

Understanding Behavior Changes in the Seattle Shopping and Wellness (SeaSAW) Cohort Study: Qualitative Follow-Up Interviews

THE EVALUATION OF SEATTLE'S SWEETENED BEVERAGE TAX

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UNDERSTANDING BEHAVIOR CHANGES IN THE SEATTLE SHOPPING AND WELLNESS (SEASAW) COHORT STUDY: QUALITATIVE FOLLOW-UP INTERVIEWS

EXECUTIVE SUMMARY

Background

Early results from the Seattle Shopping and Wellness (SeaSAW) cohort study were unexpected in that we observed similar decreases in taxed sugar-sweetened beverage consumption across parents and children living in Seattle (likely more exposed to the tax in Seattle stores and restaurants) and parents and children living in the nearby, non-taxed comparison area after 12 months post-tax. It is unknown whether the tax influenced sugar-sweetened beverage consumption in the comparison area, known as tax spillover effects, or if other factors unrelated to the tax explain the observed changes in sugar-sweetened beverage consumption.

Objectives

The objectives of this study were to understand why parents in the SeaSAW cohort decreased or did not decrease their sugar-sweetened beverage consumption after implementation of the Sweetened Beverage Tax (SBT) and explore whether reasons differed for parents in Seattle versus those in the comparison area.

Methods

We conducted semi-structured phone interviews with 35 cohort parent participants (16 from Seattle and 19 from the comparison area) in English, Somali, and Spanish. We analyzed interview transcripts to identify themes relating to reasons for and influences of sugar-sweetened beverage consumption during the cohort study. We compared themes between Seattle and comparison area participants separately for those who decreased their consumption of taxed sugar-sweetened beverages (primary analysis) and for individuals who did not decrease their consumption (secondary analysis).

Results

The most common reasons for consumption change were health-related. However, differences in the stated health reasons for consumption change between Seattle and comparison area parents may drive the observed outcomes. Parents in Seattle and the comparison area recalled information about the SBT in the media which is consistent with a shared media market in the King County region. Some parents in the comparison area were exposed to and influenced by the tax through price and health risk signaling pathways, reflecting a mix of experiences with the tax. Seattle parents were influenced by the tax mainly due to beverage price increases, with some participants engaging in occasional cross-border shopping. Completing cohort beverage surveys helped many parents become more aware of the amount they consumed, particularly among comparison area parents.

Findings point to several mechanisms suggesting that spillover effects of the tax influenced some comparison area parents to decrease consumption, including situational exposure to the tax while shopping in Seattle and health risk signaling of the tax. Other factors such as cross-border shopping among Seattle residents, possible differences in health status, and cohort survey impacts may play a role in addition to—or instead of—spillover effects.

INTRODUCTION

It is important to understand why families with lower incomes changed or did not change their sugar-sweetened beverage consumption following implementation of the 2018 Seattle Sweetened Beverage Tax (SBT). The purpose of this qualitative follow-up study is to develop deeper insights about the results of the Seattle Shopping and Wellness (SeaSAW) cohort study, which assessed the impact of the SBT on beverage consumption among children and their parents/caregivers from lower income households in Seattle and South King County, Washington. The cohort study completed its final assessment in 2019 to assess the two-year effect of the tax. The analysis compared reported consumption of sugar-sweetened beverages subject to the SBT among parents and children over time, with data collected at baseline, [pre-tax](#), to data collected at [12-](#) and 24-months post tax.

Early results of the cohort study were unexpected in that we observed similar decreases in taxed sugar-sweetened beverage consumption between families living in Seattle (likely more exposed to the tax in Seattle stores and restaurants) and families living in the nearby, non-taxed comparison area after 12 months post-tax. This finding was consistent for both parent's overall sugar-sweetened beverage consumption and their child's overall sugar-sweetened beverage consumption. This contrasts with findings on beverage purchasing in Seattle over the same period (Powell & Leider, 2020, 2021), which showed that taxed sugar-sweetened beverage volume sold declined to a greater extent in Seattle stores than in stores in the comparison area of Portland, Oregon. Other cities have also found some inconsistencies in the findings between reported consumption changes and changes in beverage purchases (Andreyeva et al., 2022). The reasons for this discordance are unclear.

In 2021, community event conversations with cohort participants began investigating reasons for the unexpected cohort study results. Across five virtual group events, participants were asked about their reactions to the study results and their personal experiences with the SBT. Participants described a growing awareness of health effects of sugar-sweetened beverages, high costs of sugar-sweetened beverages in Seattle and the comparison area, differences in community resources between Seattle and the comparison area, and an increased awareness of one's beverage consumption after completing cohort surveys. It is unclear whether themes were specific to one group and related to the cohort findings because responses could not be analyzed separately for Seattle versus comparison area participants or for those who did, versus did not decrease sugar-sweetened beverage consumption. For detailed methods and findings from the community events, see the 24 Month Report: Child Cohort – Evaluation of Seattle's Sweetened Beverage Tax.

Further investigation can help strengthen our understanding of the SeaSAW cohort results and sugar-sweetened beverage tax policy more broadly. For example, taxes may influence beverage consumption in ways other than the pathway of direct exposure to increased beverage prices. Another pathway may involve health risk signaling from media messaging, leading to changes in social norms and individual behavior (Grummon et al., 2020). This pathway may be affecting people in nearby areas beyond the taxed jurisdiction, known as spillover effects. In the case of the Seattle SBT, Seattle and the comparison area in the cohort share a media market, whereas Seattle and Portland (the comparison area in the purchasing study mentioned above) do not. It is possible the tax may have led to decreased beverage consumption in the cohort comparison area if individuals were exposed to tax-related messaging in the media. In addition, comparison area participants may have traveled into Seattle frequently enough to be exposed to the increased beverage prices due to the tax, leading to decreased consumption. Alternatively, the tax may have had little impact on cohort participants in either area, and questions remain about factors that lead individuals to change or not change beverage consumption in the context of a tax.

OBJECTIVES

The objectives of this study were to understand why parents in the SeaSAW cohort decreased their sugar-sweetened beverage consumption after implementation of the SBT and explore whether reasons differed for parents in Seattle versus those in the comparison area.

Secondarily, we sought to understand why other parents in the SeaSAW cohort did not decrease their sugar-sweetened beverage consumption after implementation of the SBT and explore whether reasons differed between Seattle and comparison area parents.

We designed this qualitative study to expand on the findings from the community cohort events in 2021. Specifically, we collected detailed information from individuals grouped by whether they decreased sugar-sweetened beverage consumption in the cohort study. We focused on investigating the 12-month post-tax data from the cohort because they were the most recently published data available. We then systematically searched for patterns across individuals and compared patterns between Seattle and the comparison area individuals. Findings from this study provide important context to the cohort data as well as insights for future work on eliminating diet-related health disparities in Seattle and elsewhere.

METHODS

We briefly describe the methods used in this study in the sections below. A detailed description of the methods is available in Appendix A.

Design and study sample

We conducted semi-structured interviews with a sample of parents who were participants of the SeaSAW cohort. Interviews occurred between October 16, 2022, and January 6, 2023. We interviewed parent participants instead of child participants because parents in the cohort were the primary grocery shoppers for their household and may have been more immediately exposed to the SBT, e.g., due to beverage price increases and media coverage. At the time of cohort enrollment in 2017, cohort participants had a household income <312% of the Federal Poverty Level, with the majority having income <130% of the Federal Poverty Level. Participants were residents of Seattle or the nearby, non-taxed comparison area, comprised of cities in South King County, primarily Auburn, Federal Way, Kent, and Renton. For details on the cohort methods and descriptions of the baseline, 12-month, and 24-month samples, see the [2018 Baseline Report](#), [2020 12-Month Report](#), and [2023 24-Month Report: Child Cohort – Evaluation of Seattle’s Sweetened Beverage Tax](#). Cohort participants who were eligible for the qualitative interviews must have completed all assessments and must not have moved out of their location group (Seattle or comparison area) during the cohort study.

The SeaSAW community outreach team—who led recruitment and facilitated interviews—was essential to obtaining a diverse cohort sample and excellent retention —. We categorized all eligible cohort participants into one of four groups and contacted individuals in a random order within each group. The groups were based on whether the participant lived in Seattle or the comparison area and whether their reported consumption of taxed sugar-sweetened beverages decreased from baseline (pre-tax) to 12-months post-tax in the cohort study. Two members of the outreach team contacted eligible participants directly by text, phone, or email, following similar protocols used in the cohort. Outreach was conducted in English, Spanish, and Somali, based on the language used in the cohort surveys. All participants were mailed a \$40 debit card after the interview.

In addition to cohort participants, we recruited peers of cohort participants from the comparison area who completed interviews for this study. Feedback from community events with cohort participants in 2021 suggested that the experience of participating in the cohort may have led some participants to decrease their beverage consumption over time. Effects of participation are common in many studies and using qualitative methods to unpack the influence of the study on participants and aid in interpreting results is a recommended practice (McCambridge et al., 2014). We recruited peers using similar eligibility criteria to the cohort so that we could understand the experience of living in the comparison area under similar conditions, but in the absence of cohort participation. Eligible peers lived in the comparison area, were parents of at least one child aged 7-17 years old and were the primary grocery shoppers for their

household. We aimed to recruit five peers, but due to staffing and timeline limitations, we recruited two. Therefore, findings from peer interviews are not a primary focus of this report and are included with cohort participant findings when appropriate.

Interviews

We designed the interview questions to explore pathways through which the SBT and other factors may influence sugar-sweetened beverage consumption. The conceptual model informing these questions is in Appendix A. The interview guides for cohort participants and peers referred by participants are included in Appendix B and Appendix C, respectively.

Briefly, interview questions explored pathways including exposure to taxed beverage prices, exposure to tax-related health risk messaging about sugar-sweetened beverages, and non-tax related factors that may influence beverage consumption such as participating in the cohort study. When applicable, questions focused on the timeframe from before to 12 and 24 months after the tax was implemented. To limit social desirability bias, we asked most questions before the interviewer mentioned the SBT. We also asked participants to describe the top reasons why they decreased, did not change, or increased their sugar-sweetened beverage consumption during the cohort study (using participants' cohort data to tailor the question). We used this approach to improve participant recall of their circumstances around the time of baseline and post-tax cohort assessments.

The two members of the study team who conducted recruitment also facilitated the interviews. They have extensive experience with survey data collection and are connected in the Somali and Hispanic/Latinx communities in Seattle and King County. Each interviewer attended two trainings led by other study team members on semi-structured interviewing techniques. We offered interviews by phone, in person, and web-based video and in English, Somali, and Spanish. Interviews were audio-recorded and professionally transcribed, and when applicable, translated to English.

Analysis

Since we were interested in whether reasons for changes in sugar-sweetened beverage consumption differed between Seattle and comparison area participants, we used a thematic analysis approach, which is a method for identifying and interpreting patterns within the data across individuals (Braun & Clarke, 2006).

For our primary analysis, we compared themes between Seattle and comparison area parents who decreased their sugar-sweetened beverage consumption. As a secondary analysis, we compared themes between Seattle and comparison area participants who did not decrease their consumption. We did this because the number of parents who did not decrease their sugar-sweetened beverage consumption was small and these participants had relatively low sugar-sweetened beverage consumption at baseline compared to participants in the groups that decreased consumption (See Appendix D for sugar-sweetened beverage consumption cohort data within each group).

Our coding framework was informed by our conceptual model and interview questions. It is included in Appendix E. Two members of the study team coded the transcripts. They first independently coded the same interview transcripts, then once they reached acceptable intercoder reliability, they separately coded the remaining interviews. The coders were aware of the subgroups to which participants belonged because the interview questions asked about participants' beverage consumption data and city of residence; thus this information was present in the transcripts. After coding, one of the coders then reviewed the coded text for patterns to develop themes, compared themes between groups, and produced key findings.

RESULTS

We contacted 198 eligible cohort participants at least once to invite them for an interview. Among these, six individuals declined to participate and 15 did not keep their scheduled appointment for an interview. Those remaining were contacted up to three times or did not respond before enrollment closed.

We interviewed 37 individuals, 16 of whom were from Seattle and 21 from the comparison area (**Table 1**). Two individuals in the comparison area group were peers referred by cohort participants in the comparison area whose sugar-sweetened beverage consumption decreased. All interviews were completed by phone. The average length was 40 minutes (range 22-68 minutes). One interview was repeated due to an audio recording failure; another was partially lost due to a recording failure and was not repeated.

Interviews were conducted in English (n=13), Somali (n=7), and Spanish (n=17). Based on self-reported data from the cohort study, one participant was male and the rest were female. Sixteen participants (43%) reported Hispanic or Latino ethnicity, 20 (54%) reported non-Hispanic or Latino ethnicity, and one (3%) declined to answer regarding ethnicity. Regarding self-reported race, two participants (5%) reported African, 11 (30%) reported African American/Black, one (3%) reported Asian Indian, one (3%) reported Guamanian or Chamorro, ten (27%) reported White, and 12 (32%) declined to answer. The average participant age was 43 years (range 30-60 years). Participants had, on average, three children (range 1-10) with an average age of 13 years (range 10 months-27 years). We note that participants must have had at least one child aged 7-17 years at the baseline cohort assessment. Using beverage consumption data from the cohort assessments, Seattle and comparison area participants in this study had similar baseline consumption of taxed sugar-sweetened beverages and similar changes in consumption after 12 months post-tax (Appendix D).

Below, we present themes first for participants who decreased their sugar-sweetened beverage consumption, and second for those who did not decrease their sugar-sweetened beverage consumption. Themes are organized within each topic that we explored to understand influences on taxed sugar-sweetened beverage consumption, informed by the interview questions and conceptual model. We draw meaning from the thematic similarities and differences between Seattle and comparison area parents to address our objectives of understanding reasons for decreasing taxed sugar-sweetened beverage consumption and whether the reasons differ between Seattle and comparison area parents. **Table 2** outlines the themes and illustrative quotes within each topic among participants who decreased consumption, and **Table 3** presents these results among participants who did not decrease consumption.

