

Office of the Director

401 Fifth Avenue, Suite 1300
Seattle, WA 98104-1818

206-296-4600 Fax 206-296-0166
TTY Relay: 711

www.kingcounty.gov/health

memo

To: City of Seattle Office of City Auditor (OCA) and Sweetened Beverage Tax (SBT) City Review Team
From: Nadine Chan, Assistant Chief, Public Health - Seattle and King County
Date: August 19, 2021
Re: SBT Evaluation: Final 24 Month Report and Frequently Asked Questions (FAQ) on Norms

Dear Office of City Auditor,

Attached is the updated final report and FAQ of findings from surveys about norms conducted 24 months after implementation of the Sweetened Beverage Tax (Ordinance 125324). We understand these documents are scheduled for public release on Friday, August 20, 2021.

Sincerely,



Nadine L. Chan, PhD, MPH
Assistant Chief of Assessment, Policy Development and Evaluation
Public Health – Seattle and King County
Enclosures

Impact of the Tax on Norms and Attitudes

THE EVALUATION OF SEATTLE'S SWEETENED BEVERAGE TAX

AUGUST 2021

Jones-Smith JC, Knox M, Walkinshaw LP, Chan NL, Saelens BE, Sawyer L, Oddo VM

Public Health
Seattle & King County



Seattle Children's[®]
HOSPITAL • RESEARCH • FOUNDATION

Research Institute

SUGGESTED CITATION

Jones-Smith JC, Knox M, Walkinshaw LP, Chan NL, Saelens BE, Sawyer L, Oddo VM. The Evaluation of Seattle's Sweetened Beverage Tax: Impact of the Tax on Norms and Attitudes. Report for City of Seattle and Seattle City Council. August 2021.

CONTACT INFORMATION

Jesse Jones-Smith, PhD, MPH, RD
Associate Professor, University of Washington
jjoness@uw.edu

FUNDING SOURCE

This report is funded by City of Seattle Sweetened Beverage Tax Ordinance 125324.

EXECUTIVE SUMMARY

This study assessed whether the Seattle Sweetened Beverage Tax (SBT) (Ordinance 125324) impacted Seattle adult residents' attitudes and perceptions about the tax itself as well as knowledge and attitudes about the healthfulness of sugary beverages. We additionally assessed self-reported and perceived changes in sugary beverage consumption, reasons for changes in consumption (if applicable), exposure to positive and negative messaging around the tax, and perceptions regarding the use of tax revenue.

We administered surveys (over the phone or online) about attitudes, beliefs, and behaviors to assess these outcomes. The pre-tax survey was administered October-December 2017, before Seattle's SBT was implemented in January 2018, and the post-tax survey was administered nearly two years after tax implementation (September-November 2019).

We surveyed adults living in Seattle as well as adults living in comparison areas. The comparison areas—Minneapolis, Minnesota, and three smaller cities in the Washington D.C metro area—were chosen based on well-matched demographic characteristics, political leanings similar to Seattle, and being in places without a sweetened beverage tax. The repeated cross-sectional sample (i.e., not the same people over time) included approximately 2,800 people split approximately evenly across Seattle and in the comparison areas and pre-tax and post-tax surveys. We also aimed to recruit sufficient samples of lower- and higher-income respondents in Seattle and the comparison areas. We conducted difference-in-differences analyses to assess whether and how attitudes, beliefs, and behaviors changed between 2019 and 2017 and ultimately, whether the changes differed between residents in Seattle versus those in the comparison areas. The difference-in-differences estimates were our primary indicators of whether the tax had an impact on any of these outcomes.

KEY FINDINGS TWO YEARS AFTER TAX IMPLEMENTATION

- We found that there was no detectable impact of living with a Sweetened Beverage Tax on overall support for the tax—support for the tax declined in Seattle, but not to a statistically greater degree than it did in the comparison areas, indicating potential trends in attitudes, rather than a consequence of the living with a tax itself. (Seattle tax support: 60.4% → 57.8%; Comparison areas: 58.9% → 58.2%; difference in change over time for Seattle versus change over time in the comparison areas was -1.9 percentage points and was not statistically significant).
- Most (more than 90% of) participants in Seattle had heard of the Sweetened Beverage Tax. A substantially larger proportion of participants in Seattle had been exposed to negative messaging about the tax compared to positive messaging and relative to respondents in the comparison areas. Specifically, 47% of Seattle residents reported hearing negative messaging about the tax, while only 28% reported hearing positive messaging. In the comparison areas, 29% of respondents had heard something negative while 20% had heard something positive about these types of taxes.
- There were notable differences by income level in attitudes and beliefs about the impact of the tax and in self-reported behaviors:
 - Seattle residents with lower incomes did not significantly change their perceptions of how the tax would impact most economic outcomes (e.g., affect family finances or lead to job loss) as compared to those with lower incomes in the comparison areas.

- Two years post-tax, more Seattle residents with lower incomes believed that sugary beverages increase risk for chronic diseases, as compared to changes among comparison areas participants with lower incomes: There was a statistically significant net increase of +6.5 percentage points of those who agreed that sugary beverages increase risk for diabetes, +7.8 percentage points for heart disease, +8.7 percentage points for dental problems, +13.7 percentage points for sugary beverages on health in general, and +14.5 percentage points for added sugar in general.
 - There was a statistically significant decrease in the proportion of lower-income Seattle residents consuming >1 sugary beverage per day as compared to the those with lower incomes in the comparison areas (-16.9 percentage points).
 - Many of these statistically significant findings among residents with lower incomes were the result of small improvements among the lower income population in Seattle compared to unexpected substantial worsening of the same outcomes among people with lower incomes in the comparison areas. For example, the proportion of high consumers decreased by 1.9 percentage points among Seattle respondents with lower incomes, but increased by 15 percentage points among respondents in the comparison areas with lower incomes.
 - On the other hand, among Seattle residents with higher incomes, beliefs about the impact of the tax on several economic outcomes became significantly more negative in Seattle versus the comparison areas. Specifically, higher-income Seattle residents were more likely to believe the tax would negatively impact small businesses (+17 percentage points from before tax to 2 years after the tax was implemented) and negatively impact family finances (+13 percentage points) as compared to changes over the same period of time for comparison areas respondents.
 - Additionally, there was a decrease in the proportion of higher-income Seattle residents versus higher-income residents in the comparison areas who endorsed the idea that the tax would have a positive impact on the health and well-being of lower income people and people of color (-15.1 percentage points).
 - There were no statistically significant changes in perceptions among higher-income residents in Seattle about healthfulness of sugary beverages nor in self-reported consumption as compared to changes over the same period of time among higher income participants in the comparison areas.
- A majority of respondents thought that the tax would be more burdensome for people with low-incomes or people of color (76% in Seattle and 73% in the comparison areas).
 - About half of individuals surveyed (49% in Seattle and 50% in the comparison areas) perceived that sugary beverage taxes will improve health and well-being and improve access to affordable healthy food for people with low-income and people of color in Seattle. Results were similar by income.
 - The majority of respondents agreed with using Sweetened Beverage Tax revenues to improve food access as well as to expand services and support for young children, which generally aligns with how funds from the tax revenue are being used in Seattle.¹

¹ Sweetened Beverage Tax Community Advisory Board 2019 Annual Report
https://www.seattle.gov/Documents/Departments/SweetenedBeverageTaxCommAdvisoryBoard/FactSheets/2019_SBT_Report_FINAL_11.3.2020.pdf

Introduction

Sweetened beverage taxes have been implemented in 8 US cities, 35 countries, and are being actively considered in several US states. Previous sweetened beverage tax evaluations have focused on the tax's impact on beverage prices, purchases, and consumption. However, very few evaluations have assessed whether these taxes influence attitudes and norms about the tax as well as the perceived healthfulness of sugary beverages. This assessment is important for at least two reasons. First, knowing how people feel about the tax from before to after implementation can be important to maintain support for the tax and potentially make policy adjustments if the majority of the public feels adamantly negative about the tax. Second, it is also possible that after tax implementation, the public's awareness of the healthfulness of sugary beverages may change. These changes could occur if there is a pro-tax public health campaign, media coverage, or simply due to the fact that the tax is perceived as a "sin tax," so consumers may perceive taxed beverages as unhealthy.

We conducted this study in order to assess whether Seattle's Sweetened Beverage Tax impacted Seattle resident's attitudes and perceptions about the tax itself as well as knowledge and attitudes about the healthfulness of sugary beverages. We additionally assessed self-perceived changes in sugary drink consumption after tax implementation, reasons for changes in consumption (if applicable), exposure to positive and negative messaging around the tax, and perceptions regarding the use of tax revenue.^{2,3}

Methods

Overview

Seattle's Sweetened Beverage Tax went into effect on January 1, 2018 and large distributors now pay a 1.75 cent per ounce tax on the distribution of sugary beverages within the city. We sought to measure changes in population-level attitudes over time in Seattle as a result of the tax while controlling for secular trends in attitudes toward sugary beverage taxes and healthfulness of sugary beverages. Thus, we used a pre- and post- design with a comparison group, in order to account for any secular trends in our outcomes of interest unrelated to the tax. Specifically, we conducted a repeated cross-sectional, population-based, mixed-mode survey (telephone and online), in Seattle and comparison areas consisting of Minneapolis and three small cities outside of Washington D.C. The comparison areas were chosen by examining economic, political, and demographic characteristics of all US cities using data from the American Community Survey. The comparison area cities were closely matched to Seattle and were not actively considering a beverage tax when we initiated baseline (pre-tax) data collection (October 2017). As a result, the comparison areas are comprised of Minneapolis, MN, the combined region of Rockville and Bethesda, MD, and Arlington, VA (henceforth referred to as D.C. metro). None of these places had a new sweetened beverage tax implemented during the study period.

Data Collection

Baseline (pre-tax) data were collected in Seattle and the comparison areas prior to the Seattle Sweetened Beverage Tax implementation, between October and December 2017. Post-tax data were collected approximately two years later, between September and November 2019 in Seattle and the comparison areas. The survey was administered either by phone or online. Phone survey participants

² The Evaluation of Seattle's Sweetened Beverage Tax, Baseline Report: Pre-implementation of the tax <https://www.seattle.gov/Documents/Departments/CityAuditor/auditreports/SBTBaselineReport.pdf>

³ Oddo, V. M., Krieger, J., Knox, M., Saelens, B. E., Chan, N., Walkinshaw, L. P., ... Jones-Smith, J. C. (2019). Perceptions of the possible health and economic impacts of Seattle's sugary beverage tax. BMC Public Health, 19(1), 1–13. <https://doi.org/10.1186/s12889-019-7133-2>

were selected using a stratified random sampling approach, sampling from databases of all working landline and cell phone numbers in our target areas. Participants who completed the survey online were selected from several existing panels comprised of a large sample of individuals, who had previously completed online surveys or opted to participate in online surveys in the past. The phone and online versions of the survey were offered in English and Spanish and the online version of the survey was also offered in Vietnamese. Residents aged 18 and older were eligible for inclusion in Seattle and the comparison areas. Survey respondents who refused to answer the screener questions on income, race/ethnicity, who did not speak or read English or Spanish, or who did not read Vietnamese were ineligible.

Recruitment. In the pre-tax survey (baseline), we recruited 851 participants in Seattle and 863 in the comparison areas. In the post-tax survey, we recruited 800 participants in Seattle and 800 participants in the comparison areas.

Statistical power calculations estimated that we would need a sample of 356 participants per income group (lower-income defined as < 260% of the Federal Poverty Line [FPL] versus higher-income, defined as >260% FPL) to detect reasonable sized differences in tax attitude effects by income. We successfully recruited enough lower-income and higher-income participants in Seattle and the comparison areas during both the pre- and post-tax surveys (see **Table 1**). We also aimed to recruit a sample that had a similar race/ethnic distribution as the populations in our sample areas based on the 5-year (2012-2016) American Community Survey (ACS).

Survey

We surveyed a variety of opinions about the tax and about sugary beverages using the questions found in **Appendix A**. The survey was developed by the evaluation team and fielded by a professional market research firm. It queried demographic characteristics and political affiliation in addition to 15 items on perceptions, feelings, and reactions about sugary beverage taxes, 8 items on knowledge and attitudes about sugary beverages, one item on self-reported frequency of sugary beverage consumption and 3 items about tax revenue spending. With few exceptions, all the post-tax survey questions were exactly the same as the pre-tax/baseline questions. Prior to asking participants about their perceptions, we first described the tax itself (e.g., a tax on distributors at 1.75 cents per oz) and explained how the tax revenue would be used.

Statistical Methods

Full details of the key outcome variables and statistical methods are provided in **Appendix B**. As a brief overview, we used “raking” weights to reweight the survey population to be representative of the city from which they were sampled using 2017 ACS (5-year estimates) to obtain city-level demographics. To estimate the impact of the tax on each of the outcomes examined, we used propensity-score-weighted income-stratified difference-in-difference models. Non-income-stratified models are presented in the Appendix Tables (**Appendix C, Table 4**).

The difference-in-difference models estimated the degree to which each outcome changed in Seattle from pre-tax to two years post-tax after accounting for any secular trends in the outcome (as captured by the change over the same period in the comparison areas). We asked the same questions of respondents in the comparison areas (but referring broadly to sweetened beverage taxes, rather than the tax in Seattle) and measured the change in their attitudes over this same period. We used the comparison areas to measure changes in these attitudes in the general population unexposed to a

sugary beverage tax, which can occur as common knowledge and public discourse about sweetened beverage taxes changes.

We refer to the difference-in-difference estimates as estimate of the impact of living with the tax on each outcome. Because we did not follow the same people over time in Seattle and the comparison areas, we used the propensity score weights to account for compositional differences in the groups within and across time points (e.g., differences in age or education distribution during the post-tax survey). This was necessary because differences in the composition of the four comparison groups and changes in their composition over time might lead to differences outcomes, regardless of the tax.

Results

Table 1 displays the weighted demographic characteristics for Seattle and the comparison areas for the pre-tax and two years post-tax samples.

Seattle: comparing pre-tax sample characteristics to sample characteristics two years post-tax

In Seattle, comparing the samples from pre- and post-tax surveys, the distribution of most demographic characteristics was similar across time points. One exception is that the percent of the population in the highest income category (>\$120,000) was somewhat lower at post-tax (13.9%) compared to pre-tax (18.7%). Additionally, the mode of survey completion differed. In the post-tax survey, more participants completed the survey online (54.9% pre-tax vs. 70% post-tax), therefore, the proportion of the sample who completed the survey via the phone declined.

Comparison areas: comparing pre-tax sample characteristics to sample characteristics two years post-tax

In the comparison areas, respondent characteristics were generally similar pre- and post-tax. Exceptions include an increased representation of 18-30 year old respondents (22.7% pre-tax versus 28.2% post-tax) and decreased representation of 41-50 year old respondents (16.9% pre-tax versus 14.2% post-tax), a shift in the population of those with incomes above or below 260% of the federal poverty line (shifting towards a higher representation of those with incomes >260% FPL [54.3% vs 61.0%]). Additionally, the proportion of respondents identifying as Democrats was higher and that of Independents was lower in the post-tax versus pre-tax survey. Finally, similar to pre-to-post changes in Seattle, a larger proportion of respondents in the comparison areas completed the survey online rather than on the phone in the post-tax period (71.4% pre-tax vs 82.2% post-tax).

Sample characteristics of Seattle versus comparison areas

Across pre- and post-tax periods, generally, the weighted characteristics of respondents in the comparison areas were well-matched to those in Seattle, with a few exceptions. The racial/ethnic composition of the population was somewhat different between Seattle and the comparison areas. Proportions of the population who identified as non-Hispanic White or non-Hispanic Asian was higher in Seattle and the proportion who identified as Black or Hispanic was lower in Seattle compared to the comparison areas. Seattle also had a somewhat smaller proportion of people who identified as Republicans in their political party affiliation and a lower proportion of respondents who completed the survey online compared to the comparison areas.

TABLE 1. SELECTED DEMOGRAPHIC CHARACTERISTICS OF SAMPLES ¹								
	SEATTLE				COMPARISON			
	PRE-TAX ² (N=834)		POST-TAX ³ (N=789)		PRE-TAX ⁴ (N=807)		POST-TAX ⁵ (N=791)	
	N	%	N	%	N	%	N	%
GENDER								
MALE	339	49.9%	323	48.6%	443	50.4%	253	48.0%
FEMALE	492	50.1%	457	51.4%	362	49.6%	536	52.0%
RACE/ETHNICITY								
NON-HISPANIC WHITE	579	64.5%	534	62.8%	510	59.3%	494	58.7%
NON-HISPANIC BLACK	58	7.2%	64	7.6%	61	13.9%	108	15.5%
NON-HISPANIC ASIAN	65	13.7%	75	15.1%	75	9.3%	70	8.9%
NON-HISPANIC OTHER ⁶	75	7.0%	62	7.9%	34	5.2%	56	5.2%
HISPANIC	54	7.6%	54	6.6%	119	12.4%	57	11.7%
AGE OF RESPONDENT								
18-30 YEARS OLD	129	19.1%	150	19.8%	159	22.7%	199	28.2%
31-40 YEARS OLD	149	22.1%	154	23.4%	178	24.9%	162	23.6%
41-50 YEARS OLD	133	20.1%	124	17.2%	124	16.9%	97	14.2%
51-64 YEARS OLD	166	23.3%	191	24.7%	155	19.9%	143	19.0%
65+ YEARS OLD	244	15.4%	163	14.8%	190	15.6%	187	15.0%
HIGHEST LEVEL OF EDUCATION								
SOME HIGH SCHOOL	24	5.0%	17	4.9%	51	9.9%	9	5.7%
COMPLETED HIGH SCHOOL	75	9.9%	95	10.4%	101	13.7%	111	13.0%
SOME COLLEGE OR VOCATIONAL	196	21.2%	224	22.5%	199	19.3%	218	21.4%
COMPLETED COLLEGE	290	37.0%	265	36.1%	225	30.4%	294	31.3%
COMPLETED GRADUATE DEGREE	235	26.9%	184	26.1%	210	26.7%	159	28.6%
INCOME RELATIVE TO FPL								
LOW INCOME: < 260% FPL	380	39.3%	380	37.5%	366	45.7%	353	39.0%
HIGH INCOME: ³ 260% FPL	454	60.7%	454	62.5%	441	54.3%	438	61.0%
HOUSEHOLD LEVEL INCOME								
<\$30,000	242	17.9%	198	18.6%	177	21.7%	207	21.1%
\$30,000-59,999	211	31.9%	242	33.9%	234	32.3%	277	37.9%
\$60,000-89,999	129	19.0%	149	21.3%	137	19.2%	155	22.8%
\$90,000-120,000	89	12.5%	81	12.3%	91	12.4%	63	9.9%
>\$120,000	122	18.7%	83	13.9%	118	14.4%	50	8.2%
POLITICAL AFFILIATION								
DEMOCRAT	456	53.8%	425	53.8%	333	43.0%	404	49.8%
INDEPENDENT	233	29.0%	216	28.4%	232	29.7%	190	25.0%
REPUBLICAN	66	8.9%	71	9.7%	127	15.9%	94	13.1%
OTHER	12	2.0%	28	3.4%	17	2.8%	14	1.6%
SURVEY MODE								
WEB	423	54.9%	527	70.1%	566	71.4%	642	82.2%
PHONE	411	45.1%	262	29.9%	241	28.6%	149	17.8%

¹N is unweighted to show actual sample size whereas percentages (%) are weighted to the 2017 5-year American Community Survey.

Therefore, the percentages displayed will be different from the number you get by dividing the total N by the cell-specific N.

² Seattle missings/don't knows baseline: gender (n=3); race/ethnicity (n=3); age (n=13); education (n=14); household income (n=41); political affiliation (n=67)

³ Seattle missings/don't knows endline: gender (n=9); age (n=7); education (n=4); household income = 36); political affiliation (n=49)

⁴ Comparison missings/don't knows baseline: gender (n=2); race/ethnicity (n=8); age (n=1); education (n=21); household income (n=50); political affiliation (n=98)

⁵ Comparison missings/don't knows endline: gender (n=2); race/ethnicity (n=6); household income = 39); age (n=3); political affiliation (n=89).

