccp.org/publications/pub_864.html. Accessed October 4, 2010.
88. Acs G, Nichols A. *Low-Income Workers and Their Employers.* Washington, D.C.: Urban Insite; 2007.
89. Casey K. TANF Emergency Fund Expires. Available at: <http://www.publicconsultinggroup.com/research/post/2010/10/04/TANF-Emergency-Fund-Expires.aspx>. Accessed October 4, 2010.
90. Avendano M, Kunst AE, Huisman M, Lenthe FV, Bopp M, Regidor E, et al. Socioeconomic status and ischaemic heart disease mortality in 10 western European populations during the 1990s. *Heart.* 2006;92(4):461-7.





91. Kunst AE, Bos V, Lahelma E, Bartley M, Lissau I, Regidor E, et al. Trends in socioeconomic inequalities in self-assessed health in 10 European countries. *Int J Epidemiol.* 2005;34(2):295-305.
92. Kunst AE, del Rios M, Groenhof F, Mackenbach JP. Socioeconomic inequalities in stroke mortality among middle-aged men: an international overview. European Union Working Group on Socioeconomic Inequalities in Health. *Stroke.* 1998;29(11):2285-91.
93. Mackenbach JP, Cavelaars AE, Kunst AE, Groenhof F. Socioeconomic inequalities in cardiovascular disease mortality; an international study. *Eur Heart J.* 2000;21(14):1141-51.
94. Marmot MG, Smith GD, Stansfeld S, Patel C, North F, Head J, et al. Health inequalities among British civil servants: the Whitehall II study. *Lancet.* 1991;337(8754):1387-93.
95. McGrail KM, van Doorslaer E, Ross NA, Sanmartin C. Income-related health inequalities in Canada and the United States: a decomposition analysis. *Am J Public Health.* 2009;99(10):1856-63.
96. Newacheck PW, Hung YY, Park MJ, Brindis CD, Irwin CE, Jr. Disparities in adolescent health and health care: does socioeconomic status matter? *Health Serv Res.* 2003;38(5):1235-52.
97. Ross CE, Mirowsky J. Does medical insurance contribute to socioeconomic differentials in health? *Milbank Q.* 2000;78(2):291-321, 151-2.
98. Sorlie PD, Johnson NJ, Backlund E, Bradham DD. Mortality in the uninsured compared with that in persons with public and private health insurance. *Arch Intern Med.* 1994;154(21):2409-16.
99. Sudano JJ, Baker DW. Explaining US racial/ethnic disparities in health declines and mortality in late middle age: the roles of socioeconomic status, health behaviors, and health insurance. *Soc Sci Med.* 2006;62(4):909-22.
100. Szanton SL, Allen JK, Thorpe RJ, Jr., Seeman T, Bandeen-Roche K, Fried LP. Effect of financial strain on mortality in community-dwelling older women. *J Gerontol B Psychol Sci Soc Sci.* 2008;63(6):S369-74.
101. Victorino CC, Gauthier AH. The social determinants of child health: variations across health outcomes - a population-based cross-sectional analysis. *BMC Pediatr.* 2009;9:53.
102. Avendano M, Glymour MM. Stroke disparities in older Americans: is wealth a more powerful indicator of risk than income and education? *Stroke.* 2008;39(5):1533-40.
103. Daly MC, Duncan GJ, McDonough P, Williams DR. Optimal indicators of socioeconomic status for health research. *Am J Public Health.* 2002;92(7):1151-7.
104. Herd P, Goesling B, House JS. Socioeconomic position and health: the differential effects of education versus income on the onset versus progression of health problems. *J Health Soc Behav.* 2007;48(3):223-38.
105. Miller C, Huston AC, Duncan GJ, McLoyd VC, Weisner TS. *New Hope for the Working Poor: Effects after Eight Years for Families and Children.* New York: MRDC; 2008.
106. Kehrer BH, Wolin CM. Impact of income maintenance on low birth weight: evidence from the Gary Experiment. *J Hum Resour.* 1979;14(4):434-62.
107. Herd P, House J, Schoeni R. Income support policies and health among the elderly. In: *Health Effects of Non-Health Policy.* Bethesda, MD: National Poverty Center; 2006.
108. Lindahl M. Estimating the effect of income on health and mortality using lottery prizes as an exogenous source of variation in income. *J Human Resources.* 2005;XL(1):144-168.