Objective 1 Results:

Comparing participants who decreased consumption of taxed sugar-sweetened beverages in Seattle to participants in the comparison area

1. Top reasons for decreasing sugar-sweetened beverage consumption

Overwhelmingly, participants expressed that health was a top reason for decreasing their sugar-sweetened beverage consumption during the cohort study. Most Seattle participants wanted to prevent or manage diseases associated with excess sugar consumption and generally improve health. Many comparison area participants reduced their consumption in response to a medical diagnosis of their own or in the family. Some participants in both groups described becoming more aware of their own consumption and the health harms of sugar-sweetened beverages. Several noted that participating in the cohort study helped them become more aware of their consumption. Costs were mentioned by several participants in both groups as more secondary reasons for change.

Seattle: among those who decreased sugar-sweetened beverage consumption.

The majority of participants decreased their consumption for reasons relating to preventing or managing sugar-sweetened beverage-related health outcomes for themselves and their children. Many participants described goals to lose weight, worries about sugar intake, trying to “get healthy” and lower disease risk. Two participants described specific diagnoses such as diabetes that prompted them to reduce their consumption. Separately, two participants said they reduced their consumption because they became newly aware of health risks associated with sugar-sweetened beverages. Cost was briefly mentioned by two participants but was not a primary reason for decreasing consumption.

Comparison area: among those who decreased sugar-sweetened beverage consumption.

Most comparison area participants said they decreased their consumption for reasons related to a medical diagnosis of their own or in their family, as opposed to general health and prevention-oriented reasons that were more common among Seattle participants. For example, some participants shared they had family histories of diabetes that motivated their change. Like Seattle participants, some participants’ reasons related to general disease prevention and health improvement. Additionally, some participants described gaining new awareness of health risks of sugar-sweetened beverages, which they attributed to the cohort study. Several participants mentioned that beverage costs were a secondary or minor reason for change that complemented health-related goals.

2. Awareness of the Seattle Sweetened Beverage Tax and remembering tax-related information

We asked participants if they knew about the tax, and if so, what they remember hearing about it and when they heard it. Generally, most participants were aware of the tax at the time of the interview. Six were not aware, all of whom were in the comparison area, including two peers referred by participants. Several participants remembered that they learned of the tax more recently while shopping for sugar-sweetened beverages, rather than around the time of tax implementation. Seattle participants tended to recall more information regarding prices of the beverages while comparison area participants reflected more on the health-related rationale of the tax.

Seattle: among those who decreased sugar-sweetened beverage consumption.

All Seattle participants who decreased consumption were aware of the tax and could recall where they heard information about it. The majority heard about the tax from the news. Most participants in this group mentioned the higher beverage prices and conveyed a sense of “sticker shock” when reflecting on the first time they learned about the tax. The three English-speaking participants described the tax as “everywhere” in the news and in conversations when it was enacted. The news was a less prominent source of information for Somali and Spanish speakers in this group; several participants became aware of the tax or realized it was in effect when they experienced the price increase while shopping. Another participant mentioned a community awareness campaign from a local healthcare organization at the time of tax implementation. One participant was unaware of the tax until they attended the SeaSAW community event in 2021.

Comparison area: among those who decreased sugar-sweetened beverage consumption.

Among comparison area participants who decreased sugar-sweetened beverage consumption, there was a range of awareness about the tax and exposure to information about it. Some participants heard about the tax from the news, including several mentions of the Hispanic/Latinx TV channels such as Univision Seattle. Some participants heard about the tax from friends and family talking about it and experiencing it; examples ranged from hearing that people stopped buying drinks altogether to hearing that others shopped outside of the city to avoid the tax. Participants also recalled hearing about the health-related rationale and the goals of the tax, whereas this was not as prevalent among Seattle participant responses. Other participants knew that sugar-sweetened beverages were more expensive but said they had not heard other details—either because they did not consume many sugar-sweetened beverages or could not remember if they noticed the prices. One of these participants remembered hearing about the tax on the news but could not remember if it was up for a public vote. Four participants and two peers had not heard about the tax until our interview (all of whom were Spanish-speaking).

3. Perceived influence of the Seattle Sweetened Beverage Tax on sugar-sweetened beverage consumption.

We asked participants if they thought the tax affected their decisions to buy or drink sugar-sweetened beverages. Participants in both locations discussed higher prices of sugar-sweetened beverages and many said the tax influenced their consumption during the study. Themes of reducing beverage purchasing or shopping outside of Seattle to avoid the tax were stronger among Seattle participants than among comparison area participants. Some comparison area participants also described reducing purchasing; others discussed health as a primary influence on consumption while the tax was a secondary influence or was not considered to be an influence. There were some suggestions of signaling effects of the tax. Several participants in both groups said the tax did not affect their decisions to buy or drink sugar-sweetened beverages.

Seattle: among those who decreased sugar-sweetened beverage consumption.

Among Seattle participants who decreased their sugar-sweetened beverage consumption, most said that the tax influenced their sugar-sweetened beverage consumption in that it helped them to decrease the

amount purchased or stop buying altogether. Many participants described the beverages as expensive and there was a strong motivation to not pay the tax that led them to limit purchasing. Some other participants bought sugar-sweetened beverages outside of Seattle to avoid the tax, though most appeared to cross-border shop occasionally rather than routinely. Finally, several participants said the tax was not one of the factors that led them to decrease their sugar-sweetened beverage consumption. They gave different explanations: they consumed few sugar-sweetened beverages at baseline, they were unaware of the tax during the cohort study, or they continued to buy sugar-sweetened beverages for their children who preferred them, suggesting the tax was not a deterrent and the participant decreased consumption for other reasons.

Comparison area: among those who decreased sugar-sweetened beverage consumption.

About half of participants in the comparison area who decreased their sugar-sweetened beverage consumption and were aware of the tax reported that it influenced their consumption. Like Seattle, a common theme was that many participants said the higher beverage prices helped them reduce purchasing and consumption. Two of the participants said they limited purchasing specifically because they were shopping in Seattle, e.g., near or at work. One participant who had not heard of the tax prior to the interview noted that higher beverage prices had helped them decrease consumption. A second theme was that other participants primarily reduced their consumption for health reasons and the tax had a minor role. Some participants described the tax initially as a motivator for reducing consumption, but ultimately attributed the reduction to health-related reasons. A minor theme was suggestive of signaling effects of the tax. Two participants described situations in which knowledge of the Seattle tax, not exposure to prices themselves, influenced decisions to purchase or consume sugar-sweetened beverages. One peer participant who became aware of the tax at the interview said it is not worth paying the high prices for sugar-sweetened beverages. Finally, several participants said the tax was not a factor that led them to decrease consumption because they consumed few sugar-sweetened beverages at baseline, reduced their consumption for health reasons only, or did not think about the tax when making shopping decisions.

4. Remembering sugar-sweetened beverage-related information and perceived influence on sugar-sweetened beverage consumption

Participants were asked to describe information they saw or heard about sugar-sweetened beverages and when they remember first noticing that information. Most participants described seeing or hearing health risk information about sugar-sweetened beverages. Several recalled beverage industry messaging. About half described receiving health-risk messaging from health clinics or healthcare professionals including their physician, child's physician, or dentist. Of those who specifically recalled beverage information from before or during the cohort study (approximately half), common sources were health clinics and professionals, social media, and TV. Participants were then asked to describe how, if at all, the information influenced their beverage consumption habits. Overall, most participants were motivated by health risk messaging to limit their consumption and their child's consumption. One Seattle participant and one comparison area participant wondered if the researchers planned to help raise awareness outside of the study population about excess sugar-sweetened beverage intake to compete with widespread food/beverage industry marketing they noticed in their communities.

Seattle: among those who decreased sugar-sweetened beverage consumption.

Everyone recalled health risk messaging about sugar-sweetened beverages. Common sources were health clinics and social media. Several participants remembered hearing health information from people in their community or family. Among the four participants who specified that the information was received before or during the cohort period, two participants mentioned the news, including one who heard beverage prices were rising. One mentioned educational materials at food banks. Regarding influence on consumption, participants generally aimed to limit their own and their child's consumption with varying outcomes; some said they stopped buying sugar-sweetened beverages for their children and focused on reading nutrition labels. Others said they reduced their own consumption but not their child's and vice versa. Another participant wondered if researchers from this study planned to conduct more health promotion in Seattle to raise awareness of the health risks. They expressed a need to counter the beverage industry marketing and help more people outside of the cohort to understand the harms and reduce their intake.

Comparison area: among those who decreased sugar-sweetened beverage consumption.

Most participants remembered hearing health risk messaging about sugar-sweetened beverages and over half recalled hearing this information before or during the cohort period. Common sources of information were health clinics, social media, TV, and community programs such as nutrition education classes and the WIC Program. Two participants brought up the Sweetened Beverage Tax as information they remembered hearing about sugar-sweetened beverages; one heard it on the news, but could not remember if the tax was in Seattle or the state and if it was up for a vote. Two participants said they did not notice many health-related messages around them, and one of the participants contrasted this with the widespread industry marketing they notice. Like participants in Seattle, most participants said the health-related information influenced their behavior. Many participants described efforts to reduce their own consumption, as an example for their children, and to educate them about health risks. Most talked about the impact of the information on their consumption as a household. Three participants discussed the role of beverage industry marketing, such as soda and juice advertisements on TV, radio, billboards, social media, and at restaurants, as well as promotions and discounts in stores. They explained that marketing makes it difficult to moderate their own and their children's consumption, although being informed about health risks can help to counter it. One participant asked if the study will do more to reach the greater Hispanic community because the study helped them realize how much they were consuming and make healthier choices.

5. Participation in the cohort study

We asked participants if they had thought differently about the beverages they consumed after filling out the surveys in the cohort study and if this had any impact on what they drank and served to their children. Many participants described becoming "more aware" of the amount of sugar-sweetened beverages they consumed or served to their children after filling out the surveys. Some participants explained that it helped them realize the amount they consumed was more than what they thought was acceptable. Many participants said this awareness helped them decrease their sugar-sweetened beverage consumption. Comparison area participants generally had stronger sentiments about the influence of the surveys than Seattle participants. Participants who said they were not impacted by the cohort surveys tended to be infrequent consumers of sugar-sweetened beverages or had specific reasons for changing their consumption such as health. Several participants in the comparison area expressed appreciation for the overall study because it reinforced the importance of addressing diet-related health disparities in communities represented in the study.

Seattle: among those who decreased sugar-sweetened beverage consumption.

Most participants said that filling out the cohort surveys increased their awareness of the amount of sugar-sweetened beverages they consumed. Many participants explained that becoming more aware of one's consumption prompted or reinforced their intentions to decrease consumption, such as following their doctor's recommendations. Other participants shared that their increased awareness helped them reflect on the associated health risks of their consumption, but they did not articulate a direct influence on the amount they consumed. One participant was not sure about the cohort study's influence, and two participants said it did not influence their thinking about the beverages and amounts they consume; instead, they decreased their consumption for health reasons.

Comparison area: among those who decreased sugar-sweetened beverage consumption.

Most participants said that completing the cohort surveys increased their awareness of the amount they consumed. In general, participants in the comparison area shared stronger sentiments about the influence of the surveys on their awareness and consumption than Seattle participants. Many participants explained that prior to this study, they rarely thought about the number of beverages they consumed or bought for their household. Four participants also expressed their gratitude for the study more broadly for its influence on their health. Of these, two participants stressed the study's importance in raising awareness about sugar-sweetened beverage consumption in communities with particularly high burdens of diet-related diseases and hoped future work will inform more people. Two other participants were less specific about the extent of the study's influence, and one recalled the 2021 cohort community meeting as an influential event instead. One of the peers referred by a comparison area participant, who was not aware of the cohort study prior to the interview, shared that the interview itself was informative, and it motivated them to think about decreasing their household's consumption.

Objective 2 Results:

Comparing participants who did not decrease consumption of taxed sugar-sweetened beverages in Seattle to the comparison area

1. Top reasons for increasing or not changing sugar-sweetened beverage consumption.

Participants who did not decrease their sugar-sweetened beverage consumption were individuals who either did not change or increased their sugar-sweetened beverage consumption during the first twelve months of the cohort study. We asked these participants to describe the top reasons why they think they did not change or increased consumption (whichever reflected their cohort data). In general, participants offered reasons related to their beverage preferences, dietary habits, and daily routines. Some participants in this group had more difficulty remembering reasons for their consumption change (or no change) compared to participants who decreased their sugar-sweetened beverage consumption, reinforcing the idea that behavior was habitual.

Seattle: among those who did not decrease sugar-sweetened beverage consumption.

Participants in this group described a range of awareness about their consumption patterns, and most reasons related generally to beverage preferences and habits. For example, one participant described their beverage intake as a "flavor habit" and "addiction," having grown up consuming them and pairing them with certain foods. Another participant was not sure

why their consumption increased but supposed it could be related to a change in employment or buying more out of convenience. One participant said they used to drink sugar-sweetened beverages with their children who liked to drink them. Another participant explained they were not aware of the health risks of consuming excess sugar-sweetened beverages, and when they later realized the health risks (after the cohort study), they decreased their consumption.

Comparison area: among those who did not decrease sugar-sweetened beverage consumption.

Participants shared similar reasons for their consumption patterns as described in the Seattle group above. Those with reasons relating to habit and routine discussed family- and work-related patterns, and others said it was simply a preference for those drinks at the time of the survey. Separately, one participant described a lack of awareness of health risks associated

with sugar-sweetened beverages that explained their consumption, while another who did not change consumption said they learned about health risks ten years prior and maintained a low consumption level. One participant who was receiving food assistance benefits said that affordability of sugar-sweetened beverages was a top reason: sugar-sweetened beverages were cheaper and more shelf-stable than 100% juice.

2. Awareness of the Seattle sugar-sweetened beverage tax and remembering tax-related information

Participants were asked if they knew about the tax, and if so, what they remember hearing about it and when they heard it. Most participants who did not decrease their sugar-sweetened beverage consumption were aware of the tax. Participants generally remembered hearing about it from the news or from other people; the news was a more common source for participants in Seattle than the comparison area. Several participants became aware of the tax while shopping in Seattle, including two participants from the comparison area.

Seattle: among those who did not decrease sugar-sweetened beverage consumption.

In general, Seattle participants who did not decrease their consumption had a limited awareness of the tax. Some thought they heard about it in the news, though they had partial recollection about the details of the tax. One participant recalled hearing on the news that the tax would make beverages more expensive and that it was implemented to educate people about sugar consumption. Another participant became aware at the store while her child was buying a sugar-sweetened beverage. One stated they heard about the tax from community members and did not hear anything in the news.

Comparison area: among those who did not decrease sugar-sweetened beverage consumption.

