

How Healthy Are Our Children?

Sara Rosenbaum and Robert Blum

Summary

The past century has seen vast improvements in our children's health. The infectious diseases that once killed huge numbers of children have largely been conquered. Infant mortality has also fallen markedly, although the United States lags behind other industrialized nations in this and other measures of children's health. Accidents and injuries also kill fewer children than they once did.

Today, write Sara Rosenbaum and Robert Blum, the greatest threats to U.S. children's health are social and environmental conditions, such as stress and exposure to toxic substances, which are associated with noncommunicable illnesses, such as mental health problems and asthma. Unlike the communicable diseases of the past, these are not equal-opportunity hazards. They are far more likely to affect poor children and the children of racial and ethnic minorities. And they have long-lasting effects, both for individuals and for the nation. For example, people who experience unhealthy levels of stress as children grow up to become less healthy, less productive adults.

Rosenbaum and Blum also examine government spending on children's health. Though such spending has increased over time, the largest share of that increased spending has been for health care, while spending on other determinants of child health, which may be as or more important, has not kept pace. Investments in medical care alone can't overcome social and environmental threats to children's health that have their roots in historic levels of poverty and inequality. Rosenbaum and Blum argue that the best way to promote children's health today is to mitigate poverty, invest in education, and make our neighborhoods and communities healthier and safer.

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This article presents an overview of the health of America's children and examines the role and extent of government investments in child health. In brief, we find that despite major gains over the past century, children's health varies widely across population subgroups and lags well behind that of many other industrialized nations. Furthermore, although public health-care expenditures for children have grown steadily, this growth has come from expanded eligibility for publicly financed health insurance and substantial increases in the cost of health care. Rising health expenditures have coincided with the erosion of public investment in education, housing, and social services, all of which are thought to affect health, especially among the poorest children.

U.S. children's health today is best understood in the context of how child health has evolved over the past century. Evidence over time illuminates the social, behavioral, and economic factors that help explain both the nation's accomplishments and its existing and emerging challenges.

Where government investment in child health is concerned, we must explore a broad range of expenditure trends, since virtually all government policies can affect children's health. These include both tax expenditures and direct investments across the areas of income support, education, social services, housing, community development, national infrastructure, public health, and health care. One reason we must view government spending broadly is that direct investment in other populations can have spillover effects on children. For example, spending on the elderly, though frequently contrasted with

spending on children, could help children by easing their families' burden of caring for aging parents.

Health Status of Children and Adolescents

To understand how public expenditures affect children's health, we must first understand child health itself.

Measuring Child Health

There are no comprehensive, agreed-upon measures or indices as to what constitutes child health.¹ The National Research Council and Institute of Medicine conceive health across four domains: sociodemographic, psychological, behavioral, and contextual (community).² This domain-based approach leads them to focus on four bellwethers: health conditions (such as asthma and obesity); functional problems (for example, attention deficits and hearing, vision, and communication problems); health potential (for example, cognitive development); and birth-related characteristics such as low birth weight.

By contrast, the Annie E. Casey Foundation, in *Kids Count*, also incorporates mortality by age, as well as the use of certain marker health services, such as immunizations, dental care, and prenatal care.³ Child Trends, another widely cited source of child health measurement, uses yet other indicators.⁴

It is beyond the scope of this article to explore the characterization of child health in depth or to attempt to reconcile differences among measures. What we strive to do, however, is use marker conditions to indicate how U.S. children's health has changed over the past century. Our choices are largely dictated by the fact that most measures are not available over long periods of time.

The Evolution of Child Health

The past century has witnessed dramatic changes in child and adolescent mortality and illness. One hundred years ago, infectious diseases were the leading causes of childhood disease and death. Today, social and environmental factors are the principal drivers of child health. Noncommunicable diseases now pose the greatest threat to our children's health. Thus child health experts and advocates now focus on the precursors of noncommunicable diseases, as well as on how children's health affects development throughout childhood and adolescence.

Changing Trends over the Past Century

When we look at the changes in child survival in the United States over the twentieth century, the improvements are nothing short of breathtaking. In 1910, the infant mortality rate was 127.6 per 1,000 live births; by 2012, the rate had dropped to 6 deaths per 1,000 live births.⁵ The same improvement is evident in the case of mortality involving children under five years of age. In 1910, mortality among young children stood at 403.6 deaths per 100,000 children; by 2012, this figure had fallen to 7.1.⁶ One hundred years ago, diarrheal disease and pneumonia were major killers of infants and young children, as they still are in many low- and middle-income countries, along with prematurity. Today, congenital anomalies, sudden infant death, and prematurity are the leading causes of infant mortality. Given the reductions in infectious disease, injury and homicide have joined congenital abnormalities as the top three causes of mortality among children under age five.⁷

The past decade has seen a significant decline in childhood deaths from unintentional injuries, from 15.5 to 11.0 deaths per

100,000 children, a reduction of 29 percent. Over this period, childhood vehicular deaths experienced an even more dramatic 41 percent decline as a result of passive restraints, child passenger laws, graduated driver licenses for adolescents, and safer vehicles, indicating that nonmedical technologies can also play an important role in improving child health. At the same time, however, the rate of unintentional injury deaths among children under age one rose from 23.1 to 27.7 per 100,000.⁸

The same trends hold true for older children and adolescents. In 1910, diphtheria, croup, and scarlet fever were among the top three causes of death for children ages five to nine years, while tuberculosis and typhoid fever joined injuries as the leading causes of death in adolescence. One hundred years later, these infectious diseases are all but unknown as causes of death. Today, injury, suicide, and homicide account for three-quarters of all deaths in the second decade of life.⁹ This is not so much because deaths from these causes have increased, but because other deaths have declined precipitously.¹⁰ Table 1 shows the century-long shift in the causes of child deaths.

