

# REDUCING CHILDHOOD SUGAR-SWEETENED BEVERAGE CONSUMPTION: USING AGENT-BASED MODELS TO INFORM POLICY

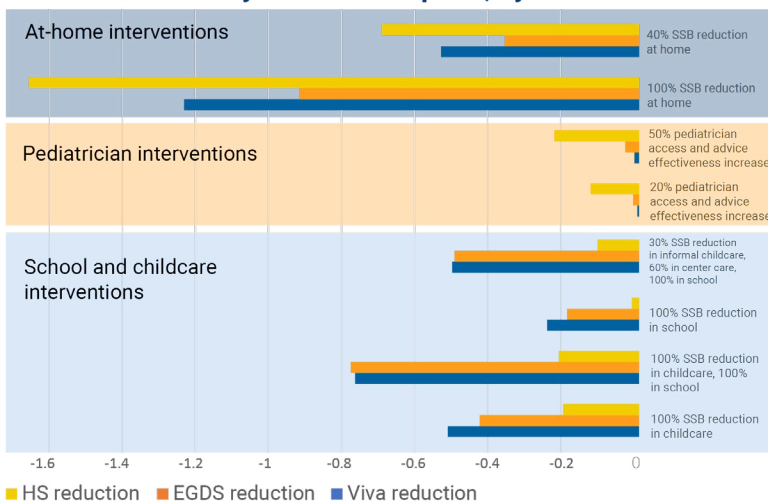
Childhood consumption of sugar-sweetened beverages (SSBs) including sodas, fruit drinks, and sports drinks is linked to numerous negative near- and long-term health outcomes. Despite widespread recognition among public health experts that childhood SSB consumption should be reduced, doing so has proven to be a challenge. In a [study](#) from October 2022, we developed an agent-based model (ABM) to evaluate intervention efforts in different settings - childcare, schools, and at home. This research showed that reduction of access to SSBs in the home was the most promising context for intervention, reducing consumption by as much as 60%.

In a new [study](#) published in the American Journal of Preventive Medicine, we replicated our previous research using high-quality, longitudinal data from multiple cohorts of children from varied populations

and environments. After verifying that the model was able to reproduce consumption patterns observed in each cohort, it was used to simulate potential impacts of multiple intervention strategies across contexts. The research found that:

- Reducing home availability of SSBs consistently led to the largest potential reduction in overall consumption
- A complete decrease in availability of SSBs in the home resulted in an average 67% decrease in overall early childhood consumption across the three cohorts
- Potential intervention impacts can vary considerably across context. For example, reducing availability in center-based childcare resulted in substantially greater reduction in one cohort relative to the other two

## Reduction in weekly SSB consumption, by cohort



Source: "Childhood sugar-sweetened beverage consumption: An agent-based model of context-specific reduction efforts," American Journal of Preventive Medicine, 2023

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## Key conclusions:

- Many policy efforts have focused on reducing the availability of SSBs in schools and childcare settings
- There is untapped potential for policy strategies targeting children's SSB consumption in the home
- One size doesn't fit all: policymakers should carefully consider which strategies will have the highest impact in the contexts in which they operate

## Lessons for your community

Children's health generally, and the consumption of sugar-sweetened beverages specifically, is a complex, context-specific issue. There are a large number of interconnected factors, and those factors vary widely by demographics and setting.

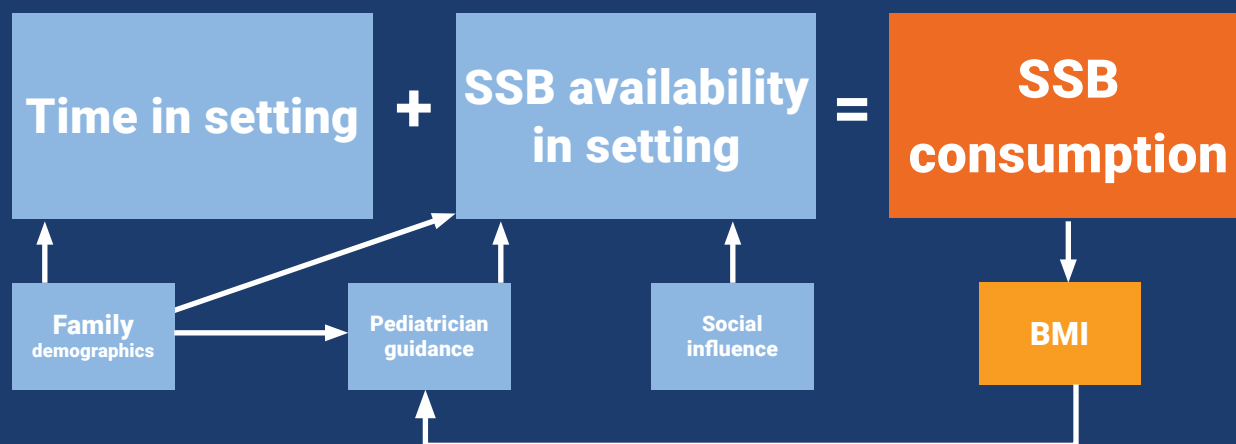
By acknowledging and embracing these challenges, our research provides valuable insights: Policies targeting access to SSBs in the home are likely to have the

greatest impact, but effective strategies will depend on where they are enacted.

Based on the strength of our model's performance with three high-quality datasets, we believe our model is broadly generalizable. This means that it has the potential to serve as a tool for designing effective strategies to reduce childhood SSB consumption tailored to specific communities' circumstances.

### A look inside our model

Agent-based modeling (ABM) is a computational simulation approach in which individuals, their behaviors, and the environments in which they operate are explicitly modeled over time. Researchers increasingly turn to this modeling approach because it can capture important interdependence, adaptivity, and heterogeneity. Importantly, it can represent where individual children spend time, and how their exposure to SSBs might change over time, potentially because of interactions between individuals (e.g., caregivers).



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