All comparison area participants who did not decrease their consumption were aware of the tax, though one confused it with the 2018 Washington state ballot initiative 1634 to ban new or increased local taxes on grocery items. Some participants mentioned they heard about the tax from other people. Two became aware when shopping for sugar-sweetened beverages in Seattle and noticed the price change. One mentioned hearing about it in the news but did not remember the year nor the source. Several participants reflected on the health-related goals of the tax by discussing the pros and cons of the tax or wondering which health conditions are targeted with the tax revenue.

3. Perceived influence of the Seattle Sweetened Beverage Tax on sugar-sweetened beverage consumption.

We asked participants if they thought the SBT affected their decisions to buy or drink sugar-sweetened beverages. Most participants said the tax did not affect their sugar-sweetened beverage consumption meaning that it did not lead them to decrease their consumption during the cohort study period. Seattle participants described habits and preferences for these beverages as an explanation for no tax effect. Comparison area participants described being minimally exposed to the tax and therefore less affected by it. In addition, two participants stated that they reduced their purchasing and consumption of sugar-sweetened beverages when they shopped in Seattle. One Seattle participant described cross-border shopping to avoid the tax.

Seattle: among those who did not decrease sugar-sweetened beverage consumption.

The majority of Seattle participants who did not decrease their consumption said the tax did not have a meaningful influence on their sugar-sweetened beverage consumption. Some participants explained that their habits and preferences were the main influences of their consumption and they continued to buy sugar-sweetened beverages in Seattle during the cohort study. Some participants stated they later reduced their sugar-sweetened beverage consumption for health reasons after the cohort study. One participant described avoiding the tax by cross-border shopping; two other participants talked about other people who cross-border shopped. One participant said they were not affected by the tax because they usually buy 100% juice which is not subject to the tax.

Comparison area: among those who did not decrease sugar-sweetened beverage consumption.

Most comparison area participants who did not decrease their consumption stated that the tax did not have an influence on their consumption patterns. Minimal exposure to taxed beverage prices was a common explanation. For example, one participant suggested they would have stopped buying sugar-sweetened beverages because of the tax if they lived in Seattle. Two other participants indicated that the tax affected their sugar-sweetened beverages consumption when they were shopping in Seattle. One participant worked in Seattle and may have been more exposed to tax prices than others in the comparison area; the other participant said they limited their consumption to conserve food assistance dollars when shopping in Seattle. Finally, one participant explained they do not drink many sugar-sweetened beverages, so the tax was not important to them.

4. Remembering sugar-sweetened beverage-related information and perceived influence on sugar-sweetened beverage consumption.

We asked participants to describe information they saw or heard about sugar-sweetened beverages and when they remember first noticing that information. Nearly all participants recalled health-risk messaging information about sugar-sweetened beverages and most heard this information from health clinics, TV, radio, or social media. Both Seattle and comparison area participants described attempts to limit sugar-sweetened beverage consumption in response to this messaging. Some described barriers to limiting consumption such as exposure to sugar-sweetened beverage marketing, child's preferences, and beverage costs.

Seattle: *among those who did not decrease sugar-sweetened beverage consumption.*

Almost all participants recalled health risk messaging about sugar-sweetened beverages. Some participants remember hearing information from their family doctor or seeing informational posters visualizing the amount of sugar in beverages at the clinic before the cohort study period. Others mentioned information on social media, the radio, and TV. One recalled seeing advertisements for beverages on social media, another heard information from their community. In general, reflections about the influence of the information on their sugar-sweetened beverages involved attempts to moderate their consumption and their children's consumption as opposed to stopping entirely. One mentioned it was difficult to avoid completely; another said they have always been relatively healthy and try to avoid sugar-sweetened beverages. Two participants discussed efforts to drink more water.

Comparison area: *among those who did not decrease sugar-sweetened beverage consumption.*

All participants heard health risk messaging about sugar-sweetened beverages and recalled a variety of sources. The most common were health clinics and social media. Three participants remembered information received prior to the cohort study period: two from health clinics and one from their child's school and the WIC Program. One participant also mentioned soda commercials on TV. In response to the health-related information they remembered, most participants described having more awareness about the amount they consumed or bought for their household. Most tried to decrease their household's consumption, though some participants described barriers to that change, including temptation, children obtaining beverages outside the home, and the relative cost of sugar-sweetened beverages versus 100% juice that made it difficult to avoid sugar-sweetened beverages while receiving food assistance.

5. Participation in the cohort study

We asked participants if they thought differently about the beverages they consumed after filling out the surveys in the cohort study and whether this had any impact on what they drank and served to their children. Most participants said that completing the surveys increased their awareness of their own and their children's sugar-sweetened beverage consumption.

Seattle: among those who did not decrease sugar-sweetened beverage consumption.

Some participants said that completing the cohort surveys increased their awareness of their own consumption or household's consumption. Three participants shared that they decreased their consumption, or their children decreased their consumption following the surveys, though one explained that the reductions were short-lived. Two participants said the surveys did not change how they thought about the beverages they consume, one of whom explained that they consumed few sugar-sweetened beverages to begin with.

Comparison area: among those who did not decrease sugar-sweetened beverage consumption.

Participants agreed that completing the surveys influenced their awareness or consumption of sugar-sweetened beverages to some degree. Two participants said they decreased their consumption as a result of this increased awareness; it is unclear whether these changes were short-lived or occurred after the cohort study period. Two participants described an increased awareness of their consumption or household's consumption but did not discuss influences on behavior change. Finally, one participant said the study only had a small influence on their thinking about beverages they consume.

DISCUSSION

Using a diverse sample of parents with lower incomes residing in Seattle (the taxed area) and outside of Seattle but in King County (the non-taxed comparison area), this qualitative study identified factors that influenced sugar-sweetened beverage consumption following implementation of the SBT. First, we sought to understand the reasons SeaSAW cohort parents in Seattle and the comparison area decreased their consumption and whether these reasons differed between location groups. Differences between the groups provide clues about spillover effects of the tax—whether the tax led to decreased consumption in Seattle and the comparison area—as well as factors unrelated to the tax that may explain decreases in either group. Second, we examined factors influencing consumption among parents in Seattle and the comparison area who did not decrease their consumption during the cohort study. We did this to contextualize findings from parents who decreased consumption and understand potential barriers to behavior change. However, our conclusions are limited for this group because the sample reported low sugar-sweetened beverage consumption at baseline (Appendix D).

Below, we summarize five key findings from this study. To develop these findings, we first compared themes between Seattle and comparison area groups using summary tables and other distillations of coded transcripts. We interpreted thematic differences and similarities between the groups to identify sugar-sweetened beverage tax impact pathways and the potential for spillover in the comparison area.

1. The top reasons for consumption change were health-related. However, differences in the stated health reasons between Seattle and comparison area parents may drive the observed outcomes.

Most Seattle and comparison area parents cited health as the top reason for decreasing their sugar-sweetened beverage consumption. Subtle differences in the health-related reasons may be important to how groups responded to exposures such as increased sugar-sweetened beverage prices, health risk messaging, or participating in the cohort study. Parents in the comparison area commonly framed this reasoning within the experience of having received a recent medical diagnosis likely related to sugar-sweetened beverage consumption or having a family history of these conditions. Seattle parents more commonly described efforts to improve overall health and prevent diseases related to sugar-sweetened

beverage consumption. These differences raise the question of whether the cohort population differed at baseline by health status, for example, in ways that were not entirely controlled for in statistical analysis (i.e., health status was not assessed in the cohort survey). This is relevant to the cohort beverage consumption results because groups with different baseline health status could have interacted differently with the tax. In addition, differences in health reasons for consumption change may track along different racial and ethnic groups in the study. For example, compared to the Seattle cohort sample, a larger proportion of the comparison area cohort sample self-identified as having Hispanic or Latinx ethnicity, and a smaller proportion self-identified their race as Black, African American, or African. We note that the cohort analysis used propensity score weighting to account for these differences in the overall study population. However, it is possible this did not sufficiently control for these differences or that that groups responded differently to the tax, suggesting that future analyses exploring tax impacts within race and ethnicity groups are warranted.

2. Parents in Seattle and the comparison area recalled information about the SBT in the media, which is consistent with a shared media market in the King County region.

While recollection of the SBT coverage was stronger among Seattle parents, many of those in the comparison area recalled hearing about the tax in the news, on stations such as Seattle Univision, a Hispanic/Latinx station. This suggests some overlap of tax-related media exposure. Additionally, when asked about the information they remembered hearing or seeing about the tax, comparison area participants tended to comment on the health-related rationale of the tax in addition to the increased prices, while Seattle parents focused more on their direct experiences with higher prices. This supports the idea that some comparison area participants are not only aware but informed about rationale for the tax, suggesting that a shared media market may have played a role. Notably, two comparison area participants were unsure whether the tax was up for a public vote, suggesting confusion between the SBT and the 2018 state ballot initiative 1634 to ban local grocery taxes which generated substantial media attention.

3. Some parents in the comparison area were exposed to and influenced by the tax through price and health risk signaling pathways, reflecting a mix of experiences with the tax.

When asked about the potential influence of the SBT on their sugar-sweetened beverage consumption, some comparison area parents said they bought fewer beverages and limited their consumption due to high prices, a strong theme also among Seattle parents. Some comparison area parents specified they did not buy sugar-sweetened beverages while they were in Seattle (e.g. near or at work). Others did not specify whether they experienced the higher prices in Seattle or the comparison area. Evidence from store audit studies indicate that sugar-sweetened beverage prices increased by a small amount on average in the comparison area after implementation of the SBT, relative to larger price increases in Seattle (see the [2020 12-Month Report](#) and 2023 24-Month Report: Child Cohort – Evaluation of Seattle’s Sweetened Beverage Tax). Other comparison area parents remarked that health was their main reason for the decrease and the tax had a smaller influence. The tax may have reinforced their existing intentions to decrease consumption. In contrast to these price-related tax influences, several parents directly described health risk signaling effects of the tax, such as the tax serving as a reminder to limit excess sugar intake. Lack of clarity on the Seattle city boundaries of the tax did not emerge as a theme (we introduced the SBT in the interview question). Altogether, these experiences suggest some evidence of spillover effects in that comparison area participants were exposed to the tax, even if it was not being imposed on sugar-sweetened beverages in the areas in which they lived, and this was related to their decrease in consumption.

4. Seattle parents were influenced by the tax mainly through beverage price increases, with some participants engaging in occasional cross-border shopping.

Responses from Seattle parents about the tax support previous evaluation work on the SBT. Parents were largely influenced to decrease their consumption in response to higher beverage prices that they noticed in stores. Some participants said they no longer bought sugar-sweetened beverages in Seattle, and instead shopped outside the city to avoid the tax. Most conveyed that the cross-border shopping did not offset the amount they previously bought in Seattle. This finding is consistent with the one- and two-years studies of retail scanner data in Seattle compared to

Portland that found there was minimal effect of cross-border shopping on tax-related decreases in volume sold in Seattle. However, we did not ask participants directly if they cross-border shopped during the cohort study, so it is possible that this was a stronger theme than what surfaced here. In a separate study, some parents with lower income in Philadelphia reported cross-border shopping to avoid the tax (Edmondson et al., 2022). In Seattle, it is unclear if cross-border shopping was more common in the cohort and among individuals with lower income more broadly than the retail scanner studies suggest.

5. Completing cohort beverage surveys helped many parents become more aware of the amount they consumed, particularly among comparison area parents.

Although many participants were already informed about health risks associated with excess sugar-sweetened beverage consumption, parents generally described a lack of awareness of the amount they and their household consumed prior to the cohort study. Most parents said the detailed cohort surveys helped increase this awareness. This was a stronger sentiment among comparison area parents who commonly described beverage industry marketing as a barrier to maintaining awareness and limiting consumption. Therefore, many parents attributed their increased awareness and ability to decrease consumption to participating in the cohort study. In addition, some comparison area parents stated a need for education and awareness efforts to expand beyond the study cohort and into their community. Given these connections, it is possible that comparison area participants responded differently to the experience of participating in the cohort study than Seattle parents. For example, comparison area participants may have had a lower baseline awareness of their consumption and thus had more to gain from completing the cohort surveys. Further, it is also possible that other experiences that differed between Seattle and comparison area parents discussed above interacted with the cohort participation experience, such as differences in health status as baseline.

CONCLUSION

Together, the findings of this study uncovered common threads and potentially important differences between the experiences of Seattle and comparison area cohort participants after SBT implementation. Most Seattle participants and about half of comparison area participants who decreased their sugar-sweetened beverage consumption stated that the SBT had an influence on their consumption. Findings point to several mechanisms suggesting that spillover effects of the tax influenced some comparison area parents to decrease consumption, including situational exposure to the tax while shopping in Seattle and health risk signaling of the tax. Other factors such as cross-border shopping among Seattle residents, possible differences in health status, and cohort survey impacts may play a role in addition to or instead of spillover effects. Future research investigating sugar-sweetened beverage tax spillover in other settings or with quantitative data are needed to validate these findings.

Limitations

This study relied on participant recall of beverage consumption and related factors up to five years in the past, around the time of the baseline cohort assessment. We managed this limitation by designing our interview guide in a way that prompted individuals to first think thoroughly about their current sugar-sweetened beverage consumption to refresh their memories before recalling past consumption and asking other look-back questions. We used evidence-based approaches to anchor one's memory to a point in time with the help of event-oriented prompts (Friedenreich, 1994) and we found it was particularly effective to remind individuals of the event of the baseline assessment itself. Nonetheless, some participants had difficulty remembering details from that period and their responses were sometimes brief and less descriptive. This limited our ability to compare them equally with those of participants who remembered more details. Overall, interviewers reiterated in debriefing meetings that most participants tried their best to give accurate, genuine, and thorough responses to the questions. Probes were used throughout the interview to ask for elaboration if possible.

The sampling approach oversampled people with large decreases in sugar-sweetened beverage consumption, which helped us explore potential spillover effects. However, this meant that the groups of individuals who did not decrease

consumption were substantially smaller in size. It was sometimes difficult to identify strong themes from the small groups, so we listed individual experiences when appropriate to demonstrate the variety of responses. Additionally, several participants who did not decrease consumption had low consumption levels at baseline and thus had little room to decrease their consumption during the cohort study. It was not particularly useful to our research question to compare these individuals to those who decreased their consumption from a higher amount at baseline. Therefore, we considered our analysis of individuals who did not decrease their consumption as a secondary analysis in this report.