We've seen similar improvements in maternal mortality, which, though not a direct indicator of child health, is widely considered a sentinel marker of health for both mothers and children. In 1912, an estimated 650 women died for every 100,000 live births. By 2010, the maternal mortality rate had fallen to 21.¹¹

Many factors underlie the shifts in child survival rates. Vaccines against preventable diseases; antibiotics and management of infectious diseases; advances in the management of pregnancy and childbirth; methods

Table 1. Causes of Mortality in Children and Adolescents: A Century of Change

Age	1910–12	2010–12
Less than 1 Year	Diarrhea and Enteritis Prematurity “Congenital Debility”	Congenital Anomalies Prematurity SIDS
1–4 Years	Diarrhea and Enteritis Prematurity Pneumonia	Unintentional Injury Congenital Anomalies Homicide Cancer Heart Disease
5–9 Years	Diphtheria and Croup Scarlet Fever Injuries	Unintentional Injury Cancer Congenital Anomalies Suicide Homicide
10+ Years	Tuberculosis Injuries Typhoid Fever	Unintentional Injury Homicide Suicide Cancer Heart Disease

Note: Conditions are listed are in order of prevalence; row 4 reports data for 10- to 19-year-olds in 1910–12 and 10- to 14-year-olds in 2010–12.

Sources: Centers for Disease Control and Prevention, “10 Leading Causes of Death by Age Group, United States—2010”; Child Health USA, “Child Mortality”; U.S. Census Bureau, *Mortality Statistics: 1910*; and Melonie Heron, “Deaths: Leading Causes for 2009.”

for promoting early detection, treatment, and mitigation of conditions that once would have caused early death; and other technological advances no doubt played important roles. Access to sanitation, education, and food and nutrition also dramatically improved, as did the overall standard of living.

At the same time, the nation and its families have changed dramatically. Over the past century, America has become more urbanized. Since 1910, the proportion of the population living in cities has risen from 45.8 percent to 80.7 percent.¹² Urbanization has brought major new economic and social opportunities, including access to health care. But it has also brought new health risks, such as pollution, human congestion, social stress and, in many cities, a

deteriorating infrastructure, especially in inner cities. Today, while nearly 60 percent of children live in two-parent biologic or adoptive homes, the remainder live in a wide range of alternative family structures (for example, blended, single parent, grandparents, etc.).¹³ As the Annie E. Casey Foundation has shown, children who grow up in other than dual-parent families tend to be disadvantaged socially and economically.¹⁴ Parental work and allocation of child care responsibilities have also changed dramatically over the past half-century. In 1965 U.S. mothers worked an average of eight hours per week for pay. Today the average is 21 hours, and in approximately 60 percent of two-parent families, both parents work outside the home. The amount of time both fathers and mothers report spending with

their children has increased since 1965, but so has parental stress.¹⁵

Despite the substantial reductions in infant and child mortality over the past century, the U.S. ranks poorly compared to other industrialized nations in this regard. For Europe as a whole, infant mortality is 4.2 per 1,000, compared with 6.2 in the United States, and few European nations have infant mortality rates in excess of 5 per 1,000. (Despite some differences in reporting requirements, the United States' poor ranking cannot be explained by differences in the reporting of live births.¹⁶) Among industrialized countries, adolescent mortality averages 45 per 100,000. In the United States, the rates are 58 per 100,000 for white and Hispanic youth and 86 per 100,000 for black teenagers.

In the U.S. as in other nations, not all children have shared equally in the fruits of national growth. Low-income children and members of racial and ethnic minority groups continue to die in infancy at rates far higher than those experienced by white and

higher-income children (a notable exception is the lower mortality risk of Hispanic infants, children, and mothers). The success of many of the programs discussed elsewhere in this issue by Maya Rossin-Slater suggests that many of these excess deaths are preventable. These health inequalities are concentrated in the most economically vulnerable populations facing the highest social risks.¹⁷

As diagnostic tools have improved, and as the nation has become more vigilant in monitoring for certain health conditions, the 21st century has also seen progress for children's health, although this progress has not been equally shared. For example, asthma hospitalizations for children fell from 21.1 per 10,000 person years in 2000 to 18.4 in 2010 (a 13 percent decrease).¹⁸ However, at a community level, the prevalence of asthma increased nationally, with a growing black-white disparity.¹⁹ Generalized patterns of health inequalities are reflected in mortality rate differentials for every age group in childhood, as shown in table 2.

Table 2. U.S. Infant and Child Mortality 2010, by Race/Ethnicity and Age (per 100,000 live births)

	Non-Hispanic White	Non-Hispanic Black	Hispanic (all races)	American Indian	Asian/Pacific Islander
Infant Mortality	528	1,051	458	378	445
Early Child Mortality, Ages 1–4	24	38	24	14	27
Child/Early Adolescent Mortality, Ages 5–14	13	18	11	9	12
Adolescent Mortality, Ages 15–19	58.0	85.7	57.9	97.1	–

Sources: Child Trends, "Infant, Child and Teen Mortality," <http://www.childtrends.org/?indicators=infant-child-and-teen-mortality>; KIDS COUNT, "Child Deaths By Race," <http://datacenter.kidscount.org/data/tables/23-child-deaths-by-race>; Child Health USA, "Adolescent Mortality," <http://mchb.hrsa.gov/chusa12/hs/hsa/pages/am.html>; Centers for Disease Control and Prevention (CDC), "Vital signs: Unintentional Injury Deaths among Persons aged 0–19 years—United States, 2000–2009," *Morbidity and Mortality Weekly Report* 61 (2012): 270–76.

The Health Pathway from Childhood to Adulthood

As childhood mortality has changed over the past century, so, too, has our understanding of disease causes and pathways. At the turn of the twentieth century, the notion of miasmas as the basis of illness had only recently given way to a microbial-based understanding of disease. Louis Pasteur, who identified microbes as the underlying agents of anthrax, had only recently died. And only a quarter-century before, at the Philadelphia Centennial Exhibit in 1876, Joseph Lister was roundly criticized by leading American surgeons for advocating aseptic surgical techniques.

By the early 1900s, germ theory had become well entrenched, and a single-agent concept of disease prevailed.²⁰ The quest for invading organisms drove research and medicine and led to dramatic advances in antibiotics and vaccines in the first half of the twentieth century. Advocates also considered the social context for health, but they tended to focus on issues such as sanitation, access to clean water, and safe milk and food supplies.²¹ This began to change after World War II, as noncommunicable conditions became major public health concerns, particularly cardiovascular disease, lung cancer, and peptic ulcers.

