UNIVERSITY of WASHINGTON
HEALTH SYSTEMS AND POPULUATION HEALTH

Are sweetened beverage taxes equitable policy?

This research brief summarizes: Jones-Smith JC, Knox MA, Coe NB, Walkinshaw LP, Schoof J, Hamilton D, Hurvitz PM, Krieger J. Sweetened beverage taxes: Economic benefits and costs according to household income. *Food Policy* Jul 2022;110 https://doi.org/10.1016/j.foodpol.2022.102277

A tax on sweetened beverage taxes can be an equitable and effective health policy when tax revenue is invested in lower-income communities.

SUMMARY

Overconsumption of sugar sweetened beverages (SSBs) contributes to multiple adverse health outcomes. Both SSB consumption and the associated health impacts are higher in lower-income communities. Sweetened beverage taxes (SBT) have emerged as an effective health policy for reducing sales of taxed beverages. However, there is concern these taxes place a greater financial burden on people with lower incomes.

This study, the first to our knowledge using real-world tax data, explored the economic equity aspects of SBT. The study looked at taxes paid, and benefits received from programs supported with tax revenues, by people with lower and higher incomes in three U.S. cities. Not surprisingly, taxes paid by people with lower incomes accounted for a larger proportion of their household income (ranging from 0.06% - 0.5% across the cities) compared to those with higher incomes (range 0.01%-0.06%). However, the proportion of income spent on SBT was quite small for both income groups. The annual per person dollar amount paid in taxes was also small ($5.50-$31 across the cities and income groups) and did not differ by income level within cities. Notably, we found the net tax effect was to redistribute dollars from higher- to lower-income populations. The dollar amount of tax revenues funding programs targeted towards people with lower incomes is greater than the amount they pay in taxes. This suggests that a SBT is a progressive, equitable public policy when tax revenues are intentionally invested in communities with lower incomes.

BACKGROUND

Overconsumption of sugar sweetened beverages (SSBs) contributes to poor diet quality, weight gain, diabetes, heart disease, and poor oral health [1-5]. In recent years, sweetened beverage taxes (SBTs) have emerged as an effective health policy for addressing overconsumption by reducing sales of taxed beverages [6,7]. There is concern these taxes may place a greater financial burden on people with lower incomes because they consume more SSBs relative to people with higher incomes [8], thus the tax may absorb a greater proportion of their income. However, others have suggested that people with lower incomes may experience a net fiscal benefit if tax revenues are invested in programs that benefit them. In this study, we compared tax payments and benefits across income groups in three U.S. cities with SBTs.

KEY FINDINGS

> Lower-income populations in three U.S. cities paid a higher percentage of their household income in beverage taxes (0.06% – 0.5%) relative to higher-income populations (0.01-0.06%), although the percentage was small.

> There was no difference in the dollar amount of taxes paid per person per year by lower-income and higher-income households, which ranged from $5.50 to $31 across cities and income groups.

> The investment of tax revenues in lower-income communities was greater than the amount these communities paid in taxes. The opposite was true for higher-income communities.

> The annual net benefit to lower-income communities ranged from $5.3 million to $16.4 million across the cities.

METHODS

We studied the volume of beverage purchases[1] made in food stores by 1,141 households in three U.S. cities (Philadelphia, Seattle, and San Francisco) with volume-based sweetened beverage excise taxes. We analyzed data for the first year after tax implementation in each city. This allowed us to estimate the amount of annual tax paid per person assuming 100% of the tax was included in the beverage purchase price. Next, we used city population data[2] to calculate the per capita amount of tax paid by income level (lower income defined as ≤ 200% federal poverty level (FPL), higher income defined as > 200% FPL) in absolute dollars and as a proportion of household income. We reviewed public documents and contacted city representatives to determine the amount of annual tax revenue collected and the amount invested in programs serving communities with lower incomes. We then calculated the net benefit as: (tax revenues allocated to communities with lower incomes) – (aggregated tax payments made by people with lower income). A positive number indicates a net benefit to lower-income households and a transfer of funds from higher- to lower-income households.