One study team member analyzed the coded text and generated findings, and we were unable to share our findings with interview participants during analysis, which is a recommended practice when possible. For these reasons, we chose a relatively straightforward analytical framework and method (thematic analysis) so that the process from raw transcripts to study findings was transparent and more likely to produce internally valid results than more complex analytical methods (Braun & Clarke, 2006). We additionally checked our early findings with the interviewers and discussed the analytical approach with other study team members to find consensus on the steps towards theme development and synthesis.

As with most qualitative research, the purpose of this study design is to generate hypotheses rather than test them, thus we do not claim that the findings of this study are generalizable to the experiences of the cohort study population or other populations. The findings instead provide a richer understanding of the experiences of living inside and outside of Seattle with different sugar-sweetened beverage consumption outcomes in the years following the SBT. Findings can inform future analyses with the cohort survey data or in other study populations to investigate associations proposed here.

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REFERENCES

Andreyeva, T., Marple, K., Marinello, S., Moore, T. E., & Powell, L. M. (2022). Outcomes Following Taxation of Sugar-sweetened Beverages: A Systematic Review and Meta-analysis. *JAMA Network Open*, 5(6), e2215276–e2215276. <https://doi.org/10.1001/JAMANETWORKOPEN.2022.15276>

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>

Edmondson, E. K., Shea, J. A., Gregory, E. F., Roberto, C. A., Garcia, S. M., Kwon, J., & Virudachalam, S. (2022). Low-income parents' perceptions of a sweetened beverage tax in Philadelphia. *Journal of Nutritional Science*, 11, 1–9. <https://doi.org/10.1017/JNS.2022.64>

Friedenreich, C. M. (1994). Improving Long-Term Recall in Epidemiologic Studies. *Epidemiology*, 5(1), 1–4. <http://www.jstor.org/stable/3702995>

Glass, T. A., & McAtee, M. J. (2006). Behavioral science at the crossroads in public health: Extending horizons, envisioning the future. *Social Science and Medicine*, 62(7), 1650–1671. <https://doi.org/10.1016/J.SOCSCIMED.2005.08.044>

Grummon, A. H., Roberto, C. A., & Krieger, J. W. (2020). Is the Association Between Beverage Taxes and Reductions in Sales Driven by Communication of Health Consequences in Addition to Price Increases? *JAMA Network Open*, 3(12), e2032537. <https://doi.org/10.1001/JAMANETWORKOPEN.2020.32537>

- Harris, P. A., Taylor, R., Minor, B. L., Elliott, V., Fernandez, M., O'Neal, L., McLeod, L., Delacqua, G., Delacqua, F., Kirby, J., & Duda, S. N. (2019). The REDCap consortium: Building an international community of software platform partners. *Journal of Biomedical Informatics*, *95*, 103208. <https://doi.org/10.1016/J.JBI.2019.103208>
- Harris, P. A., Taylor, R., Thielke, R., Payne, J., Gonzalez, N., & Conde, J. G. (2009). Research electronic data capture (REDCap)—A metadata-driven methodology and workflow process for providing translational research informatics support. *Journal of Biomedical Informatics*, *42*(2), 377–381. <https://doi.org/10.1016/J.JBI.2008.08.010>
- McCambridge, J., Kypri, K., & Elbourne, D. (2014). Research participation effects: a skeleton in the methodological cupboard. *Journal of Clinical Epidemiology*, *67*(8), 845–849. <https://doi.org/10.1016/J.JCLINEPI.2014.03.002>
- Powell, L. M., & Leider, J. (2020). The impact of Seattle's Sweetened Beverage Tax on beverage prices and volume sold. *Economics and Human Biology*, *37*, 100856. <https://doi.org/10.1016/j.ehb.2020.100856>
- Powell, L. M., & Leider, J. (2021). Impact of a sugar-sweetened beverage tax two-year post-tax implementation in Seattle, Washington, United States. *Journal of Public Health Policy*, *42*(4), 574–588. <https://doi.org/10.1057/s41271-021-00308-8>
- von Philipsborn, P., Stratil, J. M., Burns, J., Busert, L. K., Pfadenhauer, L. M., Polus, S., Holzapfel, C., Hauner, H., & Rehfues, E. A. (2020). Environmental Interventions to Reduce the Consumption of Sugar-sweetened Beverages: Abridged Cochrane Systematic Review. *Obesity Facts*, *13*(4), 397–417. <https://doi.org/10.1159/000508843>

TABLES

TABLE 1. PARTICIPANT SAMPLE (N=37) CATEGORIZED BY LOCATION AND THE CHANGE IN CONSUMPTION OF SUGAR-SWEETENED BEVERAGES SUBJECT TO THE SEATTLE SWEETENED BEVERAGE TAX FROM BASELINE (PRE-TAX) TO 12 MONTHS POST-TAX IN THE SEASAW COHORT STUDY.

SUGAR-SWEETENED BEVERAGE CONSUMPTION CHANGE FROM BASELINE TO 12-MONTHS POST-TAX	SEATTLE PARENTS N LANGUAGE SPOKEN	COMPARISON AREA PARENTS N LANGUAGE SPOKEN	TOTAL
DECREASED	10 <i>4 ENGLISH, 4 SOMALI, 2 SPANISH</i>	16 ^A <i>4 ENGLISH, 12 SPANISH</i>	26
DID NOT DECREASE ^B	6 <i>2 ENGLISH, 3 SOMALI, 1 SPANISH</i>	5 <i>3 ENGLISH, 2 SPANISH</i>	11
TOTAL	16 <i>6 ENGLISH, 7 SOMALI, 3 SPANISH</i>	21 ^A <i>7 ENGLISH, 14 SPANISH</i>	37 ^A

^A Includes 2 Spanish-speaking individuals who were peers of comparison area cohort participants.

^B Sweetened beverage consumption either did not change or increased.

TABLE 2. THEMES AND ILLUSTRATIVE QUOTES REFLECTING SELF-REPORTED REASONS FOR SUGAR-SWEETENED BEVERAGE CONSUMPTION AND INFLUENCES ON CONSUMPTION AMONG PARENTS IN SEATTLE AND THE COMPARISON AREA WHOSE CONSUMPTION OF SUGAR-SWEETENED BEVERAGES SUBJECT TO THE TAX DECREASED FROM BASELINE (PRE-TAX) TO 12 MONTHS POST-TAX.

SEATTLE PARENTS (N=10)	COMPARISON AREA PARENTS (N=16) ^A
1. Top reasons for sugar-sweetened beverage consumption results	
<i>What do you think are the top reasons why you decreased your sweetened beverage consumption?</i>	
<p>Preventing or managing disease, trying to be healthier (4 English-speakers, 2 Somali-speakers, 2 Spanish-speakers)</p> <ul style="list-style-type: none"> <i>Because of nutrition I was thinking it'd be better to decrease the amount of sugar intake we had in the house. Before I was buying a lot more sugary drinks and I'm not, you know, I'm not buying soda anymore. – Participant 21, English-speaker</i> <i>There is no need to drink sugary sweets. Salty or sugary sweets are not good health. Yes, I have cut down due to health reasons – Participant 32, Somali-speaker</i> <i>It was because of sugar that I suffered from diabetes and my girls had cavities. – Participant 15, Spanish-speaker</i> 	<p>Responding to medical diagnoses (6 Spanish-speakers^A)</p> <ul style="list-style-type: none"> <i>Because I had my kids and after that, I wanted to be healthy and I wanted to be in good weight for them. [...] Because when I had [child's name], I was diagnosed as pre-diabetic. And also my father is diabetic. So I try not to drink sugar because I know it won't do me any good. – Participant 13, Spanish-speaker</i> <p>Preventing disease, trying to be healthier (3 Spanish-speakers, 1 English-speakers)</p> <ul style="list-style-type: none"> <i>One example is that I didn't want to end up being prediabetic from eating an amount of sweets that wasn't good. So, that's why I stopped eating sweets. – Participant 8, Spanish-speaker</i>
<p>New awareness of health risks of sugar-sweetened beverages (2 Somali)</p> <ul style="list-style-type: none"> <i>The main reasons I changed what I was consuming that period are I understood what it's made of and what I was drinking. I got to know they were not good for the health of my children and mine. I planned to reduce its consumption as I couldn't stop consuming altogether. – Participant 29, Somali-speaker</i> 	<p>New awareness of consumption and risks, mostly linked with cohort participation (3 Spanish-speakers, 1 English-speaker)</p> <ul style="list-style-type: none"> <i>That when I realized, really. I had never realized how dangerous sugary drinks are. So when I participated in the first survey, I started to see what I was consuming. I think, before that, I hadn't realized what my son and I consumed. And the study made me realize, "Wow, I'm eating too much sugar." – Participant 12, Spanish-speaker</i> <p>Costs of sugar-sweetened beverages jointly with health-related reasons (3 Spanish-speakers)</p> <ul style="list-style-type: none"> <i>Because everything is very expensive and because I went to the doctor and they told me I had high sugar, like high glucose. – Participant 9, Spanish-speaker</i>

SEATTLE PARENTS (N=10)	COMPARISON AREA PARENTS (N=16) ^A
2. Awareness of the Seattle sugar-sweetened beverage tax and remembering tax-related information	
<p>The news, “everyone was talking about it.” (4 English-speakers, 1 Somali-speaker)</p> <ul style="list-style-type: none"> <i>Oh yes, I heard it from all of those things. But the thing with me is, I experienced it because the minute I went to the store I remembered oh, the taxes on 'em you know? But yeah, I knew when it passed it was gonna be bad and so I remember hearing about it. Yes, social media, news. It was everywhere when it first passed. – Participant 34, English-speaker</i> 	<p>News coverage, including Hispanic/Latinx TV (3 Spanish-speakers, 2 English-speakers)</p> <ul style="list-style-type: none"> <i>I remember once on Seattle Univision news; they were saying that they were going to charge a few cents more for people who consumed sugary drinks. But I didn't pay much attention because we don't consume that much. I only heard it on the news, on the Univision channel, from Latinos. But I don't remember hearing it anywhere else. Some friends were also commenting on it. And well, it's good, so they don't buy sugary drinks anymore. – Participant 3, Spanish-speaker</i>
<p>Sticker shock while shopping (1 Somali, 2 Spanish)</p> <ul style="list-style-type: none"> <i>The cashier told me: "You know you're going to pay a lot of because of taxes?" I wasn't understanding. [...] Just the gallon was two dollars, but he told me: "you're going to pay seven dollars for each gallon of [that]". I was surprised that I didn't know that they were charging taxes, you know? – Participant 15, Spanish-speaker</i> <i>Sugar is taxed, those drinks are more expensive than ever. [...] I remember one time I went to buy it, I was having people over. - Participant 17, Somali-speaker</i> 	<p>Hearing other people’s opinions and experiences (3 Spanish-speakers, 1 English-speaker).</p> <ul style="list-style-type: none"> <i>Normally, it wasn't my case, but it was the case of some family members who say that they've gone to buy a Starbucks [...]. So I've heard a lot of people ask for things like that and they get jacked up on everything for asking for the extra or asking for more. – Participant 11, Spanish-speaker</i> <p>Reflections about health-related aspects of the tax (3 Spanish, 1 English)</p> <ul style="list-style-type: none"> <i>There was just more information was being pushed out about how sweetened drinks aren't healthy for your body. And that's why there's this sugar tax to decrease the consumption.- Participant 14, English-speaker</i>
	<p>Not aware of the tax (5 Spanish-speakers, 1 English-speaker)^a</p> <ul style="list-style-type: none"> <i>[Do you know about this tax?] No idea. [You never heard of the tax that was added in Seattle?] No, I did not. -Participant 33, English-speaker</i>

SEATTLE PARENTS (N=10)

COMPARISON AREA PARENTS (N=16)^A**3. Perceived influence of the Seattle sugar-sweetened beverage tax on sugar-sweetened beverage consumption**

Buying less because sugar-sweetened beverages are expensive (3 Spanish-speakers, 2 English-speakers, 1 Somali-speaker)

- *Well, I have been able to save money since I no longer have pay taxes, you know? I have avoided being taxed. – Participant 15, Spanish-speaker*
- *I mean, I've witnessed it. I've been in it. Any time you go to grab anything, I way higher tax a'd it's way more expensive th'n it's ever been and I hate it. And it causes me to not buy anything in Seattle that has sugar in it. – Participant 35, English-speaker*

Occasional cross-border shopping (4 English-speakers)

- *If I need it, I will yes, I will go to a different city and buy it and that will be the end of that. [...] But, it may not happen that day like I might go in Seattle and be like oh I forgot. But w' don't need it that bad, we got bottles of water at home. Then like the next time w'en I'm going to another city, I remember like 'if I'm in Renton, I will go through that city and t'en I'll pick up whatever it is that I was gonna get. –Participant 34, English-speaker*

The tax was not a factor that led them to decrease consumption (3 Somali-speakers)

- *It became so expensive. We buy a big box at once and drink them. They don't care at all [about the tax]. Every child loves sweet drinks and most of them buy and keep them in their houses. – Participant 32, Somali-speaker*
- *Because I wasn't. I didn't even say I [was] drinking at that time. It didn't bother me. – Participant 17, Somali-speaker*

Buying less because sugar-sweetened beverages are expensive (4 Spanish-speakers, 1 English-speaker)

- *Yes, yes, because I think, why should I spend on something that is not going to give me nutrition, that is not going to do me any good? [...] Yes, yes, everybody knows that, what I have heard is that the soda is so expensive, and we went to this place and a soda was about \$5. And with tax increase, people have stopped consuming so much of these sugary drinks. [...] Because I believe in the same thing. Me too. No, ' don't buy a soda to save my money. – Participant 13, Spanish-speaker*

The tax was the backdrop to health-related reasons for change (3 Spanish-speakers, 2 English-speakers)

- *It benefited me because now I spend less money and I take more care of my health. [...] The influence of the tax was minor, it was more a health issue. [...] Yes, it was for health, I started to know more. Like I said, I now read the labels on cans and drinks. I know they are bad, so more than anything, it was for health. – Participant 10, Spanish-speaker*

The tax was not a factor that led them to decrease consumption (2 Spanish-speakers, 1 English-speaker)

- *Honestly, I knew about it, but ' can't recall making any specific efforts to avoid the tax. I think I still just bought whatever I was going to buy. – Participant 23, English-speaker*

