Predicting Disability Enrollment Using Machine Learning

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Key Findings and Policy Implications

This paper analyzes the potential for machine learning algorithms to predict disability program enrollment, focusing on SSI-enrolled teenagers as they reach adulthood. It also considers the potential value of health care in improving disability outcomes for these beneficiaries. The study uses administrative data from state Medicaid programs, including detailed healthcare utilization records, demographic and geographic information, and whether individuals are eligible for Medicaid based on disability. The paper finds that:

- As one would expect, SSI-enrolled teenagers with higher overall healthcare spending have a lower probability of exiting the program as adults. Nearly half (48%) of teenagers in the lowest quartile of Medicaid spending exit SSI, while only 23% in the highest spending quartile leave the program.
- Using a series of machine learning algorithms to assess whether the combination of healthcare and non-healthcare information in Medicaid data can predict disenrollment from SSI, the models correctly predict whether an individual will disenrolled from SSI about 80% of the time. The models work particularly well in predicting the SSI-enrolled teenagers who have a high probably of staying on SSI as adults. Among the quartile of individuals with the highest predicted continuing enrollment, 99 percent stay enrolled in the program as adults.
- Alternative specifications that use only the healthcare information in the database (i.e., excluding beneficiary demographics and geography) retain considerable independent predictive power on continuing program enrollment. And while one cannot infer any causal relationship between health care and enrollment, the results affirm that Medicaid data may be useful to future analyses of causation. At the very least, the results show that healthcare utilization helps identify people with more vs. less severe disabilities. It could also be the case that health care improves the functional ability of SSI-enrolled teenagers in ways that facilitate their departure from SSI.

The machine learning methods applied in this study have considerable importance for Social Security policy. They might be used, for example, to better target redetermination resources, or to help recipients unlikely to receive continuing coverage to plan for their transition to adulthood.

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