FINDINGS

Households with lower incomes paid a significantly larger proportion of their income (ranging from 0.06% - 0.5% across the three cities) on SBT compared to families with higher incomes (0.01% - 0.06%). However, the total annual per person dollar amount paid in taxes was small. It ranged from $5.50 - $31 per year among people with lower incomes and $9.10 - $27 among those with higher incomes. There was no statistically significant difference between the income groups within each city (Figure 1). In Philadelphia, people with lower incomes paid $4.00 more per year and in Seattle, $6.90 more. In San Francisco, the higher-income group paid $3.60 more.

In all three cities, the higher-income group contributed a greater share of SBT revenues compared to the lower income group because a larger proportion of each city's population has higher incomes. Higher-income populations paid 85%, 72%, and 52% of the total revenue collected in San Francisco, Seattle, and Philadelphia respectively. People with lower incomes benefitted from programs funded by

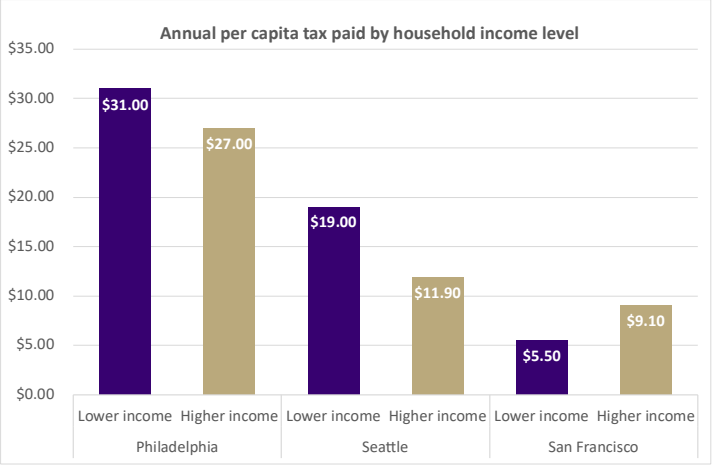

Figure 1.

by tax revenues to a greater extent than people with higher incomes. The proportion of revenues targeted to programs serving people with lower incomes was 70% in Philadelphia, 56% in Seattle, and 55% in San Francisco.

The revenue investments from SBTs dedicated to programs serving communities with lower incomes was more than the total tax collected from lower-income households. This resulted in a net transfer of taxes paid by higher-income populations to lower-income populations. The net benefit to lower-income communities was $16.4 million in Philadelphia, $6.4 million in Seattle (Figure 2), and $5.3 million in San Francisco, and represented a 22%, 28%, and 40% transfer of revenues collected, respectively.

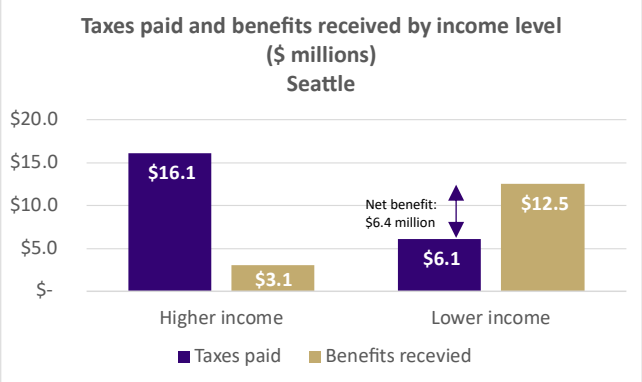

Figure 2.

CONCLUSIONS & POLICY IMPLICATIONS

[1] We used data from Neilsen's Homescan Consumer Panel and Numerator's OmniPanel which collect food and beverage purchases from food stores. Purchases from restaurants, coffee shops, etc. are not included.

[2] City population and demographic data was obtained from the American Community Survey.

We examined three measures of sweetened beverage tax (SBT) economic equity impacts across three U.S. cities and found:

> Lower-income households paid a larger proportion of household income on the tax. However, the proportion paid by households was small (0.06% to 0.5% for lower-income and 0.01% - 0.06% for higher-income households).

> There was no difference in the dollar amount of taxes paid per person per year across income groups within each city. The amount ranged from $5.50 per year among lower-income households in San Francisco and $31 per year among lower-income households in Philadelphia.

> The dollar amount of revenue allocations targeted towards programs benefitting people with lower incomes exceeded the amount of tax collected from this income group and generated a net transfer of revenues collected from higher-income populations to programs serving lower-income populations.

To our knowledge, this is the first study to use real-world data to estimate the equity impacts of SBTs. Our findings are consistent with other modeled simulation studies that looked at hypothetical taxes [9,10].