Signaling effects of the tax (2 Spanish-speakers)

- *Well, I have thought about it more, although here where I live there is no tax, anyway it reminds me that if this tax exists, it is to remind us that sugar is not so good, that we should avoid consuming it. So, at least the tax will motivate us to stop buying so many sweetened beverages. – Participant 7, Spanish-speaker*

SEATTLE PARENTS (N=10)

COMPARISON AREA PARENTS (N=16)^A

4. Remembering sugar-sweetened beverage-related information and perceived influence on sugar-sweetened beverage consumption

Health risk messaging from health clinics, social media, and community members

- *For example, if children consume sugar they can develop cavities and they also have to avoid sugar to prevent diabetes. So, overall, consume less sugar. – Participant 15, Spanish-speaker*
- *I mean, I've heard all different types of things. Just about how if we read the labels, we'll see that we're consuming way more sugar than we should in those drinks. – Participant 34, English-speaker*

Information motivated parents to limit their own and their children's sugar-sweetened beverage consumption

- *Since the time I heard it, I stopped buying sweet beverages. I have changed my decision and decided not to drink sweet beverages anymore. – Participant 18, Somali-speaker*
- *I do oftentimes think about it more when I'm in the grocery store shopping, when I get them stuff it's a lot less common. So it's going to be like instead of buying them juice all the time, I may do it more for special occasions than I do it every single day. And then when they get it, as far as any other time is concerned, they're going to get it when they like if I'm going out to eat and I pick them up to go food. That's when they'll normally get it, but it's not normally always in the house. – Participant 35, English-speaker*

Health risk messaging from health clinics, social media, and community programs

- *I've gotten brochures in clinics on nutrition or heard things on TV or I've seen things about how you can get diabetes, it can hurt your teeth, and it's not good to consume. [...] Yes, on TV everything that you shouldn't consume, that isn't good, that impacts your health. - Participant 8, Spanish-speaker*
- *Yes, well, some say that they are bad because they have a lot of like synthetic things. [...] Yes, from the doctor. They are not really good, not so much for the calories, but clinically. [...] They even say that we have to dilute it with water. - Participant 9, Spanish-speaker*

Information motivated parents to limit their own and their children's sugar-sweetened beverage consumption

- *It has influenced the fact that now I check everything, I check the food, I check the food labels. I didn't do that before. [...] Yes, it has influenced me a lot to become aware and try to be an example first, so that they see me, that I am the one who does not drink these beverages and that probably little by little they will understand, although for now they do not, I know that if I keep trying, they too will change at some point. - Participant 7, Spanish-speaker*

Beverage industry marketing is widespread and influential

- *Well, yes. The truth is that it's difficult sometimes to moderate the consumption of these drinks when there's so much propaganda on the radio, TV, everywhere, like these drinks are presented as the top, the best,*

Beverage industry marketing is widespread and influential

- *Commenting on the promotions that I buy so much soda for, it was because they had so many promotions that caught my attention. But why aren't there any promotions where they say that this has less sugar? It's not enough that it's in small print on the package [...] The companies [that are] selling and making money do a lot of promotions, like Coca-Cola and juices, but what about one's health? How can we promote awareness about drinking less sugary beverages? [...] Five years ago I would have made that change, even earlier, and I would not be now with diabetes. – Participant 2, Spanish-speaker*

what we need to be happy and whatnot. I think that, as parents, when we become aware of what sugary drinks can cause, we can change our habits. But the propaganda or advertising out there is overwhelming to be able to stop our kids from consuming this stuff outside home. – Participant 12, English-speaker

SEATTLE PARENTS (N=10)	COMPARISON AREA PARENTS (N=16) ^A
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5. Participation in the cohort study

Participating in the study increased parents' awareness of their sugar-sweetened beverage consumption and this prompted or reinforced intentions to decrease (3 Somali-speakers, 2 Spanish-speakers, 1 English-speaker)

- *Yes, sometimes it gives me an idea like how to cut it. Even with my kids, even though I did it myself. Yes, whenever I did the survey with you guys, I used to slow it down with the sweet drinks. Participant 17, Somali-speaker*
- *The truth is that I started to think about it when you started to investigate how much sugars I was drinking, and that was one of the reasons why I started to think "it is true that we are drinking a lot of sugars, my children are drinking" [...] And I said no, I have to start making the change. And then, since they have been doing the surveys I started to change a little bit, not completely like now, I don't buy them anymore, [...] but after the surveys I started*

Participating in the study increased parents' awareness of their sugar-sweetened beverage consumption and this prompted them to decrease (4 English-speakers, 4 Spanish-speakers)

- *So the answer is that the quantity decreased because during the study that you did, one is analyzing how much sugar one consumes and one does not realize it because one gets used to it, right? And the more and more, the more you become addicted to sugars. But when you talk about the subject, you give us information, it's something like, that information enters the brain and one makes changes, even if they are little, but it has helped a lot, that job that you do. Well, that's how I see it. – Participant 6, Spanish-speaker*
- *Oh yeah, of course, made me think about how much sugary drinks I really did have. So yeah, just got me thinking, too much sugary drinks, need to cut back for sure. [...] We started to cut back less and less on juice and then eventually we don't even drink the juice anymore. – Participant 33, English-speaker*

to think about sugar, because my family suffers from diabetes, and I think it is a good step so that my children don't end up with diabetes, or me, who is older. – Participant 2, Spanish-speaker

Participating in the study increased parents' awareness of their consumption and the associated health risks (1 English-speaker, 1 Somali-speaker, 1 Spanish-speaker)

- *It just made me realize that a lot of the sugary drinks are just not good for you. [...] It made me look at things a little bit differently. So I just was more aware of the effects of sweetened drinks on our health and our body and our teeth and all that. – Participant 35, English-speaker*

No influence or not sure (2 English-speakers, 1 Somali-speaker)

- *No. Honestly no. [...] I think the survey does [have an impact]. I think just the fact that all that sugar isn't good for us. Maybe it did. Maybe it opened my eyes a little bit. But no, I don't think so. I'm not sure. I don't know. – Participant 22, English-speaker*

^A*Includes a peer referred by a cohort participant in the comparison area.*

Participating in the study helped parents reflect on the amount of sugar-sweetened beverages they and their household consume (6 Spanish-speakers)

- *Yes. I started to think even more differently. Because I was more aware of what I was drinking, and how much I was buying. Until you see the study, you consume without realizing it. Actually, there haven't been many studies like that, and they are very good because we as consumers are not aware of how much we are consuming. [...] I think it influenced us for the better. – Participant 10, Spanish-speaker*

Participants stressed the importance of the overall study and were grateful for its influence on their health (3 Spanish-speakers, 1 English-speaker)

- *I feel that, thanks to this program, like you taking the time and caring enough to call Latino people like us, because you are caring about the consumption that people have. The consumption of sugary drinks. Sadly, many people are diabetic or have elevated glucose. That's where a lot of diseases come from. It is good that there are still associations like this one that carry out this program to apply these surveys. I am glad and it has benefited me because it motivates me even more to take care of myself. [...] Thank you for taking this time and looking for us to be on this program. It has helped us. It motivates me that there are organizations out there that care about people. – Participant 3, Spanish*

TABLE 3. THEMES AND ILLUSTRATIVE QUOTES REFLECTING SELF-REPORTED REASONS FOR SUGAR-SWEETENED BEVERAGE CONSUMPTION AND INFLUENCES ON CONSUMPTION AMONG PARENTS IN SEATTLE AND THE COMPARISON AREA WHOSE CONSUMPTION OF SUGAR-SWEETENED BEVERAGES SUBJECT TO THE TAX DID NOT DECREASE FROM BASELINE (PRE-TAX) TO 12 MONTHS POST-TAX.

SEATTLE PARENTS (N=6)	COMPARISON AREA PARENTS (N=5) ^A
1. Top reasons for sugar-sweetened beverage consumption results	
<i>What do you think are the top reasons why you did not change or increased your sweetened beverage consumption?</i>	
<p>Preferences and habits (2 Spanish-speakers, 1 English-speaker, 1 Somali-speaker)</p> <ul style="list-style-type: none"> <i>Because children liked it, that's why I used to buy them and drink with them, but now I noticed that it's not good for health. [...] I knew it was not healthy to drink those. Also, the more water you drink, the healthier your body will be. I knew this. [...] No, I just liked it with ice. – Participant 28, Somali-speaker</i> <i>It's like an addiction, that is, like a flavor habit. And the meals that you eat are always accompanied by something more, so it's like you always grow up eating like this, like you get used to it and the food tastes better. [...] Well, also there are always the ads and all of that, but I also believe that special events, parties, birthdays, special days are always accompanied by soft drinks and sweetened drinks. – Participant 16, Spanish-speaker</i> 	<p>Habit and routine (2 English-speakers, 1 Spanish-speaker)</p> <ul style="list-style-type: none"> <i>I think maybe just the time when I was struggling to not to drink too much coffee because coffee was the main problem. [...] That's the thing that when I tried to lower how much I drink then sometimes when I'm at work it's getting stressful and I say, "oh I need coffee," then I go get coffee. That's the only thing that I can say, that was hard to cut back. – Participant 25, English-speaker</i> <p>Awareness or lack of awareness of health risks of sugar-sweetened beverages (1 English-speaker, 1 Spanish-speaker^A)</p> <ul style="list-style-type: none"> <i>You couldn't get me to drink a glass of water to save my life. I wanted coke. I wanted something sugar. That was my go to, right? [...] But then you realize that sugar does have that after effects if you keep drinking it and using it and I didn't realize like sugars and everything, never in my wildest dreams that I ever thought sugar is almost in everything. – Participant 26, English-speaker</i>

SEATTLE PARENTS (N=6)	COMPARISON AREA PARENTS (N=5) ^A
2. Awareness of the Seattle sugar-sweetened beverage tax and remembering tax-related information	
<p>Partial recollection of the tax in the news (1 English-speaker, 1 Spanish-speaker, 1 Somali-speaker)</p> <ul style="list-style-type: none"> <i>[I remember] hearing it on the news on TV, that it was going to be a tax on drinks and that, well, they were going to be more expensive.[...] I don't remember exactly what it was. It was a program that, that they started, that was going to be done, and that was that tax, well, for benefit, just to see if they could give us education about sugar. – Participant 16, Spanish-speaker</i> <i>Yes, I saw that it was added, because at first, I used to buy it at a low price, but then the tax was added. [...] I think in 2019. [...] News. – Participant 28, Somali-speaker</i> 	<p>Various sources of information and degrees of awareness.</p> <ul style="list-style-type: none"> <i>Well, just that, that sugary drinks were going to have a tax increase, but I don't know how much, honestly. – Participant 1, Spanish-speaker</i> <p>Reflections about health-related aspects of the tax (2 English-speakers, 1 Spanish-speaker)</p> <ul style="list-style-type: none"> <i>Majority of the people that I know are 50/50 about it. Where they were like, it's making it difficult to get. Why adding tax to just a drink. But then at the same time, many people are like, it's even better because then now a lot of people are probably not going to buy and then they're going to be like, when you look into their health because some of them, they're like too much, they're like sweet or they have too much sugar. It's going to stop young people from buying more of that stuff. So that's all I heard. – Participant 25, English-speaker</i>

SEATTLE PARENTS (N=6)	COMPARISON AREA PARENTS (N=5) ^A
3. Perceived influence of the Seattle sugar-sweetened beverage tax on sugar-sweetened beverage consumption	
<p>Minimal influence on sugar-sweetened beverage consumption; habits and preferences offset higher prices (2 Somali-speakers, 1 Spanish-speaker)</p> <ul style="list-style-type: none"> <i>That's because if I wanted, I would just buy, if you have a habit of doing something, you don't look at the money, you just buy it. – Participant 31, Somali-speaker</i> <p>Participants later decreased their sugar-sweetened beverage consumption for health reasons after the cohort study period (3 Somali-speakers)</p>	<p>Minimal to no influence on sugar-sweetened beverage consumption; minimal exposure to taxed beverage prices (2 English-speakers, 1 Spanish-speaker)</p> <ul style="list-style-type: none"> <i>No, Not really, since we don't drink too much, I haven't taken that much into account. – Participant 1, Spanish-speaker</i> <i>No. [...] If I lived in Seattle and I was on a budget knowing the fact that it has that high tax, that extra high tax, I probably wouldn't [buy taxed beverages]. My kids would probably be drinking water. – Participant 26 English-speaker</i> <p>Helped reduce purchasing when shopping in Seattle (2 Spanish-speakers)</p>

- *Because it is not useful to drink it, and it became very expensive and also harmful to health, so why should I buy it? – Participant 28, Somali-speaker*
- *But the reason we stopped is because of the health wise that's going on and everything obviously that's going on. So that's why we changed and my kids are mature now. They know what is good and what is bad. Before they just say, I want it, I want it. But now that they're getting older, they know and understand. – Participant 31, Somali-speaker*

- *Yes, and that helped me stop buying sweetened drinks too when they started taxing everything with sugar in it. So that helped me stop drinking a lot too. [...] Oh, I don't remember. That was so long ago, because COVID took a lot of stuff away too, but I don't remember all of that. But when they did announce the tax on the sugar, trust me, soon after I stopped getting all those sweetened drinks. – Participant 24, English-speaker*

