

Currie, Janet

**Article**

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## Child Health and Human Capital

Janet Currie\*

When economists use the phrase “human capital,” it generally means “education.” But one’s health can also be viewed as a form of capital. Both education and health are strongly influenced by “family background,” which is commonly measured using parent’s education and income. Much of my research over the past decade seeks to evaluate the effect of public programs designed to improve the outcomes of children from disadvantaged backgrounds. In my forthcoming book, *The Invisible Safety Net: Protecting the Nation’s Poor Children and Families*, I argue that while the cash welfare system receives more attention, elements of a largely invisible safety net of in-kind programs have proven remarkably effective in improving the lives of poor children.<sup>1</sup>

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\* Currie is a Research Associate in the NBER’s Programs on Labor Studies, Children, and Education. She is also the Charles E. Davidson chair and professor of economics at the University of California, Los Angeles.

### Intervention Programs

For example, my work with Eliana Garces and Duncan Thomas shows that Head Start (a pre-school intervention for poor children) improves long-term outcomes for disadvantaged children, although it does not bring these children up to the level of their more advantaged peers. Using a special supplement to the Panel Study of Income Dynamics, we ask whether children who attended Head Start had better outcomes (on a range of measures) than their own siblings who did not attend. We find that among whites, children who attended Head Start were about 25 percent more likely to have completed high school than their siblings who did not. Among African-Americans, the Head Start children were half as likely to have been booked or charged with a crime. This is the first study to show a lasting effect of Head Start.<sup>2</sup>

Still, programs like Head Start remain “black boxes,” in that we know little about

exactly why they work. It is possible that much of the beneficial effect of Head Start is not through explicitly educational interventions but rather through mandates to improve nutrition, link families with community services, and increase utilization of preventive health care.<sup>3</sup>

Head Start’s emphasis on getting children into care remedies an important limitation of programs that focus primarily on extending health insurance via such programs as Medicaid or the State Child Health Insurance Program (SCHIP). Lack of health insurance remains an important issue, but is not the major determinant of child health. One reason is that providing eligibility for health insurance does not always lead people to use care appropriately. In a broader review of the “take up” of social programs, I discuss the low take-up rate among individuals eligible for public health insurance; this is an important social problem that reduces the use of preventive care and may increase the use of expensive palliative care.<sup>4</sup>

## SES and Child Health

Maternal education is one important determinant of take-up and of other health behaviors. However, it has been difficult to demonstrate this relationship empirically because maternal education is a choice. To tackle this problem, Enrico Moretti and I compiled data on openings of two- and four-year colleges between 1940 and 1990. We used data about the availability of colleges in the woman's county of residence in her seventeenth year as an instrument for her education at the time of her child's birth. We found that higher maternal education does improve infant health, as measured by birth weight and gestational age. It also increases the probability that a new mother is married, reduces parity (birth order), increases use of prenatal care, and reduces smoking, thus suggesting that these are important pathways for the ultimate effect on health.<sup>5</sup>

In subsequent work, Moretti and I created a unique longitudinal dataset of California births from the 1960s to the present in order to investigate the relationship between maternal income (measured at the time of the mother's birth and at the time of the child's birth), maternal birth weight, and the child's birth weight. We used names and birth dates to link the records of mothers and children and also identified mothers who were siblings. We showed that there is a strong inter-generational correlation in the birth weight of mothers and children, but that a measure of household income at the time of the mother's birth is also predictive of low birth weight in her child. Our most interesting finding is that there is an interaction between maternal low birth weight and maternal poverty in the production of child low birth weight. Together these findings suggest that inter-generational correlations in health could play a role in the inter-generational transmission of income. Parent's income affects child health, and health at birth affects future income.<sup>6</sup>

The relationship between family income and child health starts at birth but grows stronger as children age, even

in countries with universal health insurance such as Canada. Using a panel of Canadian children, Mark Stabile and I show that the health of poor children relative to that of richer children worsens with age, just as it does in the United States. We argue that this deterioration may be related to a higher "arrival rate" of negative health shocks among poor children. For example, poor children are more likely than richer ones to have new chronic conditions diagnosed at virtually all ages, and they are also more likely to be hospitalized.<sup>7</sup> Perhaps surprisingly, in our data, both rich and poor children were equally likely to recover from any given health shock. Identifying the sources of these health shocks and policies that may prevent them is an important avenue for future research.

