QNAS

QnAs with Janet Currie

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Many mental illnesses arise in adolescence, and a study of national insurance claims in the United States finds a large variance in how adolescent patients are treated even within the same zip code. The findings, reported in Janet Currie's Inaugural Article (IA) (1), reveal that 45% of adolescents receive first-line treatments that are not approved by the US Food and Drug Administration (FDA) (1). Currie, elected to the National Academy of Sciences in 2019, has studied children's health for three decades. A professor of economics and public affairs at Princeton University, Currie has undertaken pioneering economic analysis of child development, including analysis of the effects of the Head Start program on children (2, 3) and the effects of expansions of the Medicaid program for pregnant women and children (4, 5). In her IA (1), Currie analyzes a large national dataset to reveal disparities in treatment that cannot be attributed to supply-side factors, such as limited availability of treatment providers.

Janet Currie. Image credit: Princeton University/Denise Applewhite.

PNAS: What is the link between health and economics?

Currie: Health can have an impact on how much human capital, like education, people are able to acquire. Moreover, healthcare is a business, and it accounts for almost 20% of US GDP [gross domestic product]. So there are two strands: One is thinking about health as a business, and another is thinking about health as a form of wealth. My work generally focuses more on that second aspect of health as a form of human capital. The Inaugural Article (1) brings those two strands together to a certain extent because mental health problems in children are one of the things that causes them to have less human capital than they might otherwise, and I'm looking at how those children with mental health problems end up getting treated by the healthcare system.

PNAS: One of your past studies (6) examined the effects of traffic congestion on infant health. How did you find data to use in that study?

Currie: This [year] is the 50th anniversary of the Clean Air Act, which has had a huge impact in the [United States]. We often hear about how bad pollution is and, of course, climate change is a very serious problem, but in terms of the amount of pollution that we are generating, it's really remarkable how much cleaner the air is than it was 50 years ago.

However, while we can see that some parts of the country have cleaner air than others and that, on average, those parts of the country also have healthier people, correlation is not causation. What I try and do is find a third factor that causes a change in pollution levels without causing other effects on health or on where people live. So, I was looking for a factor that would reduce pollution from traffic congestion, and the roll out of E-ZPass in New Jersey and Pennsylvania proved to be a great "natural experiment."

E-ZPass, or electronic toll collection, was introduced to speed up traffic, but incidentally resulted in big reductions in air pollution right around toll plazas by allowing cars to speed through instead of idling. What we find is that introducing E-ZPass improved the health of infants born right around the toll plazas, compared to other infants who were born to mothers who lived a little bit further away from the toll plazas but along the same highways. Both groups were subjected to approximately equal numbers of cars going by, but the group near the toll plazas had been subjected to higher pollution from cars idling near the plazas. E-ZPass eliminated this extra source of pollution and improved the health of these infants (6).

PNAS: In the IA (1), you analyze data from the Blue Cross Blue Shield (BCBS) database, a sample of 2.2. million children. Nine percent of the children had at least one mental illness claim. What are the strengths and limitations of the data?

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Currie: The sheer size of that dataset is a strength. We also have fairly detailed information about what treatments they received, such as which drugs they were prescribed. We are able to identify and focus on the first time that children get treated. We think that's important because there's a lot more consensus about how to treat somebody when they walk into the office for the first time.

There are also a lot of things about these patients that we don't see in claims data. There tends to be a trade-off between how detailed the data are for each person and how many people are included in the dataset. Datasets that cover millions of people often have less information about each person, but you may still be able to see patterns in that data that are meaningful and would be invisible in smaller datasets.

Another limitation is that a sample of children with health insurance from Blue Cross Blue Shield is not representative of all children in the [United States]. We compared our sample of children to similar children in the US Census and, as one might expect, the BCBS children are from wealthier areas, on average, and are a bit less likely to be minority. However, BCBS does offer some Medicaid plans, and we do have representation of minority children and those from poorer areas.

PNAS: When you parsed the data by geographic area, you created healthcare markets that included zip codes of where the children lived and where they could seek care. What did the analysis reveal?

Currie: The first thing that we establish is that there is just incredible variation in the types of treatments being received across the country. Then, we try and look at what the reason for that may be. Everyone points to shortages of child psychiatrists and other mental health professionals as one of the main reasons for variation in treatment (including whether children get treatment in a timely way). We show that measures of the availability of different kinds of mental healthcare workers do have statistically significant effects on treatment choices, but they just don't explain much of the variation across areas. We also find that there is a great deal of variation in treatment even among children from the same zip codes, and even within zip codes that are relatively well-supplied with mental health professionals.

Our argument is that a lot of the variation in treatment reflects differences in the provider's practice styles. Different providers tend to have different favorite treatments, and this tends to be idiosyncratic to the provider rather than a characteristic of the area.

PNAS: You note that when large numbers of children in an area receive treatments that are not FDA-approved on their first visits, this should be a red flag.

Currie: We are pretty conservative about identifying what we think are questionable treatments. One category that we think is questionable is prescribing a drug that is not FDA-approved for any indication for a child the patient's age. If it is the first time a child is being treated, why not start with a drug that is FDA-approved? We're working very hard on a follow-up paper to see what the effect of these questionable treatments is on the child's future health outcomes. I'm not really trying to criticize doctors. I'm just trying to say, there's a lot of practice that doesn't seem to be following guidelines. We should try to understand it better and realize that it's not just being driven by shortages of child psychiatrists. And it also seems unlikely to be driven by the patients since most parents are unlikely to be demanding non-FDA–approved drugs for their children.

I don't think of what I'm trying to do here as a substitute for clinical research or case studies. The kind of work that I'm doing is a valuable complement to traditional medical studies. If you could combine what people learn from clinical studies and what can be learned from studies of "big data," like insurance claims, then we could progress a lot faster.

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