⁶ Given low numbers, Native Hawaiian or Other Pacific Islanders, American Indian and Alaska Natives, and those reporting two or more races are categorized as non-Hispanic Other.

How did perceptions about a sweetened beverage tax change over time for people living with a sweetened beverage tax compared to those without one?

To assess support of and perceptions about the health and economic consequences of the tax, we asked about general support for the tax and the potential economic impacts including: cross-border shopping, small businesses, the economy, job loss, family finances, and whether the tax affects low-income people and people of color. Perceptions about potential health impacts of the tax included public health and child well-being. For these questions, each participant was read two statements and asked which statement was much or somewhat closer to their belief. For example, participants were asked whether the statement “*This tax will result in job loss*” was somewhat or much closer to their own view compared to the statement “*This tax will not result in job loss.*” For all questions, participants were also given the option to report “don’t know” or “refused.”

Additionally, we created a score to summarize overall perceptions of tax impacts, henceforth referred to as the tax impacts score. The tax impacts score was a combination of the eight aforementioned indicators of beliefs about the impact of the tax on health or economic outcomes. For each question, we assigned a 1 if the impact of the tax was perceived as positive/beneficial, a 0 if they responded that they “don’t know”, and a -1 if the tax was perceived as negative/detrimental (score range: -8 to 8). A higher score indicates that perceptions about the impact of the tax were more positive.

As described in the statistical analysis section, our primary estimates of the association of the tax with changes in attitudes are the *difference-in-difference estimates*, rather than simply the change from pre- to post-tax in Seattle. Any change in Seattle that had a statistically significant difference compared to the change in the comparison areas was considered as potentially attributable to the unique experience of actually living in Seattle with a sweetened beverage tax.

Table 2 shows the changes in support for the tax, attitudes for each of the questions about the health and economic impact for Seattle and the comparison areas, and the difference between the changes in Seattle and the comparison areas (the “differences-in-difference”) by lower-income (< 260% FPL) and higher-income (³ 260% FPL) samples. The difference-in-differences (included in **Table 2**) were our primary indicators of whether the tax had an impact on any of these outcomes and statistically significant values are denoted with bolding and an asterisk. **Appendix C (Tables A1 & A2)** shows the pre-tax levels, post-tax levels, and change for Seattle and the comparison areas. **Appendix C Table A4** displays the overall estimates (not divided by income level).

Support for the tax and its perceived impact on public health or child well-being did not change significantly in either the lower- or higher-income group in Seattle after accounting for the change in the comparison areas. When looking at the overall sample (Appendix C Table A4), support for the tax declined in Seattle, but not to a statistically greater degree than it did in the comparison areas, indicating potential trends in attitudes, rather than a consequence of the living with a tax itself. (Seattle tax support: 60.4% → 57.8%; Comparison areas: 58.9 → 58.2; difference in change over time for Seattle versus change over time in the comparison areas was -1.9 percentage points and was not statistically significant).

For the lower-income population, there was no statistically significant difference from pre- to post-tax in the proportion of the population that thought the sweetened beverage tax would not be bad for the

economy, would negatively impact small businesses, would result in job loss, or would affect family finances, after accounting for changes over the same time among the lower-income populations in the comparison areas. Among the lower-income population, the only attitude/behavior that changed significantly in association with the tax was about cross-border shopping. Specifically, there was a statistically significant increase in the percentage of the population who said they would cross the city border to shop for sugary beverages (difference-in-difference (DD): +11 percentage points (95% CI 5.6, 16.6)).

On the contrary, among the higher-income population, perceptions about the overall economic impact of the tax became more negative two years post-tax in Seattle after accounting for the change in the comparison areas. Specifically, there was a statistically significant increase in the proportion of the Seattle residents who thought that the beverage tax would have negative effects on small businesses (DD: +17.1 percentage points (95% CI: 0.3, 33.9)), would have negative impacts on family finances (DD: +13.0 percentage points (95% CI: 2.9, 23.2)) as compared to changes in the comparison areas. There was a decrease in the proportion of higher-income Seattle versus comparison area residents who endorsed the idea that the tax would have a positive impact on the health and well-being of lower-income people and people of color DD: -15.1 (95%CI: -27.2, -2.9). In addition, similar to the lower-income group, there was a net increase in the proportion of higher-income Seattle residents who endorsed the idea that they would or do shop across the border for sweetened beverages accounting for changes in the comparison areas (DD: +7.3 percentage points (95% CI: 0.8, 13.8)). Additionally, we found a statistically significant decrease in positive perceptions of the tax according to our summary measure of perceptions of the economic impacts of the tax among the higher-income residents in Seattle as compared to changes among the higher-income residents in the comparison areas (DD: -1.3 (-2.2, -0.5))

TABLE 2. DIFFERENCE-IN-DIFFERENCES (DD) COMPARING SEATTLE TO THE COMPARISON AREAS AND OVER TIME IN PERCEPTIONS OF THE IMPACTS OF SUGARY BEVERAGE TAX(ES) BY INCOME¹

	LOWER INCOME ²				HIGHER INCOME ²			
	PERCENTAGE POINT (95% CI)				PERCENTAGE POINT (95% CI)			
	N	SEATTLE DIFFERENCE	COMPARISON DIFFERENCE	DD	N	SEATTLE DIFFERENCE	COMPARISON DIFFERENCE	DD
SUPPORT FOR THE SUGARY BEVERAGE TAX(ES)	1216	-3.0 (-4.0, -2.1)	-8.0 (-17.1, 1.1)	4.9 (-4.6, 14.5)	1603	-2.7 (-4.4, -1.0)	4.19 (-8.8, 17.1)	-6.9 (-20.0, 6.2)
SUGARY BEVERAGE TAX IMPROVES PUBLIC HEALTH	1212	4.7 (2.8, 6.7)	-4.9 (-17.7, 7.9)	9.6 (-4.2, 23.5)	1212	0.6 (-0.6, 1.8)	4.0 (-6.5, 14.6)	-3.4 (-14.2, 7.3)
SUGARY BEVERAGE TAX IMPROVES CHILD WELLBEING	1207	2.6 (-0.7, 6.0)	-1.7 (-13.9, 10.4)	4.3 (-9.3, 18.0)	1207	1.7 (0.9, 2.5)	6.2 (-8.7, 21.0)	-4.4 (-19.4, 10.5)
ECONOMIC IMPACTS OF THE TAX								
WOULD/DOES CROSS-BORDER SHOP	1221	7.4 (5.5, 9.3)	-3.7 (-10.1, 2.7)	11.1 (5.6, 16.6)*	1221	14.9 (13.6, 16.1)	7.5 (0.3, 14.7)	7.3 (0.8, 13.8)*
SUGARY BEVERAGE TAX HAS POSITIVE EFFECT ON ECONOMY	1037	10.6 (8.3, 12.9)	3.3 (-3.6, 10.2)	7.3 (-0.1, 14.7)	1037	1.1 (-1.1, 3.4)	-0.6 (-13.1, 11.8)	1.8 (-11.0, 14.5)
SUGARY BEVERAGE TAX WILL HAVE NEGATIVE EFFECTS ON SMALL BUSINESSES	1141	7.4 (6.1, 8.8)	7.8 (-14.5, 30.1)	-0.4 (-21.8, 20.9)	1141	15.2 (14.2, 16.2)	-2.0 (-18.7, 14.8)	17.1 (0.33, 33.9)*
SUGARY BEVERAGE TAX WILL RESULT IN JOB LOSS	1080	1.9 (0.5, 3.3)	-1.7 (-7.8, 4.4)	3.6 (-2.5, 9.6)	1080	9.0 (6.4, 11.6)	-7.2 (-23.2, 8.8)	16.2 (-1.0, 33.3)
SUGARY BEVERAGE TAX WILL HAVE A NEGATIVE IMPACT ON FAMILY'S FINANCES	1222	3.3 (1.8, 4.8)	3.2 (-7.2, 13.7)	0.1 (-9.5, 9.6)	1222	11.0 (9.1, 12.8)	-2.1 (-11.4, 7.2)	13.0 (2.9, 23.2)*
SUGARY BEVERAGE TAX WILL HAVE A POSITIVE IMPACT ON PEOPLE WITH LOW-INCOME AND PEOPLE OF COLOR'S HEALTH AND WELL-BEING	1122	-2.4 (-5.1, 0.4)	-8.5 (-15.6, -1.5)	6.2 (-0.6, 13.0)	1122	-7.2 (-8.4, -5.9)	7.9 (-5.3, 21.1)	-15.1 (-27.2, -2.9)*
OVERALL PERCEPTIONS RELATED TO THE IMPACTS OF TAX³		-0.1 (-0.2, 0.1)	0.0 (-0.5, 0.6)	0.2 (-0.6, 1.1)		-1.0 (-1.2, -0.9)	0.3 (-0.5, 1.1)	-1.3 (-2.2, -0.5)*

Bolded cells are statistically significant; bolding plus asterisk (*) denotes a statistically significant difference-in-difference, our primary measure of tax effects

CI = confidence interval

¹Estimated using linear probability models using difference-in-differences. Estimates are weighted to be representative of the populations in each area and are propensity score weighted to additionally control for confounding by demographics by balancing differences across city and time point. Models also control for race/ethnicity, educational attainment, household income, age, sex, political affiliation, mode. Standard errors are clustered at the city level (Seattle, Minneapolis, Bethesda, Rockville, and Arlington); ² Lower income is defined as < 260% FPL. Higher income is defined as > 260% FPL.; ³ Comprised of the following eight questions: child well-being, public health, cross-border shopping, small businesses, the economy, job loss, family finances, and impacts on people with lower-income and people of color. For each question, we assigned a 1 if the impact of the tax was perceived as positive/beneficial, a 0 if they responded that they "don't know", and a -1 if the tax was perceived as negative/detrimental (score range: -8 to 8). A higher score was interpreted to mean that perceptions about the tax impacts were more positive. * p < 0.05

How did Seattle's Sweetened Beverage Tax affect resident's attitudes about the healthfulness of sugary beverages?

One possible consequence of the tax could be a shift in norms and attitudes around the healthfulness of sugary drinks. We asked respondents a series of questions about whether sugary drinks cause the following: serious health problems, cavities and tooth decay, obesity, diabetes, and heart disease. Additionally, we asked if excess sugar from any source (e.g., cookies) can lead to serious health problems. Specifically, respondents were asked whether they strongly agreed, agreed, disagree, or strongly disagreed with statements like "Drinking sugary drinks causes serious health problems." For these analyses, we collapsed the responses from four- to two-category variables (e.g.: "strongly" and "somewhat" agree were collapsed into "agree").

Table 3 shows the changes in attitudes for each of the questions about healthfulness of sugary drinks for Seattle, the comparison areas, and the difference between the changes in Seattle and the comparison areas by lower-income and higher-income samples.

Among lower-income populations in Seattle, there were statistically significant net increases in the percentage of the population that agreed or strongly agreed that sugary beverages cause serious health problems (DD: +13.7 percentage points; 95%CI: 6.8, 20.6), increase the chances of dental health problems (DD: +8.7 percentage points; 95%CI: 3.0, 14.5), raise a person's chances of diabetes (DD: +6.5 percentage points; 95%CI: 1.6, 11.4), raise a person's chance of heart disease (DD: +7.8 percentage points; 95%CI: 3.0, 12.6), and that excess sugar from any source can lead to serious health problems (DD: +14.5 percentage points; 95%CI: 13.2, 15.9), after accounting for changes over the same period in the comparison areas. In addition, based on a one-question assessment of self-reported frequency of sugary beverage consumption, the proportion of the population who were high consumers of sugary beverages (>1 time per day) decreased in Seattle above and beyond changes in the comparison areas (DD: -16.9 percentage points; 95%CI: -30.8, -3.1). Many of these statistically significant difference-in-difference findings were the result of small improvements among people with lower incomes in Seattle compared to unexpected substantial worsening of the same outcomes among people with lower incomes in the comparison areas. For example, the proportion of high consumers decreased by 1.9 percentage points among Seattle respondents with lower incomes, but increased by 15 percentage points among respondents in the comparison areas with lower incomes. For this reason, we consider the findings as suggestive evidence rather than strong evidence of decreased consumption and increased perceptions that sugary beverages are unhealthy.

On the contrary, there was no significant relative change in Seattle versus the comparison areas in any of these beliefs about the health impacts of sugar or sugary beverages, nor in the self-reported frequency of consumption amongst the higher-income populations.

TABLE 3. DIFFERENCE-IN-DIFFERENCE (DD) COMPARING SEATTLE TO THE COMPARISON AREAS AND OVER TIME IN PERCEPTIONS OF HEALTHFULNESS OF SUGARY BEVERAGES, BY INCOME¹

	LOWER INCOME ²				HIGHER INCOME ²			
	N	SEATTLE DIFFERENCE	COMPARISON DIFFERENCE	DD (95% CI)	N	SEATTLE DIFFERENCE	COMPARISON DIFFERENCE	DD (95% CI)
SUGARY BEVERAGES CAUSE SERIOUS HEALTH PROBLEMS	2919	3.4 (1.8, 4.9)	-10.4 (-16.1, -4.6)	13.7 (6.8, 20.6)*	2929	-0.0 (-1.8, 1.8)	5.1 (-1.2, 11.4)	-5.1 (-10.5, 0.3)
SUGARY BEVERAGES RAISE A PERSON'S CHANCES OF DENTAL HEALTH PROBLEMS, INCLUDING CAVITIES AND TOOTH DECAY	2933	1.8 (0.3, 3.3)	-6.9 (-11.8, -2.0)	8.7 (3.0, 14.5)*	2947	3.4 (2.2, 4.6)	0.9 (-7.0, 8.8)	2.5 (-4.5, 9.5)
SUGARY BEVERAGES SIGNIFICANTLY RAISE A PERSON'S CHANCES OF OBESITY	2932	1.0 (-0.3, 2.4)	-3.3 (-9.3, 2.8)	4.3 (-2.7, 11.3)	2944	5.0 (4.2, 5.7)	2.8 (-3.3, 9.0)	2.1 (-4.6, 8.9)
SUGARY BEVERAGES SIGNIFICANTLY RAISE A PERSON'S CHANCES OF DIABETES	2925	-1.7 (-3.6, 0.1)	-8.3 (-12.0, -4.5)	6.5 (1.6, 11.4)*	2923	4.7 (3.0, 6.3)	4.6 (-2.3, 11.5)	0.1 (-7.8, 8.0)
SUGARY BEVERAGES SIGNIFICANTLY RAISE A PERSON'S CHANCES OF HEART DISEASE	2844	-0.7 (-3.2, 1.9)	-8.5 (-14.0, -2.9)	7.8 (3.0, 12.6)*	2820	2.5 (1.8, 3.2)	10.7 (1.3, 20.1)	-8.3 (-17.6, 1.0)
EXCESS SUGAR FROM ANY SOURCE, CAN LEAD TO SERIOUS HEALTH PROBLEMS	2903	6.6 (5.9, 7.3)	-7.9 (-9.5, -6.4)	14.5 (13.2, 15.9)*	2914	-1.5 (-2.9, -0.1)	-2.7 (-7.4, 2.0)	1.3 (-3.3, 5.8)
SELF-REPORTED HIGH CONSUMPTION OF SUGARY BEVERAGE (>1 TIME PER DAY)	2919	-1.9 (-3.3, -0.6)	15.0 (-0.1, 30.2)	-16.9 (-30.8, -3.1)*	2929	0.9 (-0.5, 2.4)	-4.4 (-15.5, 6.8)	5.3 (-7.0, 17.7)

Bolded cells are statistically significant; bolding plus asterisk () denotes a statistically significant difference-in-difference, our primary measure of tax effects*

CI = confidence interval; DID = difference-in-difference

¹*Estimated using linear probability models using difference-in-differences. Estimates are weighted to be representative of the populations in each area and are propensity score weighted to additionally control for confounding by demographics by balancing differences across city and time point. Models also control for race/ethnicity, educational attainment, household income, age, sex, political affiliation, mode. Standard errors are clustered at the city level (Seattle, Minneapolis, Bethesda, Rockville, and Arlington).*

² *Lower income is defined as < 260% FPL. Higher income is defined as > 260% FPL.*

** p < 0.05*

Did participants perceive that they had changed their beverage consumption after the tax, and if so what was their motivation?

During the post-tax survey, we included questions that asked about participants’ perceived changes in consumption of sugary beverages, whether they perceived they had changed their intake of these beverages, and if so, why. We also asked whether they had heard anything positive or negative about the tax. **Table 4** displays these results. The prevalence of consuming one or more sugary beverages a day was similar between Seattle and the comparison areas (20.5% vs. 18.9%, respectively) two years post-tax. Similar proportions of those in Seattle (41.5%; 95% CI: 37.8%, 45.3%) and the comparison areas (44.9 %; 95% CI: 40.6%, 49.2%) reported changing their consumption in the last year, most of whom (>75%) reported drinking fewer (versus more) sugary beverages. Among those who consumed less, we first asked if a sugary beverage tax or tax campaign contributed to their change in consumption. In response, 45.6% (95% CI: 39.0%, 52.5%) of people in Seattle reported the tax and/or their campaigns was one of the reasons they drank less. This is compared to only 9.1% (95% CI: 5.9%, 14.0%) of those in the comparison areas. In a second set of questions to gauge the general reasons for respondents decreasing their consumption, participants were asked to choose the primary reason they decreased their consumption from choices: health, tax(es), cost, taste, convenience, or other. Health was the primary reason for consuming fewer sugary beverages—in the comparison areas, approximately 88% of respondents selected “health” as their primary reason for decreasing consumption, while in Seattle, 62% selected “health”, 21% selected “taxes”, and 12% selected “cost”. It is possible respondents viewed “taxes” and “cost” interchangeably, given that taxes increase costs. Far fewer respondents in the comparison areas selected either “taxes” or “cost”, although, overall, the proportion of people reporting they decreased their consumption was similar overall in Seattle versus the comparison areas.

TABLE 4. SUGARY BEVERAGE CONSUMPTION (POST-TAX DATA ONLY)

	SEATTLE		COMPARISON AREAS	
	N	% (95% CI)	N	% (95% CI)
CHANGED HOW MUCH ONE CONSUMED SUGARY DRINKS IN THE LAST YEAR:	315	41.5 % (37.8%, 45.3%)	359	44.9 % (40.6%, 49.2%)
• CONSUMED MORE	67	23.6 % (18.8%, 29.1%)	70	20.9 % (15.9%, 26.9%)
• CONSUMED LESS	248	76.4 % (70.9%, 81.2%)	289	79.1 % (73.1%, 84.1%)
IF CONSUMED LESS, SUGARY DRINK TAXES AND/OR THEIR CAMPAIGNS WERE ONE OF THE REASONS ONE DRANK LESS	114	45.6 % (39.0%, 52.5%)	27	9.1 % (5.9%, 14.0%)
IF CONSUMED LESS, THE PRIMARY REASON CHANGED WHAT ONE DRANK IN THE LAST YEAR:				
• HEALTH	154	62.2 % (55.5%, 68.5%)	254	88.3% (83.4%, 91.9%)
• TAX(ES)	47	21.0 % (15.9%, 27.2%)	3	1.2 % (0.3%, 4.5%)
• COST	33	12.0 % (8.4%, 16.7%)	8	2.6 % (1.2%, 5.7%)
• TASTE	3	1.1 % (0.3%, 3.8%)	10	3.7 % (1.8%, 7.3%)
• CONVENIENCE	4	1.5 % (1.1%, 5.6%)	7	2.5 % (0.3%, 3.8%)
• OTHER	5	1.7 % (0.6%, 3.3%)	6	1.5 % (0.5%, 4.2%)

CI: confidence interval
¹Percentages and confidence intervals are based on weighted to the 2017 5-year American Community Survey.

² Seattle don’t know responses: high consumer (2.2%); changed sugary drink taxes (2.4%); primary reason changed (0.6%).

³ Comparison don’t know responses: high consumer (3.8%); changed sugary drink taxes (3.7%); primary reason changed (0.1%).

Were respondents exposed to the tax and any tax messaging?