## Threats to Child Health

One example of a negative health shock not prevented by conventional medical care is unintentional injuries. Such injuries are a leading cause of death among children over the age of one in the United States. Joseph Hotz and I show that accident rates are responsive to child care policy—they are lower among children in care when the care givers are more educated—although stiffer child care regulations may also increase accident rates among children pushed out of regulated care by higher prices.<sup>8</sup>

Pollution is another factor that affects disadvantaged children disproportionately. In our study of the effects of air pollution in California on infant health, Matthew Neidell and I find that the most polluted zip codes have 50 percent more mothers who are high school dropouts than the least polluted ones. This complicates our attempts to identify the causal effect of pollution. We use individual-level vital statistics data to investigate the effects of criterion air pollutants on infant mortality, fetal deaths, low birth weight, and prematurity. Our models are identified using within-the-zip-code level variation in pollution levels that remains after controlling for seasonal patterns and weather. We find that the reductions in

carbon monoxide (CO) and particulates (PM10) that occurred over the 1990s saved more than 1,000 infant lives in California.<sup>9</sup>

Nutrition is a key determinant of health that is receiving increasing attention, given an "epidemic" of obesity and obesity-related diseases such as diabetes. I have examined the determinants of child nutrition in a series of studies with Jayanta Bhattacharya, Steven Haider, and Thomas Deliere. We find that poverty is an important predictor of nutritional outcomes among preschool children, but not among school-aged children. However, "food insecurity" (missing meals or being afraid that there will not be sufficient money to buy food) is not predictive of poorer nutritional outcomes among either group of children (although it could be viewed as a bad outcome in itself). Nevertheless, there are many children with nutritional deficiencies, even among those who consume too many calories.<sup>10</sup>

Using data from the National Health and Nutrition Examination Surveys, we also find that poor families reduce expenditures and calories consumed in response to cold weather shocks (a "heat or eat" effect), although we find no evidence that this affects the quality of the diet. Despite recent concerns about inadequacies in child nutrition programs, we find that the School Breakfast program improves the quality of children's diets.<sup>11</sup> Taken as a whole, these studies suggest that there is a link between poverty and poor child nutrition that is mitigated by the food safety net that is in place, particularly for school aged children.

While most of the economic research on child health focuses on physical health, mental health may be much more important. The majority of workdays lost among adults are attributable to mental health problems, and many such problems have their roots in childhood. The best available estimates suggest that mental health problems may be much more prevalent among poor than among non-poor children, confounding attempts to measure the effects of mental illness per se. Stabile and I use nationally representative samples of U.S. and Canadian children to

examine the medium-term outcomes of children with symptoms of Attention Deficit Hyperactivity Disorder (ADHD), the most common child mental health problem.<sup>12</sup>

Rather than relying on diagnoses, we use “screener” questions administered to all children, and we use sibling fixed effects to control for omitted variables such as poverty. We find large negative effects on test scores and schooling attainments, and positive effects on the probability of being placed in special education. The effects are remarkably similar in Canada and the United States. Moreover, the effects are approximately linear, suggesting that even moderate symptoms have costs in terms of educational attainment. In contrast, physical health problems such as asthma are found to have insignificant effects. These results indicate that mental health conditions might well prove to be a “missing link” between family background, child health, and educational attainments.

## The Role of Health Insurance

Despite the key role of family background and non-medical threats to child health, most discussions of disparities in child health focus not on more general interventions, such as Head Start, but rather on the role of health insurance. I have continued to study Medicaid, the main system of public health insurance for poor women and children. Using individual-level vital statistics data, Jeffrey Grogger and I find that state welfare reforms prior to 1996 were associated with reductions in the use of prenatal care and with negative impacts on infant health, presumably because women who went off the welfare rolls were no longer automatically eligible for Medicaid coverage.<sup>13</sup>

Over the 1990s, most states switched their Medicaid caseloads from traditional fee-for-service to some form of Medicaid managed care (MMC). Like the managed care programs that cover most privately insured Americans, MMC restricts access to services in order to reduce costs. In the case of Medicaid patients, though, it has

been argued that managed care might have some offsetting benefits for patients. For instance, it would guarantee access to providers who were contractually obligated to treat Medicaid patients, whereas under the fee-for-service system, many providers did not accept Medicaid.