Investigators were unable to identify a single microbe causing these or many other conditions. Consequently, they began to explore behavioral and environmental factors. The case-control studies showing an association between lung cancer and cigarette smoking were a watershed that, among other things, compelled rethinking of the dominant construct of illness. The behavioral lens has widened to encompass the link between diet

and serum cholesterol control on one hand and cardiovascular disease on the other, as well as numerous other relationships among social conditions, behaviors, and disease. No longer was disease seen as the consequence of a single invading organism; rather, people began talking about a “web of causation.”²²

Today, we have a profoundly different understanding of disease causes and pathways. Specifically, we have come to understand that many disease conditions—and especially noncommunicable conditions—result from interactions between individuals and their environments. Today, we understand that environmental toxins are not only physical and chemical in nature but can be social as well. And we know that risk exposures in fetal life and even before conception can drive chronic conditions across the life course.

Researchers have examined the interaction between children and their environments, including the families in which they live and the conditions that affect families’ lives and wellbeing, highlighting the effects of socially toxic environments.²³ In the Adverse Childhood Experiences Study (ACES), researchers showed an association between child abuse and being reared in dysfunctional households, on the one hand, and later adult health, on the other. Since then, research has documented strong associations between adverse childhood experiences and adult cancers, sexually transmitted infections, ischemic heart disease, and hepatitis.²⁴ In fact, children who have adverse childhood experiences show a risk of subsequent disease approximately two to four times as high as children who did not have such experiences. Researchers define adverse childhood experiences to include psychological/ physical/ sexual abuse, exposure to substance abuse,

mental illness, exposure to maternal violence, and exposure to parental criminal behavior. In their research sample, drawn from a large HMO in Southern California, ACES researchers found that one in four adults reported two or more such experiences, while 11 percent of those 50 years of age or older reported four or more. For adults of any income level, early adverse childhood experiences have profound effects. Poverty not only increases the risk of having such experiences, but also reduces the availability of protective factors (for example, nurturing adults) that can buffer the impact of exposure.²⁵

Exposure to social toxins in childhood alters the developing brain and can have adult consequences. Today we understand that brain development extends well into the third decade. Exposure to toxic environments—what researchers call *toxic stress*—alters brain architecture in developing children by chronically increasing cortisol, a stress hormone; this, in turn, reduces brain development, producing a less complex brain scaffolding. The result is reduced capacity for reasoning, stress reactivity, decision making, and learning.²⁶

The ACES findings added weight to what was already an emerging ecological model of child health. This model, first advanced by Urie Bronfenbrenner, a leading figure in child development research, pointed to an association between a host of environmental factors and children's health.²⁷ So, too, evidence has begun to show that many adult diseases have their origins in infancy or before birth. The fetal origins hypothesis, championed by David Barker, has led to research demonstrating that birth weight is strongly associated with adult disease risk. One reason may be that under-nutrition in developing fetuses in turn elevates the

risk of chronic diseases in adults and the elderly.²⁸ Subsequent research has validated this association with hypertension, cardiovascular disease, type 2 diabetes, and metabolic syndrome.²⁹

We now also understand that the interaction between genetics and the environment is a major factor in health. When they first described the DNA double helix in 1953, James Watson and Francis Crick ushered in an era in which researchers concluded that the key to disease was locked in the gene. Sixty years later, the human genome has been mapped, and with that mapping has come the promise of altering genes known to cause disease, especially noncommunicable diseases. Advances in genetics have led to a better understanding of the gene/environment interaction, and we now know that genes per se account for a relatively small fraction of human disease at any age. Research shows that what you eat and the environment in which you live play significant roles in turning genes on or off in undesirable ways that may lead, for example, to cancer.³⁰

At the same time that landmark genetic research was occurring, epidemiologic research began to raise fundamental questions about what drives health. Why, for example, did babies born to women of the Confederacy in the American Civil War have a significantly higher incidence of stroke as adults than those born to women in the North?³¹ Why did children born in a three-month period in certain communities of the Netherlands in 1945 have a significantly higher prevalence of schizophrenia as adolescents than those born in other communities at the same time or even in the same community at other times?³² Why did smoking patterns of a paternal grandfather

affect his grandson's body mass index but not his granddaughter's—even when the grandfather and grandson had never met?³³ Today we understand some of how the environment can get under the skin. We understand, for example that diet, alcohol consumption, environmental pollutants, and stress can turn genes on or off by altering epigenetic regulators, thereby allowing certain conditions such as cancer or obesity to be expressed.³⁴

As our understanding of what drives health has evolved, we have moved from focusing strictly on gene/environment interactions to an “upstream” conceptual model in which infant and child health is also important for understanding adult disease. Promoting children's health is no longer only a crucial goal in its own right; child health emerges as an essential precondition to improving health over the lifespan, reducing the burden of disease, and lowering health-care expenditures. “By shifting the timing of our focus from clinical disease to preclinical precursors,” Guoying Wang and colleagues have written, “we will be able to move toward the ultimate goal of twenty-first century medicine—preventing and intervening before the onset of clinical disease. By doing so, we hope to improve child and adolescent health, population health and quality of life, and at the same time, reduce health care costs.”³⁵

Child Health Concerns

Today, the primary health problems that children and youth face are noncommunicable conditions that not only adversely affect health and development but also act as precursors of noncommunicable disease in adults. These conditions arise from both lifestyle behaviors and the social environments in which our most vulnerable children live. In some cases, they may also be the result

of medical successes: premature infants who survive or pediatric cancer patients who are cured but who nevertheless experience future health problems stemming from either their initial conditions or their medical care.

The neighborhood in which a child is born and grows up can have an important impact on the risk of illness or death, as well as life expectancy. Neighborhoods are highly correlated with both family income and a host of environmental exposures (for example, violence, unsanitary conditions, environmental and social toxins). One important factor is residential segregation, which continues to be pervasive in American life.³⁶

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A great deal of evidence suggests that family characteristics affect children's health. Elsewhere in this issue, Maya Rossin-Slater demonstrates substantial disparities in birth outcomes by maternal education, which is a commonly used measure of socioeconomic status. Using data from the 2012 National Health Interview Survey (NHIS) to look at marker childhood health conditions associated with lower income and adverse community health conditions, we can also see an association between the incidence of poorer health and populations at heightened risk of poverty and deprivation, including members of racial and ethnic minorities—particularly non-Hispanic blacks.