During the post-tax survey, respondents were also asked if they had heard of either the Seattle Sweetened Beverage Tax or, in the comparison areas, sugary beverage tax(es) in general. If they had heard of the tax, we then asked whether they had heard anything positive or negative about sugary beverage taxes. As detailed in **Table 5**, more than 90% of those in Seattle had heard of the Seattle Sweetened Beverage Tax, whereas only 47% of those in the comparison areas had heard of sugary beverage taxes in general. Among those who had heard of the tax (or sugary beverages taxes in general) similar proportions of those in Seattle (28.3%; (95% CI: 24.8%, 32.0%)) and the comparison areas (20.7 %; (95% CI: 16.2%, 26.1%)) reported hearing or seeing positive messaging related to the sugary beverage taxes. However, more of those living in Seattle reported hearing or seeing negative messaging related to the tax (47.4%; (95% CI: 43.5%, 51.3%)), compared to only 29.1% in the comparison areas (95% CI: 24.0%, 34.7%). This suggests that negative press coverage and anti-tax coverage was more prevalent or more salient in Seattle than was pro-tax coverage.

TABLE 5. SUGARY BEVERAGE TAX MESSAGING EXPOSURE (POST-TAX DATA ONLY)				
	SEATTLE		COMPARISON AREAS	
	N	% (95% CI)	N	% (95% CI)
INDIVIDUAL HAD HEARD ABOUT SUGARY BEVERAGE TAX(ES)	737	93.4 % (91.3%, 95.1%)	357	47.2 % (42.9%, 51.5%)
INDIVIDUAL HAD SEEN, HEARD, OR READ SOMETHING POSITIVE ABOUT SUGARY DRINK TAXES	194	28.3 % (24.8%, 32.0%)	75	20.7 % (16.2%, 26.1%)
INDIVIDUAL HAD SEEN, HEARD, OR READ SOMETHING NEGATIVE ABOUT SUGARY DRINK TAXES	346	47.4 % (43.5%, 51.3%)	111	29.1 % (24.0%, 34.7%)

CI: confidence interval

¹ Percentages and confidence intervals are based on weighted to the 2017 5-year American Community Survey. Excludes “don’t know” responses. N column indicates the number who responded affirmatively to each question, rather than the total N.

² Seattle don’t know responses: heard about tax(es) (0.4%); heard something positive (10.7%); heard something negative (10.4%).

³ Comparison don’t know responses: heard about tax(es) (2.3%); heard something positive (18.7%); heard something negative (18.0%).

Because of the differences in perceptions about the tax by income, we explored whether exposure to positive or negative tax messaging in Seattle was qualitatively different by income level. **Table 6** displays these results. A somewhat higher proportion of lower-income versus higher-income respondents had heard of the tax, although both were >90%. A substantially higher percentage of lower-income versus higher-income respondents had seen anything positive about the tax (31.8% compared to 22.0%), and a somewhat larger proportion had seen anything negative about the tax (49.7% vs 43.3%).

TABLE 6. PERCENT OF LOW- AND HIGH-INCOME SEATTLE RESIDENTS WHO HAD HEARD, SEEN, OR READ ABOUT THE SUGARY DRINK TAX		
	% LOW INCOME (95% CI)	% HIGH INCOME (95% CI)
HEARD ABOUT THE TAX ¹	95.3 % (92.5%, 97.1%)	90.3 % (86.3%, 93.2%)
SAW, HEARD, OR READ ANYTHING POSITIVE ABOUT SUGARY DRINK TAXES ²	31.8 % (27.3, 36.8)	22.0 % (17.2%, 27.7%)
SAW, HEARD, OR READ ANYTHING NEGATIVE ABOUT SUGARY DRINK TAXES ³	49.7 % (44.7%, 54.8%)	43.3 % (37.4%, 49.4%)

¹ Don’t know 0.3% among low-income, 0.6% among high-income

² Don’t know 10.7% among low-income, 10.8% among high-income

³ Don't know 10.3% among low-income, 10.6% among high-income

Did respondents agree with the tax revenue priorities set by the community advisory board?

Participants were additionally asked about their opinions on how municipalities should use the revenues collected from sweetened beverage taxes. Respondents were asked if food access as well as expanding services and support for young children (i.e. early child development) for people with lower-incomes and for people of color in Seattle were the right priorities to invest money that comes from the tax (yes/no for each). If they responded “yes” regarding priorities, we then asked individuals to rank four initiatives from highest (1) to lowest (4) priority within healthy food access and within early childhood development. **Table 7** summarizes these responses both as percentages and weighted mean values of ranked choice; the higher the mean value for each initiative, the higher priority it was ranked.

Food access: Approximately 80% of participants in Seattle and the comparison areas agreed that funding to improve food access and expanded services and support for young children should be priorities for the money that comes from these taxes. On average, people in Seattle ranked funds to improve the quality of food offered to schools/after-school programs as first (highest priority) (mean=2.9; 95% CI: 2.9, 3.0), followed by: vouchers to low-income residents to buy more fruits and vegetables (mean=2.8; 95% CI: 2.7, 2.9), food banks and meal programs (mean=2.5; 95% CI: 2.4, 2.6), and community led organizations working to increase access to healthy food (mean=1.8; 95% CI: 1.7, 1.9). Interestingly, the priority ranking of the initiatives were similar in the comparison areas.

Early childhood development: In Seattle, individuals ranked vouchers/subsidies to lower-income, working families to help pay childcare as the highest priority (mean =2.8; 95% CI: 2.7, 2.9) and basic supplies provided directly to low-income families (e.g. clothes) was the second-ranked priority (mean=2.5 (95%CI: 2.5, 2.6). Funds to support child development training and coaching for childcare providers and funds to families with young children who have developmental delays were ranked lower and equally. Ranking of priorities was again similar in the comparison areas.

TABLE 7. PERCEPTIONS ABOUT THE USE OF SUGARY BEVERAGE TAX FUNDS (POST-TAX DATA ONLY)

	SEATTLE		COMPARISON	
	N	% OR MEAN ³ (95% CI)	N	% OR MEAN (95% CI)
PERCENT WHO AGREED THAT IMPROVED FOOD ACCESS AND EXPANDED SERVICES AND SUPPORT FOR YOUNG CHILDREN, PEOPLE OF COLOR, AND LOWER-INCOME PEOPLE AS THE TOP PRIORITIES TO INVEST MONEY THAT COMES FROM THESE TAXES	659	84.3 % (81.3%, 86.9%)	629	79.0 % (75.2%, 82.3%)
TO ADDRESS FOOD ACCESS, THE MONEY RAISED BY SUGARY DRINK TAXES MAY BE USED TO FUND THE FOLLOWING INITIATIVES:				
FUNDS TO IMPROVE THE QUALITY OF FOOD OFFERED TO SCHOOLS/AFTER-SCHOOL PROGRAMS		2.9 (2.9, 3.0)		2.9 (2.9, 3.0)
RANKED 1 ^C	264	33.2% (29.8%, 36.8%)	291	35.6% % (31.6%, 39.8%)
RANKED 2 ND	283	36.1% (32.5%, 39.8%)	245	31.9% % (28.0%, 36.1%)
RANKED 3 RD	175	22.7% (19.6%, 26.1%)	183	23.7% % (20.2%, 27.6%)
RANKED 4 TH	67	8.1% (6.2%, 10.4%)	72	8.8% % (6.7%, 11.5%)
VOUCHERS TO LOW-INCOME RESIDENTS SO THEY CAN BUY MORE FRUITS AND VEGETABLES		2.8 (2.7, 2.9)	253	2.7 (2.6, 2.8)
RANKED 1 ST	306	37.4% % (33.9%, 41.1%)	193	33.6% % (29.5%, 37.9%)
RANKED 2 ND	183	23.5% % (20.4%, 26.9%)	163	24.1% % (20.6%, 28.0%)
RANKED 3 RD	164	21.2% % (18.3%, 24.5%)	182	18.7% % (15.8%, 22.1%)
RANKED 4 TH	136	17.8% % (15.1%, 20.9%)	253	23.6% % (20.2%, 27.4%)
FOOD BANKS AND MEAL PROGRAMS		2.5 (2.4, 2.5)		2.4 (2.3, 2.4)
RANKED 1 ST	130	17.9% % (15.0%, 21.2%)	128	16.2% % (13.3%, 19.6%)
RANKED 2 ND	226	28.2% % (25.0%, 31.7%)	215	26.6% % (22.9%, 30.5%)
RANKED 3 RD	284	35.2% % (31.8%, 38.9%)	272	34.1% % (30.2%, 38.4%)
RANKED 4 TH	149	18.6% % (15.9%, 21.8%)	176	23.1% % (19.7%, 26.9%)
COMMUNITY LED ORGANIZATIONS WORKING TO INCREASE ACCESS TO HEALTHY FOOD		1.8 (1.7, 1.9)		2.0 (1.9, 2.1)
RANKED 1 ST	89	11.5% % (9.2%, 14.2%)	119	14.7% % (12.1%, 17.7%)
RANKED 2 ND	97	12.2% % (9.9%, 14.8%)	138	17.4% % (14.5%, 20.8%)
RANKED 3 RD	166	20.9% % (17.9%, 24.1%)	173	23.4% % (19.8%, 27.4%)
RANKED 4 TH	437	55.5% % (51.7%, 59.2%)	361	44.5% % (40.2%, 48.8%)
TO ADDRESS EARLY CHILDHOOD DEVELOPMENT, THE MONEY RAISED BY SUGARY BEVERAGE TAXES MAY BE USED TO FUND THE FOLLOWING INITIATIVES:				

VOUCHERS/SUBSIDIES TO LOWER-INCOME, WORKING FAMILIES TO HELP THEM AFFORD CHILDCARE		2.8 (2.7, 2.9)		2.6 (2.5, 2.7)	
RANKED 1 ST	292	37.1% % (33.5%, 40.8%)	229	29.2% % (25.4%, 33.2%)	
RANKED 2 ND	204	26.6% % (23.3%, 30.1%)	196	23.9% % (20.5%, 27.6%)	
RANKED 3 RD	134	16.2% % (13.6%, 19.1%)	179	21.7% % (18.4%, 25.5%)	
RANKED 4 TH	159	20.2% % (17.3%, 23.4%)	187	25.2% % (21.6%, 29.3%)	
BASIC SUPPLIES DIRECTLY TO LOW-INCOME FAMILIES SUCH AS, CLOTHES, MATERNITY		2.5 (2.5, 2.6)		2.6 (2.5, 2.7)	
RANKED 1 ST	239	30.6% % (27.2%, 34.2%)	276	34.2% % (30.2%, 38.4%)	
RANKED 2 ND	173	21.3% % (18.4%, 24.6%)	164	19.8% % (16.6%, 23.4%)	
RANKED 3 RD	149	20.0% % (17.1%, 23.2%)	151	20.3% % (17.0%, 24.0%)	
RANKED 4 TH	228	28.1% % (24.9%, 31.6%)	200	25.8% % (22.2%, 29.7%)	
FUNDS TO FAMILIES WITH YOUNG CHILDREN WHO HAVE DEVELOPMENTAL DELAYS		2.3 (2.3, 2.4)		2.4 (2.4, 2.5)	
RANKED 1 ST	140	17.3% % (14.6%, 20.3%)	148	19.4% % (16.1%, 23.2%)	
RANKED 2 ND	181	23.3% % (20.2%, 26.6%)	227	28.5% % (24.8%, 32.6%)	
RANKED 3 RD	292	36.6% % (33.0%, 40.3%)	236	29.5% % (25.8%, 33.5%)	
RANKED 4 TH	176	22.9% % (19.9%, 26.2%)	180	22.6% % (19.3%, 26.3%)	
FUNDS TO SUPPORT CHILD DEVELOPMENT TRAINING AND COACHING FOR CHILDCARE PROVIDERS		2.3 (2.2, 2.4)		2.4 (2.3, 2.4)	
RANKED 1 ST	118	15.1% % (12.6%, 18.0%)	138	17.3% % (14.4%, 20.6%)	
RANKED 2 ND	231	28.8% % (25.6%, 32.4%)	204	27.8% % (24.1%, 31.9%)	
RANKED 3 RD	214	27.3% % (24.0%, 30.8%)	225	28.5% % (24.7%, 32.6%)	
RANKED 4 TH	226	28.8% % (25.5%, 32.3%)	224	26.4% % (22.8%, 30.4%)	

¹ Percentages and confidence intervals are based on data weighted to the 2017 5-year American Community Survey.

² The question offered the response options of agreeing that these were the right priorities or not and a fill in the blank to suggest other priorities if the respondent did not agree with these priorities.

³ Means are weighted means that take into account the ranked choice. First choice gets four points, second choices gets 3 points, third choice gets 2 points and fourth choice gets 1 point.

Did respondents perceive the tax to be regressive?

TABLE 8. INDIVIDUALS' PERCEPTIONS RELATED TO THE IMPACTS OF THE TAX ON PEOPLE OF LOWER INCOMES AND PEOPLE OF COLOR (POST-TAX DATA ONLY)				
	N	SEATTLE % (95% CI)	N	COMPARISON % (95% CI)
THIS TAX WILL BE MORE BURDENSOME FOR PEOPLE WITH LOW-INCOME AND PEOPLE OF COLOR	172	75.9 % (79.1%, 72.3%)	189	72.5 % (76.3%, 68.3%)
THIS TAX WILL IMPROVE HEALTH AND WELL-BEING FOR PEOPLE WITH LOW-INCOME AND PEOPLE OF COLOR	343	49.3 % (45.3%, 53.3%)	353	50.7 % (46.1%, 55.2%)
THIS TAX WILL HAVE A POSITIVE IMPACT ON PEOPLE WITH LOW-INCOME AND PEOPLE OF COLOR'S HEALTH AND WELL-BEING AND IMPROVE ACCESS AFFORDABLE, HEALTHY FOOD.	322	49.1 % (45.0%, 53.2%)	336	50.7 % (46.0%, 55.4%)

CI: confidence interval

¹ Percentages and confidence intervals are based on weighted to the 2017 5-year American Community Survey. Don't know responses are excluded. N column indicates the number who responded affirmatively to each question, rather than the total N.

A tax is considered regressive if people with lower incomes bear more of the tax burden than people with higher incomes. In the pre-tax survey, respondents were asked about tax regressivity in a way that combined the ideas of financial regressivity with potential positive impacts on health and well-being. Specifically, we asked participants if they agreed that the tax would have a positive or negative “impact on people with low-income and people of color’s health and well-being and help them access affordable, healthy food in Seattle”. In the post-tax survey, we aimed to better understand how, if at all, respondents perceived financial aspects of the tax to be more burdensome for people with low-income and people of color in Seattle, independent from any perceptions related to health and well-being.

Table 8 details the individuals perceptions related to the regressivity of the tax.

A majority thought that the tax would be more burdensome for people with low-incomes or people of color (76% in Seattle and 73% in the comparison areas). At the same time, in considering the burden of taxes, tax design experts now are beginning to consider whether “sin taxes” also offer greater health benefits for those who may be more financially burdened by the tax.⁴ In this survey, about half of individuals surveyed (49% in Seattle and 51% in the comparison areas) perceived that sugary beverage taxes will improve health and well-being and improve access to affordable healthy food for people with low-income and people of color in Seattle. Results were similar by income (results shown in **Appendix Table 3**)

Conclusions/Discussion

In pre- and post-tax repeated cross-sectional study with well-matched comparison areas, we found differences by income in the effect of the tax on attitudes as estimated by difference-in-difference models.

We found that, for both income groups, there was no detectable impact of living with a Sweetened Beverage Tax on overall support for the tax—support for the tax declined in Seattle, but not to a greater

⁴ Allcott H, Lockwood BB, Taubinsky D. Regressive Sin Taxes, with an Application to the Optimal Soda Tax. Q J Econ. 2019;1557–626.

degree than it did in the comparison areas, indicating potential secular trends in attitudes, rather than a consequence of the living with a tax itself.

However, there were important differences in the impact of the tax on attitudes and beliefs by income level. For lower-income populations, living with the tax had no impact on beliefs of the impact of the tax on economic outcomes; however, for higher-income populations, beliefs of the impact of the tax on several economic outcomes became significantly more negative. Specifically, a greater percentage of respondents with higher incomes felt the tax would lead to job loss or negatively impact family finances after living with the tax in Seattle and fewer felt that the tax would positively impact the health and well-being of lower-income people or people of color.

Furthermore, while higher-income respondents did not change their perceptions of the health effects of sugary beverages or excess sugar from any source, lower-income respondents in Seattle increased or maintained levels relative to the comparison areas. This is evidenced in the relative increase in the percent of lower-income respondents in Seattle who believed that sugary beverages increase the risk for diabetes, heart disease, dental problems, and that sugary beverages and excess sugar in general increases the risk for serious health problems. Finally, there was suggestive evidence of decreased consumption of sugary beverages among the lower-income population based on a one-question assessment of self-reported frequency of sugary beverage consumption. The statistical significance of these difference-in-difference findings may have been driven by relatively larger decreases in the comparison areas about these perceptions of health concerns associated with sugary beverages (e.g., a 10 percentage point decrease in the perception that sugary beverages cause serious health problems in the comparison areas and a 15 percentage point decrease in proportion of high consumers). And yet, at the same time, there is evidence of positive, statistically significant impacts among the lower-income group when comparing just Seattle pre-tax to post-tax outcomes. For this reason, we consider the findings as suggestive (rather than strong) evidence of a trend among lower income populations towards decreased consumption and increased perceptions that sugary beverages are unhealthy.

Given the known disparities in these health conditions by income, it could be that lower-income populations are increasingly aware of the factors that are negatively impacting their communities. The differences by income in the impact of the tax on these beliefs could also be attributable to differences in the reach of pro-tax and educational campaigns. For example, to our knowledge, there was no broadly advertised educational or pro-tax, city government-supported campaign in the Seattle area prior to the tax passing or during implementation.^{5, 6} The tax went into effect shortly after a change in the executive office of the City of Seattle and the new Mayor took a neutral stance on the tax and did not proactively attempt to inform the public of the purpose of the tax or potential benefits or harms of the tax. At the same time, several news organizations covered the tax while focusing on its potential negative impact on small businesses. Additionally, in 2018, there was a large anti-beverage tax campaign with presence in Seattle and the rest of Washington state about ballot initiative measure 1634, which was a preemption bill, disallowing in the future any localities smaller than the state to adopt taxes on

⁵ Letters and final recommendations of the Sweetened Beverage Tax Community Advisory
<https://www.seattle.gov/sweetened-beverage-tax-community-advisory-board/board-recommendations>

⁶ Sweetened Beverage Tax Community Advisory Board 2019 Annual Report
https://www.seattle.gov/Documents/Departments/SweetenedBeverageTaxCommAdvisoryBoard/FactSheets/2019_SBT_Report_FINAL_11.3.2020.pdf

any grocery items, including beverages. The campaign was funded primarily by the beverage industry⁴⁻⁷ and alleged that beverage taxes result in higher grocery bills and that this may negatively impact businesses and family finances. The initiative was passed by Washington voters.

However, there was at least one grassroots organizations, Got Green,⁸ a small advocacy organization, that specifically conducted outreach in lower-income communities and communities of color to provide information about the rationale of the Seattle Sweetened Beverage Tax prior to its implementation in 2018, including information about the negative health impacts of sugary beverages on diseases that are disproportionately represented among lower-income communities and communities of color, such as diabetes, obesity, and heart disease.

In addition, the Healthy King County Coalition provided a forum for debate on this topic. Additionally, it is possible that the SBT Community Advisory Board (CAB) and its actions played a role in the generally less negative perception among lower-income populations. The CAB formation was written into the ordinance, thus creating a sustained force in the local context about the tax and the use of revenue resulting from the tax. The CAB's composition included members who served low-income populations and communities of color. The CAB played a central role in holding the City accountable about using revenues to fund programs that would primarily benefit lower-income populations (which now includes counter-marketing campaigns). In addition, the CAB recruits CBOs to apply for funds to provide programs/services to low-income and communities of color and they release annual reports about the use of revenues as well as benefits to low-income and communities of color.

Finally, in addition to the CAB efforts, the tax revenues in Seattle are, by ordinance, largely targeted to increasing access and resources within lower-income communities and communities of color. This may have impacted perceptions of the impact of the tax. It is notable that the only sweetened beverage taxes in the US to have been implemented and subsequently repealed (Cook County, IL) did not focus tax revenue on these communities.