SEATTLE PARENTS (N=6)	COMPARISON AREA PARENTS (N=5) ^A
4. Remembering sugar-sweetened beverage-related information and perceived influence on sugar-sweetened beverage consumption	
Health risk messaging from health clinics, TV, radio, and social media	Health risk messaging from health clinics, TV, radio, social media, and community organizations ^A
<ul style="list-style-type: none"> • <i>Actually, number 1, my husband has diabetes. [...] He cannot have any sugary thing. Number 2, I learned pretty long ago that white sugar is a silent killer. [...] Not definitely from news. Yeah. Social media. I can't remember probably from the doctor's office. When my husband has diabetes they said do not have any sugary things. It's a silent killer for you, because the diabetic patient if they keep having sugary food, slowly their eyes, lungs, heart, kidney, everything got damaged. Maybe from them. – Participant 20, English-speaker</i> • <i>Yes, I heard it. From TV. The Channel is FOX13. I don't remember but it was a long time ago. – Participant 30, Somali-speaker</i> 	<ul style="list-style-type: none"> • <i>There's a clinic that I went to at Midway. [...] where they had this thing like comparing drinks like how much sugar is in a can of soda and stuff like that. They had a chart that was posted somewhere like when you're walking on the hallway or you're sitting there waiting to see the doctor. [...]. Like how much sugar is in a can of soda compared to ABCD, stuff like that. - Participant 25, English-speaker</i> • <i>I have always heard if your child has too much sugar, they'll gain weight, there'll be obesity will be a diabetic. This is why we're all fat, because we don't drink water. We don't. - Participant 26, English-speaker</i>
Information motivated parents to limit their own and their children's sugar-sweetened beverage consumption	Information motivated parents to limit their own and their children's sugar-sweetened beverage consumption
<ul style="list-style-type: none"> • <i>Well, yes, because before we used to drink more, almost every day and now it's not so much, it's not so much anymore. [...] Also, sharing information with the children, what you know, and also</i> 	<ul style="list-style-type: none"> • <i>Well, it's always tempting to stop consuming, right? But sometimes temptation wins. [...] Well, the truth is, I wouldn't want</i>

buying less so as not to be tempted. – Participant 16, Spanish-speaker

- *I intend to cut it down when I go to the party. – Participant 30, Somali-speaker*

us to drink, neither them nor me. But sometimes I am not with my children all the time, so it's difficult. For example, the youngest sometimes drinks Sprite instead of Coca-Cola, which I think the only thing that changes is the color because I think it's the same amount of sugar. – Participant 1, Spanish-speaker

SEATTLE PARENTS (N=6)

COMPARISON AREA PARENTS (N=5)^A

5. Participation in the cohort study

Participating in the study increased some parents' awareness of their own or their child's sugar-sweetened beverage consumption (2 Somali-speakers, 1 English-speaker, 1 Spanish-speaker)

- *Yes. After I've seen all the stuff we drink. That's why I told my kids, you guys need to cut down, but we went from there and from then on now we're good. – Participant 31, Somali-speaker*
- *Yes, every time we do the survey, you know, one becomes more aware, and thinks about it a little more, and tries not to drink so many things with sugar, but unfortunately there are not many messages on TV, or the radio, or on social media, that make you see or think or motivate yourself to do healthier things. [...] Yeah, yeah, it's definitely helped, well, kind of SeaSAW. I mean, it helps when we do the survey for a while and then we fall again. But I feel that we are drinking less than before, less than ten years ago or so. I think that we are consuming less, but we try to control ourselves, but, you know, sometimes the habit wins over us. – Participant 16, Spanish-speaker*

No influence of the cohort study (1 English-speaker, 1 Somali-speaker)

- *No. Probably because, that's what I said, it's not a big thing to me, sugar products. – Participant 19, English-speaker*

Participating in the study increased parents' awareness of their own or their child's sugar-sweetened beverage consumption and prompted some parents to decrease their consumption (3 English-speakers, 1 Spanish-speaker)

- *I feel like when I did the survey then when I read the questions, I don't know how I can put it, but it almost made me feel like I became aware. Because every day we're doing all these things, you're buying all these things you don't really think. But when people start asking you questions, how much do you consume a day or more often than it clicks in your head. [...] So it's like an awareness where it kind of opens your eyes a little bit to think, is this really necessary? Like if they're asking me how much I am consuming, and you don't really think about it until someone asks you say wait a minute, how much sodas are we drinking, like per day or a month and all these things. – Participant 25, English-speaker*
- *For example, I learned the amount, and I shared them with them so they could realize. [...] Yes, we reduced the quantity, immediately. [...] We reduced the excessive consumption. [...] For example, some years ago, my answers were a lot of about sugar. Each day more and more. So we have tried to moderate it, but there is still work to do. – Participant 5, Spanish-speaker*

^AIncludes a peer referred by a cohort participant in the comparison area because the peer participant said they did not change their beverage consumption.

APPENDIX A

DETAILED METHODS

SAMPLING AND RECRUITMENT

We used a stratified, convenience sampling scheme of four subgroups based on whether participants lived in Seattle or the comparison area and whether their reported consumption of taxed sweetened beverages decreased from baseline (pre-tax) to 12-months post-tax. To create the subgroups, we calculated each participant's taxed sweetened beverage consumption change from self-reported data collected at baseline and 12-months post-tax on the modified BEVQ, the questionnaire used to assess beverage intake in the cohort. Since we were interested in factors that influenced and prevented changes in beverage consumption over time, we sampled parents who 1) decreased or 2) who did not change or increased (i.e., did not decrease) their sweetened beverage consumption during the cohort study. We recruited parents from Seattle and the comparison area because we were interested in whether experiences differed between the groups. The sampling scheme ensured that about half of the sample decreased their consumption by at least 5.75 fluid ounces per day (the midpoint between the mean changes in consumption for all Seattle parents and comparison area parents in the cohort after 12 months post-tax). We did this because the interviews asked participants to remember information over the last five years around the time of the cohort baseline assessment; participants who made large decreases in their sweetened beverage consumption may be more likely to remember what led to that change than participants who decreased their consumption by a smaller amount.

To draw our convenience sample across the four subgroups, we contacted individuals from a list of eligible cohort participants in a random order within each group. We contacted each individual up to three times with several days between each contact attempt. Participants could respond to the study team via text, phone, or email, and could review information about the study on our study website.

DATA COLLECTION

Theoretical framework

To develop our interview questions, we used a conceptual model depicting multilevel influences of the pathways through which a sweetened beverage tax can impact sweetened beverage consumption (**Figure**). The model is informed by previous work on socioecological determinants of sweetened beverage consumption (von Philipsborn et al., 2020) and multilevel influences on health behaviors (Glass & McAtee, 2006). Specifically, we were interested in whether experiences differed between Seattle and comparison area parents with respect to the price and non-price pathways of a SBT. Pathways include exposure to beverage prices and exposure to media messaging about sweetened beverages or the tax, which we call health risk signaling.

By examining participants' experiences with the tax through these pathways, we investigated the possibility that the SBT influenced beverage consumption in the comparison area, known as spillover effects. The pathways involve mechanisms such as a shared media market or cross-border shopping (i.e., shopping outside of Seattle to avoid the tax), and are influenced by county- and community-level factors in the conceptual model. Further, we explored whether factors unrelated to the tax were different between Seattle and comparison area parents as possible reasons for the beverage consumption results, including individual-level factors. We also explored the role of participating in the SeaSAW cohort study on beverage consumption changes.

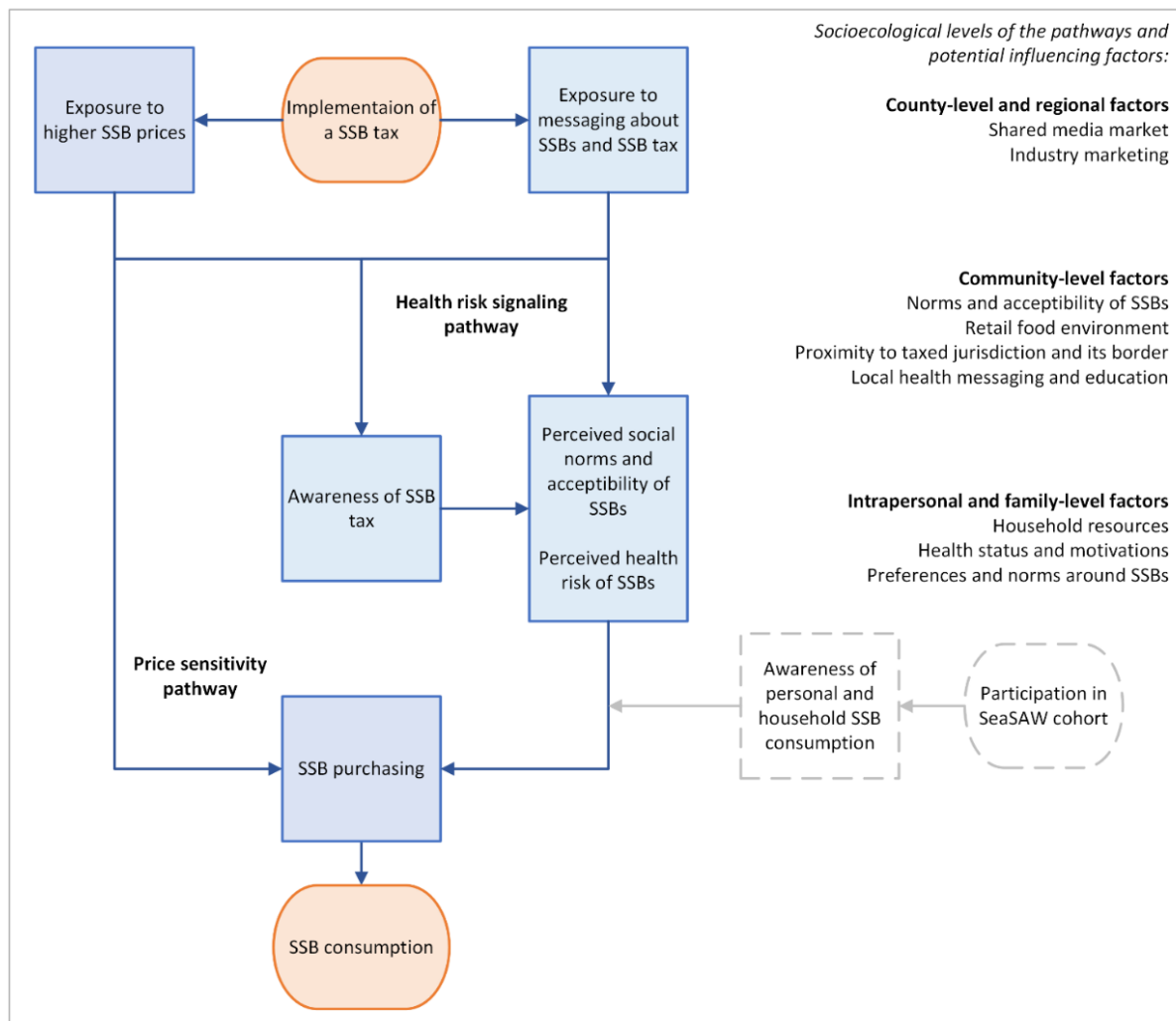


Figure. Conceptual model of potential factors influencing the pathways through which a sugar-sweetened beverage (SSB) tax affects SSB consumption among families living within and nearby the taxed jurisdiction.

INTERVIEW GUIDE

To collect this information, interview questions explored the following potential influences on participants' beverage consumption: exposure to sweetened beverage-related and tax-related information, exposure to tax prices, awareness of the tax, perceived influences of information and the tax on one's sweetened beverage consumption, social norms, beverage shopping habits, individual and household beverage consumption, preferences for sweetened beverages, and changes to these factors over time (particularly from before to after the tax). The interview guides for cohort participants and peers referred by participants are in Appendix B and Appendix C, respectively.

Interviewers asked participants to describe their current experiences and behaviors as well as remember back to before 2018 (pre-tax period) to describe how these may or may not have changed. To limit social desirability bias, we asked most questions before the interviewer mentioned the SBT; questions near the end of the interview assessed awareness of the tax and directly asked whether and how the tax influenced the participant's beverage consumption. We also used data from the cohort surveys to inform our interview questions. For example, for participants whose taxed sweetened beverage consumption decreased during the study, we asked them to

describe the top reasons why they think they decreased their consumption. For those who did not decrease their tax sweetened beverage consumption, we asked them to describe the top reasons why they think they did not change (or why they increased) their consumption. We used this approach because we thought it would improve participant recall of their circumstances around the time of baseline and post-tax cohort assessments. While we did not ask participants to describe their children's sweetened beverage consumption in relation to these topics directly, we asked participants about changes they made to the types of beverages they served their children. We included these questions for the purposes of understanding household-level factors that may have influenced parental changes in sweetened beverage consumption.

Finally, to explore how completing cohort surveys may have influenced beverage consumption results, we asked participants directly if they thought any differently about the beverages they consumed after filling out the cohort study surveys at each assessment and if this experience had an impact on their consumption.

STUDY TEAM

The two members of the study team who conducted recruitment also facilitated the interviews. They have extensive experience with survey data collection and are connected in the Somali and Hispanic/Latinx communities in Seattle and King County. Each interviewer attended two trainings led by other study team members on semi-structured interviewing techniques that included mock interviews. The study team also included the study coordinator, data analyst, research assistant, and principal investigators from the University of Washington, Seattle Children's Research Institute, and Public Health—Seattle & King County. The study team co-developed the interview guide and pilot tested it with two individuals not involved in the study prior to data collection.

We offered interviews by phone, in person, and web-based video and in English, Somali, and Spanish. Interviews were audio-recorded and professionally transcribed, and when applicable, translated to English. Interviewers also typed field notes following each interview to capture main topics in the conversation. A subset of the study team, including interviewers, met weekly during data collection to assess interview quality, progress, and findings. We referenced field notes and debriefed with interviewers directly to accomplish this. Field notes and patient enrollment data were stored using REDCap electronic data capture tools hosted at the University of Washington Institute of Translational Health Sciences (Harris et al., 2009, 2019). The study was approved by the Seattle Children's Institutional Review Board.

ANALYSIS

Method

We analyzed the transcripts using a thematic analysis approach, which is a method for identifying and interpreting patterns within the data across individuals (Braun & Clarke, 2006). Specifically, this involved tagging sections of text in transcripts with codes that described the basic meaning of the text in relation to our research question. We then examined coded text for patterns and iteratively developed themes within key topics relating to interview questions and the conceptual model. To develop themes, we summarized patterns of coded text separately for each of the four analysis groups and retained illustrative quotes for each theme. We additionally examined and described text that was not patterned but meaningful to our understanding of diverse experiences in the sample. We compared themes between Seattle and comparison area groups using summary tables and created further distillations of coded text for select topics of interest, e.g., whether (or not) the participant said the SBT influenced their sweetened beverage consumption. Finally, we interpreted thematic differences and similarities between the groups to develop key findings in the context of SBT pathways and spillover in the comparison area.

For our primary analysis, we compared themes between Seattle and comparison area parents who decreased their sweetened beverage consumption. As a secondary analysis, we compared themes between Seattle and comparison area participants who did not decrease their consumption. We did this because the number of parents who did not decrease their sweetened beverage consumption was small and these participants had relatively low

sweetened beverage consumption at baseline compared to participants in the groups that decreased consumption (Appendix D).