For example, in 2012, 14 percent of children under the age of 18 had ever been diagnosed with asthma, and 9 percent had persistent asthma.³⁷ Among non-Hispanic black children, however, the incidence of asthma rose to 22 percent, and 14 percent had persistent asthma. In the NHIS, 82.9 percent of schoolchildren ages 5–11 reported their overall health as good to excellent. The remaining 17 percent (those not in good-to-excellent health) were five times as likely to have asthma. There was a strong and positive correlation between parental income and children's positive assessment of their health; while nearly 90 percent of children at the highest income levels reported excellent health, only 46 percent of those living in poverty did so. The NHIS also showed that while one-third of America's children had missed no school due to illness or injury in the previous 12 months (2011–12), 4 percent missed 11 or more days, with a significant impact on their educational achievement.³⁸ Children living in households headed by a single mother were twice as likely as their peers (6 percent vs. 3 percent) to miss 11 or more days.

The NHIS also revealed other child health disparities. In 2012, 6 percent of children had unmet dental needs because their parents couldn't pay for care; unmet need was highest among uninsured children and children living in households headed by a single mother. That same year, 4.9 percent of children were reported to have learning or attention disabilities, which have become the dominant sources of child disability in the U.S.³⁹ (See also the article in this issue by Alison Cuellar, which focuses on children's mental health.) Both learning and attention disabilities were strongly associated with poverty and disadvantage.⁴⁰

Two researchers recently presented nationally representative statistics from the National Health and Nutrition Examination Survey that connect indicators of poor child health to household income.⁴¹ Obesity, hypertension, diabetes, low high-density lipoprotein cholesterol (HDL, known as "good cholesterol"), and high cholesterol ratio were measured through physical examinations and/or laboratory reports. Their figures indicate clear income gradients in children's health across all measures other than diabetes.

As table 2 shows, the United States has experienced substantial decreases in infant and child mortality. But disparities persist, not only by income but also by racial/ethnic status. One study based on NHIS data clustered 17 measures of child health into four domains: health status, disability, consequences of illness, and specific conditions.⁴² Overall, from 1998 to 2009, the authors found no narrowing of the racial/ethnic gap. Black children consistently had lower self-assessed health status than did non-Hispanic white children as well as higher prevalence rates of the specific illnesses analyzed. In fact, for 11 of the 17 marker conditions there was no narrowing of the gap in black-white odds ratios, while others (for example, autism) saw improvement.

Taken together, these data bolster the idea that, in both direct and indirect ways, the social contexts in which children live and develop are prominent determinants of child health. Poor health is disproportionately associated with poverty, as well as with minority status and residence in single-parent households, the same households that are most likely to face deep and entrenched poverty. And we see uneven progress in closing the gaps, at least for a number of

important child health indicators. That said, all groups have benefited, though not equally so, as key markers of child health, such as infant mortality, have improved over time.

The Nation's Investment in Children

Turning to the question of public sector investments in support of U.S. children's health, we need to consider a series of questions. How should investing in children be defined? What is a fair and accurate measurement of child health spending? What national expenditures should count as expenditures on children? In the United States, after all, much of the national investment capital is privately held, with government playing a role in specific areas of social policy. Where have governmental investments historically made their presence felt, and what types of government investments should count in measuring governmental involvement? How have patterns of governmental investments changed over time, and how does the U.S. investment picture measure up to those of other nations with comparable political and economic characteristics?

Defining Governmental Investment in Children

Society invests in children in numerous ways. In a nation such as the United States, in which capital and investment decision making lie so prominently in private hands, should the question of investment be viewed through both a private and a public lens? Simply put, private sector behaviors matter deeply to children's wellbeing. These include the decisions of families, who are on the front line of child wellbeing; decisions by private developers and banks, for example, to finance a community development project in an aging waterfront city; the decisions of entrepreneurs and businesses about where

to use their resources, time, and energy; employment policies, ranging from wages to other forms of nonwage compensation such as health insurance, paid and unpaid family leave, flexible work hours, child care, and other policies that support families with children; banks' lending practices; private philanthropy; and how settled communities react to and embrace newcomers. All of these decisions have economic dimensions, and all bear on children's health and welfare.

In this article, we use the concept of investment more narrowly. We focus on governmental investments, that is, expenditures that follow from policy decisions by federal, state, and local governments. And we consider not only direct outlays of public funds, but also investments in the form of tax revenues that are forgone to promote a public good, such as permitting families to deduct home mortgage payments from personal taxes, thereby encouraging home ownership, which may ultimately affect community stability. An examination of government spending would be incomplete without considering both types of investments.

Measuring Expenditures

In a 2000 report that compared federal spending on the elderly and children, the Congressional Budget Office devised a methodology that has essentially been followed in later studies—an expenditure is counted as one for children if the object of the expenditure is a child or if the expenditure involves benefits that households receive as a result of having a child (defined by the CBO as up to age 18) in the household.⁴³

This methodology omits numerous types of government expenditures critical to children. For example, the CBO does not count unemployment benefits, which are obviously

important to children in unemployed families but don't vary by family size. Nor does it include such community investments as the special Medicare and Medicaid payments received by hospitals that treat a disproportionate percentage of low-income patients, a key form of social investment in low-income communities that lack access to an adequate supply of health-care providers. The CBO's methodology also excludes community-level spending, such as grants to develop and operate community health centers or to deploy National Health Service Corps physicians in medically underserved urban and rural communities. These expenditures obviously aid children (indeed, children comprise 32 percent of health center patients).⁴⁴ But because these investments are at the community level and are not conditioned on the presence of children, the CBO methodology doesn't count them.

Where transfer payments are concerned, the CBO methodology prorates benefits that flow to all members of a household, such as food stamps. In the case of certain entitlements, such as Medicaid, Social Security, and the Earned Income Tax Credit (EITC), the CBO methodology distributes benefits on two bases: payments made directly on behalf of a child (or an elderly person in the case of coverage of the elderly), and benefits given to adults by virtue of their relationship to one or more children.