The combination of these different campaigns and media coverage might explain the differences in responses by income. Specifically, higher-income Seattle residents were generally feeling less positive about the tax impacts over time, but lower-income Seattle residents generally either did not change their perceptions of tax impacts or felt more positive about the tax and increased beliefs that sugary beverages are harmful to health.

Relatedly, more than 90% of Seattle residents had heard of the Sweetened Beverage Tax and a substantially larger proportion had been exposed to negative messaging about the tax, compared to positive messaging—in Seattle and relative to the respondents in the comparison areas. Overall, it appears that on average, Seattle residents were exposed to more negative messaging about the tax than positive messaging, but that lower-income populations were exposed to more positive messaging than higher-income populations.

⁷ Beverage industry, allies start campaign to stop Seattle's soda tax from spreading, The Seattle Times, February 28, 2018. <https://www.seattletimes.com/seattle-news/politics/beverage-industry-allies-start-campaign-to-stop-seattles-soda-tax-from-spreading/>

⁸ Got Green. <https://gotgreenseattle.org/?s=soda>

Our results indicate that the vast majority of respondents agreed with the stated priorities for using the tax revenues to improve food access as well as expand services and support for young children, which generally aligns with how the funds are being used in Seattle.⁹

A sizable proportion of the sample perceived that they had decreased their sugary beverage consumption over the past year. However, this proportion was similar in Seattle and the comparison areas. Of those who said they decreased their consumption, nearly half of those in Seattle, but only ten percent in the comparison areas said that one of the reasons they decreased their consumption was the sugary beverage tax or tax campaigns. Approximately 33% of Seattle residents decreasing their consumption cited the tax or cost as the primary reason, compared to <5% of comparison areas residents. Nevertheless, health concerns seem to be the primary reason that respondents in the comparison areas reported decreasing their consumption and the overall percent of people reporting decreasing their consumption was similar, so it is generally unclear what role the tax may have had in this self-reported change. Our 12-month report on changes in reported sugary beverages among lower-income families found no differential change among Seattle versus non-Seattle King County residents, with both groups decreasing consumption from pre-tax to the post-tax period. Still, results from objective store purchasing data published last year suggest that purchasing taxed beverages declined more in Seattle compared Portland (the comparison area in that study) from a pre-tax to 1-year post-tax period. This offers a suggestion of true declines in purchasing in association with the tax when measured with non-self-report data.¹⁰

Limitations

Limitations of this study should be noted. This was a repeated, cross-sectional survey, meaning that we did not survey the same people over time, but instead conducted a population-based sample in Seattle and the comparison areas in pre- and post-tax time periods. The samples were well-matched, but, as with most studies, we cannot rule out the possibility that unmeasured characteristics that differed across time might be driving some of the results. We rely on the comparison areas to serve as the counterfactual for our best guess of what the trends in Seattle would have looked like had Seattle not implemented the tax; however, it is also possible that unmeasured compositional factors could confound our results. The proportion of the sample completing the survey online rather than the phone was larger in both Seattle and the comparison areas in the post-tax measurement, however, we do control for mode of survey in our estimates. Finally, we were limited to conducting the survey in English, Spanish (for phone and online), plus Vietnamese in the online only version.

Future work

This report represents the final planned analysis for the City of Seattle assessing the impact of the Sweetened Beverage Tax on norms and attitudes. There has been very little systematic collection of how beverage taxes around the country have influenced attitudes, beliefs, and norms, so this work represents an informative and unique perspective. Since magnitude, revenue focus, which beverages are taxed, and messaging have been different across US cities that have adopted beverage taxes, we recommend that future tax evaluations also consider incorporating an assessment of the impact of the

⁹ Sweetened Beverage Tax Community Advisory Board 2019 Annual Report.
https://www.seattle.gov/Documents/Departments/SweetenedBeverageTaxCommAdvisoryBoard/FactSheets/2019_SBT_Report_FINAL_11.3.2020.pdf

¹⁰ Powell LM, Leider J. The impact of Seattle's Sweetened Beverage Tax on beverage prices and volume sold. *Econ Hum Biol.* 2020 May;37:100856. doi: 10.1016/j.ehb.2020.100856. Epub 2020 Jan 21. PMID: 32070906.

tax on attitudes, beliefs, and norms, as these are likely to be somewhat dependent on these factors that are part of or accompany a sweetened beverage tax.

APPENDIX A. COMPLETE SURVEYS FOR SEATTLE AND COMPARISON CITIES, WEB AND PHONE VERSIONS

Norms and Attitudes Survey: Web Version in Seattle

This study is being conducted by researchers at the University of Washington and will ask you some questions about the sugary drink tax that started in January 2018 in Seattle. There are no right or wrong answers and your answers will be kept confidential. The survey will take less than 15 minutes to complete.

Screeners Questions

1. What zip code you live in? _____

PROGRAMMER NOTES:

IF respondent does not live in any of the zip codes listed below, TERMINATE

IF respondent lives in a zip code entirely within city limits CONTINUE

IF respondent lives in zip code that borders Northern city limits ask question 2

IF respondent lives in zip code that borders Southern city limits as question 3

Zip codes entirely within Seattle city limits: 98101, 98102, 98103, 98104, 98105, 98107, 98109, 98112, 98115, 98116, 98119, 98121, 98122, 98125, 98126, 98134, 98144, 98154, 98164, 98174, 98177, 98195, 98199

Zip codes the overlap Seattle city limits in North: 98133, 98117

Zip codes the overlap Seattle city limits in South: 98146, 98136, 98106, 98108, 98118, 98178

2. Do you live above or below 145th street?

☐ Above [TERMINATE]

☐ Below [CONTINUE]

3. Do you live within Seattle city limits?

☐ No [TERMINATE]

☐ Yes [CONTINUE]

4. Are you of Hispanic or Latino origin? (Check all that apply)

☐ No, not of Hispanic, Latino or Spanish origin

☐ Yes, Mexican, Mexican American or Chicano

☐ Yes, Puerto Rican

☐ Yes, Cuban

☐ Yes, another Hispanic, Latino or Spanish origin

☐ DON'T KNOW

☐ REFUSED

5. What race(s) do you consider yourself? (Check all that apply)

☐ White

☐ Black or African American

☐ American Indian or Alaska Native (ASSIGN TO OTHER)

☐ Asian

☐ Native Hawaiian or Other Pacific Islander (ASSIGN TO Other)

☐ Other _____

☐ DON'T KNOW

☐ REFUSED

6. How many adults (including yourself) live in your household? _____ adults

7. How many children under 18 live in your household? _____ children

8. Is your total annual household income above or below _____ per year?

- ☐ Above (“high” income)
☐ Below (“low” income)

PROGRAMMING INSTRUCTIONS

Household Size Add Q2+Q3	Annual 260% Insert in Q8
1	\$ 32,472
2	\$ 43,968
3	\$ 55,464
4	\$ 66,948
5	\$ 78,444
6	\$ 89,940

Instructions for respondent: Please answer every question by checking off the box that best matches your answer, even if the answer is “I don’t know.”

PROGRAMMER NOTE: Force answer of all questions. Respondents should only be allowed to check one box, except for question 5.

Because we will be asking you questions about sugary drinks, we want to tell you what we mean when we refer to sugary drinks in this survey. **Sugary drinks** include **regular soft drinks, soda or pop** (such as Coke, Pepsi, Sprite, Root Beer, Orange Soda, Jarritos, Dr. Pepper), **fruit-flavored drinks** (such as lemonade, Sunny Delight, Hawaiian Punch), **sports drinks** (such as Gatorade, Powerade), **sweetened teas or coffees** (such as Arizona Iced Tea, Snapple, Pure Leaf, Starbucks Frappuccino, mochas, or bubble teas), and **energy drinks** (such as Red Bull, Rockstar, Monster). They do NOT include milk, 100% fruit juice, diet drinks, or artificially sweetened drinks.

1. During the past 30 days, how often did you drink **sugary drinks**?

- ☐ Never or less than 1 time per week
☐ 1 time per week
☐ 2-6 times per week
☐ 1 time per day
☐ 2 or more times per day
☐ Don't know

2. Have you changed how much you drink sugary drinks in the last year?

- ☐ Yes → **if yes,** ☐ More ☐ Less
☐ No
☐ Don’t know

PROGRAMMING NOTE: Skip questions 3-5 if respondent answered, “no” to question 2 or “yes and MORE” to question 2.

3. Was the sugary drink tax and/or its campaign one of the reasons you drank less?

- ☐ Yes
☐ No
☐ Don’t know

4. What is the primary reason you have changed what you drink in the last year?

- ☐ Health
☐ Sugary drink tax

- “ Cost
- ☐ Taste
- ☐ Convenience
- ☐ Other
- ☐ Don’t know

PROGRAMMING NOTE: *Can select multiple options to # 5.*

5. If you now drink something instead of a sugary drink, which of the following do you drink instead: tap water, filtered tap water, bottled water, unflavored milk, unsweetened coffee or tea, or diet drinks?
- ☐ Tap water
 - ☐ Filtered tap water
 - ☐ Bottled water (READ ONLY IF NECESSARY e.g., Aquafina, Dasani, Smart Water, La Croix, Mio)
 - ☐ Unflavored Milk
 - ☐ Unsweetened coffee or tea
 - ☐ Diet drinks (READ ONLY IF NECESSARY e.g. Diet coke, Coke Zero Sugar, Diet Pepsi)
 - ☐ None, respondent does not drink other drinks instead of sugary drinks
 - ☐ Don’t know

On January 1, 2018, the City of Seattle started taxing sugary drinks. In Seattle, large distributors now pay a 1.75 cents per ounce tax on sugary drinks. Taxed beverages include drinks that have added sugar. The tax does NOT include diet beverages, 100% fruit juices, or milk products. Money from the tax will help give more people access to healthy and affordable food, expand early education for pre-school aged kids, and help high school graduates enter college.

6. Have you heard of this tax?
- ☐ Yes
 - ☐ No
 - ☐ Don’t know

PROGRAMMING NOTE: *Skip question 7 if respondent answered, “no” to question 6.*

7. In your own words, what has been your experience with Seattle’s sugary drink tax?
8. Based on what you know, how much do you approve or disapprove of this tax?
- ☐ Strongly disapprove
 - ☐ Somewhat disapprove
 - ☐ Somewhat approve
 - ☐ Strongly approve
 - ☐ Don’t know

PROGRAMMING NOTE: *Skip questions 9-10 if respondent answered, “no” to question 6.*

9. In past 6 months, have you seen, heard, or read anything POSITIVE about the sugary drink tax?
- ☐ Yes
 - ☐ No
 - ☐ Don’t know
10. In past 6 months, have you seen, heard, or read anything NEGATIVE about the sugary drink tax?
- ☐ Yes
 - ☐ No

“ Don’t know

11. Below is a pair of statements that people have made about this new tax on sugary drinks. Please indicate which statement is closer to your own view, even if neither is exactly right.

____ 11A	Statement 1: 1. This tax WILL improve public health in Seattle. Statement 2: 2. This tax will NOT improve public health in Seattle.
____ 11B	Statement 1: 1. This tax WILL improve the health and well-being of children in Seattle. Statement 2: 2. This tax will NOT improve the health and well-being of children in Seattle.

- ☐ FIRST statement is MUCH closer
☐ FIRST statement is SOMEWHAT closer
☐ SECOND statement is MUCH closer
☐ SECOND statement is SOMEWHAT closer
☐ Don’t know

12. Below is a pair of statements that people have made about how the new tax on sugary drinks might affect people and businesses in Seattle. Please indicate which statement is closer to your own view, even if neither is exactly right.

____ 12A	Statement 1: This tax WILL be more burdensome for people with low-income and people of color in Seattle. Statement 2: This tax WILL NOT be more burdensome for people with low-income and people of color in Seattle.
____ 12B	Statement 1: This tax WILL improve health and well-being for people with low-income and people of color in Seattle Statement 2: This tax WILL NOT improve health and well-being for people with low-income and people of color in Seattle
____ 12C	Statement 1: I travel to another city to buy sugary drinks so I don’t have to pay the tax. Statement 2: I do NOT travel to another city to buy sugary drinks because of the tax.
____ 12D	Statement 1: This tax will have a POSITIVE effect on Seattle's economy. Statement 2: This tax will have a NEGATIVE effect on Seattle's economy.

____ 12E	Statement 1: This tax WILL have a negative effect on small businesses in Seattle. Small businesses may lose money and could even go out of business because of the tax. Statement 2: This tax will NOT have negative effects on small businesses in Seattle. It's not likely that businesses will lose money or go out of business because of the tax.
____ 12F	Statement 1: This tax WILL result in job loss in Seattle. Statement 2: This tax will NOT result in job loss in Seattle.
____ 12G	Statement 1: This tax WILL have a negative impact on my family's finances Statement 2: This tax will NOT have a negative impact on my family's finances.
____ 12H	Statement 1: This tax will have a POSITIVE impact on people with low-income and people of color's health and well-being and help them access affordable, healthy food in Seattle. Statement 2: This tax will have a NEGATIVE impact on people with low-income and people of color's finances, will drive up the cost of living for those who can least afford to pay the tax, and further increase income inequality.

- ☐ FIRST statement is MUCH closer
☐ FIRST statement is SOMEWHAT closer
☐ SECOND statement is MUCH closer
☐ SECOND statement is SOMEWHAT closer
☐ Don't know

13. For each of the following statements about how sugary drinks affect health, please indicate how much you agree or disagree:

- ☐ Strongly disagree
☐ Somewhat disagree
☐ Somewhat agree
☐ Strongly agree
☐ Don't know

- i. Drinking sugary drinks causes serious health problems.
- ii. Drinking sugary drinks significantly raises a person's chances of dental health problems, including cavities and tooth decay.
- iii. Drinking sugary drinks significantly raises a person's chances of obesity.
- iv. Drinking sugary drinks significantly raises a person's chances of diabetes.
- v. Drinking sugary drinks significantly raises a person's chances of heart disease.

14. Drinking sugar drinks significantly raises a person's chances of heart disease. Consuming excessive amounts of sugar from any source, not only from drinks but also from foods such as cookies or cereals, can lead to serious health problems. Please indicate how much you agree or disagree:

- ☐ Strongly disagree
- ☐ Somewhat disagree
- ☐ Somewhat agree
- ☐ Strongly agree
- ☐ Don't know

15. Thinking about how sugary drinks affect health, what is the MOST people should drink them?

- ☐ Never or less than 1 time per week
- ☐ 1 time per week
- ☐ 2-6 times per week
- ☐ 1 time per day
- ☐ 2 or more times per day
- ☐ Don't know

16. Please indicate whether you think regularly drinking each type of drink affects a person's chances of developing health problems like diabetes or becoming overweight.

(PROGRAMMER NOTE: LIST ITEMS IN RANDOM ORDER)

- i. **Regular soft drinks, soda or pop, not including diet** (e.g. Coke, Pepsi, Sprite, Root Beer, Orange Soda, Jarritos, Dr. Pepper)
- ii. **Fruit-Flavored drinks** (e.g. lemonade, Sunny Delight, Hawaiian Punch)
- iii. **Sports drinks** (e.g. Gatorade, Powerade)
- iv. **Sweetened teas or coffees** (e.g. Arizona Iced Tea, Snapple, Pure Leaf, Starbucks Frappuccino, mocha, or bubble teas)
- v. **Energy drinks** (e.g. Red Bull, Rockstar, Monster)

Responses for each drink are:

- ☐ Doesn't increase
- ☐ Probably increases
- ☐ Definitely increases
- ☐ Don't know

17. Below is a pair of statements that people have made about this new tax on sugary drinks. Please indicate which statement is closer to your own view, even if neither is exactly right.

Statement 1: Under this tax, people still have the CHOICE to drink what they want.

Statement 2: This tax significantly LIMITS people's ability to choose what they drink.

- ☐ FIRST statement MUCH closer
- ☐ FIRST statement SOMEWHAT closer
- ☐ SECOND statement MUCH closer
- ☐ SECOND statement SOMEWHAT closer

“ Don’t know

18. Money from the sugary drink tax has been used to improve food access and expand services and support for young children (from birth to age 3), for people with lower-incomes, and for people of color in Seattle. Do you think these are the right priorities to invest money that comes from the tax?

☐ Yes → **SKIP to question 19**

☐ No → what do you suggest is a better area to invest tax revenue? [open ended]

19. To address food access, the money raised by the tax may be used to fund the following initiatives. How would you rank these initiatives, with 1 being most important and 4 being the least important:

_____ Vouchers to low-income residents so they can buy more fruits and vegetables

_____ Funds to improve the quality of food offered to lower income children in childcare programs, schools, and after-school programs

_____ Food banks and meal programs

_____ Community led organizations working to increase access to healthy food.

20. To address early childhood development, the money raised by the tax may be used to fund the following initiatives. How would you rank these initiatives, with 1 being most important and 4 being the least important:

_____ Vouchers/subsidies to lower-income, working families to help them afford childcare

_____ Funds to support child development training and coaching for childcare providers, to improve the quality of care they provide to young children

_____ Funds for specialized support to families with young children who have developmental delays

_____ Provide basic supplies directly to low-income families such as, clothes, maternity supplies, diapers, books.

21. After hearing more about the tax, how much do you approve or disapprove of this tax ?

☐ Strongly disapprove

☐ Somewhat disapprove

☐ Somewhat approve

☐ Strongly approve

☐ Don’t know

Finally, we want you a few questions about yourself and your household.

22. What is your age?

☐ 18-30

☐ 31-40

☐ 41-50

☐ 51-64

☐ 65+

☐ REFUSED

23. What is your gender?

☐ Male ☐ Female ☐ Self-identify _____

24. What was the highest education level that you completed?

- ☐ Some high school
- ☐ Completed high school
- ☐ Some college or vocational training
- ☐ Completed college or university
- ☐ Completed graduate or professional degree
- ☐ DON'T KNOW

25. What is your marital status?

- ☐ Married
- ☐ Widowed/divorced/separated
- ☐ Single and never married
- ☐ Living with partner
- ☐ DON'T KNOW

26. Please indicate your annual household income before taxes.

- ☐ <\$30,000
- ☐ \$30,000-\$59,999
- ☐ \$60,000-\$89,999
- ☐ \$90,000-\$120,000
- ☐ >\$120,000
- ☐ Don't know

27. Have you been covered by Medicaid in the last 12 months?

- ☐ Yes
- ☐ No
- ☐ Don't know

28. In general, do you think of yourself as a Democrat, an Independent, a Republican, or what?

- ☐ Democrat
- ☐ Independent
- ☐ Republican
- ☐ Other (please specify) _____
- ☐ Don't know

29. To help us make sure people from all Seattle neighborhoods are included in this survey, we would like to know the nearest intersection to your home. Please indicate the two cross-streets of this intersection.

What is the name of the first street? _____

What is the name of the second street? _____

Thank you for taking the time to complete our survey.

Norms and Attitudes Survey Phone Version in Seattle

Hello, my name is _____. I'm working with the University of Washington and I am looking for someone to answer some questions about the sugary drink tax that started in January 2018 in Seattle. There are no right or wrong answers and your answers will be kept confidential. Do you have a few minutes to answer some brief questions?

INTERVIEWER NOTE: *if needed, the survey will take about 15 minutes to complete.*

Screener Questions

First, I'd like to ask you a few questions about your household to make sure you are eligible for this survey.