Code framework

We employed a largely deductive approach to analysis in that we used topics from the interview guide and conceptual model to inform our code framework. Codes were organized into two categories: 1) determinants of sweetened beverage consumption, which were further organized within socioecological levels, and 2) indicators that either overlapped with determinants to provide context (e.g., timeframe, relating to the child versus the adult) or cataloged descriptive text (e.g., the number and ages of their children). We adjusted the code framework during early analysis to refine code definitions and concepts. These adjustments included consolidating several health-related codes, adding a code for cross-border shopping, and adding codes that catalogued the timeframe of the text (e.g., pre-tax or during the cohort study), among other decisions about when codes should or should not overlap in a section of text. The code framework is included in Appendix E.

Coding and theme development

Two members of the study team with experience in qualitative data analysis, the research assistant and data analyst, coded the transcripts. The coders first independently coded the same transcript, then discussed code applications and adjusted the coding framework together. They repeated this process for each transcript until no further changes to the code framework were needed and they reached acceptable intercoder reliability (Cohen's kappa value of 0.78). They separately coded the remaining interviews and continued to meet to discuss code applications as needed. Coders were aware of the subgroups in which participants belonged because the interview questions asked about participants' beverage consumption data and city of residence; thus this information was present in the transcripts. The research assistant developed the themes and key findings by reviewing the coded text, identifying themes, comparing themes between groups, and interpreting key findings. We discussed early findings with the interviewers, gathered feedback, and asked for clarification on sections of text difficult to decipher. Dedoose Version 9.0.85 was used for coding and analysis.

APPENDIX B

INTERVIEW GUIDE FOR COHORT PARTICIPANTS

INTERVIEW QUESTIONS

Thank you for talking with me today. I'm going to take us through several questions about sweetened drinks that you, your family, and your friends may typically drink.

Since you previously participated in the SeaSAW study that asked about sweetened drinks over time, we are also interested in understanding more about the survey responses that we received during the study between the years 2017 and 2019.

The questions I will ask you are open-ended, and I invite you to share as many details as you would like throughout our conversation. My goal is to understand your experiences, perspectives, and day-to-day decisions about buying and drinking sweetened drinks.

BUILDING RAPPORT

1. To start off, just to get us thinking about different types of drinks and those that you drink, can you describe for me your most favorite drink? It does not have to be sweetened or something that you typically drink.
 - What makes this drink your favorite?
 - How and when do you typically drink this drink?

CURRENT SWEETENED DRINK INTAKE

2. Now I am going to ask about sweetened drinks, in particular. I want to take a moment to explain what I mean by "sweetened drinks." These include regular soft drinks, soda or pop (such as [pick one] Coke, Pepsi, Orange Soda, and Jarritos), fruit-flavored drinks (such as [pick one] lemonade, Sunny Delight, and Hawaiian Punch), sports drinks (such as [pick one] Gatorade and Powerade), sweetened teas or coffees (such as [pick one] Arizona Iced Tea, Snapple, Starbucks Frappuccino, mochas, or bubble teas), and energy drinks (such as [pick one] Red Bull and Rockstar). Sweetened drinks do NOT include milk, 100% fruit juice, diet drinks, or artificially sweetened drinks.

Do you have any questions about what I mean by sweetened drinks?

Can you describe for me all of the kinds of sweetened drinks you typically drink?

- *In a typical day, or a typical week?*

[If necessary, paraphrase, reflect back. E.g., “Okay, so it sounds like you typically have X once a day in the morning and sometimes you drink Y a couple times a week...”]

[For each drink type mentioned, cover the following details as applicable. Repeat with each drink type]

For [X drink]...

- How often would you say you drink this drink?
- How much do you usually drink?
- Why do you choose to drink this drink? *What are your top reasons you choose this drink?*
- Where do you typically buy this drink?
 - *Can you describe the store(s)? E.g., store type, in your neighborhood, close to your neighborhood?*
 - *What makes you decide to get the drink from this place instead of others?*

3. [If not previously mentioned in above responses] Some people add their own sweeteners to drinks, like adding sugar to coffee or tea [*or making horchata at home*]. Do you typically add sweeteners to any of your drinks?

YES → Can you tell me more about what you drink and what you add to sweeten it?

[For each drink mentioned, cover the following details as applicable]

- How often would you say you drink this drink?
- How much do you usually drink?
- Why do you choose to drink this drink?
- Where do you typically prepare and drink this drink? (Could also ask where you buy, if applicable)

NO → [proceed]

CONTEXTUAL FACTORS: HOME/WORK LOCATION, PEER AND CHILD INTAKE, MEDIA MESSAGING

4. Next, I'd like to get a better understanding of where you live and work, since this can sometimes influence where someone grocery shops and buys sweetened drinks.

What is the name of the neighborhood where you currently live? How long have you lived in this neighborhood?

[If less than 4 years] In what neighborhood did you live previously? *What neighborhood were you living in when you participated in the SeaSAW study?*

Do you work outside your home?

YES → In which neighborhood or city do you work?

- Do you typically buy or drink sweetened drinks as part of your workday or commute? *What does that look like for you? Can you tell me more about that?*
- How long have you worked in that area?

[If less than 4 years] In what neighborhood or city did you work before the place where you work now? *What neighborhood or city were you working in when you participated in the SeaSAW study?*

- Did you typically buy or drink sweetened drinks as part of your work day or commute? *Can you tell me more about that?*

NO → [proceed]

5. Thinking about your current sweetened drink habits you shared earlier, in general, how do you think your intake of sweetened drinks compares to other people in your city? *More than, less than, about the same?*

How do you think it compares to your friends and family? *More than, less than, about the same?*

6. Now I am interested specifically in the drinks that your child or your children drink. You were eligible for this interview because you have at least one child. Can you please tell me how many children you have at home and how old they are?
7. What kinds of sweetened drinks does your child/do you children typically drink? *It can be hard to know exactly what they drink, especially if they are older and in school. Please give me your best guess!*

[For each drink mentioned, cover the following details as applicable]

- In a typical day, in a typical week?
- How often would you say they drink these drinks?
- How much or what size drink do they usually drink?
- What do you think are the top reasons they drink these drinks?
- Where do you think they usually get or buy these drinks?

8. Next, I am interested in what information you notice and hear about sweetened drinks.

What sorts of things have you heard, seen, or read in the news or on social media about sweetened drinks?

- *What radio stations, TV channels, or news stations do you remember sharing this information? Were these national or local?*
- *On what social media sites?*
- *Do you remember around what year or time period you noticed this information?*
- *Is there anywhere else that you've heard or seen information about sweetened drinks?*

How has this information affected your decision making around drinking sweetened drinks?

How has it affected your decision making around serving sweetened drinks to your child/children?

PAST SWEETENED DRINK INTAKE AND SERVING TO CHILDREN

9. Now, I'm going to ask about what you liked to drink several years ago. Think back over the last five years, going back to the year 2017. I realize that's a long time!

So, this would be around the time you signed up for the SeaSAW cohort and completed the first survey. You may remember meeting us at a community event or health clinic, or you may have completed the survey online after getting a text message, letter, or online ad from us about the study.

- To help you think back to this time period, it can also be useful to try to imagine what your day-to-day life was like. For example, how old [was your child/were your children] in 2017 and what activities were they were doing? Remembering family events, like weddings, could also be helpful.
- *It may also help to think about national events that happened then. For example, 2017 was the first year of Donald Trump's presidency. In the 2017 Super Bowl, the New England Patriots beat the Atlanta Falcons.*

So, thinking of life five years ago, what sweetened drinks would you say you chose to typically drink then?

[If necessary, paraphrase, reflect back]

[For each drink type mentioned, cover the following details as applicable]

For [X drink]...

- How often would you say you drank this? *Per day, per week?*
- How much did you usually drink?
- Why did you choose to drink this drink? *What are your top reasons you choose this drink?*
- Where did you typically buy this drink?
 - *Can you describe the store(s)? Type of store, in your neighborhood or close to your neighborhood?*
 - *What made you decide to get the drink from this place instead of others?*

10. Now, I have a few questions about a specific time frame during the SeaSAW study that you participated in. We asked you about what sweetened drinks you typically drink at each survey in 2017, 2018, and 2019. From the beginning of the study to 1 year later, so from 2017 to 2018, your survey responses indicated that you [**decreased / increased / did not change**] the amount of sweetened drinks that you drink.

[If increased or decreased] What do you think are the top reasons you changed what you drink during this time frame?

[If about the same] Can you think of times when you wanted to change what you typically drink but did not during this time frame?

- *What were your reasons for wanting to change?*
- *What were the reasons why you did not change?*

Now I have similar questions about your survey responses at the 2-year survey. From the beginning of the study to 2 years later, so from 2017 to 2019, your survey responses indicated that you [**decreased / increased / did not change**] the amount of sweetened drinks that you drink.

[If increased or decreased] What do you think are the top reasons you changed what you drink during this time frame?

[If about the same] Can you think of times when you wanted to change what you typically drink but did not during this time frame?

- *What were your reasons for wanting to change?*
- *What were the reasons why you did not change?*

11. Thinking back, again, over the last five years from 2017 until now, can you describe any change you have made to the drinks you buy or serve to your [child/children]?

[If changes]

- *What drinks did you used to serve?*
- What were the top reasons for this change?

[If no changes]

- Can you think of times when you wanted to change what you typically serve them but did not? *What were your reasons for wanting to change? What were the reasons why you did not change?*

TAX AWARENESS AND IMPACTS

12. In the year 2018, about four and a half years ago, a tax was added to sweetened drinks in Seattle. Do you know about this tax?

YES → What sorts of things have you heard about it?

- Do you remember when you first heard about the tax? Around what time frame was this?
- What do you remember hearing about it at that time?
- Can you describe where you heard this information? For example, the local newspaper, social media, or community organizations.

NO → May I tell you a bit about it?

YES → In January 2018, the City of Seattle added a tax of 1.75 cents per ounce on sweetened drinks – so, for example, an extra 35 cents on a 20oz bottle of soda. Since the tax, most businesses have raised prices for sweetened drinks in Seattle. The purpose of the tax is to raise money to help give more people access to healthy food, expand childhood education, and help high school graduates enter college.

NO → Okay, I'll move on to the next question.

13. Do you think the tax has affected your decisions to buy or drink sweetened drinks? *Why/why not?*

Do you think the tax has affected your decisions to serve sweetened drinks to your child/children?
Why/why not?

14. Thinking about other people you know in your community or city, do you think the tax has affected what they drink? *Why/why not?*

COHORT STUDY EXPERIENCE

15. Finally, I am wondering about your experience with the SeaSAW cohort study. Do you recall participating in this cohort study?
- If you could think back to the cohort survey visits, after completing the surveys, did you think anything differently about the sweetened drinks you typically drink?
 - Did this have any impact on what you drink?
 - Did this have an impact on what your child drinks/children drink?

WRAP UP AND CLOSE OUT

16. To wrap up, are there other things you think about when deciding to buy or drink sweetened drinks that we have not covered today?

Great, those are all the questions I have. Thank you for taking the time to share your perspectives and experiences with me. Do you have any additional comments or questions for me before we end our interview?

APPENDIX C

INTERVIEW GUIDE FOR PEERS REFERRED BY COHORT PARTICIPANTS

INTERVIEW QUESTIONS

Thank you for talking with me today. I'm going to take us through several questions about sweetened drinks that you, your family, and your friends may typically drink.

The questions I will ask you are open-ended, and I invite you to share as many details as you would like throughout our conversation. My goal is to understand your experiences, perspectives, and day-to-day decisions about buying and drinking sweetened drinks.

BUILDING RAPPORT

1. To start off, just to get us thinking about different types of drinks and those that you drink, can you describe for me your most favorite drink? It does not have to be sweetened or something that you typically drink.
 - What makes this drink your favorite?
 - How and when do you typically drink this drink?

CURRENT SWEETENED DRINK INTAKE

2. Now I am going to ask about sweetened drinks, in particular. I want to take a moment to explain what I mean by "sweetened drinks." These include regular soft drinks, soda or pop (such as [pick one] Coke, Pepsi, Orange Soda, and Jarritos), fruit-flavored drinks (such as [pick one] lemonade, Sunny Delight, and Hawaiian Punch), sports drinks (such as [pick one] Gatorade and Powerade), sweetened teas or coffees (such as [pick one] Arizona Iced Tea, Snapple, Starbucks Frappuccino, mochas, or bubble teas), and energy drinks (such as [pick one] Red Bull and Rockstar). Sweetened drinks do NOT include milk, 100% fruit juice, diet drinks, or artificially sweetened drinks.

Do you have any questions about what I mean by sweetened drinks?

Can you describe for me all of the kinds of sweetened drinks you typically drink? *In a typical day, or*

a typical week?

[If necessary, paraphrase, reflect back. E.g., “Okay, so it sounds like you typically have X once a day in the morning and sometimes you drink Y a couple times a week...”]

[For each drink type mentioned, cover the following details as applicable. Repeat with each drink type]

For [X drink]...

- How often would you say you drink this drink?
- How much do you usually drink?
- Why do you choose to drink this drink? *What are your top reasons you choose this drink?*
- Where do you typically buy this drink?
 - *Can you describe the store(s)? E.g., store type, in your neighborhood, close to your neighborhood?*
 - *What makes you decide to get the drink from this place instead of others?*

3. [If not previously mentioned in above responses] Some people add their own sweeteners to drinks, like adding sugar to coffee or tea *[or making horchata at home]*. Do you typically add sweeteners to any of your drinks?

YES → Can you tell me more about what you drink and what you add to sweeten it?

[For each drink mentioned, cover the following details as applicable]

- How often would you say you drink this drink?
- How much do you usually drink?
- Why do you choose to drink this drink?
- Where do you typically prepare and drink this drink? (Could also ask where you buy, if applicable)

NO → [proceed]

CONTEXTUAL FACTORS: HOME/WORK LOCATION, PEER AND CHILD INTAKE, MEDIA MESSAGING

4. Next, I'd like to get a better understanding of where you live and work, since this can sometimes influence where someone grocery shops and buys sweetened drinks.

What is the name of the neighborhood where you currently live? How long have you lived in this neighborhood?

[If less than 4 years] In what neighborhood did you live previously?

Do you work outside your home?

YES → In which neighborhood or city do you work?

- Do you typically buy or drink sweetened drinks as part of your workday or commute?
- How long have you worked in that area?

