CAN INCOME-RELATED POLICIES IMPROVE POPULATION HEALTH?

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In the United States as in other countries, the higher one's income, the better one's health. This income-health gradient spans all levels of income and holds true for most measures of health, from life expectancy to the prevalence of diseases and health behaviors. It is found at most ages, appearing first in childhood, continuing into adolescence and adulthood, and then dissipating in old age (Braveman et al. 2010; Braveman and Barclay 2009; Dubay and Lebrun 2012; Deaton 2002). One recent study found that being poor or near poor imposes a greater societal health burden than any other risk factor, including the two leading behavioral causes of death—tobacco use and obesity (Muennig et al. 2010). Another study showed that income accounts for 52 percent of the difference in life expectancy after age 1 between black and white men and 59 percent of the difference among women (Geruso 2012).

Researchers are trying to disentangle the complex causal pathways that connect income, health, education, and family and community conditions across an individual's life course and even from one generation to the next, but there is no question that income matters greatly to health. Although poorer health can contribute to lower income (e.g., by limiting schooling or work), much of the relationship between income and health is because income and other upstream factors influence health directly or indirectly. Some connections between income and health are simple and straightforward, such as the ability of affluent people to buy better health insurance, more health care services, and healthier food. Other connections are less obvious: wealthier families can afford houses in neighborhoods with better schools, places to walk or cycle, parks and recreational facilities, and healthy grocery stores and restaurants. In contrast, people who live in lower-income or economically distressed neighborhoods are often exposed to higher crime, poorer housing, more environmental hazards, dangerous traffic, and more alcohol and fast-food outlets. They are also subject to more stress, a health hazard in itself (Schiller, Lucas, and Peregoy 2012). For more information about the factors that link income and health, see "How Are Income and Wealth Linked to Health and Longevity?"

Our society's debates and decisions about the best way to grow the economy, reduce unemployment, and promote high-quality jobs also have direct implications for health.

Just as there are many pathways linking income and health, there are many policies and programs that influence and shape these pathways. Government policies affect the income and health of Americans,[1] but the policies and practices of businesses, employers, developers, advertisers, and philanthropists also affect the health and economic well-being of American families. In the United States especially, both public and private policies play a major role in shaping the income-health gradient.

Because a stepwise gradient between income and health is found at almost all levels of income, it is important to recognize that this issue extends beyond antipoverty programs: even the health of middle-class Americans is affected by the economic circumstances of families and communities. Our society's debates and decisions about the best way to grow the economy, reduce unemployment, and promote high-quality jobs also have direct implications for health. Both conservative and progressive strategies—from policies that enable small businesses to thrive and take on new workers to policies that provide tax credits and sick leave to working parents—are really health policies (Woolf 2009; Schoeni et al. 2010). So too are

policies that improve wages and earnings by encouraging more education, employment, and training; that help individuals and families build assets and savings; and that promote retirement savings and benefits to bolster economic stability later in life.

In this brief we focus on the emerging evidence and prospects for income-related policies to improve population health. Many policies and programs have yet to be rigorously evaluated for their health impacts, and longer-term health effects may not be captured or tracked in part because they are not the primary goals of the interventions. But our growing understanding of the important connections between income and health means that these programs may have even longer-term and larger benefits than we have recognized. At the very least, we need to start measuring and tracking more carefully the health effects of income-related policies. Because poor health can be costly to individuals, families, and the nation as a whole, the financial savings associated with health improvements may be substantial.

THREE TYPES OF POLICY APPROACHES

Many types of policies affect the income of Americans directly or indirectly. Some boost income and earnings for different groups of people (e.g., parents, mortgage holders, long-term unemployed) or for specific geographic areas and communities (e.g., enterprise zones). Other types of policies are designed to reduce income-related barriers to maintaining health (e.g., free health care clinics). We consider three broad types of policies: (1) those that invest in early childhood to alter children's lifelong trajectories, (2) those that provide income support or in-kind benefits, and (3) those that seek to improve the living conditions of entire neighborhoods or communities.

The three types of income-related policy approaches and their potential effects on individual and population health are described below.

Policies Directed at Early Life Conditions

Some of the most important connections between income and health are formed early in life when the first stages of a child's health trajectory and development over the life course are set (Halfon 2009 and 2014). Investments early in life, and the policies that advance them, help ensure optimal health development as well as later success in school and at work. As the Center on the Developing Child (2010, 21) at Harvard University explains,

> Every system that touches the lives of children—as well as mothers before and during pregnancy—offers an opportunity to strengthen the foundations and capacities that make lifelong healthy development possible. Investments in the early reduction of significant adversity are particularly likely to generate strong returns.

Across most social, economic, and cultural circumstances, the basic needs of young children are much the same (Mistry et al. 2012). They need responsive caregiving, safe and secure environments, adequate

and appropriate nutrition, and opportunities to develop health-promoting behaviors and habits (e.g., those relating to sleep, diet, physical activity, and screen time). Families and communities typically meet these needs, but sometimes they need additional supports. Private efforts can help, but publicly funded programs such as the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) and early intervention services for infants and toddlers with disabilities available through Part C of the Individual with Disabilities Education Act (IDEA) can be critical to participants' health and well-being. These federal programs and similar state and local programs can target low-income children, as with WIC, or be universal, as is the case with IDEA. For many families without access to private help, these programs are crucial to providing children with a strong and healthy start in life.