1. Can you tell me what zip code you live in? _____

INTERVIEWER NOTES:

IF respondent does not live in any of the zip codes listed below, TERMINATE

IF respondent lives in a zip code entirely within city limits CONTINUE

If respondent lives in zip code that borders Northern city limits ask question 2

If respondent lives in zip code that borders Southern city limits as question 3

If DK OR REFUSED - TERMINATE

Zip codes clearly in Seattle city limits: 98101, 98102, 98103, 98104, 98105, 98107, 98109, 98112, 98115, 98116, 98119, 98121, 98122, 98125, 98126, 98134, 98144, 98154, 98164, 98174, 98177, 98195, 98199

Zip codes the overlap Seattle city limits in North: 98133, 98117

Zip codes the overlap Seattle city limits in South: 98146, 98136, 98106, 98108, 98118, 98178

2. Do you live above or below 145th street?

☐ Above [TERMINATE]

☐ Below [CONTINUE]

DK/REFUSED - TERMINATE

3. Do you live within Seattle city limits?

☐ No [TERMINATE]

☐ Yes [CONTINUE]

DK / REFUSED - TERMINATE

4. Are you of Hispanic or Latino origin? (Check all that apply)

☐ No, not of Hispanic, Latino or Spanish origin

☐ Yes, Mexican, Mexican American or Chicano

☐ Yes, Puerto Rican

☐ Yes, Cuban

☐ Yes, another Hispanic, Latino or Spanish origin

☐ DON'T KNOW

☐ REFUSED

5. What race(s) do you consider yourself? (Check all that apply)

☐ White

☐ Black or African American

☐ American Indian or Alaska Native (ASSIGN TO OTHER)

☐ Asian

☐ Native Hawaiian or Other Pacific Islander (ASSIGN TO OTHER)

☐ Other _____

☐ DON'T KNOW - TERMINATE

☐ REFUSED - TERMINATE

6. How many adults (including yourself) live in your household? _____ adults

IF DK/REFUSED - TERMINATE

7. How many children under 18 live in your household? _____ children

IF DK/REFUSED TERMINATE

8. Is your total annual household income above or below _____ per year?

IF DK/REFUSED TERMINATE

INTERVIEWER NOTE: use chart to get household size specific value for 260% FPL for this household

☐ Above (“high” income)

☐ Below (“low” income)

PROGRAMMING INSTRUCTIONS

Household Size Add Q6+Q7	Annual 260% Insert in Q8
1	\$ 32,472
2	\$ 43,968
3	\$ 55,464
4	\$ 66,948
5	\$ 78,444
6	\$ 89,940

Domain 1: Current Consumption

INTERVIEWER: READ DRINK TYPES IN BOLD ONLY – READ BRANDS IN PARENTHESIS ONLY IF NEEDED

Because we will be talking today about sugary drinks, I want to start off by telling you what we mean when we refer to sugary drinks. **Sugary drinks** include **regular soft drinks, soda or pop** (such as Coke, Pepsi, Sprite, Root Beer, Orange Soda, Jarritos, Dr. Pepper), **fruit-flavored drinks** (such as lemonade, Sunny Delight, Hawaiian Punch), **sports drinks** (such as Gatorade, Powerade), **sweetened teas or coffees** (such as Arizona Iced Tea, Snapple, Pure Leaf, Starbucks Frappuccino, mochas, or bubble teas), and **energy drinks** (such as Red Bull, Rockstar, Monster). They do NOT include milk, 100% fruit juice, diet drinks, or artificially sweetened drinks.

To start off, I’m interested in learning about whether you drink sugary drinks.

1. During the past 30 days, did you drink **sugary drinks** never or less than 1 time per week, 1 time per week, 2-6 times per week, 1 time per day, or 2 or more times per day?

☐ Never or less than 1 time per week

☐ 1 time per week

☐ 2-6 times per week

☐ 1 time per day

☐ 2 or more times per day

☐ Don't know

☐ REFUSED

2. Have you changed how much you drink sugary drinks in the last year?

☐ Yes → if yes, ☐ More ☐ Less

☐ No

☐ Don't know

☐ REFUSED

INTERVIEWER NOTE: Skip questions 3-5 if respondent answered, “no” to question 2 or “yes and MORE” to question 2.

3. Was the sugary drink tax and/or its campaign one of the reasons you drank less?

- ☐ Yes
- ☐ No
- ☐ Don't know
- ☐ REFUSED

4. What is the primary reason you have changed what you drink in the last year?

- ☐ Health
- ☐ Sugary drink tax
- ☐ Cost
- ☐ Taste
- ☐ Convenience
- ☐ Other
- ☐ Don't know
- ☐ REFUSED

INTERVIEWER and PROGRAMMING NOTE: *Can select multiple options to # 5.*

5. If you now drink something instead of a sugary drink, which of the following do you drink instead: tap water, filtered tap water, bottled water, unflavored milk, unsweetened coffee or tea, or diet drinks?

- ☐ Tap water
- ☐ Filtered tap water
- ☐ Bottled water (READ ONLY IF NECESSARY e.g., Aquafina, Dasani, Smart Water, La Croix, Mio)
- ☐ Unflavored Milk
- ☐ Unsweetened coffee or tea
- ☐ Diet drinks (READ ONLY IF NECESSARY e.g. Diet coke, Coke Zero Sugar, Diet Pepsi)
- ☐ None, respondent does not drink other drinks instead of sugary drinks
- ☐ Don't know
- ☐ REFUSED

Domain 2: Norms/Attitudes towards tax itself

Next, I'd like to tell you a little bit about the new tax on sugary drinks in Seattle.

On January 1, 2018, the City of Seattle started taxing sugary drinks. In Seattle, large distributors now pay a 1.75 cents per ounce tax on sugary drinks. Taxed beverages include drinks that have added sugar. The tax does NOT include diet beverages, 100% fruit juices, or milk products. Money from the tax will help give more people access to healthy and affordable food, expand early education for pre-school aged kids, and help high school graduates enter college.

6. Have you heard of this tax, yes or no?

- ☐ Yes
- ☐ No
- ☐ Don't know
- ☐ REFUSED

INTERVIEWER NOTE: *Skip question 7 if respondent answered, "no" to question 6.*

7. In your own words, what has been your experience with Seattle's sugary drink tax?

8. Based on what you know, do you strongly disapprove, somewhat disapprove, somewhat approve, strongly approve of this tax?

- ☐ Strongly disapprove
- ☐ Somewhat disapprove

- “ Somewhat approve
- ☐ Strongly approve
- ☐ Don’t know
- ☐ REFUSED

INTERVIEWER NOTE: *Skip questions 9-10 if respondent answered, “no” to question 6.*

9. In past 6 months, have you seen, heard, or read anything **POSITIVE** about the sugary drink tax?
- ☐ Yes
 - ☐ No
 - ☐ Don’t know
 - ☐ REFUSED

10. In past 6 months, have you seen, heard, or read anything **NEGATIVE** about the sugary drink tax?
- ☐ Yes
 - ☐ No
 - ☐ Don’t know
 - ☐ REFUSED

11. I’m going to read you pairs of statements that people have made about this new tax on sugary drinks. After I read each pair, please tell me which statement is closer to your own view, even if neither is exactly right.

(INTERVIEWER PROMPT) Which statement comes closer to your own view?

- ____ 11A 1. This tax **WILL** improve public health in Seattle.
 2. This tax will **NOT** improve public health in Seattle.

- ____ 11B 1. This tax **WILL** improve the health and well-being of children in Seattle.
 2. This tax will **NOT** improve the health and well-being of children in Seattle.

(AFTER CHOICE IS MADE, INTERVIEWER PROBE:) Is that **MUCH** closer or **SOMEWHAT** closer?

- ☐ **FIRST** statement is **MUCH** closer
- ☐ **FIRST** statement is **SOMEWHAT** closer
- ☐ **SECOND** statement is **MUCH** closer
- ☐ **SECOND** statement is **SOMEWHAT** closer
- ☐ Don’t know
- ☐ REFUSED

Domain 3: Unintended Impacts

Now, I’d like to ask a few questions on how the new tax on sugary drinks might be affecting people and businesses in Seattle.

12. Like I did earlier, I'm going to read you pairs of statements that people have made about this tax on sugary drinks. After I read each pair, please tell me which statement is closer to your own view, even if neither is exactly right.

(INTERVIEWER PROMPT) Which statement comes closer to your own view?

____ 12A	Statement 1: This tax WILL be more burdensome for people with low-income and people of color in Seattle. Statement 2: This tax WILL NOT be more burdensome for people with low-income and people of color in Seattle.
____ 12B	Statement 1: This tax WILL improve health and well-being for people with low-income and people of color in Seattle Statement 2: This tax WILL NOT improve health and well-being for people with low-income and people of color in Seattle
____ 12C	Statement 1: I travel to another city to buy sugary drinks so I don't have to pay the tax. Statement 2: I do NOT travel to another city to buy sugary drinks because of the tax.
____ 12D	Statement 1: This tax will have a POSITIVE effect on Seattle's economy. Statement 2: This tax will have a NEGATIVE effect on Seattle's economy.
____ 12E	Statement 1: This tax WILL have a negative effect on small businesses in Seattle. Small businesses may lose money and could even go out of business because of the tax. Statement 2: This tax will NOT have negative effects on small businesses in Seattle. It's not likely that businesses will lose money or go out of business because of the tax.
____ 12F	Statement 1: This tax WILL result in job loss in Seattle. Statement 2: This tax will NOT result in job loss in Seattle.
____ 12G	Statement 1: This tax WILL have a negative impact on my family's finances Statement 2: This tax will NOT have a negative impact on my family's finances.

____ 12H	Statement 1: This tax will have a POSITIVE impact on people with low-income and people of color's health and well-being and help them access affordable, healthy food in Seattle. Statement 2: This tax will have a NEGATIVE impact on people with low-income and people of color's finances, will drive up the cost of living for those who can least afford to pay the tax, and further increase income inequality.
----------	---

(AFTER CHOICE IS MADE, INTERVIEWER PROBE:) Is that MUCH closer or SOMEWHAT closer?

- ☐ FIRST statement is MUCH closer
- ☐ FIRST statement is SOMEWHAT closer
- ☐ SECOND statement is MUCH closer
- ☐ SECOND statement is SOMEWHAT closer
- ☐ Don't know
- ☐ REFUSED

Domain 4: Norms/Attitudes towards healthfulness of sugary drinks

INTERVIEWER: READ DRINK TYPES IN BOLD ONLY – READ BRANDS IN PARENTHESIS ONLY IF NEEDED

Remembering back to how I defined sugary drinks earlier, I am now going to read you some statements about how sugary drinks affect health. Would it help if I repeated the definition?

(INTERVIEWER NOTE: IF YES, read: **Sugary drinks** include **regular soft drinks, soda or pop** (such as Coke, Pepsi, Sprite, Root Beer, Orange Soda, Jarritos, Dr. Pepper), **fruit-flavored drinks** (such as lemonade, Sunny Delight, Hawaiian Punch), **sports drinks** (such as Gatorade, Powerade), **sweetened teas or coffees** (such as Arizona Iced Tea, Snapple, Pure Leaf, Starbucks Frappuccino, mochas, or bubble teas), and **energy drinks** (such as Red Bull, Rockstar, Monster). They do NOT include milk, 100% fruit juice, diet drinks, or artificially sweetened drinks.)

13. Using a scale of 1 to 4, where 1 means Strongly Disagree and 4 means Strongly Agree, how much do you agree or disagree with the following statements. [READ EACH STATEMENT; REPEAT SCALE AS NEEDED]

Responses are:

- ☐ Strongly disagree
- ☐ Somewhat disagree
- ☐ Somewhat agree
- ☐ Strongly agree
- ☐ Don't know
- ☐ REFUSED

INTERVIEWER: READ 'DRINKING SUGARY DRINKS' WITH FIRST STATEMENT – THEN REPEAT ONLY AS NECESSARY...

- i. Drinking sugary drinks causes serious health problems.
- ii. Drinking sugary drinks significantly raises a person's chances of dental health problems, including cavities and tooth decay.
- iii. Drinking sugary drinks significantly raises a person's chances of obesity.
- iv. Drinking sugary drinks significantly raises a person's chances of diabetes.

- v. Drinking sugary drinks significantly raises a person's chances of heart disease.
14. Using the same scale of 1 means strongly Disagree and 4 means Strongly Agree, how much do you agree or disagree that consuming excessive amounts of sugar from any source, not only from drinks but also from foods such as cookies or cereals, can lead to serious health problems.
- ☐ Strongly disagree
 - ☐ Somewhat disagree
 - ☐ Somewhat agree
 - ☐ Strongly agree
 - ☐ Don't know
 - ☐ REFUSED
15. Now, thinking about how sugary drinks affect health, what is the MOST people should drink them? READ IF NECESSARY: Please tell me if it's never or less than 1 time per week, 1 time per week, 2-6 times per week, 1 time per day, or 2 or more times per day.
- ☐ Never or less than 1 time per week
 - ☐ 1 time per week
 - ☐ 2-6 times per week
 - ☐ 1 time per day
 - ☐ 2 or more times per day
 - ☐ Don't know
 - ☐ REFUSED
16. Next, I am going to read a list of the types of sugary drinks. Please tell me whether you think regularly drinking each type of drink doesn't increase, probably increases, or definitely increases a person's chances of developing health problems like diabetes or becoming overweight.

(INTERVIEWER NOTE: READ ITEMS IN RANDOM ORDER – READ BRANDS IN PARENTHESIS ONLY IF NECESSARY)

- i. **Regular soft drinks, soda or pop, not including diet** (e.g. Coke, Pepsi, Sprite, Root Beer, Orange Soda, Jarritos, Dr. Pepper)
- ii. **Fruit-Flavored drinks** (e.g. lemonade, Sunny Delight, Hawaiian Punch)
- iii. **Sports drinks** (e.g. Gatorade, Powerade)
- iv. **Sweetened teas or coffees** (e.g. Arizona Iced Tea, Snapple, Pure Leaf, Starbucks Frappuccino, mocha, or bubble teas)
- v. **Energy drinks** (e.g. Red Bull, Rockstar, Monster)

Responses for each drink are:

- ☐ Doesn't increase
- ☐ Probably increases
- ☐ Definitely increases
- ☐ Don't know
- ☐ REFUSED

Domain 5: Norms/attitudes towards government regulation of individual behaviors

17. Similar to prior questions, I'm going to read you a pair of statements. After I read both statements please tell me which one comes closer to your own view, even if neither is exactly right.

(INTERVIEWER PROMPT) Which statement comes closer to your own view?

Statement 1: Under this tax, people still have the CHOICE to drink what they want.

Statement 2: This tax significantly LIMITS people's ability to choose what they drink.

(AFTER CHOICE IS MADE, INTERVIEWER PROBE:) Is that MUCH closer or SOMEWHAT closer?

- ☐ FIRST statement MUCH closer
- ☐ FIRST statement SOMEWHAT closer
- ☐ SECOND statement MUCH closer
- ☐ SECOND statement SOMEWHAT closer
- ☐ Don't know
- ☐ REFUSED

Domain 6: Opinions on Tax Revenues

18. Money from the sugary drink tax has been used to improve food access and expand services and support for young children (from birth to age 3), for people with lower-incomes, and for people of color in Seattle. Do you think these are the right priorities to invest money that comes from the tax?

- ☐ Yes → **SKIP to question 19**
- ☐ No → what do you suggest is a better area to invest tax revenue? [open ended]

19. To address food access, the money raised by the tax may be used to fund the following initiatives. How would you rank these initiatives, with 1 being most important and 4 being the least important:

- _____ Vouchers to low-income residents so they can buy more fruits and vegetables
- _____ Funds to improve the quality of food offered to lower income children in childcare programs, schools, and after-school programs
- _____ Food banks and meal programs
- _____ Community led organizations working to increase access to healthy food.

20. To address early childhood development, the money raised by the tax may be used to fund the following initiatives. How would you rank these initiatives, with 1 being most important and 4 being the least important:

- _____ Vouchers/subsidies to lower-income, working families to help them afford childcare
- _____ Funds to support child development training and coaching for childcare providers, to improve the quality of care they provide to young children
- _____ Funds for specialized support to families with young children who have developmental delays
- _____ Provide basic supplies directly to low-income families such as, clothes, maternity supplies, diapers, books.

Domain 7: Conclusion and Demographics

21. After hearing more about the tax, let me ask you again, do you strongly disapprove, somewhat disapprove, somewhat approve, or strongly approve of this tax?

- ☐ Strongly disapprove
- ☐ Somewhat disapprove
- ☐ Somewhat approve
- ☐ Strongly approve
- ☐ Don't know
- ☐ REFUSED

Finally, I want to ask you a few questions about yourself and your household.

22. What is your age?

- ☐ 18-30
- ☐ 31-40
- ☐ 41-50
- ☐ 51-64
- ☐ 65+
- ☐ REFUSED

23. What is your gender?

- ☐ Male
- ☐ Female
- ☐ Self-identify (Specify: _____)
- ☐ REFUSED

24. What was the highest education level that you completed?

- ☐ Some high school
- ☐ Completed high school
- ☐ Some college or vocational training
- ☐ Completed college or university
- ☐ Completed graduate or professional degree
- ☐ REFUSED

25. What is your marital status?

- ☐ Married
- ☐ Widowed/divorced/separated
- ☐ Single and never married
- ☐ Living with partner
- ☐ REFUSED

26. Now, we don't want to know your exact income, but just roughly, could you tell me if your annual household income before taxes is:

- ☐ <\$30,000
- ☐ \$30,000-\$59,999
- ☐ \$60,000-\$89,999
- ☐ \$90,000-\$120,000
- ☐ >\$120,000
- ☐ DON'T KNOW
- ☐ REFUSED

27. Can you tell me if you have been covered by Medicaid in the last 12 months?

- ☐ Yes
- ☐ No

☐ DON'T KNOW

☐ REFUSED

28. Generally speaking, do you think of yourself as **(ROTATE)** a Democrat, an Independent, a Republican, or what?

☐ Democrat

☐ Independent

☐ Republican

☐ Other (SPECIFY)

☐ DON'T KNOW

☐ REFUSED

29. To help us make sure people from all Seattle neighborhoods are included in this survey, we would like to know the nearest intersection to your home. Please name the two cross-streets of this intersection.

What is the name of the first street? _____

INTERVIEWER NOTE: Confirm street spelling and directionals (e.g. N, S, NW, NE)

What is the name of the second street? _____

INTERVIEWER NOTE: Confirm street spelling and directionals (e.g. N, S, NW, NE)

CLOSING: Those are all of our questions. Thank you for taking the time to complete our survey.

Norms and Attitudes Survey: Web Version in Comparison Cities

This study is being conducted by researchers at the University of Washington and will ask you some questions about sugary drink taxes. There are no right or wrong answers and your answers will be kept confidential. The survey will take less than 15 minutes to complete.

Screeners Questions

9. What zip code you live in? _____

PROGRAMMER NOTES:

IF respondent does not live in any of the zip codes listed below, TERMINATE

10. Are you of Hispanic or Latino origin? (Check all that apply)

- ☐ No, not of Hispanic, Latino or Spanish origin
- ☐ Yes, Mexican, Mexican American or Chicano
- ☐ Yes, Puerto Rican
- ☐ Yes, Cuban
- ☐ Yes, another Hispanic, Latino or Spanish origin
- ☐ DON'T KNOW
- ☐ REFUSED

11. What race(s) do you consider yourself? (Check all that apply)

- ☐ White
- ☐ Black or African American
- ☐ American Indian or Alaska Native (ASSIGN TO OTHER)
- ☐ Asian
- ☐ Native Hawaiian or Other Pacific Islander (ASSIGN TO Other)
- ☐ Other _____
- ☐ DON'T KNOW
- ☐ REFUSED

12. How many adults (including yourself) live in your household? _____ adults

13. How many children under 18 live in your household? _____ children

14. Is your total annual household income above or below _____ per year?

- ☐ Above ("high" income)
- ☐ Below ("low" income)

PROGRAMMING INSTRUCTIONS

Household Size Add Q2+Q3	Annual 260% Insert in Q8
1	\$ 32,472
2	\$ 43,968
3	\$ 55,464
4	\$ 66,948
5	\$ 78,444
6	\$ 89,940

Instructions for respondent: Please answer every question by checking off the box that best matches your answer, even if the answer is "I don't know."

PROGRAMMER NOTE: Force answer of all questions. Respondents should only be allowed to check one box except for question 5

Because we will be asking you questions about sugary drinks, we want to tell you what we mean when we refer to sugary drinks in this survey. **Sugary drinks** include **regular soft drinks, soda or pop** (such as Coke, Pepsi, Sprite, Root Beer, Orange Soda, Jarritos, Dr. Pepper), **fruit-flavored drinks** (such as lemonade, Sunny Delight, Hawaiian Punch), **sports drinks** (such as Gatorade, Powerade), **sweetened teas or coffees** (such as Arizona Iced Tea, Snapple, Pure Leaf, Starbucks Frappuccino, mochas, or bubble teas), and **energy drinks** (such as Red Bull, Rockstar, Monster). They do NOT include milk, 100% fruit juice, diet drinks, or artificially sweetened drinks.