However, incentives facing providers are complex and may result in many consequences that were not intended by legislators. John Fahr and I find that the introduction of MMC in California was accompanied by shifts in the composition of the Medicaid caseload away from black children, and that black children who lost coverage were subsequently more likely to go without doctor visits. Using a panel of all California births among mothers in the 1990s, Anna Aizer, Moretti, and I are able to follow mothers who were required to join MMC plans between births. We find that mothers forced to switch to MMC were more likely to delay prenatal care and to suffer adverse birth outcomes than other mothers.<sup>14</sup>

Aizer and I also examine estimates of “network effects” in the utilization of public prenatal care services provided under the Medicaid program. We find that these effects are similar for first-time mothers and for second-time mothers who have already used prenatal care services. This suggests that the measured effects do not represent transmission of information about the services between network members, because mothers who have already used the services presumably know about them. Moreover, the estimated effects are much reduced when we control for the hospital of delivery. Perhaps surprisingly, women who live in the same neighborhoods, but who are from different ethnic groups, tend to deliver in different hospitals. These results suggest that it is the enrollment services provided by hospitals, and not the woman’s “network,” that facilitates access to Medicaid-sponsored prenatal care services.<sup>15</sup>

In summary, my research points to a holistic view of child human capital development that encompasses educational attainment, physical, and mental health, and seeks to explore the feedbacks between them. Interventions to reduce

the transmission of poverty from one generation to the next could perhaps be improved if we understood these linkages better.

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## Estate Taxation

### Wojciech Kopczuk\*

Taxation of estates and inheritances is one of the most controversial issues in tax policy. While this type of taxation is viewed by some as an integral part of a system that guarantees equality of opportunities, others describe it as a "death tax" and argue that it is both inherently unfair to levy a tax at death and that it is particularly costly to do so, highlighting its adverse effect on wealth accumulation, discrimination against savers, negative consequences for the survival of small businesses, and a multitude of avoidance opportunities.

From an economist's point of view, estate taxation touches on a wide array of important topics. It is a form of a tax on

capital. It is heavily progressive, with U.S. federal tax rates currently approaching 50 percent and exceeding 70 percent in the past. It is closely tied to the propagation of inequality and the impact of redistribution. It affects the intergenerational mobility of wealth. Its impact and its cost depend on the presence and nature of a bequest motive. How individuals plan for leaving an estate depends also on their acceptance and attitudes toward their own death, thus providing a natural place for looking for examples of the importance of psychological considerations. The U.S. estate tax is nominally a tax on individuals, but its incidence depends on family structure and interrelationships. The tax has been dubbed a "voluntary tax," highlighting that tax avoidance and administration issues are also very important.

Estate taxation has figured in economic research in three different ways. First, one may be interested in understanding how the actual estate tax affects

economic decisions. Second, there is an important theoretical question regarding the role that this type of taxation should play in the tax system. Third, the existing data on estate taxpayers provides a source of information that can shed light on central economic, but non-tax, issues. In my research, I have pursued each of these directions.

In a few of my papers, I looked at how transfer taxation affects economic decisions. The notion that the estate tax forces people to make difficult late-in-life, even deathbed, decisions, has its place in the political discourse about the tax, but is it really true? Using linked estate and income tax data, I studied how estates of people who suffered from a lengthy illness differ from estates of those who died instantaneously.<sup>1</sup> I found that the size of the reported estate (of wealthy estate taxpayers) is as much as 20 percent lower for decedents whose terminal illness lasted months or more, but I also showed that

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\*Wojciech Kopczuk is a Faculty Research Fellow in the NBER's Public Economics Program and an associate professor of economics and international and public affairs at Columbia University. His profile appears later in this issue.