The past several decades have yielded tremendous insights into the conditions that support or impede health and human development from the earliest stages of life. Research from disciplines spanning the biomedical, behavioral, and social sciences all point to the importance of a strong and healthy start in the early years and in utero (Institute of Medicine and National Research Council 2012; Boivin and Hertzman 2012; Panter-Brick and Leckman 2013). A healthy start is important not only to a child's physical and mental well-being and growth but also to shaping his or her resilience and capacity to succeed economically. Conditions that support health include those that allow children to acquire early language skills, gain an education, acquire vocational and social skills, and tap into social networks, with all the health-related benefits these various abilities confer, including the abilities to earn, invest, and save financial resources for later in life.

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Among the various investments that can boost both income and health, none seems more promising than education, especially early childhood education (Anderson et al. 2003). Early childhood education programs targeted at low-income children, such as Head Start, have been shown to increase parental time investments in children and to have important health benefits, including reductions in childhood mortality and increased vaccination rates (Ludwig and Miller 2007; Currie and Thomas 1995; Gelber and Isen 2013). Although some of the academic gains attributable to Head Start may fade between school entry and the third grade,[2] other important benefits of the program are long lasting. Adults who participated in Head Start as children were more likely to finish high school and enroll in college than their siblings who did not have access to the program. These advantages not only set them on a track for success in securing better jobs and earning higher incomes, but they also provide health benefits. Although health effects vary by race, sex, and cognitive functioning of the mother, adults who participated in Head Start as children are less likely to report being in poor health, smoking, repeating grades, or being "idle" (not in school and not earning income) as adults (Deming 2009; Anderson, Foster, and Frisvold 2010; Garces, Thomas, and Currie 2002).

Two intensive preschool experiments, the Perry Preschool Project (PPP) and the Carolina Abecedarian Project (ABC), have reported long-term benefits on graduation rates, employment, and higher earnings

(Heckman, Pinto, and Savelyev 2013; Campbell et al. 2012). Long-term studies of PPP and ABC participants also provide evidence that preschool investments produce healthier behaviors and better health in adulthood (Conti and Heckman 2013). The evidence suggests that early interventions can reduce risks to health, such as smoking and drinking at young ages, smoking at age 40, driving without a seatbelt or under the influence of alcohol, and having high body-mass index, and improve health conditions, such as depression. The results were stronger, however, for the ABC than the PPP program, likely because of the greater intensity of the intervention. A follow-up study of the ABC program also found that male participants were less likely to have hypertension, vitamin D deficiency, or multiple risk factors such as obesity and hypertension (Campbell et al. 2014). They also had healthier Framingham scores for cardiovascular disease risk (compared with control subjects). Female participants participants had lower levels of prehypertension and abdominal obesity and healthier Framingham scores.

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Evidence from the emerging literature on the effects of prekindergarten on school readiness generally shows that there are important gains in language, literacy, and mathematics but that short-term socioemotional effects are minimal (Yoshikawa et al. 2013). The benefits of quality early childhood education are not limited to children from disadvantaged families. Much of the work on the effects of prekindergarten programs on school readiness outcomes has focused on programs targeted at low-income children, but studies of two universal prekindergarten programs (one in Tulsa, Oklahoma, and one in Boston, Massachusetts) both found improvements in achievement for middle-income children, albeit smaller than those for low-income children (Yoshikawa et al. 2013; Gormley, Gayer, and Phillips 2008; Gormley et al. 2005; Weiland and Yoshikawa 2013). These higher test scores are in turn associated with higher earnings and employment rates in adulthood (Duncan and Magnuson 2011; Gelber and Weinzierl 2012; Duncan et al. 2007). A study that estimated the effects on future adult earnings of a universal prekindergarten program in Tulsa, Oklahoma, found a benefit-to-cost ratio of 3- or 4-to-1 for both half- and full-day prekindergarten across program participants of different incomes (Bartik, Gormley, and Adelstein 2012).

New evidence from the Promise Academy in the Harlem Children's Zone suggests that interventions targeting older children may also improve health. Evaluations of Promise Academy elementary and middle schools found large improvements in test scores for children who won entrance into the school via lottery compared with those who did not (Dobbie and Fryer 2011). In addition, six years after random admission by lottery to middle school, children who won the lottery were more likely to be enrolled in college, girls were less likely to have become pregnant and boys to have been incarcerated, and admitted students' diets were healthier than the diets of students who were not chosen by the lottery (Dobbie and Fryer 2013). There were no similar improvements in other broad measures of physical and mental health.[3]

A variety of innovative public-private partnerships are also emerging to support investments in early childhood education as well as education and training at older ages. For example, Goldman Sachs, a global investment bank and investment management firm, is investing $4.6 million in Salt Lake City, Utah, preschool programs through the use of "social impact bonds." The pay-for-success based social impact bonds leverage private capital to support positive social outcomes in ways that are intended to generate modest financial returns for private investors and cost savings for cash-strapped state and local governments. The preschool investments are directed toward at-risk children and are designed to reduce the need for much more expensive special education services later, but they may boost educational and economic outcomes as well.[4] The Business Roundtable, an association of chief executive officers of leading US companies, is encouraging government to broaden access to early childhood education (Business Roundtable 2013). Major corporations are also investing in education. Change the Equation, for example, is a CEO-led initiative that is mobilizing the business community to improve the quality of science, technology, engineering, and mathematics (STEM) learning in the United States. Although the impact of these initiatives on educational, employment, and health outcomes still needs to be established, they have the potential to improve healthy behaviors, long-term earnings potential, and health outcomes.