30. During the past 30 days, how often did you drink **sugary drinks**?

- ☐ Never or less than 1 time per week
- ☐ 1 time per week
- ☐ 2-6 times per week
- ☐ 1 time per day
- ☐ 2 or more times per day
- ☐ Don't know

31. Have you changed how much you drink sugary drinks in the last year?

- ☐ Yes → **if yes**, ☐ More ☐ Less
- ☐ No
- ☐ Don't know

PROGRAMMING NOTE: Skip questions 3-5 if respondent answered, “no” to question 2 or “yes and MORE” to question 2.

32. Were sugary drink taxes and/or their campaigns one of the reasons you drank less?

- ☐ Yes
- ☐ No
- ☐ Don't know

33. What is the primary reason you have changed what you drink in the last year?

- ☐ Health
- ☐ Sugary drink tax
- ☐ Cost
- ☐ Taste
- ☐ Convenience
- ☐ Other
- ☐ Don't know

PROGRAMMING NOTE: Can select multiple options to # 5.

34. If you now drink something instead of a sugary drink, which of the following do you drink instead: tap water, filtered tap water, bottled water, unflavored milk, unsweetened coffee or tea, or diet drinks?

- ☐ Tap water
- ☐ Filtered tap water
- ☐ Bottled water (READ ONLY IF NECESSARY e.g., Aquafina, Dasani, Smart Water, La Croix, Mio)
- ☐ Unflavored Milk
- ☐ Unsweetened coffee or tea
- ☐ Diet drinks (READ ONLY IF NECESSARY e.g. Diet coke, Coke Zero Sugar, Diet Pepsi)
- ☐ None, respondent does not drink other drinks instead of sugary drinks
- ☐ Don't know

Seven U.S. cities have now implemented sugary drink taxes. For example, in one city, large distributors now pay a 1.75 cents per ounce tax on sugary drinks. Taxed drinks include drinks that have added sugar. The tax does NOT include diet drinks, 100% fruit juices, or milk products. Money from the tax will help give more people access to healthy and affordable food, expand early education for pre-school aged kids, and help high school graduates enter college.

35. Have you heard of this kind of tax?

- ☐ Yes
- ☐ No
- ☐ Don't know

PROGRAMMING NOTE: Skip question 7 if respondent answered, "no" to question 6.

36. In your own words, what has been your experience with sugary drink taxes?

37. Based on what you know, would you approve or disapprove of this tax in your city/in [city of respondent]?

- ☐ Strongly disapprove
- ☐ Somewhat disapprove
- ☐ Somewhat approve
- ☐ Strongly approve
- ☐ Don't know

PROGRAMMING NOTE: Skip questions 9-10 if respondent answered, "no" to question 6.

38. In past 6 months, have you seen, heard, or read anything POSITIVE about sugary drink taxes?

- ☐ Yes
- ☐ No
- ☐ Don't know

39. In past 6 months, have you seen, heard, or read anything NEGATIVE about sugary drink taxes?

- ☐ Yes
- ☐ No
- ☐ Don't know

40. Below is a pair of statements that people have made about these taxes on sugary drinks. Please indicate which statement is closer to your own view, even if neither is exactly right.

_____ 11A	Statement 1: 1. These taxes WOULD improve public health. Statement 2: 2. These taxes WOULD NOT improve public health.
-----------	---

_____ 11B	Statement 1: 1. These taxes WOULD improve the health and well-being of children. Statement 2: 2. These taxes WOULD NOT improve the health and well-being of children.
-----------	---

☐ FIRST statement is MUCH closer

- “ FIRST statement is SOMEWHAT closer
☐ SECOND statement is MUCH closer
☐ SECOND statement is SOMEWHAT closer
☐ Don't know

41. Below is a pair of statements that people have made about these taxes on sugary drinks might affect people and businesses. Please indicate which statement is closer to your own view, even if neither is exactly right.

____ 12A	Statement 1: These taxes WILL be more burdensome for people with low-income and people of color. Statement 2: These taxes WILL NOT be more burdensome for people with low-income and people of color.
____ 12B	Statement 1: These taxes WILL improve health and well-being for people with low-income and people of color. Statement 2: These taxes WILL NOT improve health and well-being for people with low-income and people of color.
____ 12C	Statement 1: I WOULD travel to another city to buy sugary drinks so I don't have to pay these tax. Statement 2: I WOULD NOT travel to another city to buy sugary drinks because of these tax.
____ 12D	Statement 1: These taxes WOULD have a POSITIVE effect on the economy. Statement 2: These taxes WOULD have a NEGATIVE effect on the economy.
____ 12E	Statement 1: These taxes WOULD have a negative effect on small businesses. Small businesses may lose money and could even go out of business because of the tax. Statement 2: These taxes WOULD NOT have negative effects on small businesses. It's not likely that businesses will lose money or go out of business because of the tax.
____ 12F	Statement 1: These taxes WOULD result in job loss. Statement 2: These taxes WOULD NOT result in job loss.

____ 12G	Statement 1: These taxes WOULD have a negative impact on my family's finances Statement 2: These taxes WOULD NOT have a negative impact on my family's finances.
____ 12H	Statement 1: These taxes would have a POSITIVE impact on people with low-income and people of color's health and well-being and help them access affordable, healthy food. Statement 2: These taxes would have a NEGATIVE impact on people with low-income and people of color's finances, would drive up the cost of living for those who can least afford to pay the tax, and further increase income inequality.

- ☐ FIRST statement is MUCH closer
- ☐ FIRST statement is SOMEWHAT closer
- ☐ SECOND statement is MUCH closer
- ☐ SECOND statement is SOMEWHAT closer
- ☐ Don't know

42. For each of the following statements about how sugary drinks affect health, please indicate how much you agree or disagree:

Responses are:

- ☐ Strongly disagree
 - ☐ Somewhat disagree
 - ☐ Somewhat agree
 - ☐ Strongly agree
 - ☐ Don't know
- vi. Drinking sugary drinks causes serious health problems.
 - vii. Drinking sugary drinks significantly raises a person's chances of dental health problems, including cavities and tooth decay.
 - viii. Drinking sugary drinks significantly raises a person's chances of obesity.
 - ix. Drinking sugary drinks significantly raises a person's chances of diabetes.
 - x. Drinking sugary drinks significantly raises a person's chances of heart disease.

43. Drinking sugar drinks significantly raises a person's chances of heart disease. Consuming excessive amounts of sugar from any source, not only from drinks but also from foods such as cookies or cereals, can lead to serious health problems. Please indicate how much you agree or disagree:

- ☐ Strongly disagree
- ☐ Somewhat disagree
- ☐ Somewhat agree
- ☐ Strongly agree
- ☐ Don't know

44. Thinking about how sugary drinks affect health, what is the MOST people should drink them?

- ☐ Never or less than 1 time per week
- ☐ 1 time per week
- ☐ 2-6 times per week
- ☐ 1 time per day
- ☐ 2 or more times per day
- ☐ Don't know

45. Please indicate whether you think regularly drinking each type of drink affects a person's chances of developing health problems like diabetes or becoming overweight.

(PROGRAMMER NOTE: LIST ITEMS IN RANDOM ORDER)

- vi. **Regular soft drinks, soda or pop, not including diet** (e.g. Coke, Pepsi, Sprite, Root Beer, Orange Soda, Jarritos, Dr. Pepper)
- vii. **Fruit-Flavored drinks** (e.g. lemonade, Sunny Delight, Hawaiian Punch)
- viii. **Sports drinks** (e.g. Gatorade, Powerade)
- ix. **Sweetened teas or coffees** (e.g. Arizona Iced Tea, Snapple, Pure Leaf, Starbucks Frappuccino, mocha, or bubble teas)
- x. **Energy drinks** (e.g. Red Bull, Rockstar, Monster)

Responses for each drink are:

- ☐ Doesn't increase
- ☐ Probably increases
- ☐ Definitely increases
- ☐ Don't know

46. Below is a pair of statements that people have made about the tax on sugary drinks. Please indicate which statement is closer to your own view, even if neither is exactly right.

Statement 1: Under these taxes, people would still have the CHOICE to drink what they want.

Statement 2: These taxes would significantly LIMIT people's ability to choose what they drink.

- ☐ FIRST statement MUCH closer
- ☐ FIRST statement SOMEWHAT closer
- ☐ SECOND statement MUCH closer
- ☐ SECOND statement SOMEWHAT closer
- ☐ Don't know

47. Money from sugary drink taxes has been used to improve food access and expand services and support for young children (from birth to age 3), for people with lower-incomes, and for people of color. Do you think these are the right priorities to invest money that comes from these taxes?

- ☐ Yes → **SKIP to question 19**

“ No → what do you suggest is a better area to invest tax revenue? [open ended]

48. To address food access, the money raised by sugary drink taxes may be used to fund the following initiatives. How would you rank these initiatives, with 1 being most important and 4 being the least important:

- _____ Vouchers to low-income residents so they can buy more fruits and vegetables
- _____ Funds to improve the quality of food offered to lower income children in childcare programs, schools, and after-school programs
- _____ Food banks and meal programs
- _____ Community led organizations working to increase access to healthy food.

49. To address early childhood development, the money raised by sugary drink taxes may be used to fund the following initiatives. How would you rank these initiatives, with 1 being most important and 4 being the least important:

- _____ Vouchers/subsidies to lower-income, working families to help them afford childcare
- _____ Funds to support child development training and coaching for childcare providers, to improve the quality of care they provide to young children
- _____ Funds for specialized support to families with young children who have developmental delays
- _____ Provide basic supplies directly to low-income families such as, clothes, maternity supplies, diapers, books.

50. After hearing more about these taxes, how much do you approve or disapprove of this tax in your city/in [city of respondent]?

- ☐ Strongly disapprove
- ☐ Somewhat disapprove
- ☐ Somewhat approve
- ☐ Strongly approve
- ☐ Don't know

Finally, we want you a few questions about yourself and your household.

51. What is your age?

- ☐ 18-30
- ☐ 31-40
- ☐ 41-50
- ☐ 51-64
- ☐ 65+
- ☐ REFUSED

52. What is your gender?

- ☐ Male
- ☐ Female
- ☐ Self-identify _____

53. What was the highest education level that you completed?

- ☐ Some high school
- ☐ Completed high school
- ☐ Some college or vocational training

- ☐ Completed college or university
- ☐ Completed graduate or professional degree
- ☐ DON'T KNOW

54. What is your marital status?

- ☐ Married
- ☐ Widowed/divorced/separated
- ☐ Single and never married
- ☐ Living with partner
- ☐ DON'T KNOW

55. Please indicate your annual household income before taxes.

- ☐ <\$30,000
- ☐ \$30,000-\$59,999
- ☐ \$60,000-\$89,999
- ☐ \$90,000-\$120,000
- ☐ >\$120,000
- ☐ Don't know

56. Have you been covered by Medicaid in the last 12 months?

- ☐ Yes
- ☐ No
- ☐ Don't know

57. In general, do you think of yourself as a Democrat, an Independent, a Republican, or what?

- ☐ Democrat
- ☐ Independent
- ☐ Republican
- ☐ Other (please specify) _____
- ☐ Don't know

58. To help us make sure people from all neighborhoods are included in this survey, we would like to know the nearest intersection to your home. Please indicate the two cross-streets of this intersection.

What is the name of the first street? _____

What is the name of the second street? _____

Thank you for taking the time to complete our survey.

Norms and Attitudes Survey: Phone Version in Comparison Cities

Hello, my name is _____. I'm working with the University of Washington and I am looking for someone to answer some questions about sugary drink taxes. There are no right or wrong answers and your answers will be kept confidential. Do you have a few minutes to answer some brief questions?

INTERVIEWER NOTE: *if needed, the survey will take about 15 minutes to complete.*

Screeners Questions

First, I'd like to ask you a few questions about your household to make sure you are eligible for this survey.

15. Can you tell me what zip code you live in? _____
(PROGRAMMING – LIST ATTACHED TO END OF DOCUMENT)

INTERVIEWER NOTES:

IF respondent does not live in any of the zip codes listed below, TERMINATE
if DK OR REFUSED - TERMINATE

16. Are you of Hispanic or Latino origin? (Check all that apply)

- ☐ No, not of Hispanic, Latino or Spanish origin
- ☐ Yes, Mexican, Mexican American or Chicano
- ☐ Yes, Puerto Rican
- ☐ Yes, Cuban
- ☐ Yes, another Hispanic, Latino or Spanish origin
- ☐ DON'T KNOW
- ☐ REFUSED

17. What race(s) do you consider yourself? (Check all that apply)

- ☐ White
- ☐ Black or African American
- ☐ American Indian or Alaska Native (ASSIGN TO OTHER)
- ☐ Asian
- ☐ Native Hawaiian or Other Pacific Islander (ASSIGN TO OTHER)
- ☐ Other _____
- ☐ DON'T KNOW - TERMINATE
- ☐ REFUSED - TERMINATE

18. How many adults (including yourself) live in your household? _____ adults

IF DK/REFUSED - TERMINATE

19. How many children under 18 live in your household? _____ children

IF DK/REFUSED TERMINATE

20. Is your total annual household income above or below _____ per year?

IF DK/REFUSED TERMINATE

INTERVIEWER NOTE: use chart to get household size specific value for 260% FPL for this household

- ☐ Above ("high" income)
- ☐ Below ("low" income)

PROGRAMMING INSTRUCTIONS

Household Size Add Q4+Q5	Annual 260% Insert in Q8
1	\$ 32,472
2	\$ 43,968
3	\$ 55,464

4	\$	66,948
5	\$	78,444
6	\$	89,940

Domain 1: Current Consumption

INTERVIEWER: READ DRINK TYPES IN BOLD ONLY – READ BRANDS IN PARENTHESIS ONLY IF NEEDED

Because we will be talking today about sugary drinks, I want to start off by telling you what we mean when we refer to sugary drinks. **Sugary drinks** include **regular soft drinks, soda or pop** (such as Coke, Pepsi, Sprite, Root Beer, Orange Soda, Jarritos, Dr. Pepper), **fruit-flavored drinks** (such as lemonade, Sunny Delight, Hawaiian Punch), **sports drinks** (such as Gatorade, Powerade), **sweetened teas or coffees** (such as Arizona Iced Tea, Snapple, Pure Leaf, Starbucks Frappuccino, mochas, or bubble teas), and **energy drinks** (such as Red Bull, Rockstar, Monster). They do NOT include milk, 100% fruit juice, diet drinks, or artificially sweetened drinks.

To start off, I'm interested in learning about whether you drink sugary drinks.

59. During the past 30 days, did you drink **sugary drinks** never or less than 1 time per week, 1 time per week, 2-6 times per week, 1 time per day, or 2 or more times per day?

- ☐ Never or less than 1 time per week
- ☐ 1 time per week
- ☐ 2-6 times per week
- ☐ 1 time per day
- ☐ 2 or more times per day
- ☐ Don't know
- ☐ REFUSED

60. Have you changed how much you drink sugary drinks in the last year?

- ☐ Yes → **if yes**, ☐ More ☐ Less
- ☐ No
- ☐ Don't know
- ☐ REFUSED

INTERVIEWER NOTE: Skip questions 3-5 if respondent answered, "no" to question 2 or "yes and MORE" to question 2.

61. Were sugary drink taxes and/or their campaigns one of the reasons you drank less?

- ☐ Yes
- ☐ No
- ☐ Don't know
- ☐ REFUSED

62. What is the primary reason you have changed what you drink in the last year?

- ☐ Health
- ☐ Sugary drink tax
- ☐ Cost
- ☐ Taste
- ☐ Convenience
- ☐ Other
- ☐ Don't know
- ☐ REFUSED

INTERVIEWER and PROGRAMMING NOTE: *Can select multiple options to # 5.*

63. If you now drink something instead of a sugary drink, which of the following do you drink instead: tap water, filtered tap water, bottled water, unflavored milk, unsweetened coffee or tea, or diet drinks?

- ☐ Tap water
- ☐ Filtered tap water
- ☐ Bottled water (READ ONLY IF NECESSARY e.g., Aquafina, Dasani, Smart Water, La Croix, Mio)
- ☐ Unflavored Milk
- ☐ Unsweetened coffee or tea
- ☐ Diet drinks (READ ONLY IF NECESSARY e.g. Diet coke, Coke Zero Sugar, Diet Pepsi)
- ☐ None, respondent does not drink other drinks instead of sugary drinks
- ☐ Don't know
- ☐ REFUSED

Domain 2: Norms/Attitudes towards tax itself

Next, I'd like to ask you a little bit about taxes on sugary drinks.

Seven U.S. cities have now implemented sugary drink taxes. For example, in one city, large distributors now pay a 1.75 cents per ounce tax on sugary drinks. Taxed drinks include drinks that have added sugar. The tax does NOT include diet drinks, 100% fruit juices, or milk products. Money from the tax will help give more people access to healthy and affordable food, expand early education for pre-school aged kids, and help high school graduates enter college.

64. Have you heard of this kind of tax, yes or no?

- ☐ Yes
- ☐ No
- ☐ Don't know
- ☐ REFUSED

INTERVIEWER NOTE: *Skip question 7 if respondent answered, "no" to question 6.*

65. In your own words, what has been your experience with sugary drink taxes?

66. Based on what you know, would you strongly disapprove, somewhat disapprove, somewhat approve, strongly approve of this tax in your city/in [city of respondent] ?

- ☐ Strongly disapprove
- ☐ Somewhat disapprove
- ☐ Somewhat approve
- ☐ Strongly approve
- ☐ Don't know
- ☐ REFUSED

INTERVIEWER NOTE: *Skip questions 9-10 if respondent answered, "no" to question 6.*

67. In past 6 months, have you seen, heard, or read anything POSITIVE about sugary drink taxes?

- ☐ Yes
- ☐ No
- ☐ Don't know
- ☐ REFUSED

68. In past 6 months, have you seen, heard, or read anything **NEGATIVE** about sugary drink taxes?
- ☐ Yes
 - ☐ No
 - ☐ Don't know
 - ☐ REFUSED

69. I'm going to read you pairs of statements that people have made about these taxes on sugary drinks. After I read each pair, please tell me which statement is closer to your own view, even if neither is exactly right.

(INTERVIEWER PROMPT) Which statement comes closer to your own view?

- ____ 11A 1. These taxes **WOULD** improve public health.
 2. These taxes **WOULD NOT** improve public health.
- ____ 11B 1. These taxes **WOULD** improve the health and well-being of children.
 2. These taxes **WOULD NOT** improve the health and well-being of children.

(AFTER CHOICE IS MADE, INTERVIEWER PROBE:) Is that **MUCH** closer or **SOMEWHAT** closer?

- ☐ **FIRST** statement is **MUCH** closer
- ☐ **FIRST** statement is **SOMEWHAT** closer
- ☐ **SECOND** statement is **MUCH** closer
- ☐ **SECOND** statement is **SOMEWHAT** closer
- ☐ Don't know
- ☐ REFUSED

Domain 3: Unintended Impacts

Now, I'd like to ask a few questions on how these taxes on sugary drinks might affect people and businesses.

70. Like I did earlier, I'm going to read you pairs of statements that people have made about sugary drink taxes. After I read each pair, please tell me which statement is closer to your own view, even if neither is exactly right.

(INTERVIEWER PROMPT) Which statement comes closer to your own view?

- | | |
|----------|--|
| ____ 12A | Statement 1: These taxes WILL be more burdensome for people with low-income and people of color. |
| | Statement 2: These taxes WILL NOT be more burdensome for people with low-income and people of color. |

____ 12B	Statement 1: These taxes WILL improve health and well-being for people with low-income and people of color. Statement 2: These taxes WILL NOT improve health and well-being for people with low-income and people of color.
____ 12C	Statement 1: I WOULD travel to another city to buy sugary drinks so I don't have to pay the tax. Statement 2: I WOULD NOT travel to another city to buy sugary drinks because of the tax.
____ 12D	Statement 1: These taxes WOULD have a POSITIVE effect on the economy. Statement 2: These taxes WOULD have a NEGATIVE effect on the economy.
____ 12E	Statement 1: These taxes WOULD have a negative effect on small businesses. Small businesses may lose money and could even go out of business because of the tax. Statement 2: These taxes WOULD NOT have negative effects on small businesses. It's not likely that businesses will lose money or go out of business because of the tax.
____ 12F	Statement 1: These taxes WOULD result in job loss. Statement 2: These taxes WOULD NOT result in job loss.
____ 12G	Statement 1: These taxes WOULD have a negative impact on my family's finances Statement 2: These taxes WOULD NOT have a negative impact on my family's finances.
____ 12H	Statement 1: These taxes would have a POSITIVE impact on people with low-income and people of color's health and well-being and help them access affordable, healthy food. Statement 2: These taxes would have a NEGATIVE impact on people with low-income and people of color's finances, would drive up the cost of living for those who can least afford to pay the tax, and further increase income inequality.