Private Research

The Urban Institute, whose *Kids Share* study is the most important analysis to date on measuring expenditures on children, notes one limitation that arises in attempting to measure investment levels—the inability to “directly compare spending amounts to levels of need or to quantify the amount of unmet need that may exist.”⁴⁵ Thus, whether

the government underspends on children or overspends on the elderly, for example, has meaning only in relation to their need, making meaningful comparisons difficult and suggesting that perhaps the conceptual and policy framework on which spending rests is more important than the amount spent. For example, if spending on children is more likely to flow through means-tested programs, while spending for the elderly tends to reflect an underlying framework of universal legal entitlement, the structural distinction may be more meaningful than the dollar value of the actual transfers because of the political, economic, and social implications of different investment structures.

With these limits in mind, Urban Institute researchers have built on the CBO methodology, seeking to answer certain broad questions such as when childhood begins and ends, what exactly constitutes spending on children and their parents versus the general population, and whether spending encompasses both tax expenditures (that is, revenue forgone) as well as direct program outlays. The Urban Institute's approach includes expenditures devoted entirely to children (for example, child care, foster care, or elementary and secondary education), as well as entitlements that directly benefit children (for example, Medicaid and Supplemental Security Income). Like the CBO model, the Urban Institute's model also includes family benefits that increase when children are present, such as food stamps (known as the Supplemental Nutrition Assistance Program, or SNAP) and low-cost public housing. The Urban Institute methodology includes expenditures for which children are necessary to qualify for benefits, such as Temporary Aid to Needy Families (TANF), as well as

tax expenditures such as the EITC and tax benefits that are nonrefundable (for example, the Child Tax Credit).

As with the CBO's methodology, the Urban Institute's approach excludes many forms of government spending that benefit families and communities but that are not directly linked to the presence or number of children. As with the CBO, this limitation excludes investments that either replace income for families or target broad indicators of family and community health, such as unemployment compensation, the home mortgage tax deduction, roads, job training programs, national parks, and environmental protection. All of these investments benefit all members of society, underscoring the shortcomings of any measurement system that is directed at a subpopulation defined by age.

In sum, measuring governmental investments in children is a highly imperfect exercise. Researchers have attempted to answer three basic questions. First, what is the extent of direct government investment aimed at offsetting income inequality? Second, what is the extent of investments aimed at mitigating the effects of low income in areas such as housing, health care, and nutrition? And third, what is the extent of government investments that promote children's human capital? Many investments, of course, do not fit neatly into one of these boxes. An investment in nutrition, for example, is also an investment in human capital.

Here, we treat all types of government expenditures — whether in medical care or in the social conditions of health, and whether direct outlays or tax expenditures — as investments in child health. Medical care

is enormously important to children, especially those with serious health care needs, but, given the role of social and environmental factors, it is only one of the keys to promoting child health. As children develop, their health is shaped by the familial, social, and economic supports they receive. Indeed, the foregoing discussion of child health compels a far broader definition of health expenditures, since the consequences of these expenditures directly affect both children's health in the near term and the population's health in the long term.

Spending on Children

Given the U.S. political structure, governmental investments must be measured at both the federal and state levels. Different levels of government emphasize different investments. As the CBO has pointed out, the federal government has taken the lead in supporting the elderly; by contrast, states have assumed leadership in spending on children and families through education and social programs. That said, the CBO points out that federal spending on the elderly surpasses overall state spending on children. The CBO's figures illustrate the dominance of federal programs in the lives of the elderly, compared to those of children. According to the CBO study, in fiscal year 1995, state governments spent \$4,000 per child, on average, compared with \$700 for each elderly person, principally because federal spending for the elderly dwarfs state and local spending on children. Although the numbers are somewhat dated, the same exponential difference undoubtedly holds true today, as state expenditures have eroded even as federal spending on the elderly has continued to climb.

Although the CBO has not updated its study, later data from the Urban Institute study

show a persistent difference in spending on children versus spending on the elderly. In 2008, total federal and state spending on children for health care, education, income security and tax credits, and other services surpassed \$11,800 per child; of this amount, about one-third came from the federal government. By contrast, total government spending on the elderly that year for health, income security and tax credits, and other investments surpassed \$26,300, 97 percent of which was federal.

The Urban Institute spending comparison further shows that health and income security represent the largest comparable differences. Both can be explained, of course; dramatic differences in per capita health-care expenditures would be expected, because the elderly consume vastly more health care. Large differences in income security can be explained by the presence of Social Security for the elderly, which is structured to replace income in retirement as opposed to supplementing income for families still in their earning years. Nonetheless, these figures suggest the comparatively modest role that income supplementation policies play in the lives of children. And the differences have become more pronounced, considering the stagnation in wages among families with children over the past four decades.

The disparities in spending for children have in all likelihood grown since 2008, given numerous economic and political factors: the most serious recession since the Great Depression; reductions in federal spending on children's programs following the short-lived stimulus package enacted by Congress in 2009 as the American Recovery and Reinvestment Act; and a general lack of political support for an expansion of domestic discretionary spending

programs that favor children and their families, including spending on education.

Regardless of whether we use the CBO's or the Urban Institute's methodology, the federal government makes a relatively modest investment in children's health. Indeed, modest is the hallmark of the day, whether the investment is described in terms of size in relation to the federal budget, spending as a percentage of the GDP, or spending in relation to expenditures on the elderly.

The CBO estimates covered the period from 1971 through 2000, and the study made projections to 2010. These estimates show that in 2000, the federal government spent an estimated \$148 billion on children, one-third of that in the form of domestic discretionary programs. Not surprisingly, given the cost of health care, Medicaid dominated federal spending on children that year, representing about one out of every six dollars spent on federal children's investments (\$23 billion out of \$148 billion). In 2000, spending on children comprised 8.4 percent of the federal budget and 1.5 percent of the national GDP. The CBO projected in 2000 that children's spending would remain at 1.5 percent of GDP by 2010 while rising to 9.4 percent of the federal budget.

Spending on the elderly presents a different picture under the CBO analysis. In the case of the elderly, the CBO analysis constructs a profile beginning in 1971; that year, the federal government spent \$45 billion on the elderly, with discretionary spending amounting to approximately 2 percent of the total (\$1 billion versus \$44 billion). By 2000, mandatory spending on the elderly had increased exponentially to \$597 billion, while discretionary spending had risen to

\$18 billion, approximately 3 percent of total federal spending.

