Optimal interventions for increasing healthy food consumption among low-income populations

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Abstract

In the US, over $60 billion per year is spent on policies aimed at increasing fruit and vegetable (FV) consumption among low income households. Many of these interventions are either monetary or education-related. The goal of this paper is to improve the performance of these interventions through a more strategic and personalized allocation of funds. This paper introduces a novel consumer behavioral model for grocery shopping dynamics, which is nested into a bi-level model for optimizing the planner’s budget allocation. The planner’s goal is to increase the consumer’s FV purchasing. The model agrees with known empirical evidence and suggests several new policy insights, for example that price- and education-related interventions can be either complementary or substitutable.

To demonstrate the applicability of the model, the modeling parameters and optimal intervention bundles are estimated for the low income households contained in the USDA’s FoodAPS dataset. Furthermore, for settings where the planner cannot provide completely personalized interventions, an empirical analysis reveals that high levels of FV consumption can be achieved by subsetting consumers into a small number of groups and deploying smart group-level interventions.