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Policies Directed at Income Security

The second set of policy approaches includes policies that encourage work or provide Americans with short-term cash assistance or in-kind benefits. They include policies that promote successful business and job growth, as well as policies established by government programs such as social safety net programs, Social Security, and Medicare. They can also involve private-sector efforts that help boost or protect the income or assets of individuals and families. Such efforts span the full spectrum of approaches to improve the economy and the social and economic well-being of individuals and families, including efforts by businesses and government to promote education and training, job growth, and career advancement. This second group of policy approaches includes policies targeted at low-and moderate-income Americans, as well as ones aimed at the working poor or the long-term unemployed.

Income support is an important area of income-related policy. Many public policies are designed to help people in need and therefore target programs or benefits to specific groups. These groups include people who are struggling because of life-long disadvantages. But income security and social insurance programs are not just for the long-term poor. Even people who may have enjoyed strong starts in life—with few or no spells of poverty—may need help weathering hard times brought on by an economic recession, a natural disaster, a medical crisis, the death of a family member, or old age. Policies that help people in these situations include public programs, such as Social Security and unemployment insurance, as well as private-

sector efforts that help people and communities in need.

Given the political controversies surrounding many government-financed income support programs, especially in an era of tight fiscal restraints created by debt and deficit concerns, it is useful to consider the evidence about the health effects of income support policies and programs, as well as programs that provide in-kind benefits that free up income within family budgets. To date, most research on these programs has focused on their effects on family economic outcomes such as employment, education, and poverty. But several important studies are starting to document the health benefits of these programs. As with most social science research, there are methodological challenges to identifying the effects of programs on health. But evidence from three publicly funded programs—the Earned Income Tax Credit (EITC), the Supplemental Nutrition Assistance Program (SNAP), and Supplemental Security Income (SSI)—is illustrative.

The EITC provides extra income to low-income working Americans. Families with children receive much larger credits than single individuals: in 2012, the average EITC benefit was $2,805 for families with children and $262 for families without children.[5] Workers receive higher EITC credits as earned income increases (up to a maximum amount that varies by the number of children in the family) and then phases out. The EITC has been found to increase labor supply and therefore income, especially for single mothers, and was credited with lifting 3.3 million children out of poverty in 2011.[6] The EITC has also been shown to increase academic test scores of children whose parents receive the benefit (Dahl and Lochner 2012; Chetty, Friedman, and Rockoff 2011).

The EITC has also led to improvements in infant health through reductions in the probability of being a low-birth weight infant and through overall increases in birth weight (Strully, Rehkopf, and Xuan 2010; Wicks-Lim and Arno 2015; Hoynes, Miller, and Simon 2015). These improved birth outcomes appear to be strongly associated with reductions in maternal smoking and alcohol use and more intensive prenatal care. Other studies also show a broad association between the EITC and maternal smoking (Cowan and Tefft 2012). Low-birth-weight infants can require very costly medical care and also have higher rates of developmental disabilities (Russell et al. 2007; Behrman and Rosenzweig 2004; Avchen, Scott, and Mason 2001). As a result, reductions in the prevalence of low birth weight have great potential to curb health care costs.

SNAP (formerly the food stamp program) provides financial assistance to low-income families to purchase food. Although SNAP was designed to reduce hunger and food insecurity, it has also been shown to have long-term health impacts. The implementation of SNAP was associated with increased birth weight for infants born to women who had access to the program in the last trimester of their pregnancy (Almond, Hoynes, and Schanzenbach 2011). In addition, new research suggests that the effects of receiving SNAP are long lasting. Specifically, children benefitting from SNAP in utero or in early childhood experienced lower rates of metabolic syndrome (a cluster of conditions that include obesity, high blood pressure, heart disease, and diabetes), and women experienced greater self-sufficiency relative to those women with no access to food assistance during these critical periods (Hoynes, Schanzenbach, and Almond 2012).

Finally, the health benefits of income support programs are not limited to infants and children.

Emerging evidence suggests that Social Security benefits have been an important factor in lowering mortality among people aged 65 and older (Arno et al. 2011) and that SSI benefits for low-income Americans have led to lower disability rates (Herd, Schoeni, and House 2008).

Additional evidence that cash payments improve health comes from an interesting natural experiment that unfolded as part of the Great Smoky Mountains study of the psychiatric health of children ages 9 to 13 years in 11 counties in North Carolina. In 1996, three years after the study started, a newly opened casino on a local Cherokee Indian reservation began distributing a share of the casino's profits to Cherokees (but not others) in the community.[7] Distributions for children were held in a trust until they reached age 18, but their parents received payments totaling approximately $9,000 annually by 2006. Long-term studies demonstrated that, among those children who were under age 12 when the casino opened, the increased income was associated with a lower prevalence of psychiatric disorders and alcohol and cannabis dependence or abuse at age 21. Other studies have shown greater educational attainment at ages 19 and 21 as well as reduced criminal behavior at ages 16 and 17 with a similar "dose-response pattern," meaning longer exposure to the cash benefit led to better results (Akee et al. 2010). Other studies, however, have found negative health effects, including increased obesity among young adults and increased deaths attributable to accidents (Bruckner, Brown, and Magerison-Zilco 2011; Akee et al. 2013; Jones-Smith, Dow, and Chichlowska 2014).

Beyond the traditional Great Society model of publicly funded safety net and social insurance programs, there is growing interest in private-sector initiatives and public-private partnerships that increase economic opportunity and wealth for families, often through programs that encourage entrepreneurship, home ownership, retirement investment, or college access. These strategies, which often attract support from across the political spectrum and from business and financial leaders, have the dual advantage of potentially promoting upward economic mobility for lower- and middle-income Americans while narrowing large racial and gender gaps in income and net worth. These initiatives tend to be localized, and empirical evidence of their effectiveness in achieving positive financial outcomes and certainly health outcomes is still limited.