In contrast to spending on children, mandatory spending on individual entitlements accounts for the overwhelming majority of federal spending on the elderly, through programs such as Social Security, federal civilian and military retiree benefits, Medicare and Medicaid, veterans' compensation and pensions, food stamps, and others. Because of rapid growth in the elderly population, as well as the strong connection between elderly expenditures and individual entitlements, the proportion of the federal budget and the GDP going to the elderly is high and rising rapidly. By 2000, spending on the elderly consumed 34.8 percent of the federal budget and 6.4 percent of the nation's GDP; the CBO projected that year that by 2010, spending on the elderly would rise to nearly 43 percent of the federal budget, or nearly five times the expenditures for children, and 7.1 percent of the GDP. Because the nation has failed to either introduce cost efficiencies in health-care entitlements or generate sufficient revenue to support necessary social expenditures in discretionary spending programs that do not rise automatically with inflation, investments that are structured under law to depend on discretionary investments have fallen behind. It is children who disproportionately depend on these types of discretionary investments.

Interstate Variation in Child Spending

Where state investments are concerned, the aggregate figure tells only part of the story, of course. Underlying economic and social factors cause extreme interstate variation in the level of childhood poverty, revealing a far more serious picture for children

in some states than in others. The Annie E. Casey Foundation's *Kids Count* data project reported that in 2012, 23 percent of American children lived in poverty, an increase of nearly one-third from the 2008 figure of 18 percent.⁴⁶ The overall figure masks dramatic state-level differences in poverty levels, ranging from 13 percent in North Dakota to 35 percent in Mississippi. Furthermore, interstate variation shows up in more than just the child poverty statistics. *Kids Count* also reported that southern and southwestern states, which tend to have higher childhood poverty generally, showed far higher proportions of children living in areas with a high concentration of poverty (that is, areas where 30 percent or more of the population is poor), a condition that is especially related to elevated risks to health and wellbeing. Nationally, from 2007 to 2011, 12 percent of U.S. children lived in high-poverty areas; among the 14 states and the District of Columbia whose figures surpassed this level, three were in the Northeast (four if we include the District of Columbia).

State investment in children varies significantly, *Kids Count* shows. Although some federal programs use a funding formula that takes state poverty into account, not all do so. As a result, although federal expenditures might mitigate the impact of low spending in states, by no means does federal spending alone equalize opportunity across states.

Education offers a powerful example of the phenomenon. In 2008, when school expenditures across the country averaged slightly more than \$7,100 per pupil, the federal government paid only \$537 per pupil, or 7 percent of each dollar spent, according to Urban Institute estimates. In a per-pupil spending arrangement, the actual number of

poor children might dictate the total federal investment, but the level of investment per child does not rise in a way that offsets a low state spending baseline. Adjusting for regional cost differences, the Urban Institute documented a more than twofold difference in state per-pupil educational spending in 2010, and the 2008 recession made these interstate divisions deeper. By fiscal year 2014, 13 states, some of which had very high childhood poverty levels, were spending more than 10 percent less on elementary and secondary education than they had spent in 2008.⁴⁷

In sum, children derive much of their support from state expenditures, and state expenditures matter a great deal. But state expenditures are significantly less generous than those made by the federal government, especially in certain areas, such as income security, tax credits, housing, and nutrition. The states' tendency not to spend on direct family economic supports, coupled with a structural emphasis on universal entitlement spending on the elderly under federal policies, helps explain why per capita spending on the elderly is much higher than per capita child spending. Furthermore, the level of state support varies deeply, with children in the poorest states with the most entrenched childhood poverty facing a far greater risk of low investment, thereby increasing the likelihood of perpetuating poverty and furthering the disparities of health, education, and opportunity.

Federal Spending Patterns

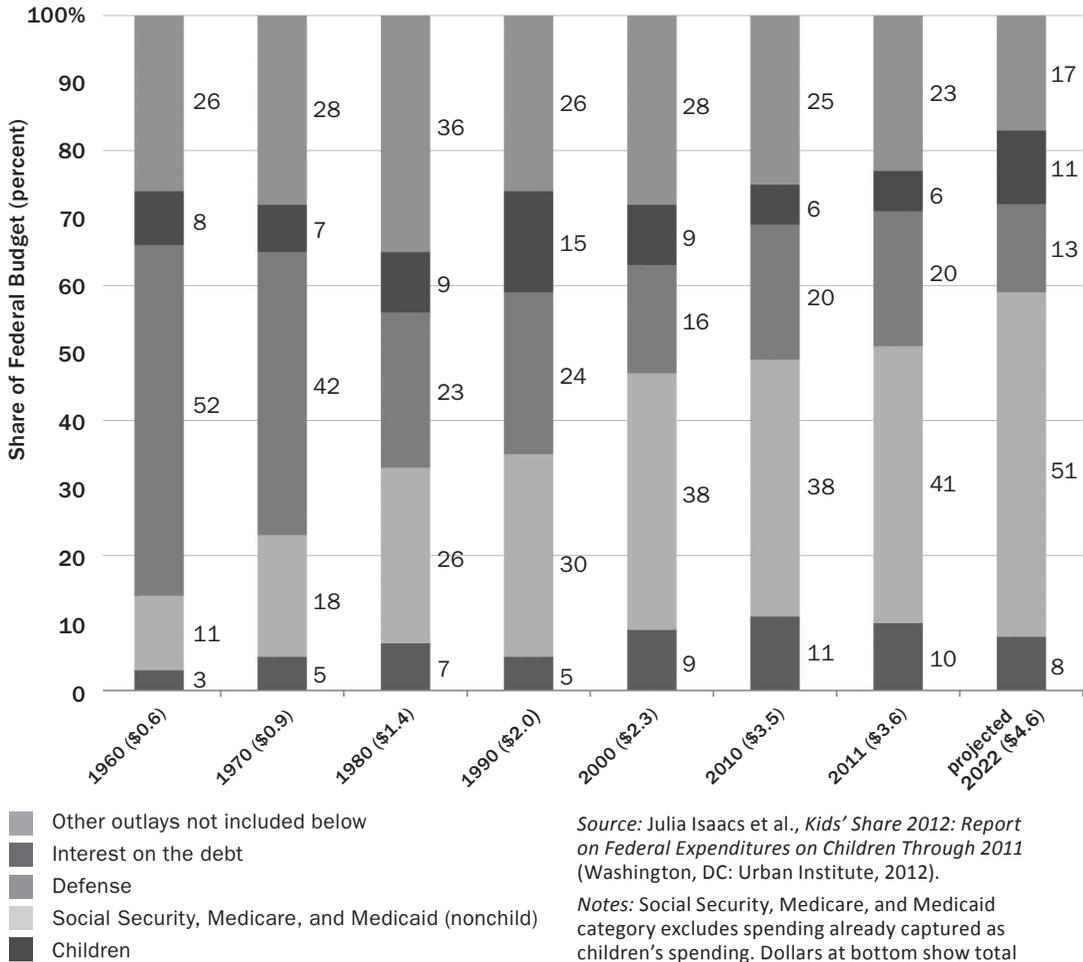
Because federal spending dominates in many key areas, such as income support, medical care, housing, and nutrition assistance, federal spending patterns merit particular attention.

