

Effects of sweetened beverage taxes on beverage purchasing among households with and without children: An exploratory subgroup analysis from an online experimental marketplace study

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Background

- Sugar-sweetened beverages (SSB) are a leading source of added sugar¹
- Reduction of children's SSB intake is an important public health target to prevent diet-related chronic disease²
- Beverage taxes reduce SSB purchasing³
- Limited data for effects of beverage taxes for households with and without children

Methods

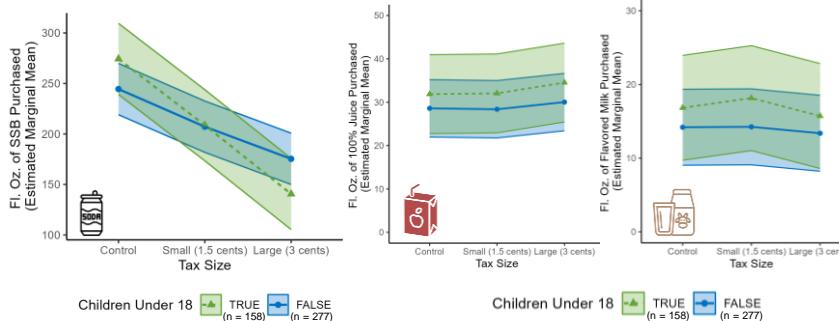
- Exploratory, subgroup analysis
- n=435 adults who drink SSB
- Measured beverage purchasing in an experimental marketplace (virtual, research storefront)⁴
- Participants assigned to targeted tax condition (SSB taxed) or broad tax condition (SSB and non-sugar sweetened beverages taxed); collapsed across tax type for analyses
- Participants shopped for beverages 3 times (control; small tax - 1.5 c/fl oz; large tax - 3 c/fl oz)
- 1/10 participants received beverages selected via a grocery pickup order
- Data analysis: Linear mixed effects models with interaction term for household composition

Results

Households with children under 18 had larger declines in SSB purchasing after experiencing a beverage tax compared to households without children.

Purchases of tax-exempt sugary beverages (flavored milk and 100% juice) did not increase in response to beverage taxes for both households with and without children.

Data Visualization



Larger Decline in SSB Purchases for Households With Children Mean SSB purchased (fl. oz.) in each condition for households with children (green triangle) and without children (blue circle), adjusting for household income and household size in a linear mixed effects model.

No Change in Tax-Exempt Sugary Beverage Purchases Purchases of 100% juice and flavored milk (tax-exempt but high in sugar) did not increase for both households with children (green triangle) and without children (blue circle), adjusting for household income and household size in a linear mixed effects model.

Implications

These data support the idea that beverage taxes will result in lower SSB purchasing for households with children, an important population subgroup for reduction of SSB intake.

The reason for greater declines in SSB purchases for households with children is unclear. Understanding this difference may help increase the effect of beverage taxes.

For both households with and without children, we found no evidence of an increase in purchasing of tax-exempt sugary beverages (a potential unintended consequence) in response to beverage taxes.

Acknowledgements

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References

- Drewowski, A., & Rehm, C. D. (2014). Consumption of added sugars among US children and adults by food purchase location and food source. *Am J Clin Nutr*, 100(3), 901-907.
- Wetter, S. A., & Hodge Jr, J. G. (2016). Taxing sugar-sweetened beverages to lower childhood obesity: Public health and the law. *J Law Med Ethics*, 44(2), 359-363.
- Wetter, S. A., Hodge, J. G., & Powell, L. B. (2022). Outcomes following taxation of sugar-sweetened beverages: A systematic review and meta-analysis. *JAMA Netw Open*, 5(6), e2215276-e2215276.
- Downey, H., Epstein, L. H., & Stein, J. S. (2025). The Experimental Beverage Marketplace: Feasibility and preliminary validation of a tool to experimentally study sugar-sweetened beverage taxes and beverage purchasing. *Appetite*, 206, 107848.
5. Beverage icons from the Noun Project.

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