There is growing interest in private-sector initiatives and public-private partnerships that increase economic opportunity and wealth for families.

One example of this type of initiative, adopted by a number of mainstream banks and financial service companies, originated with social loan programs and lending circles that provide zero-fee, zero-interest credit-building small-dollar loans for low-income community members. Because mainstream, low-cost capital is generally out of reach for many people, and others have thin or damaged scores from high-cost debts, these loans help people open bank accounts, avoid predatory lenders, and quickly and safely establish a positive credit score. These positive outcomes open up new financial pathways by reducing barriers to jobs and housing, increasing access to more affordable financial products, and allowing families to start accumulating financial assets. One specific program, the Mission Asset Fund, has been shown to increase

credit scores and reduce debt among low-income participants in its lending circles (Reyes et al. 2013).[8] Impacts on health have yet to be examined for this program and should be tracked in the future.

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Policies Directed at Community and Economic Development

The third set of policies is aimed at mitigating the detrimental health effects of having a low income by improving the circumstances and environments in which lower-income people live and work. These wide-ranging, diverse policies are designed to revitalize neighborhoods, improve housing stock and local schools, control crime and redesign traffic patterns, and protect workers from on-the-job hazards. These community investments can be important to economic revitalization and the creation of jobs and higher living standards, and a stronger community can also be important in promoting better health and buffering the adverse effects of material deprivation.

The income and financial resources within entire communities strongly affect the institutional resources in place that can support education, training, and employment opportunities, as well as lifelong health development. These resources extend to other place-based amenities and recreational settings such as safe parks and playgrounds, groceries and farmers markets that sell fresh and healthy foods, high-quality programs for children and youth, safe and healthy housing, and transportation hubs. These conditions shape people's economic and social opportunities and thus affect their income, health, and well-being.

Many public policies pertaining to education, housing, public health and safety, transportation, and community development affect—directly or indirectly—the basic conditions in which people live, work, and play. Understanding and acting on the many connections between nonhealth policies and actual health are primary goals of the health in all policies movement that has advanced so rapidly in many countries and is slowly gaining traction in the United States (Wernman and Teutsch 2015; Gase, Pennotti, and Smith 2013).[9] As social and economic investments are targeted at individuals, families, and even entire communities, it will be important to track the short-and long-term effects of these investments on health and their impact on communities' culture of health. Until now, this type of framing and assessment has not been a priority, but it may be critical to addressing the health disadvantage faced by US residents and mitigating escalating health costs (Woolf and Aron 2013; Bradley et al. 2011).

Community investments can be important in promoting better health and buffering the adverse effects of material deprivation.

Efforts to change community conditions can affect intergenerational cycles of poverty and disadvantage and buffer the damaging effects of lower incomes on health. Such efforts may include expanding employment opportunities, boosting wages, strengthening systems of work supports, and bolstering the social safety net. They may also address the conditions of severely distressed neighborhood environments by increasing educational and enrichment opportunities for children, reducing crime and violence, providing health-promoting services and amenities, strengthening social networks and the capacity of residents to work toward shared goals, and expanding access to economic advancement (Turner et al. 2014).

A variety of initiatives to promote community economic development are being spearheaded by business interests and developers. A new focus on collective impact initiatives (Kania and Kramer 2011), in which sectors across a community come together to make changes, is attracting growing interest from health leaders, business communities, and investors. Such initiatives include efforts to build mixed-income housing that replaces blighted public housing units; bring industry and jobs into areas struggling with long-term unemployment; build supermarkets and farmers markets in food deserts; offer job training, childcare, and job search assistance to the unemployed; redesign the built environment to add green space and introduce pedestrian routes that open access to geographically isolated residential neighborhoods; and develop new transportation systems that foster commerce and transportation to jobs, medical care, and retail outlets. These efforts need formal evaluation plans that can capture their impact on health outcomes and a variety of other social and economic benefits. Despite the lack of evaluation of specific programs, however, the financial services industry has exhibited interest in new investment vehicles such as social impact bonds, which bet on the success of these efforts. One prominent proponent of this new thinking is the Federal Reserve Bank of San Francisco through their initiative devoted to "investing in what works for America's communities" (Federal Reserve Bank 2012).

Although government usually plays a role in these projects, many of the impassioned champions are real estate developers, local businesses and employers, and major industries. Health care systems are investing in communities on the assumption that improved outcomes will affect their payout for health care costs through reduced disease rates and admissions. A major national health insurer, the UnitedHealth Group, for example, is investing $50 million in the construction of hundreds of low-income housing units in Minnesota and the Upper Midwest.[10] In addition to gaining federal tax credits in return for this investment, they recognize that stable housing is an important component of better health and promote this investment as a way of building healthier communities and healthier lives.

In Minneapolis/St. Paul, Minnesota, the Itasca Project, an employer-led civic alliance consisting primarily of private-sector CEOs, is enhancing regional economic competitiveness and quality of life through major initiatives spanning higher education, transportation, and job growth, all with the aim of driving long-term, sustainable economic growth and prosperity.[11] One component of the Itasca Project involved improving the financial fitness of community members, especially those who were not taking full advantage of their employer-sponsored benefits, by working with Minnesota employers to promote practical, focused actions to increase savings and banking among their employees. A powerful example of a comprehensive communitywide initiative—one that should certainly influence the income-health pathway on multiple levels—is the Magnolia Community Initiative (MCI) that formally began in 2008

in Los Angeles,California.[12] MCI is a voluntary network of 70 organizations in partnership with residents to improve the lives of 35,000 children living in neighborhoods within a five-square-mile, 500-block catchment area. The goal of the partnership is to break records in education and health by improving the quality of nurturing care and economic stability that the children receive from their families and community.