The Urban Institute's *Kids Share* historical analysis of federal spending patterns on children from 1960 to 2011 shows that the decline in the proportion of children living in poverty was accompanied by an increase in the proportion of federal budget outlays spent on children, rising from 3 percent in 1960 to 10 percent by 2011. But because spending on children disproportionately takes the form of discretionary spending (which does not rise automatically with inflation), periods of economic retrenchment have caused federal spending on children to contract. This decline has become more pronounced in recent years, as a consequence of budget legislation that has significantly shrunk the level of permissible federal discretionary spending in coming years. As a result, the Urban Institute projects that by 2022, spending on children will fall to 8 percent of the total federal budget. Figure 1 presents the results of the institute's analysis.

These estimates, as the Urban Institute researchers note, don't include federal tax expenditures over time, which take the form of exemptions and deductions. In a separate analysis, the researchers examined the share of the domestic federal budget spent on children between 1960 and 2011 and projected such expenditures for 2022. Once federal tax expenditures are included, the results are even more startling. In 1960, investments in children consumed 20 percent of the domestic federal budget, which included tax expenditures such as the value of the dependent exemption. By 2011, this figure had fallen by one-quarter to 15 percent of the domestic budget, chiefly because of the declining value of the dependent exemption.

As we've said, the fact that expenditures for children reached the levels they did in 2011 stems primarily from Medicaid

Figure 1. Share of Federal Budget Outlays Spent on Children and Other Items, Selected Years, 1960–2022



Source: Julia Isaacs et al., *Kids' Share 2012: Report on Federal Expenditures on Children Through 2011* (Washington, DC: Urban Institute, 2012).

Notes: Social Security, Medicare, and Medicaid category excludes spending already captured as children's spending. Dollars at bottom show total federal outlays in trillions of 2011 dollars.

expansions for children over the 1980s and the enactment of the Children's Insurance Program (CHIP) in 1997, and the value of the employee health-benefit tax exclusion for children (estimated by the Urban Institute at more than \$19 billion in 2011), as well as medical cost inflation. In other words, investments in housing, income, nutrition, education, child welfare, and other programs and services that relate to children's overall health have stalled, even as medical spending has risen.

Children's Spending as a Percentage of GDP

The Urban Institute also examined spending on children as a share of the GDP over time. In 1960, spending on children stood at 2 percent of GDP and was dominated by the dependent exemption under the Internal Revenue Code. By 2010, children's spending was approaching 3.5 percent of GDP (a figure markedly higher than that projected by the CBO in 2000). But by then, mandatory spending had come to dominate growth:

direct outlays on children's health-care programs, the employee health-benefit tax exclusion, and the refundable children's tax credit. The dependent exemption, which was not indexed to inflation, had shrunk deeply, and discretionary programs remained flat.

The Affordable Care Act

Can the Affordable Care Act (ACA) be expected to alter this picture? The answer is no. Though it advances U.S. policy, the ACA is all about medical care. The refundable premium tax credits that the ACA establishes for low- and moderate-income families (those with incomes between 100 percent and 400 percent of the federal poverty level) will help families secure affordable coverage. But these expenditures will, of course, be medical. In effect, the ACA fills in the affordability gap left by Medicaid and CHIP, which were already in place, by adding insurance premium tax credits for families whose children qualify for neither existing program (see the article in this issue by Lindsey Leininger and Helen Levy for more information about the ACA and children).

Arguably, the greatest stride for children under the ACA is not that it expands subsidized coverage (although simplified enrollment procedures are expected to help close the gap between children eligible for insurance and those who enroll), but that it extends affordable coverage to parents and adult caretakers. The ACA's potential for parents to gain insurance coverage has been seriously complicated by the Supreme Court's 2012 decision permitting states to opt out of the Medicaid expansion.⁴⁸ To date, approximately 5 million poor adults, disproportionately residents of the South and African American, have been affected by the fallout from the decision.⁴⁹ For the time being, these adults still have

no pathway to affordable coverage; their incomes are too low to qualify for premium tax credits in the health insurance exchange, whose threshold for financial assistance is set at 100 percent of the federal poverty level. This gap leaves children in the poorest families in the opt-out states continually vulnerable to the profound effects that untreated illness and disability on the part of their parents or caretakers can have on their own health and wellbeing.

To be sure, the ACA also makes broader, community-level investments that will affect children's health. The law calls for major improvements in the quality of care, payment reform to improve the efficiency of health care, and investments in a health-care workforce that can better meet the demands of a modern health system (Congress ultimately appropriated no funding for workforce improvements).

Other aspects of the ACA emphasize building healthy communities. For example, Congress included a special community health center development fund to help establish accessible and comprehensive primary health care in medically underserved communities. The ACA's health center investment, coupled with health center funding made available under the 2009 economic stimulus law, has helped boost health center capacity nationally, raising the number of people served from slightly more than 18.7 million to over 21.1 million by 2012.⁵⁰ In addition, the ACA established a Prevention and Public Health Fund, through which Community Transformation Grants are awarded to improve community and population health. In the end, however, the ACA is about expanding access to health insurance coverage and, by extension, health care, and does not directly speak to underlying issues of individual, family, and community health.