In conclusion, SBTs can be an equitable public policy when revenues are allocated to programs that benefit people with lower incomes. This can be accomplished by dedicating SBT revenue by law ("earmarking") to these programs rather than placing them in a jurisdiction's general fund.

Funding Acknowledgement

This study was funded by the Robert Wood Johnson Foundation's Healthy Eating Research program with partial support from an NICHD grant, P2C HD042828, to the Center for Studies in Demography & Ecology at the University of Washington.

Researcher(s)' own analyses calculated (or derived) based in part on data from Nielsen Consumer LLC and marketing databases provided through the NielsenIQ Datasets at the Kilts Center for Marketing Data Center at The University of Chicago Booth School of Business. The conclusions drawn from the NielsenIQ data are those of the researcher(s) and do not reflect the views of NielsenIQ. NielsenIQ is not responsible for, had no role in, and was not involved in analyzing and preparing the results reported herein.

Suggested Citation

Jones-Smith J, Leng K, Walkinshaw L, Knox M, Krieger J. *Are sweetened beverages taxes equitable policy?* Research Brief. University of Washington. June 2022.
https://nutr.uw.edu/cphn/drinktaxes/taxequitybrief

References

1. Malik VS, Li Y, Pan A, et al. Long-Term Consumption of Sugar-Sweetened and Artificially Sweetened Beverages and Risk of Mortality in US Adults. *Circulation*. 2019;139(18):2113-2125. doi:10.1161/CIRCULATIONAHA.118.037401
2. Luger M, Lafontan M, Bes-Rastrollo M, Winzer E, Yumuk V, Farpour-Lambert N. Sugar-Sweetened Beverages and Weight Gain in Children and Adults: A Systematic Review from 2013 to 2015 and a Comparison with Previous Studies. *Obes Facts*. 2017;10(6):674-693. doi:10.1159/000484566
3. Chi DL, Scott JAM. Added Sugar and Dental Caries in Children: A Scientific Update and Future Steps. *Dent Clin North Am*. 2019;63(1):17-33. doi:10.1016/j.cden.2018.08.003
4. Malik VS, Popkin BM, Bray GA, Després JP, Hu FB. Sugar-sweetened beverages, obesity, type 2 diabetes mellitus, and cardiovascular disease risk. *Circulation*. 2010;121(11):1356-1364. doi:10.1161/CIRCULATIONAHA.109.876185
5. Malik VS, Hu FB. The role of sugar-sweetened beverages in the global epidemics of obesity and chronic diseases. *Nat Rev Endocrinol*. 2022 Apr;18(4):205-218. doi: 10.1038/s41574-021-00627-6.
6. Andreyeva T, Marple K, Marinello S, Moore TE, Powell LM. Outcomes Following Taxation of Sugar-Sweetened Beverages: A Systematic Review and Meta-analysis. *JAMA* Netw Open. 2022 Jun 1;5(6):e2215276. doi: 10.1001/jamanetworkopen.2022.15276..
7. Petimar J, Gibson LA, Yan J, Bleich SN, Mitra N, Trego ML, Lawman HG, Roberto CA. Sustained Impact of the Philadelphia Beverage Tax on Beverage Prices and Sales Over 2 Years. *Am J Prev Med*. 2022 Jun;62(6):921-929. doi: 10.1016/j.amepre.2021.12.012. Epub 2022 Feb 25. PMID: 35221175; PMCID: PMC9124672.
8. Chevinsky JR, Lee SH, Blanck HM, Park S. Prevalence of Self-Reported Intake of Sugar-Sweetened Beverages Among US Adults in 50 States and the District of Columbia, 2010 and 2015. Prev Chronic Dis 2021; 18:200434. DOI: 10.5888/pcd18.200434
9. Smith TA, Lin BW, Lee J-Y. Taxing caloric sweetened beverage: Potential effects on beverage consumption, calorie intake, and obesity. *Econ Res Rep*. 2010;July(100):25. doi:10.2139/ssrn.2118636
10. Zhen C, Finkelstein EA, Nonnemaker JM, Karns SA, Todd JE. Predicting the effects of sugar-sweetened beverage taxes on food and beverage demand in a large demand system. *Am J Agric Econ*. 2014;96(1):1-25. doi:10.1093/ajae/aat049