CONCLUSIONS

Programs and policies that improve the income and the income-generating potential of individuals, families, and entire communities are powerful tools for improving health, narrowing health inequalities, and containing spiraling health care costs. Given the growing evidence of the importance of social and economic determinants of health—particularly income—in the United States, it will be equally important to continue to pilot, study, and expand successful policies and programs that can drive improvements in health by improving people's incomes and the (pre)conditions that help people acquire greater income. These policies and programs span early childhood development, education and training, employment and financial services, housing, transportation, food and nutrition, and the entire field of community development and provide multiple platforms and opportunities for effective intervention.

Programs and policies that improve the income and the income-generating potential of individuals, families, and entire communities are powerful tools for improving health.

From a health-preserving and health-promoting perspective, policies and programs that target early childhood, especially early childhood education and prekindergarten, are very promising in fostering a strong and healthy start in life and should be supported and encouraged. Similarly, income-support programs for individuals and families, including seniors, will also improve health. There are many proposals to safeguard and even expand the EITC, which has been a powerful tool for keeping many Americans out of poverty (Meyer 2010). Programs like the EITC and SSI confer health benefits, and programs to encourage enrollment of eligible Americans are important.

Finally, community-development efforts, including financial innovations and investments from the private sector, hold great promise for providing individuals and families with access to training, jobs, and financial literacy and asset-building programs as well as buffering the poor health effects of distressed environments and revitalizing the economic well-being of communities. These efforts also need to be encouraged and studied, because enhanced neighborhood conditions can have a profound impact on the health, survival, and well-being of residents, especially children.

NOTES

1. As a recent report from the American Public Health Association and the Public Health Institute explains, "Public policy has been defined as the actions of government and the intentions that determine those actions, political decisions for implementing programs to achieve societal goals, or simply whatever governments choose to do or not to do" (Rudolph et al. 2013).

2. For a review of early Head Start evaluations, see Hubbel McKay et al. (1985). Similar results were found in a recent Head Start evaluation, except that this study suggested that cognitive and emotional benefits remained in third grade among children living in higher-risk families (Puma et al. 2012).

3. The Harlem Children's Zone includes neighborhood interventions in addition to The Promise Academy. Using the experience of children attending school from outside the Harlem Children's Zone, Dobbie and Fryer (2013) suggest that the intervention that improved outcomes was the school and not the neighborhood improvements. This finding is consistent with the limited health improvements found for children who moved to higher-income neighborhoods though the Moving to Opportunity Demonstration (Gennetian et al. 2012).

4. William Alden, "Goldman Sachs to Finance Early Education Program," DealBook (blog), New York Times, June 12 2013. http://dealbook.nytimes.com/2013/06/12/goldman-to-invest-in-utah-preschool-program/?_php=true&_type=blogs&_r=0.

5. Center on Budget and Policy Priorities, "Policy Basics: The Earned Income Tax Credit," last modified January 20, 2015, accessed March 13, 2015, http://www.cbpp.org/cms/?fa=view&id=2505.

6. Chuck Marr, Chye-Ching Huang, Arloc Sherman, and Brandon DeBot, "EITC and Child Tax Credit Promote Work, Reduce Poverty, and Support Children's Development, Research Finds," Center on Budget and Policy Priorities, last modified March 3, 2015, accessed March 13, 2015, http://www.cbpp.org/cms/?fa=view&id=3793.

7. It is important to understand that the value of this study from a policy perspective does not derive from the presence of the casino per se (in fact casinos may be detrimental to community health) but to the fact that some families began to receive cash supplements from the casino while others did not.

8. See Mission Asset Fund, "Lending Circles," accessed March 13, 2015, http://missionassetfund.org/programs/lending-circles.

9. Health in all policies is a "collaborative approach to improving the health of all people by incorporating health considerations into decision-making across sectors and policy areas" (Rudolph et al. 2013, 5). Finland, for example, has halved childhood obesity in six years by adopting this approach, see World Health Organization, "Finland curbs childhood obesity by integrating health in all policies," last modified February 2015, accessed March 13, 2015.

10. UnitedHealth Group, "UnitedHealth Group, Minnesota Equity Fund and Community Leaders Celebrate Opening of Affordable-Housing Community in Ramsey," News release, November 14, 2013.

11. "About the Itasca Project." Accessed March 20, 2015, http://www.theitascaproject.com/index.htm.

12. "Magnolia Place Community Initiative," http://www.magnoliaplacela.org/.

REFERENCES

Akee, Randall K. Q., William E. Copeland, Gordon Keeler, Adrian Angold, and E. Jane Costello. 2010. "Parents' Incomes and Children's Outcomes: A Quasi-Experiment Using Transfer Payments from Casino Profits." *American Economic Journal: Applied Economics* 2 (1): 86–115. https://www.aeaweb.org/articles.php?doi=10.1257/app.2.1.86.

Akee, R., E. Sieonova, W. Copeland, A. Angold, and E. J. Costello. 2013. "Young Adult Obesity and Household Income: Effects of Unconditional Cash Transfers." *Journal of Applied Economics* 5 (2): 1–28.

Almond, Douglas, Hilary W. Hoynes, and Diane Whitmore Schanzenbach. 2011. "Inside the War on Poverty: The Impact of Food Stamps on Birth Outcomes." *Review of Economics and Statistics* 93 (2): 387–403.

Anderson, Kathryn, James E. Foster, and David E. Frisvold. 2010. "Investing in Health: The Long-Term Impact of Head Start on Smoking." *Economic Inquiry* 48 (3): 587–602.