(AFTER CHOICE IS MADE, INTERVIEWER PROBE:)

Is that MUCH closer or SOMEWHAT closer?

- ☐ FIRST statement is MUCH closer
- ☐ FIRST statement is SOMEWHAT closer
- ☐ SECOND statement is MUCH closer
- ☐ SECOND statement is SOMEWHAT closer
- ☐ Don't know
- ☐ REFUSED

Domain 4: Norms/Attitudes towards healthfulness of sugary drinks

INTERVIEWER: READ DRINK TYPES IN BOLD ONLY – READ BRANDS IN PARENTHESIS ONLY IF NEEDED

Remembering back to how I defined sugary drinks earlier, I am now going to read you some statements about how sugary drinks affect health. Would it help if I repeated the definition?

(INTERVIEWER NOTE: IF YES, read: **Sugary drinks** include **regular soft drinks, soda or pop** (such as Coke, Pepsi, Sprite, Root Beer, Orange Soda, Jarritos, Dr. Pepper), **fruit-flavored drinks** (such as lemonade, Sunny Delight, Hawaiian Punch), **sports drinks** (such as Gatorade, Powerade), **sweetened teas or coffees** (such as Arizona Iced Tea, Snapple, Pure Leaf, Starbucks Frappuccino, mochas, or bubble teas), and **energy drinks** (such as Red Bull, Rockstar, Monster). They do NOT include milk, 100% fruit juice, diet drinks, or artificially sweetened drinks.)

71. Using a scale of 1 to 4, where 1 means Strongly Disagree and 4 means Strongly Agree, how much do you agree or disagree with the following statements. [READ EACH STATEMENT; REPEAT SCALE AS NEEDED]

Responses are:

- ☐ Strongly disagree
- ☐ Somewhat disagree
- ☐ Somewhat agree
- ☐ Strongly agree
- ☐ Don't know
- ☐ REFUSED

INTERVIEWER: READ 'DRINKING SUGARY DRINKS' WITH FIRST STATEMENT – THEN REPEAT ONLY AS NECESSARY...

- xi. Drinking sugary drinks causes serious health problems.
- xii. Drinking sugary drinks significantly raises a person's chances of dental health problems, including cavities and tooth decay.
- xiii. Drinking sugary drinks significantly raises a person's chances of obesity.
- xiv. Drinking sugary drinks significantly raises a person's chances of diabetes.
- xv. Drinking sugary drinks significantly raises a person's chances of heart disease.

72. Using the same scale of 1 means strongly Disagree and 4 means Strongly Agree, how much do you agree or disagree that consuming excessive amounts of sugar from any source, not only from drinks but also from foods such as cookies or cereals, can lead to serious health problems.

- ☐ Strongly disagree
- ☐ Somewhat disagree
- ☐ Somewhat agree
- ☐ Strongly agree

- ☐ Don't know
- ☐ REFUSED

73. Now, thinking about how sugary drinks affect health, what is the MOST people should drink them? READ IF NECESSARY: Please tell me if it's never or less than 1 time per week, 1 time per week, 2-6 times per week, 1 time per day, or 2 or more times per day.

- ☐ Never or less than 1 time per week
- ☐ 1 time per week
- ☐ 2-6 times per week
- ☐ 1 time per day
- ☐ 2 or more times per day
- ☐ Don't know
- ☐ REFUSED

74. Next, I am going to read a list of the types of sugary drinks. Please tell me whether you think regularly drinking each type of drink doesn't increase, probably increases, or definitely increases a person's chances of developing health problems like diabetes or becoming overweight.

(INTERVIEWER NOTE: READ ITEMS IN RANDOM ORDER – READ BRANDS IN PARENTHESIS ONLY IF NECESSARY)

- xi. **Regular soft drinks, soda or pop, not including diet** (e.g. Coke, Pepsi, Sprite, Root Beer, Orange Soda, Jarritos, Dr. Pepper)
- xii. **Fruit-Flavored drinks** (e.g. lemonade, Sunny Delight, Hawaiian Punch)
- xiii. **Sports drinks** (e.g. Gatorade, Powerade)
- xiv. **Sweetened teas or coffees** (e.g. Arizona Iced Tea, Snapple, Pure Leaf, Starbucks Frappuccino, mocha, or bubble teas)
- xv. **Energy drinks** (e.g. Red Bull, Rockstar, Monster)

Responses for each drink are:

- ☐ Doesn't increase
- ☐ Probably increases
- ☐ Definitely increases
- ☐ Don't know
- ☐ REFUSED

Domain 5: Norms/attitudes towards government regulation of individual behaviors

75. Similar to prior questions, I'm going to read you a pair of statements. After I read both statements please tell me which one comes closer to your own view, even if neither is exactly right.

(INTERVIEWER PROMPT) Which statement comes closer to your own view?

Statement 1: Under these taxes, people would still have the CHOICE to drink what they want.

Statement 2: These taxes would significantly LIMIT people's ability to choose what they drink.

(AFTER CHOICE IS MADE, INTERVIEWER PROBE:)

Is that MUCH closer or SOMEWHAT closer?

- ☐ FIRST statement MUCH closer
- ☐ FIRST statement SOMEWHAT closer
- ☐ SECOND statement MUCH closer
- ☐ SECOND statement SOMEWHAT closer
- ☐ Don't know
- ☐ REFUSED

Domain 6: Opinions on Tax Revenues

76. Money from sugary drink taxes has been used to improve food access and expand services and support for young children (from birth to age 3), for people with lower-incomes, and for people of color. Do you think these are the right priorities to invest money that comes from these taxes?

- ☐ Yes → **SKIP to question 19**
- ☐ No → what do you suggest is a better area to invest tax revenue? [open ended]

77. To address food access, the money raised by sugary drink taxes may be used to fund the following initiatives. How would you rank these initiatives, with 1 being most important and 4 being the least important:

- _____ Vouchers to low-income residents so they can buy more fruits and vegetables
- _____ Funds to improve the quality of food offered to lower income children in childcare programs, schools, and after-school programs
- _____ Food banks and meal programs
- _____ Community led organizations working to increase access to healthy food.

78. To address early childhood development, the money raised by sugary beverage taxes may be used to fund the following initiatives. How would you rank these initiatives, with 1 being most important and 4 being the least important:

- _____ Vouchers/subsidies to lower-income, working families to help them afford childcare
- _____ Funds to support child development training and coaching for childcare providers, to improve the quality of care they provide to young children
- _____ Funds for specialized support to families with young children who have developmental delays
- _____ Provide basic supplies directly to low-income families such as, clothes, maternity supplies, diapers, books.

Domain 7: Conclusion and Demographics

79. After hearing more about these taxes, let me ask you again, would you strongly disapprove, somewhat disapprove, somewhat approve, or strongly approve of this tax in your city/in [city of respondent]?

- ☐ Strongly disapprove
- ☐ Somewhat disapprove
- ☐ Somewhat approve
- ☐ Strongly approve
- ☐ Don't know
- ☐ REFUSED

Finally, I want to ask you a few questions about yourself and your household.

80. What is your age?

- ☐ 18-30
- ☐ 31-40
- ☐ 41-50
- ☐ 51-64
- ☐ 65+
- ☐ REFUSED

81. What is your gender?

- ☐ Male ☐ Female ☐ Self-identify (Specify: _____) ☐ REFUSED

82. What was the highest education level that you completed?

- ☐ Some high school
- ☐ Completed high school
- ☐ Some college or vocational training
- ☐ Completed college or university
- ☐ Completed graduate or professional degree
- ☐ REFUSED

83. What is your marital status?

- ☐ Married
- ☐ Widowed/divorced/separated
- ☐ Single and never married
- ☐ Living with partner
- ☐ REFUSED

84. Now, we don't want to know your exact income, but just roughly, could you tell me if your annual household income before taxes is:

- ☐ <\$30,000
- ☐ \$30,000-\$59,999
- ☐ \$60,000-\$89,999
- ☐ \$90,000-\$120,000
- ☐ >\$120,000
- ☐ DON'T KNOW
- ☐ REFUSED

85. Can you tell me if you have been covered by Medicaid in the last 12 months?

- ☐ Yes
- ☐ No

☐ DON'T KNOW

☐ REFUSED

86. Generally speaking, do you think of yourself as (ROTATE) a Democrat, an Independent, a Republican, or what?

☐ Democrat

☐ Independent

☐ Republican

☐ Other (SPECIFY)

☐ DON'T KNOW

☐ REFUSED

87. To help us make sure people from all neighborhoods are included in this survey, we would like to know the nearest intersection to your home. Please name the two cross-streets of this intersection.

What is the name of the first street? _____

INTERVIEWER NOTE: Confirm street spelling and directionals (e.g. N, S, NW, NE)

What is the name of the second street? _____

INTERVIEWER NOTE: Confirm street spelling and directionals (e.g. N, S, NW, NE)

CLOSING: Those are all of our questions. Thank you for taking the time to complete our survey.

APPENDIX B. DETAIL METHODS

Overview

Seattle's Sweetened Beverage Tax went into effect on January 1, 2018 and large distributors now pay a 1.75 cent per ounce tax on sugary beverages. To test the impact of the Seattle tax on attitudes and norms, we used a pre- and post- design, with a comparison group. We conducted a mixed-mode survey (phone and web), that investigated individuals' support for the tax, as well as their perceptions on the possible economic (6 questions) and health impacts (2 questions) of the tax, as well as overall healthfulness of sugary beverages (6 Questions).

Data Collection

We sought to measure population-level attitudes over time both in Seattle and a comparison area, which allowed us to control for secular changes in attitudes toward sugary beverage taxes and healthfulness of sugary beverages that were unrelated to the actual implementation of the tax. The comparison area, which we determined to be similar to Seattle in terms of their economic, political, and demographic characteristics, was comprised of individuals from Minneapolis, MN, the combined region of Rockville and Bethesda, MD, and Arlington, VA (henceforth referred to as D.C. metro).

The mixed-mode survey (telephone and online) was fielded by a survey research firm: Ironwood Insights Group, LLC. Baseline data were collected pre-tax implementation, between October and December 2017 and endline data were collected post-tax implementation, between September and November 2019 in Seattle and the comparison area. Phone survey participants were selected using a stratified random sampling approach, sampling from databases of landline and cell phone numbers in our target areas. Participants who completed the survey online were selected from several existing panels comprised of a large sample of individuals. The phone and web versions of the survey were offered in English and Spanish and the online version of the survey was also offered in Vietnamese. All residents in Seattle or the comparison area, aged 18 and older were eligible for inclusion. Those refusing to answer the screener questions on income, race/ethnicity, who did not speak or read English or Spanish, or read Vietnamese were ineligible to participate.

Recruitment

At baseline, we recruited 851 total participants in Seattle (49% completed by phone and 51% completed online) and 863 in the comparison area (33% completed by phone and 67% completed online). At endline, we recruited 800 participants in Seattle (34% completed by phone and 66% completed online) and 800 participants in the comparison area (19% completed by phone and 81% completed online).

Additionally, the survey aimed to test whether perceptions about the tax were different for lower-income (< 260% of the Federal Poverty Line [FPL]) versus higher-income ($\geq$ 260% FPL) populations. We estimated that we would need a sample of 356 participants per income group and we successfully recruited enough lower-income and higher-income participants in Seattle and the comparison area at both baseline and endline. We also aimed to recruit a sample that had a similar race/ethnic distribution as the populations in our recruitment, based on the 2017 5-year American Community Survey (ACS) sample.

Data Quality and Response Rate

The telephone survey was conducted by trained interviewers and Ironwood Insights Group implemented standard data quality assurance checks throughout the data collection periods. Estimated using the American Association for Public Opinion Research Response Rate A Number 4, our survey had a response rate of 3.6% and 4.6% in Seattle and the comparison area, respectively at baseline and 13.1% and 2.9% in

Seattle and the comparison area, respectively at endline (12). This is similar to response rates in national-level random digit dial surveys (13, 14) and a recent evaluation of the sugary beverage tax in Philadelphia (3). We were not able to estimate a response rate for our online sample. At baseline participants were not compensated for participation; however, at endline, 9% (N=72) of comparison area residents and 3% (N=25) of Seattle residents received a \$10 gift card for their participation.

Primary Independent Variable

Our exposure of interest was the Sweetened Beverage Tax, which was implemented on January 1, 2018 in the City of Seattle.

Primary Dependent Variables

We explored several dependent variables over time, which we broadly grouped into 4 categories: opinions on the tax itself, economic impacts, health impacts, and consumption.

Opinions on the tax itself: we queried whether participants approved or disapproved of the tax(es) itself. Participants' opinion about the tax itself was queried using a four-category Likert scale: strongly approve, somewhat approve, somewhat disapprove, and strongly disapprove.

Economic impacts of the tax: participants' perceptions around the potential economic impacts included of the tax included: cross-border shopping, small businesses, the economy, job loss, family finances, and whether the tax affects low-income people and people of color. Each participant was read two statements and asked which statement was much or somewhat closer to their belief. For example, participants were asked whether the statement "This tax will result in job loss" was somewhat or much closer to their own view compared to the statement "This tax will not result in job loss".

Health impacts of the tax: participants' perceptions regarding health impacts of the tax included whether the actual implementation of the tax affected participants' perceptions on whether sugary beverage taxes improve child well-being and public health. Each participant was read two statements and asked which statement was much or somewhat closer to their belief. perceptions as to whether consuming sugary beverages raise the chances of developing serious health condition, obesity, diabetes, heart disease, or adversely affects dental health. We also asked participants about whether consumption of added sugar leads to the development of serious health conditions. Participants' perceptions about the general healthfulness of sugary beverages were queried using a four-category Likert scale: strongly agree, somewhat agree, somewhat disagree, and strongly disagree.

Consumption: we investigated whether the tax affected changes in sugary beverage consumption (None or < 1 week, 1 week, 2-6 week, 1 day, 2+ day), beliefs about beverage choice, and the substitution of sugary beverages or alternative beverages (tap water, filtered water, bottled water, milk, tea/coffee, diet drinks).

For these analyses, we collapsed the responses from four- to two-category variables (e.g.: "strongly" and "somewhat" agree were collapsed into "agree"). For all questions, participants were also given the option to report "don't know" or "refused". These responses were coded as missing values.

Additionally, we created a score to summarize overall perceptions of impacts of the tax, henceforth referred to as the tax impacts score. The tax impacts score was comprised of the eight questions on: child well-being, public health, cross-border shopping, small businesses, the Seattle economy, job loss, family finances, and impacts on people with lower-income and people of color. For each question, we assigned a 1 if the impact of the tax was perceived as positive/beneficial, a 0 if they responded that they "don't

know”, and a -1 if the tax was perceived as negative/detrimental (score range: -8 to 8). A higher score was interpreted to mean that perceptions about the tax impacts were more positive.

Covariates

These analyses controlled several covariates, including: race/ethnicity (non-Hispanic White, non-Hispanic Black, non-Hispanic Asian, non-Hispanic Other, Hispanic), educational attainment ($\leq$ high school, some college, college degree, graduate degree), annual household income ($<$ \$30,000, \$30,000-\$59,999, \$60,000-\$89,999, \$90,000-\$120,000, $>$ \$120,000), age (18-30, 31-40, 41-50, 51-64, $\geq$ 65), gender (female, male), political affiliation (republican, democrat, independent, don’t know), and mode (phone, web).

Effect Modifiers

A broader body of literature suggests that support for sugary beverage taxes may differ by demographic characteristics (5, 6, 9, 15, 16). For example, a few cross-sectional studies have found that lower (versus higher) educational attainment is associated with lower levels of support for sugary beverage taxes (5, 15) and lower odds of perceiving that the tax would improve public health (9). Similarly, our pre-tax findings suggested that fewer lower-income versus higher-income participants, perceived that the tax would improve public health, would not result in job loss and would not negatively affect their own finances. Thus, we explored heterogeneity in the association by income ($<$ 260% FPL versus $\geq$ 260% FPL).

Analytic Sample

In total we recruited a total 3,314 individuals for our study. However, we identified 93 individuals whose screener question related to household income and FPL classification ($<$ 260% FPL versus $\geq$ 260% FPL) did not correspond to their report of household income asked later in the survey (e.g. $<$ \$30,000, \$30,000-\$59,999). We could not determine which variable accurately captured these individuals’ income-level. Therefore, they were excluded from analyses (baseline Seattle $n=15$; baseline Comparison $n=44$; endline Seattle $n=8$, endline Comparison $n=3$). Additionally, 249 people were excluded from the sample due to missingness in creation of the propensity score weight (detailed below). This resulted in an analytic sample of 2,972 individuals.

Population Weight

We created population weights using the raking method (19) in order to results to the known Seattle and comparison area population totals, as determined by the 5-year ACS (2013-2017) for race/ethnicity, gender, age, educational attainment, annual household income.

Propensity Score Weight

To account for compositional differences in groups over time, we created propensity score weights to use in the difference-in-difference models (described below). Propensity score methods, with two treatment groups, are commonly used to minimize selection bias in non- experimental studies. But this approach does not minimize potential selection biases (i.e. compositional differences in repeat cross-sections) and as detailed by Stuart et al., differences in the composition of the four comparison groups and changes in their composition over time might lead to differences in the trend regardless of the tax. Therefore, we employ the approach detailed by Stuart et al. (17) and created a propensity score weight that compared the baseline Seattle group to the following groups: 1) baseline comparison; 2) endline Seattle, 3) endline comparison.

To estimate the propensity scores, we first fit a multinomial logistic regression predicting group as a function of a set of observed covariates: race/ethnicity, gender, age, educational attainment, annual household income, and sugary beverage consumption. Each individual then had four resulting propensity

scores or the probability of being in Group k , for $k=1$ to 4, which sum to 1 for each individual. The weights are then created in such a way that each of the four groups is weighted to be similar to Group 1 or the treatment group in the pre-period. These individuals in Seattle at baseline received a weight of 1, while individuals in other groups received a weight that is proportional to the probability of their being in Seattle at baseline, relative to the probability of their being in the group they were actually in. Thus, the compositional differences between the four groups would be minimized and all groups would essentially reflect the covariate distribution of Seattle at baseline. Because we were also interested in the sample being reflective of the populations in Seattle and the comparison areas, the population was incorporated both in the creation of the propensity score and outcome models (described below)(18) .

The average standardized absolute mean difference was then calculated by averaging the mean differences across all the covariates. This provided an overall estimate of the balance across all covariates, and a lower average indicated that the groups are similar with respect to measured covariates.

Statistical Analyses

We describe the demographic characteristics of the sample and baseline and endline. Additionally, we described the following, as these questions were only asked during the endline survey: changes in consumption in the last year; reasons for changing consumption in the last year; exposure to tax messaging; perceptions around the use of tax revenue; and two additional questions related to the regressivity of sugary beverage taxes. These descriptive analyses employ the population weights.

Our primary analyses estimated the effect of the sugary beverage tax on perceptions around the potential economic and health impacts said tax. We use regression-based difference-in-differences models to estimate the degree to which perceptions in Seattle changed above and beyond the change in perceptions in the comparison area, over the same period of time. We employed linear probability models with standard errors clustered at the city-level (Seattle, Minneapolis, Bethesda, Rockville, Arlington). These models take the general form:

$$Y_{it} = \beta_0 + \beta_1(\text{city})_i + \beta_2(\text{time})_t + \beta_3(\text{city} \times \text{time})_{it} + \beta_4 X_{it} + \epsilon_{it}$$

where, Y_{ijt} is the outcome i at time t . City is assigned a value of 1 for observations in Seattle and 0 for observations in the comparison area. Time is an indicator variable that is assigned a value of 1 for post-tax perceptions and 0 for pre-tax perceptions; this controls for the expected trend had Seattle not implemented the tax. β_3 is the primary coefficient of interest, the difference-in-differences estimator, and estimates the average change in perceptions in Seattle above and beyond the average change in perceptions in the comparison area. Finally, X represents the vector of covariates described above. In addition to controlling for demographic characteristics and mode, all the difference-in-difference results presented use both the propensity score and population survey weights. Additionally, models control for race/ethnicity, gender, age, educational attainment, and annual median household income resulting in doubly robust estimates.

