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What Can Algorithms Tell Us About Inequality?

The dynamic nature of poverty presents a challenge in designing effective assistance policies. A significant gap in our understanding of poverty is related to the role of income shocks in triggering or perpetuating cycles of poverty. Such shocks can constitute unexpected expenses – such as a medical bill or a parking ticket – or an interruption to one's income flow. Shocks have recently garnered increased public attention, in part due to prevalent evictions and food insecurity during the COVID-19 pandemic. However, shocks do not play a corresponding central role in the design and evaluation of poverty-alleviation programs.

To bridge this gap, we present a model of economic welfare that incorporates dynamic experiences with shocks and pose a set of algorithmic questions related to subsidy allocations. We then computationally analyze the impact of shocks on poverty using a longitudinal, survey-based dataset. We reveal insights about the multi-faceted and dynamic nature of shocks and poverty. We discuss how these insights can inform the design of poverty-alleviation programs and highlight directions at this emerging interface of algorithms, economics, and social work.