Anderson, L. M., C. Shinn, M. T. Fullilove, S. C. Scrimshaw, J. E. Fielding, J. Normand, and V. G. Carande-Kulis. 2003. "The Effectiveness of Early Childhood Development Programs: A Systematic Review." *American Journal of Preventive Medicine* 24 (3 suppl): 32–46.

Arno, P. S., J. S. House, D. Viola, and C. Schechter. 2011. "Social Security and Mortality: The Role of Income Support Policies and Population Health in the United States." *Journal of Public Health Policy* 32 (2): 234–50. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3148579/.

Avchen, Rachel Nonkin, Keith G. Scott, and Craig A. Mason. 2001. "Birth Weight and School-Age Disabilities: A Population-Based Study. *American Journal of Epidemiology* 154 (10): 895–901. http://aje.oxfordjournals.org/content/154/10/895.long.

Bartik, Timothy J., William Gormley, and Shirley Adelstein. 2012. "Earnings Benefits of Tulsa's Pre-K Program for Different Income Groups." *Economics of Education Review* 31 (6) 1143–61. http://www.sciencedirect.com/science/article/pii/S0272775712001021.

Behrman, J. R., and M. R. Rosenzweig. 2004. "Returns to Birthweight." *Review of Economics and Statistics* 86 (2): 586–601. http://www.mitpressjournals.org/doi/abs/10.1162/003465304323031139#.VJi26F4AA.

Boivin, Michel, and Clyde Hertzman, eds. 2012. "Early Childhood Development: Adverse Experiences and Developmental Health." Ottawa, ON: Royal Society of Canada and Canadian Academy of Health Sciences Expert Panel. http://www.newcahswebsite.com/wp-content/uploads/2012/11/ECD-Report-nov-15-2012.pdf.

Bradley, Elizabeth H., Benjamin R. Elkins, Jeph Herrin, and Brian Elbel. 2011. "Health and Social Services Expenditures: Associations with Health Outcomes." *BMJ Quality & Safety* 20 (10): 826–31.

Braveman, P., and C. Barclay. 2009. "Health Disparities Beginning in Childhood: A Life-Course Perspective." *Pediatrics* 124 (suppl 3): S163–S75.

Braveman, P. A., C. Cubbin, S. Egerter, D. R. Williams, and E. Pamuk. 2010. "Socioeconomic Disparities in Health in the United States: What the Patterns Tell Us." *American Journal of Public Health* 100 (suppl 1): S186–S96.

Bruckner, T. A., R. A. Brown, and C. Magerison-Zilco. 2011. "Positive Income Shocks and Accidental Deaths among Cherokee Indians: A Natural Experiment." *International Journal of Epidemiology* 4 (4): 1083–90.

Business Roundtable. 2013. "Expand Access to High-Quality Early Learning Programs." Washington, DC: Business Roundtable.

Campbell, F., G. Conti, J. J. Heckman, S. H. Moon, R. Pinto, E. Pungello, and Y. Pan. 2014. "Early Childhood Investments Substantially Boost Adult Health." *Science* 343 (6178): 1478–85.

Campbell, F. A., E. P. Pungello, M. Burchinal, K. Kainz, Y. Pan, B. H. Wasik, O. A. Barbarin, J. J. Sparling, and C. T. Ramey. 2012. "Adult Outcomes As a Function of an Early Childhood Educational Program: An Abecedarian Project Follow-up." *Developmental Psychology* 48 (4): 1033–43.

Center on the Developing Child. 2010. "The Foundations of Lifelong Health Are Built in Early Childhood." Cambridge, MA: Harvard University, Center on the Developing Child. http://developingchild.harvard.edu/resources/reports_and_working_papers/foundations-of-lifelong-health/.

Chetty, Raj, John N. Friedman, and Jonah Rockoff. 2011. "New Evidence on the Long-Term Impacts of Tax Credits." Washington, DC: Internal Revenue Service. http://www.irs.gov/pub/irs-soi/11rpchettyfriedmanrockoff.pdf.

Conti, Gabriella, and James J. Heckman. 2013. "The Developmental Approach to Child and Adult Health." *Pediatrics* 131: S133–S41.

Cowan, Benjamin, and Nathan Tefft. "Education, Maternal Smoking, and the Earned Income Tax Credit." *BE Journal of Economic Analysis and Policy* 12 (1) (Topics), Article 45. http://www.degruyter.com/dg/viewarticle/j$002fbejeap.2012.12.issue-1$002f1935-1682.3305$002f1935-1682.3305.xml;jsessionid=B27B7816DE91887F938B57F9C1402B1E.

Currie, Janet, and Duncan Thomas. 1995. "Does Head Start Make a Difference?" *American Economic Review* 85 (2): 341–64.

Dahl, Gordon, and Lance Lochner. 2012. "The Impact of Family Income on Child Achievement: Evidence from the Earned Income Tax Credit." *American Economic Review* 102 (5): 1927–56. http://www.aeaweb.org/articles.php?doi=10.1257/aer.102.5.1927.

Deaton, A. 2002. "Policy Implications of the Gradient of Health and Wealth." *Health Affairs* 21 (2): 13–30.

Deming, David. 2009. "Early Childhood Intervention and Life-Cycle Skill Development: Evidence from Head Start." *American Economic Journal: Applied Economics* 1 (3): 111–34. http://www.people.fas.harvard.edu/~deming/papers/Deming_HeadStart.pdf.