In sum, the story of investments in children over the past 50 years has been a move away from general family support (in the form of the dependent exemption) and toward more targeted support through spending tied to need (for example, Medicaid, CHIP, the EITC, and SNAP). These programs have grown, lifting total spending on children as a proportion of the federal budget and as a percentage of GDP. Spending on children, however, remains far lower than spending on the elderly. More importantly, perhaps, with so much government spending on children driven by discretionary expenditure decisions, is that as discretionary spending has retrenched, investments in children have also declined as a proportion of total government spending.

International Comparisons of Spending on Children

As we've seen, the U.S. stacks up relatively poorly on critical measures of child health. Similarly, the U.S. compares unfavorably to other nations on indicators of governmental investment in children and their families. Indeed, the picture that emerges is one of a powerful and immensely wealthy nation that, compared to other nations, has made a startlingly modest investment in its children.

Assessing how nations invest in children is challenging in view of the vast differences in the structure of governmental programs and activities, which in turn makes direct comparison difficult. At the same time, however, researchers have developed methods for comparing public investment by examining the steps governments take to advance children's human capital while ameliorating the impact of poverty.

Crowded and environmentally unsound living conditions introduce health and social

risks that children who live in clean and safe environments don't face. In a cross-national comparison of public spending for children, Julia Isaacs found that the United States compared poorly on a number of investment measures. Building on previous research showing elevated child poverty in nations that spend less on cash benefits, services, and tax breaks for families with children, Isaacs concluded that within the Organisation for Economic Co-operation and Development (OECD), a gulf separates the United States from other nations because of its "tight-fisted" policies toward children and their families.⁵¹ Even when Isaacs used a test that considered a broader array of governmental investments, including tax expenditures through the Earned Income Tax Credit, she concluded that spending on children in the United States still lagged behind that of nine other OECD nations. When the measure was expanded further to include a range of expenditures spanning cash benefits, family services, and education, Isaacs found that the United States lagged behind 10 other nations. Only when health-care spending was included did the United States rise to the top of the range. As we've pointed out, this fact may tell us more about how costly health care is in the United States rather than how well the United States invests in children.

Where spending on the elderly is concerned, all OECD nations demonstrate what Isaacs calls an "age bias" in public expenditures. The per capita expenditure disparity ranges from 1.2 times as much in Scandinavian countries to 35 times as much in Spain.⁵² The United States shows an age bias of 2.5; this bias climbs higher once education spending is removed. Overall, this age bias among OECD nations helps explain why, in high-GDP countries, the proportion of elderly people living in poverty has

declined significantly, while the decline in poverty among children has remained so much more modest.

Conclusions

The evidence we've presented supports several conclusions and carries important implications.

First, the classic indicators of health that have guided the clinical medical response to children, as well as the organization and financing of health care, have shown dramatic improvement. At the same time, much work remains, especially for children who live in low-income households or are members of racial and ethnic minority groups and thus at risk for poor health and inadequate health care. The triumph over death that has characterized the nation's century-long health-care effort on behalf of its children has led not only to better health, but also to the survival of infants and children who previously might have died and whose full participation in life may depend on continuous and enhanced medical services and supports. The role that medical technology plays in the survival of infants and children with serious medical conditions has been profound. That said, the disparities in child health across the child age spectrum demand that we think beyond clinical services to the contextual factors that put children at risk and that reduce health inequalities. The ACA makes enormous strides in moving the nation toward greater health care equity, but, obviously, it does not address the underlying conditions of child health.

Second, even as child mortality data show significant improvements, the evidence we've presented demonstrates continuing

and ongoing exposure to health risks, both physical and mental. To tackle these risks, we need solutions that lie beyond the furthest reaches of the medical care system working by itself. Access to medical care is of bedrock importance for all children. But medical care is not structured—nor should it be—to address the underlying causes of poor health in children and adolescents. These causes can be found in historic levels of poverty and inequality—themselves the result of a vast array of economic, political, and social factors—that take an inevitable toll on families and produce enormous deprivation and stress. If we want to improve children's health at the population level, then the nation will need health commitments that extend well beyond medical care.

For these underlying causes of poor child health, we need a different type of treatment, one that emphasizes human capital investment in education; in policies that promote community and neighborhood health, security and safety; and in policies, services, programs, and supports that mitigate the effects of poverty for individual families and help overcome the effects of too-limited family income. Failure to make these investments not only harms children but, given the evidence of the relationship between child development and later health in adults, consigns the nation to a future of diminished strength, laboring under the weight of unsustainable medical costs.

When it comes to these investments, the federal government will play an outsized role for children, just as it does for the elderly. In this regard, the absence of universal legal entitlements for children and families (see the article in this issue by Clare Huntington and Elizabeth Scott), coupled with an erosion in funding for programs that rely on

annual discretionary appropriations, has left American children uniquely vulnerable and lagging far behind children in other wealthy nations. Rather than acting on what we know, the nation is squeezing out of the federal budget the very programs that might make the biggest difference in child health, even as it spends more generally on medical care. We need to change national budgeting priorities to ensure children's place as a central focus of national investment. The government's investment in child health has failed to keep pace with the evolving understanding of the factors that help determine children's health.

Remedying this significant shortcoming will take time and resources. It will require expanding the range of interventions classified as health care and developing a new approach to training health-care professionals to help them more effectively integrate health care with upstream investments. It will also involve changing the outlook of public and private insurers to take a broader view where child health financing is

concerned. One example might be insurance coverage of clinical care services in schools and community settings, an expenditure recognized by Medicaid but frequently excluded by private insurance. Another example would be to recognize certain environmental interventions as legitimate health-care spending, even though treatments such as the elimination of asthma triggers from a child's apartment might not entail diagnostic and treatment services by a licensed medical or health professional.

Finally, it goes without saying that none of these new directions in child health policy can gain traction without a basic shift in the social and political context in which they are made. We Americans value our freedom as individuals; what we seem to lack at the moment is recognition that embracing children and families through social investment not only doesn't diminish this core value but actually promotes it, by building the human capital that in turn will help the nation move confidently into the future.

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