Statistical analyses were performed using Stata 15.1 (StataCorp LP, College Station, The University of Washington School of Public Health Institutional Review Board determined that this study was exempt.

APPENDIX C. TABLES

**TABLE A1. ADJUSTED IMPACT OF TAX ON TAX AND HEALTH OPINIONS, AND OVERALL PERCEPTIONS IN SEATTLE AND COMPARISON CITIES OVER TIME AMONG
LOWER-INCOME RESPONDENTS**

	SEATTLE TIME 1 (95% CI)	SEATTLE TIME 2 (95% CI)	SEATTLE DIFFERENCE (95% CI)	SEATTLE P VALUE OF DIFF	COMPARISON TIME 1	COMPARISON TIME 2	COMPARISON DIFFERENCE (95% CI)	COMPARISON P VALUE OF DIFF	DIFFERENCE OF DIFFERENCES (95% CI)	P VALUE OF DIFF	N OBS. IN MODEL
SSB TAX OPINIONS											
SUPPORT FOR THE SUGARY BEVERAGE TAX(ES)	59.1 (56.0, 62.1)	56.1 (53.4, 58.7)	-3.0 (-4.0, -2.0)	0.001	61.3 (55.0, 67.6)	53.3 (47.2, 59.5)	-8.0 (-17.1, 1.1)	0.072	4.9 (-4.6, 14.5)	0.225	1216
TAX IMPROVES PUBLIC HEALTH	55.2 (51.5, 58.9)	60.0 (57.8, 62.2)	4.7 (2.8, 6.7)	0.003	63.6 (51.1, 76.1)	58.7 (50.3, 67.1)	-4.9 (-17.7, 7.9)	0.345	9.6 (-4.2, 23.5)	0.125	1212
TAX IMPROVES CHILD WELLBEING	60.3 (57.0, 63.6)	62.9 (62.3, 63.5)	2.6 (-0.7, 5.9)	0.097	62.1 (56.2, 68.1)	60.4 (52.6, 68.2)	-1.7 (-13.9, 10.4)	0.716	4.3 (-9.3, 18.0)	0.430	1207
WOULD/DOES CROSS-BORDER SHOP	22.7 (19.9, 25.4)	30.1 (27.3, 32.9)	7.4 (5.5, 9.3)	<0.001	23.4 (17.8, 29.0)	19.7 (11.5, 27.9)	-3.7 (-10.1, 2.7)	0.184	11.1 (5.6, 16.6)	0.005	1221
SUGARY BEVERAGE TAX IS GOOD FOR ECONOMY	53.7 (50.3, 57.1)	64.3 (62.1, 66.4)	10.6 (8.3, 12.9)	<0.001	56.5 (47.5, 65.5)	59.8 (54.1, 65.5)	3.3 (-3.6, 10.2)	0.252	7.3 (-0.1, 14.7)	0.053	1037
SUGARY BEVERAGE TAX WILL HAVE NEGATIVE EFFECTS ON SMALL BUSINESSES	43.0 (40.0,46.0)	50.4 (48.3, 52.5)	7.4 (6.1, 8.8)	<0.001	44.8 (33.8, 55.8)	52.6 (40.5, 64.7)	7.8 (-14.5, 30.1)	0.385	-0.4 (-21.8, 20.9)	0.960	1141
SUGARY BEVERAGE TAX WILL RESULT IN JOB LOSS	27.0 (24.8, 29.2)	28.9 (27.6, 30.2)	1.9 (0.5, 3.3)	0.020	34.5 (27.5, 41.5)	32.8 (26.0, 39.6)	-1.7 (-7.8, 4.4)	0.489	3.6 (-2.4, 9.6)	0.176	1080
SUGARY BEVERAGE TAX WILL HAVE A NEGATIVE IMPACT ON FAMILY'S FINANCES	25.8 (22.6, 29.0)	29.0 (27.2, 30.9)	3.3 (1.8, 4.8)	0.004	30.0 (21.7, 38.3)	33.2 (26.0, 40.5)	3.2 (-7.2, 13.7)	0.440	0.0 (-9.5, 9.6)	0.990	1222
SUGARY BEVERAGE TAX	52.8 (46.6, 59.0)	50.4 (46.3, 54.5)	-2.4 (-5.1, 0.4)	0.073	60.4 (52.8, 67.9)	51.8 (45.0, 58.6)	-8.5 (-15.6, -1.5)	0.028	6.2 (-0.6, 13.0)	0.066	1122

WILL HAVE A
POSITIVE IMPACT
ON PEOPLE WITH
LOW-INCOME AND
PEOPLE OF
COLOR'S HEALTH
AND WELL-BEING

'DRINKING SUGARY DRINKS' CAUSES

SERIOUS HEALTH PROBLEMS	78.5 (76.5, 80.5)	81.9 (79.9, 83.8)	3.4 (1.8, 4.9)	0.004	90.3 (87.2, 93.4)	80.0 (73.8, 86.2)	-10.4 (-16.1, -4.6)	0.008	13.7 (6.8, 20.6)	0.005	1245
DENTAL HEALTH PROBLEMS	87.6 (86.7, 88.6)	89.4 (88.0, 90.8)	1.8 (0.3, 3.3)	0.031	94.3 (90.6, 98.0)	87.4 (84.8, 90.0)	-6.9 (-11.8, -2.0)	0.017	8.7 (2.9, 14.5)	0.014	1259
OBESITY	85.5 (83.1, 87.8)	86.5 (84.7, 88.3)	1.0 (-0.3, 2.4)	0.105	91.6 (87.1, 96.2)	88.4 (81.9, 94.8)	-3.3 (-9.3, 2.8)	0.208	4.3 (-2.7, 11.3)	0.165	1258
DIABETES	88.5 (86.7, 90.2)	86.7 (85.0, 88.5)	-1.7 (-3.6, 0.1)	0.058	92.9 (89.1, 96.8)	84.7 (81.4, 88.0)	-8.3 (-12.0, -4.5)	0.004	6.5 (1.6, 11.4)	0.021	1251
HEART DISEASE	78.1 (76.1, 80.0)	77.4 (76.7, 78.0)	-0.7 (-3.2, 1.8)	0.497	83.8 (78.6, 89.0)	75.4 (68.7, 82.1)	-8.5 (-14.0, -2.9)	0.014	7.8 (2.9, 12.6)	0.011	1170
ADDED SUGAR LEADS TO SERIOUS HEALTH PROBLEMS	82.3 (80.5, 84.1)	88.9 (87.5, 90.2)	6.6 (5.9, 7.3)	<0.001	89.6 (85.2, 94.1)	81.7 (77.8, 85.6)	-7.9 (-9.4, -6.4)	<0.001	14.5 (13.2, 15.9)	<0.001	1229

SELF-REPORTED CONSUMPTION OF SUGAR- SWEETENED BEVERAGES

HIGH CONSUMER	19.9 (18.6, 21.2)	18.0 (15.6, 20.4)	-1.9 (-3.3, -0.6)	0.015	10.5 (5.9, 15.2)	25.5 (8.3, 42.8)	15.0 (-0.1, 30.2)	0.051	-16.9 (-30.8, -3.1)	0.027	1298
---------------	----------------------	----------------------	----------------------	-------	---------------------	---------------------	-----------------------	-------	-------------------------	-------	------

IMPACT OF TAX ON OVERALL PERCEPTIONS

OVERALL PERCEPTIONS RELATED TO THE TAX IMPACTS	2.4 (0.1, 4.6)	2.3 (-0.04, 4.7)	-0.1 (-0.2, 0.1)	0.383	2.5 (-0.3, 5.4)	2.2 (-0.1, 4.5)	-0.3 (-1.1, 0.5)	0.349	0.2 (-0.6, 1.1)	0.458	1298
--	-------------------	---------------------	---------------------	-------	--------------------	--------------------	---------------------	-------	--------------------	-------	------

TABLE A2. ADJUSTED IMPACT OF TAX ON TAX AND HEALTH OPINIONS, AND OVERALL PERCEPTIONS IN SEATTLE AND COMPARISON CITIES OVER TIME AMONG HIGHER-INCOME RESPONDENTS											
	SEATTLE TIME 1, (95% CI)	SEATTLE TIME 2, (95% CI)	SEATTLE DIFFERENCE (95% CI)	SEATTLE P VALUE OF DIFF	COMPARISON TIME 1	COMPARISON TIME 2	COMPARISON DIFFERENCE (95% CI)	COMPARISON P VALUE OF DIFF	DIFFERENCE OF DIFFERENCES (95% CI)	P VALUE OF DIFF	N OBS. IN MODEL
SSB TAX OPINIONS											
SUPPORT FOR THE SUGARY BEVERAGE TAX(ES)	61.4 (59.9, 62.8)	58.6 (57.8, 59.5)	-2.7 (-4.4, -1.0)	0.011	56.4 (48.7, 64.0)	60.6 (54.3, 66.8)	4.2 (-8.7, 17.1)	0.419	-6.9 (-20.0, 6.2)	0.219	1603
TAX IMPROVES PUBLIC HEALTH	58.3 (56.9, 59.6)	58.9 (58.5, 59.2)	0.6 (-0.6, 1.8)	0.238	55.1 (51.0, 59.3)	59.2 (52.1, 66.3)	4.0 (-6.5, 14.6)	0.348	-3.4 (-14.2, 7.3)	0.426	1609
TAX IMPROVES CHILD WELLBEING	59.7 (59.0, 60.3)	61.4 (60.9, 61.8)	1.7 (0.9, 2.5)	0.004	58.6 (52.9, 64.3)	64.7 (55.3, 74.2)	6.2 (-8.7, 21.0)	0.315	-4.4 (-19.4, 10.5)	0.455	1620
WOULD/DOES CROSS-BORDER SHOP	20.1 (18.8, 21.4)	35.0 (33.4, 36.5)	14.9 (13.6, 16.1)	<0.001	16.3 (12.2, 20.3)	23.8 (14.4, 33.2)	7.5 (0.3, 14.7)	0.044	7.3 (0.8, 13.8)	0.035	1620
SUGARY BEVERAGE TAX IS GOOD FOR ECONOMY	59.1 (56.6, 61.6)	60.2 (58.9, 61.5)	1.1 (-1.1, 3.4)	0.237	55.4 (45.4, 65.4)	54.8 (47.2, 62.4)	-0.6 (-13.1, 11.8)	0.895	1.8 (-11.0, 14.5)	0.722	1337
SUGARY BEVERAGE TAX WILL HAVE NEGATIVE EFFECTS ON SMALL BUSINESSES	41.2 (39.8, 42.7)	56.4 (54.9, 57.8)	15.1 (14.1, 16.1)	<0.001	46.9 (37.7, 56.1)	44.9 (36.6, 53.2)	-2.0 (-18.7, 14.8)	0.762	17.1 (0.3, 33.9)	0.047	1488
SUGARY BEVERAGE TAX WILL RESULT IN JOB LOSS	22.4 (19.4, 25.3)	31.4 (30.8, 31.9)	9.0 (6.4, 11.6)	0.001	29.7 (24.1, 35.2)	22.4 (9.1, 35.8)	-7.2 (-23.2, 8.8)	0.278	16.2 (-1.0, 33.3)	0.059	1433
SUGARY BEVERAGE TAX WILL HAVE A NEGATIVE IMPACT ON FAMILY'S FINANCES	15.8 (11.8, 19.8)	26.7 (24.4, 29.1)	10.9 (9.1, 12.8)	<0.001	22.0 (13.0, 30.9)	19.9 (16.0, 23.7)	-2.1 (-11.4, 7.2)	0.565	13.0 (2.9, 23.2)	0.024	1601
SUGARY BEVERAGE TAX WILL HAVE A	53.9 (51.8, 55.9)	46.7 (45.0, 48.4)	-7.2 (-8.4, -5.9)	<0.001	43.8 (35.4, 52.3)	51.7 (45.1, 58.3)	7.9 (-5.3, 21.1)	0.171	-15.1 (-27.2, -2.9)	0.026	1467

POSITIVE IMPACT ON PEOPLE WITH LOW-INCOME AND PEOPLE OF COLOR'S HEALTH AND WELL-BEING											
'DRINKING SUGARY DRINKS' CAUSES											
SERIOUS HEALTH PROBLEMS	86.2 (84.0, 88.4)	86.2 (85.5, 86.9)	0.0 (-1.8, 1.8)	0.999	80.8 (75.4, 86.1)	85.8 (81.0, 90.6)	5.1 (-1.2, 11.4)	0.089	-5.1 (-10.5, 0.3)	0.060	1631
DENTAL HEALTH PROBLEMS	86.3 (85.7, 86.9)	89.7 (88.9, 90.5)	3.4 (2.2, 4.6)	0.001	89.7 (88.4, 91.1)	90.6 (82.3, 98.9)	1.0 (-7.0, 8.8)	0.771	2.5 (-4.5, 9.5)	0.375	1649
OBESEITY	86.9 (86.3, 87.4)	91.8 (91.5, 92.2)	5.0 (4.2, 5.7)	<0.001	87.8 (85.3, 90.2)	90.6 (85.5, 95.7)	2.8 (-3.3, 9.0)	0.272	2.1 (-4.6, 8.9)	0.430	1646
DIABETES	87.4 (86.5, 88.4)	92.1 (91.3, 93.0)	4.7 (3.0, 6.3)	0.001	87.5 (83.6, 91.4)	92.1 (89.0, 95.2)	4.6 (-2.3, 11.5)	0.140	0.1 (-7.8, 8.0)	0.973	1625
HEART DISEASE	78.1 (76.7, 79.4)	80.5 (79.6, 81.4)	2.5 (1.8, 3.2)	0.001	75.0 (70.9, 79.0)	85.7 (79.2, 92.2)	10.7 (1.3, 20.1)	0.034	-8.3 (-17.6, 1.0)	0.069	1522
ADDED SUGAR LEADS TO SERIOUS HEALTH PROBLEMS	88.9 (87.3, 90.4)	87.4 (86.9, 87.9)	-1.4 (-2.8, -0.1)	0.045	91.2 (87.0, 95.4)	88.5 (86.3, 90.7)	-2.7 (-7.4, 2.0)	0.183	1.3 (-3.3, 5.8)	0.481	1616
SELF-REPORTED CONSUMPTION OF SUGAR- SWEETENED BEVERAGES											
HIGH CONSUMPTION	14.8 (11.1, 18.5)	15.7 (13.4, 18.1)	0.9 (-0.5, 2.4)	0.147	21.6 (18.5, 24.7)	17.2 (5.6, 28.8)	-4.4 (-15.5, 6.8)	0.337	5.3 (-7.0, 17.7)	0.298	1674
IMPACT OF TAX ON OVERALL PERCEPTIONS											
OVERALL PERCEPTIONS RELATED TO THE TAX IMPACTS	3.2 (-0.0, 6.4)	2.2 (-0.9, 5.3)	-1.0 (-1.2, -0.9)	<0.001	2.6 (-0.5, 5.7)	2.9 (-0.5, 6.3)	0.3 (-0.5, 1.1)	0.379	-1.3 (-2.2, -0.5)	0.012	1674

TABLE A3. PERCEIVED EFFECTS OF THE TAX ON PEOPLE WITH LOW-INCOMES AND PEOPLE OF COLOR, AMONG HIGH- AND LOW-INCOME RESPONDENTS				
	% SEATTLE		% COMPARISON	
	LOW INCOME	HIGH INCOME	LOW INCOME	HIGH INCOME
TAX WILL BE MORE BURDENSOME FOR PEOPLE WITH LOW-INCOME AND PEOPLE OF COLOR	76.1% (80.9%, 70.5%)	75.8% (80.0%, 71.1%)	72.1% (78.0%, 65.3%)	72.7% (77.5%, 67.3%)
TAX WILL IMPROVE HEALTH AND WELL-BEING FOR PEOPLE WITH LOW-INCOME AND PEOPLE OF COLOR	45.9% (39.8%, 52.1%)	51.3% (46.1%, 56.4%)	48.2% (40.8%, 55.6%)	52.2% (46.5%, 57.9%)
THIS TAX WILL HAVE A POSITIVE IMPACT ON PEOPLE WITH LOW-INCOME AND PEOPLE OF COLOR'S HEALTH AND WELL-BEING AND HELP THEM ACCESS AFFORDABLE, HEALTHY FOOD	46.9% (40.7%, 53.2%)	50.4% (45.1%, 55.7%)	48.3% (40.7%, 55.9%)	52.3% (46.4%, 58.1%)

TABLE A4. DIFFERENCE-IN-DIFFERENCE ESTIMATES OF INDIVIDUALS' PERCEPTIONS RELATED TO THE ECONOMIC AND HEALTH IMPACTS OF THE TAX¹

	N	PERCENTAGE POINT (95% CI)
SUPPORT FOR THE SUGARY BEVERAGE TAX(ES)	2819	-1.9 (-9.8, 6.1)
OVERALL PERCEPTIONS RELATED TO THE IMPACTS OF TAX ²	2972	-0.7 (-1.3, -0.2) *
ECONOMIC IMPACTS OF THE TAX		
WILL NOT/DOES NOT CROSS-BORDER SHOP	2841	-9.5 (-13.8, -5.2) *
SUGARY BEVERAGE TAX IS NOT BAD FOR ECONOMY	2374	2.4 (-6.7, 11.6)
SUGARY BEVERAGE TAX WILL NOT HAVE NEGATIVE EFFECTS ON SMALL BUSINESSES	2629	-8.6 (-15.6, -1.7) *
SUGARY BEVERAGE TAX WILL NOT RESULT IN JOB LOSS	2513	-10.2 (-23.6, 3.2)
SUGARY BEVERAGE TAX WILL NOT HAVE A NEGATIVE IMPACT ON FAMILY'S FINANCES	2823	-8.7 (-16.4, -0.9) *
SUGARY BEVERAGE TAX WILL HAVE A POSITIVE IMPACT ON PEOPLE WITH LOW-INCOME AND PEOPLE OF COLOR'S HEALTH AND WELL-BEING	2766	-2.6 (-14.5, 9.3)
HEALTH IMPACTS OF THE TAX		
SUGARY BEVERAGE TAX IMPROVES PUBLIC HEALTH	2821	0.3 (-8.9, 9.4)
SUGARY BEVERAGE TAX IMPROVES CHILD WELLBEING	2827	-2.2 (-14.3, 10.0)
SUGARY BEVERAGES CAUSE SERIOUS HEALTH PROBLEMS	2876	2.3 (-3.0, 7.5)
SUGARY BEVERAGES RAISE A PERSON'S CHANCES OF DENTAL HEALTH PROBLEMS, INCLUDING CAVITIES AND TOOTH DECAY	2908	4.1 (-1.7, 10.0)
SUGARY BEVERAGES SIGNIFICANTLY RAISE A PERSON'S CHANCES OF OBESITY	2904	2.8 (-0.8, 6.3)
SUGARY BEVERAGES SIGNIFICANTLY RAISE A PERSON'S CHANCES OF DIABETES	2876	2.6 (-1.8, 7.0)
SUGARY BEVERAGES SIGNIFICANTLY RAISE A PERSON'S CHANCES OF HEART DISEASE	2692	-1.6 (-9.6, 6.4)
EXCESS SUGAR FROM ANY SOURCE, CAN LEAD TO SERIOUS HEALTH PROBLEMS	2845	6.4 (3.1, 9.6) *

CI = confidence interval

¹Estimated using linear probability difference-in-difference models. Estimates are weighted to be representative of the populations in each area and are propensity score weighted to additionally control for confounding by demographics by balancing differences across city and time point. Models additionally control for race/ethnicity, educational attainment, household income, age, sex, political affiliation, mode. Standard errors are clustered at the city level (Seattle, Minneapolis, Bethesda, Rockville, and Arlington).