Dobbie, Will, and Roland G. Fryer. 2011. "Are High-Quality Schools Enough to Increase Achievement among the Poor? Evidence from the Harlem Children's Zone." *American Economic Journal: Applied Economics* 3 (3): 158–87.

Dobbie, Will, and Roland Fryer. 2013. “The Medium-Term Impacts of High-Achieving Charter Schools on Non-Test Score Outcomes.” NBER Working Paper 19581. Cambridge, MA: National Bureau of Economic Research.

Dubay, Lisa C., and Lydie A. Lebrun. 2012. “Health, Behavior, and Health Care Disparities: Disentangling the Effects of Income and Race in the United States.” *International Journal of Health Services* 42 (4): 607–25. http://www.pubfacts.com/detail/23367796/Health-behavior-and-health-care-disparities:-disentangling-the-effects-of-income-and-race-in-the-Uni.

Duncan, G. J., C. J. Dowsett, A. Claessens, K. Magnuson, A. C. Huston, P. Klebanov, L. S. Pagani, L. Feinstein, M. Engel, J. Brooks-Gunn, H. Sexton, K. Duckworth, and C. Japel. 2007. “School Readiness and Later Achievement.” *Developmental Psychology* 43(6): 1428–46.

Duncan, Greg J., and Katherine Magnuson. 2011. “The Long Reach of Early Childhood Poverty.” *Pathways* Winter: 23–7. http://www.stanford.edu/group/scspi/_media/pdf/pathways/winter_2011/PathwaysWinter11_Duncan.pdf.

Federal Reserve Bank. 2012. Investing in What Works for America’s Communities: *Essays on People, Place & Purpose.* San Francisco, CA: Federal Reserve Bank of San Francisco and Low Income Investment Fund.

Garces, Eliana, Duncan Thomas, and Janet Currie. 2002. “Longer-Term Effects of Head Start.” *American Economic Review* 92 (4): 999–1012.

Gase, L. N., R. Pennotti, and K. D. Smith. 2013. “‘Health in All Policies’: Taking Stock of Emerging Practices to Incorporate Health in Decision Making in the United States.” *Journal of Public Health Management and Practice* 19 (6): 529–40. http://www.ncbi.nlm.nih.gov/pubmed/24080816.

Gelber, Alexander, and Adam Isen. 2013. “Children’s Schooling and Parents’ Behavior: Evidence from the Head Start Impact Study.” *Journal of Public Economics* 101: 25–38.

Gelber, Alexander M., and Matthew C. Weinzierl. 2012. “Equalizing Outcomes vs. Equalizing Opportunities: Optimal Taxation When Children’s Abilities Depend on Parents’ Resources.” NBER Working Paper No. 18332. Cambridge, MA: National Bureau of Economic Research. http://www.nber.org/papers/w18332.

Gennetian, Lisa A., Matthew Sciandra, Lisa Sanbonmatsu, Jens Ludwig, Lawrence F. Katz, Greg J. Duncan, Jeffrey R. Kling, Ronald C. Kessler. 2012. “The Long-Term Effects of Moving to Opportunity on Youth Outcomes.” *Cityscape: A Journal of Policy Development and Research* 14 (2): 137–68.

Geruso, Michael. 2012. “Black-White Disparities in Life Expectancy: How Much Can the Standard SES Variables Explain?” *Demography* 49 (2): 553–74.

Gormley, W., T. Gayer, and D. A. Phillips. 2008. “Preschool Programs Can Boost School Readiness.” *Science* 320: 1723–4.

William Gormley, Jr., Ted Gayer, Deborah Phillips, and Brittany Dawson. 2005. “The Effects of Universal Pre-K on Cognitive Development,” *Developmental Psychology* 41 (6): 872–84.

Halfon, Neal. 2009. “Life Course Health Development: A New Approach for Addressing Upstream Determinants

of Health and Spending." *Expert Voices*. Washington, DC: National Institute for Health Care Management Foundation.

Halfon, Neal. 2014. "Socioeconomic Influences on Child Health: Building New Ladders of Social Opportunity." *Journal of the American Medical Association* 311 (9): 915–17.

Heckman, J., R. Pinto, and P. Savelyev. 2013. "Understanding the Mechanisms through Which an Influential Early Childhood Program Boosted Adult Outcomes." *American Economic Review* 103 (6): 2052–86.

Herd, Pamela, Robert F. Schoeni, and James S. House. 2008. "Upstream Solutions: Does the Supplemental Security Income Program Reduce Disability in the Elderly?" *Milbank Quarterly* 86 (1): 5–45. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2690339/.

Hoynes, Hilary W., Doug Miller, and David Simon. 2015. "Income, the Earned Income Tax Credit, and Infant Health." *American Economic Journal: Economic Policy* 7 (1): 172–211.

Hoynes, Hilary W., Diane Whitmore Schanzenbach, and Douglas Almond. 2012. "Long Run Impacts of Childhood Access to the Safety Net." NBER Working Paper No. 18535. Cambridge, MA: National Bureau of Economic Research. http://www.nber.org/papers/w18535.

Hubbel McKay, Ruth, Larry Condelli, Harriet Ganson, Barbara Barrett, Catherine McConkey, and Margarat Plantz. 1985. *The Impact of Head Start on Children, Families and Communities: Final Report of the Head Start Evaluation, Synthesis and Utilization Project*. Publication No. (OHDS) 850311393. Washington, DC: US Department of Health and Human Services.

Institute of Medicine, and National Research Council. 2012. *From Neurons to Neighborhoods: An Update*. Washington, DC: National Academies Press. http://iom.edu/Reports/2012/From-Neurons-to-Neighborhoods-An-Update.aspx.

Jones-Smith, J. C., W. H. Dow, and K. Chichlowska. 2014. "Association between Casino Opening or Expansion and Risk of Childhood Overweight and Obesity." *Journal of the American Medical Association* 311 (9): 929–36.

Kania, J., and M. Kramer. 2011. "Collective Impact." *Stanford Social Innovation Review* Winter: 36–41. http://www.ssireview.org/images/articles/2011_WI_Feature_Kania.pdf. (Accessed August 31, 2014.)

Ludwig, Jens, and Douglas L. Miller. 2007. "Does Head Start Improve Children's Life Chances? Evidence from a Regression Discontinuity Design." *Quarterly Journal of Economics* February: 159–208.

Meyer, Bruce D. 2010. "The Effects if the Earned Income Tax Credit and Recent Reforms." In *Tax Policy and the Economy*. Vol. 24, edited by Jeffrey R. Brown, 153–80. Cambridge, MA: National Bureau of Economic Research.

Muenning, Peter, Kevin Fiscella, Daniel Tancredi, and Peter Franks. 2010. "The Relative Health Burden of Selected Social and Behavioral Risk Factors in the United States: Implications of Policy." *American Journal of Public Health* 100 (9): 1758–64.

Panter-Brick, Catherine, and James F. Leckman. 2013. "Editorial Commentary: Resilience in Child Development:

Interconnected Pathways to Wellbeing." *Journal of Child Psychology and Psychiatry* 54 (4): 333–6. http://onlinelibrary.wiley.com/doi/10.1111/jcpp.12057/pdf.

Puma, Mike, Stephen Bell, Ronna Cook, Camilla Heid, Pam Broene, Frank Jenkins, Andrew Mashburn, and Jason Downer. 2012. *Third Grade Follow-up to the Head Start Impact Study Final Report*. OPRE Report # 2012-45. Washington, DC: US Department of Health and Human Services, Administration for Children and Families, Office of Planning, Research and Evaluation.

Reyes, Belinda, Elías López, Sarah Phillips, and Kurt Schroeder. 2013. *Building Credit for the Underbanked: Social Lending as a Tool for Credit Improvement*. San Francisco State University.

Rudolph, Linda, Julia Caplan, Karen Ben-Moshe, and Lianne Dillon. 2013. Health in All Policies: *A Guide for State and Local Governments*. Washington, DC: American Public Health Association and Public Health Institute.

Russell, R. B., N. S. Green, C. A. Steiner, S. Meikle, J. L. Howse, K. Poschman, T. Dias, L. Potetz, M. J. Davidoff, K. Damus, and J. R. Petrini. 2007. "Cost of Hospitalization for Preterm and Low Birth Weight Infants in the United States." *Pediatrics* 120 (1): e1–e9.

Schiller, J. S., J. W. Lucas, and J. A. Peregoy. 2012. "Summary Health Statistics for U.S. Adults: National Health Interview Survey, 2011." *Vital and Health Statistics* 10 (256): Table 14. http://www.cdc.gov/nchs/data/series/sr_10/sr10_256.pdf.

Strully, Kate W., David H. Rehkopf, and Ziming Xuan. 2010. "Effects of Prenatal Poverty on Infant Health: State Earned Income Tax Credits and Birth Weight." *American Sociological Review* 75 (4): 534–62. http://asr.sagepub.com/content/75/4/534.abstract

Schoeni, Robert F., James S. House, George A. Kaplan, and H. Pollack, eds. 2010. *Making Americans Healthier: Social and Economic Policy As Health Policy*. New York, NY: Russell Sage Foundation. https://www.russellsage.org/publications/making-americans-healthier

Turner, Margery Austin, Peter Edelman, Erika Poethig, and Laudan Aron. 2014. "Tackling Persistent Poverty in Distressed Urban Neighborhoods: History, Principles, and Strategies for Philanthropic Investment." Washington, DC: Urban Institute. http://www.urban.org/UploadedPDF/413179-Tackling-Persistent-Poverty-in-Distressed-Urban-Neighborhoods.pdf.

Weiland, Christina, and Hirokazu Yoshikawa. 2013. "Impacts of a Prekindergarten Program on Children's Mathematics, Language, Literacy, Executive Function, and Emotional Skills." *Child Development* 84 (6): 2112–30. http://onlinelibrary.wiley.com/doi/10.1111/cdev.12099/abstract.

Wernman, Aaron, and Steven M. Teutsch. 2015. "Health in All Policies for Big Cities." *Journal Public Health Management Practice* 21 (Suppl1): S56–S65.

Wicks-Lim, Jeannette, and Peter S. Arno. 2015. *Improving Population Health by Reducing Poverty: New York's Earned Income Tax Credit*. Amherst: University of Massachusetts.

Woolf, Steven H. 2009. "Social Policy As Health Policy." *Journal of the American Medical Association* 301: 1166–9.

Woolf, Steven H., Laudan Aron. 2013. U.S. *Health in International Perspective: Shorter Lives, Poorer Health.* Washington, DC: The National Academies Press.

Yoshikawa, Hirokazu, Christina Weiland, Jeanne Brooks-Gunn, Margaret R. Burchinal, Linda M. Espinosa, William T. Gormley, Jens Ludwig, Katherine A. Magnuson, Deborah Phillips, and Martha J. Zaslow. 2013. *Investing in Our Future: The Evidence Base on Preschool Education.* Ann Arbor, MI: Society for Research in Child Development, and New York, NY: Foundation for Child Development. http://fcd-us.org/sites/default/files/Evidence%20Base%20on%20Preschool%20Education%20FINAL.pdf.

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