[If less than 4 years] In what neighborhood or city did you work before the place where you work now?

- Did you typically buy or drink sweetened drinks as part of your work day or commute?

NO → [proceed]

5. Thinking about your current sweetened drink habits you shared earlier, in general, how do you think your intake of sweetened drinks compares to other people in your city? *More than, less than, about the same?*

How do you think it compares to your friends and family? *More than, less than, about the same?*

6. Now I am interested specifically in the drinks that your child or your children drink. You were eligible for this interview because you have at least one child. Can you please tell me how many children you have at home and how old they are?

7. What kinds of sweetened drinks does your child/do you children typically drink? *It can be hard to know exactly what they drink, especially if they are older and in school. Please give me your best guess!*

[For each drink mentioned, cover the following details as applicable]

- In a typical day, in a typical week?
- How often would you say they drink these drinks?
- How much or what size drink do they usually drink?
- What do you think are the top reasons they drink these drinks?
- Where do you think they usually get or buy these drinks?

8. Next, I am interested in what information you notice and hear about sweetened drinks.

What sorts of things have you heard, seen, or read in the news or on social media about sweetened drinks?

- *What radio stations, TV channels, or news stations do you remember sharing this information? Were these national or local?*
- *On what social media sites?*
- *Do you remember around what year or time period you noticed this information?*
- *Is there anywhere else that you've heard or seen information about sweetened drinks?*

How has this information affected your decision making around drinking sweetened drinks?

How has it affected your decision making around serving sweetened drinks to your child/children?

PAST SWEETENED DRINK INTAKE AND SERVING TO CHILDREN

9. Now, I'm going to ask about what you liked to drink several years ago. Think back over the last five years, going back to the year 2017. I realize that's a long time!

- To help you think back to this time period, it can also be useful to try to imagine what your day-to-day life was like. For example, how old [was your child/were your

children] in 2017 and what activities were they were doing? Remembering family events like weddings could also be helpful.

- *It may also help to think about national events that happened then. For example, 2017 was the first year of Donald Trump's presidency. In the 2017 Super Bowl, the New England Patriots beat the Atlanta Falcons.*

So, thinking of life five years ago, what sweetened drinks would you say you chose to typically drink then?

[If necessary, paraphrase, reflect back]

[For each drink type mentioned, cover the following details as applicable]

For [X drink]...

- How often would you say you drank this? *Per day, per week?*
- How much did you usually drink?
- Why did you choose to drink this drink? *What are your top reasons you choose this drink?*
- Where did you typically buy this drink?
 - *Can you describe the store(s)? Type of store, in your neighborhood or close to your neighborhood?*
 - *What made you decide to get the drink from this place instead of others?*

10. In general, how do you think your previous intake of sweetened drinks compares to what it is now?

[If increased or decreased] What do you think are the top reasons you changed what you drink during this time?

[If about the same] Can you think of times when you wanted to change what you typically drink but did not during this time frame?

- *What were your reasons for wanting to change?*
- *What were the reasons why you did not change?*

11. Thinking back, again, over the last five years from 2017 until now, can you describe any change you have made to the drinks you buy or serve to your [child/children]?

[If changes]

- *What drinks did you used to serve, and how does that compare to now?*
- What were the top reasons for this change?

[If no changes]

- Can you think of times when you wanted to change what you typically serve them but did not?
 - *What were your reasons for wanting to change?*
 - *What were the reasons why you did not change?*

TAX AWARENESS AND IMPACTS

12. In the year 2018, about four and a half years ago, a tax was added to sweetened drinks in Seattle. Do you know about this tax?

YES → What sorts of things have you heard about it?

- Do you remember when you first heard about the tax? Around what time frame was this?
- What do you remember hearing about it at that time?
- Can you describe where you heard this information? For example, the local newspaper, social media, or community organizations.

NO → May I tell you a bit about it?

YES → In January 2018, the City of Seattle added a tax of 1.75 cents per ounce on sweetened drinks – so, for example, an extra 35 cents on a 20oz bottle of soda. Since the tax, most businesses have raised prices for sweetened drinks in Seattle.

The purpose of the tax is to raise money to help give more people access to healthy food, expand childhood education, and help high school graduates enter college.

NO → Okay, I'll move on to the next question.

13. Do you think the tax has affected your decisions to buy or drink sweetened drinks? *Why/why not?*

Do you think the tax has affected your decisions to serve sweetened drinks to your child/children?
Why/why not?

14. Thinking about other people you know in your community or city, do you think the tax has affected what they drink? *Why/why not?*

COHORT STUDY EXPERIENCE

15. Finally, I would like to ask you about the person who referred you for this study. They were participants of a previous research study. First, were you aware of their participation in the previous study?

➤ What do you know about that study and their experience as a participant?

WRAP UP AND CLOSE OUT

16. To wrap up, are there other things you think about when deciding to buy or drink sweetened drinks that we have not covered today?

Great, those are all the questions I have. Thank you for taking the time to share your perspectives and experiences with me. Do you have any additional comments or questions for me before we end our interview?

OK, thank you. I am going to end the audio recording now.

Demographic Questions

[Note: these questions are adapted from the SeaSAW household information survey]

It is important for us to know who takes part in this study. As with all the information we collect, this household and personal information will be kept confidential and not linked to you or anyone in your family. We will not share this information with anyone else and we will combine this information with the other interview participants when we report our findings.

1. In what city do you currently live?
2. How many adults 18 years and older, including yourself, live in your household?
3. How many children under 18 years live in your household? What are their ages?
4. What is your age?
5. What is your gender?
6. Are you of Hispanic or Latino origin? [Do not read list. Mark all that apply.]
 - NOT HISPANIC/LATINO
 - CUBAN
 - DOMINICAN
 - SPANIARD
 - PUERTO RICAN
 - MEXICAN/ MEXICAN AMERICAN/CHICANO
 - CENTRAL AMERICAN
 - SOUTH AMERICAN
 - LATIN AMERICAN
 - OTHER HISPANIC/LATINO
7. What race or races do you consider yourself? [Do not read list. Mark all that apply.]
 - AFRICAN AMERICAN/BLACK/AFRICAN

- ALASKA NATIVE
- WHITE/CAUCASIAN
- ASIAN INDIAN
- CAMBODIAN
- CHINESE
- FILIPINO
- HMONG
- INDONESIAN
- JAPANESE
- KOREAN
- LAOTIAN
- MALAYSIAN
- PAKISTANI
- SINGAPOREAN
- TAIWANESE
- THAI
- VIETNAMESE
- OTHER ASIAN
- NATIVE HAWAIIAN
- FIJIAN
- GUAMANIAN or CHAMORRO
- MARIANA ISLANDER
- MELANESIAN
- MICRONESIAN
- SAMOAN
- TONGAN
- OTHER PACIFIC ISLANDER
- WASHINGTON INDIAN
- OTHER AMERICAN INDIAN

8. What languages do you speak at home?

9. I would like to get a better sense of your household income. Please think about the income that all earners in your household make combined. Is it easier for you to think about this for the whole year or monthly? (use the corresponding list). I am going to start reading some income ranges to you, please say 'stop' when we get to the range that best fits your [monthly or yearly] household income:

Monthly	Yearly
<\$500	<\$6000
500 –under 1000	6000 –under 12,000
1000 –under 2000	12000 –under 24,000
2000 –under 3000	24,000 –under 36,000
3000 –under 4000	36,000 –under 48,000
4000 –under 5000	48,000 –under 60,000
5000 –under 6000	60,000 –under 72,000
6000 –under 7000	72,000 –under 84,000
7000 – under 8000	84,000 –under 96,000
8000 – under 9000	96,000 –under 108,000
9000 – under 10000	108,000 –under120,000
>10000	>120,000

APPENDIX D

TABLE. CHARACTERISTICS OF THE INTERVIEW PARTICIPANTS' CONSUMPTION OF TAXABLE SUGAR-SWEETENED BEVERAGES AT BASELINE (PRE-TAX) IN THE COHORT STUDY AND THE CHANGE FROM BASELINE TO 12-MONTHS POST-TAX (N=35).*				
	DECREASED SWEETENED BEVERAGE CONSUMPTION		DID NOT DECREASE SWEETENED BEVERAGE CONSUMPTION	
	SEATTLE	COMPARISON AREA	SEATTLE	COMPARISON AREA
N	10	14	6	5
LANGUAGE SPOKEN	4 ENGLISH, 4 SOMALI, 2 SPANISH	4 ENGLISH, 10 SPANISH	2 ENGLISH, 3 SOMALI, 1 SPANISH	3 ENGLISH, 2 SPANISH
BASELINE CONSUMPTION, FL. OZ., MEAN (SD)	19.5 (19.4) RANGE: 1.1, 64.0	19.9 (21.5) RANGE: 2.9, 73.1	0.7 (1.2) RANGE: 0, 2.9	1.8 (2.5) RANGE: 0, 5.1
CHANGE IN CONSUMPTION AFTER 12 MONTHS, FL. OZ., MEAN (SD)	-16.1 (19.3) RANGE: -62.3, -1.1	-16.7 (22.2) RANGE: -73.1, -1.4	2.8 (3.7) RANGE: 0, 9.14	2.9 (3.5) RANGE: 0, 7.1

*Does not include 2 Spanish-speaking peer participants referred by cohort participants in the comparison area for whom we do not have cohort sweetened beverage consumption data.

SD: standard deviation.

APPENDIX E
TRANSCRIPT CODING FRAMEWORK AND PROTOCOL

SEM Level	Code	Definition	Examples / Characteristics	Rules/Reminders
Determinants of and reasons for sweetened beverage consumption (SSB)				
Micro-level: Intrapersonal and Family	1. Bev-preferences	Taste or preferences for SSBs that the participant articulates as a reason for their SSB consumption. Include aspects of habit, tradition, culture, and special occasions here.	Include if it is a reason why someone chooses to drink SSBs or the reasons why they made changes or did not make changes to their SSBs intake.	Does not include basic mentioning of the types of beverages. Does not include non-SSBs that are mentioned as a favorite drink, except for those mentioned as a replacement for SSBs or if they are frequently consumed.
	2. Bev-perceived-healthfulness	Statements about perceived healthfulness of SSBs and perceived appropriate levels of consumption as it relates to their behavior. Focus on concepts involving learning about health harms of SSBs, becoming more aware.	Aiming to capture evidence of signaling effects of the tax such as increased awareness of health harms of SSBs.	Include attitudes about health risks of SSBs and one's awareness of their current or past intake.
	3. Health-status/goals	Mentions of a health condition or health-related goals as drivers of their SSB consumption. Include statements about one's	Examples: learning of a diagnosed health condition, mentioning the health status of their children as a motivator.	

		<p>motivation and/or ability to make intended changes to SSB intake.</p> <p>Purpose: to understand how health-related reasons for SSB intake differed between study groups and may serve as a moderator to tax effects.</p>		
Interpersonal	4. Social-norms-acceptability	<p>Perceived family-, peer- or community-level norms around SSB consumption, including values and attitudes about consuming SSBs and acceptable amounts. May or may not have an influence on one’s SSB consumption and one’s purchasing decisions for their child.</p> <p>Purpose: Understand potential pathways from exposure to the tax or media/information and changes to SSB intake; social norms may moderate this pathway; may indicate signaling effects of the tax.</p>	<p>When the participant is talking about what and how much other people drink and why. E.g., responses to the questions about how their consumption compares to others in their city and family/friends.</p>	<p>Do not code the tax influence responses as social norms.</p>
	5. Bev-sourcing/access	<p>Places where the participant purchases or accesses SSBs and the reasons for accessing SSBs at these places. Include child’s SSB</p>	<p>Places such as grocery stores, restaurants, school. Reasons such as convenience (same location where all groceries are</p>	<p>If specifically related to work or commuting), overlap with Work/commute.</p>

Settings, food environment		access. Include preparing SSBs at home.	purchased), having a preferred beverage in stock, and close to one's home.	Overlap with Bev-affordability if beverage costs are a determinant of their SSB purchasing at these sources.
	a. Cross-border-shopping	A subcode of Bev-sourcing/access. This code captures shopping decisions to avoid the tax by shopping outside of Seattle for SSB. Also captures the reverse, where a non-Seattle resident is unable to avoid the tax by working, shopping in Seattle and says they reduce purchasing because of it.		Only code if the action of tax avoidance (or reduced purchasing as result of non-avoidance) is mentioned directly. Overlap with Bev-sourcing/access when applicable.
	b. Work/commute	A subcode of Bev-sourcing/access. Whether the participant works outside the home and shops for SSBs in this context, including the commute. Purpose: The place of work may alter one's SSB tax exposure and response to it.	Code responses to the specific questions about purchasing beverages in the context of their work and/or other routine commutes.	Always overlap with bev-sourcing/access. Code here even if they do not work or they work at home.
	6. Bev-affordability	Mentions of absolute and relative costs of SSBs as a determinant of the participant's SSB purchasing and consumption.	Making shopping decisions to find cheaper items, SSB cost changes over time, increased personal resources that make food/beverages more affordable	Overlap with Bev-sourcing/access if beverage costs are a determinant of their SSB purchasing.

	7. Cohort-effects	Whether the participant believes their cohort participation made them think differently about what they drink/buy and whether it ultimately influenced what they drink/buy	Code responses to the specific questions about the cohort and elsewhere if the participant raises the topic	Code the response to all cohort effect questions as one excerpt. Do not overlap this excerpt with Cohort-period or Child codes. Avoid overlapping with other determinant codes. Peer participants: Code responses to questions about the cohort participant who referred them.
Macrolevel (city- and county-level policies, media)	8. Bev-information	The information seen, heard, read about SSBs and how that information did or did not influence their SSB decisions. Include sources of the information, including from their community.	News media, online, community/friends, doctor, etc. Include when the participant remembers hearing it and how the info has changed over time. Include nutrition information such as nutrition labels.	Code the whole response to the information questions as one excerpt. Do not overlap with Child code. Limit overlapping with other determinant codes in most cases. Can overlap if there is a separate thought describing a different influence on one's SSB intake and it is not appropriate to create separate excerpts. Overlap with Tax-awareness/information only if the participant spontaneously brings up the tax (verbatim) in response to the question about hearing beverage information. Overlap with Pre-cohort or Cohort-period codes if the

				participant describes the timing in which they received the information.
	9. Tax-awareness/information	Whether the participant is aware of the SSB tax. When they became aware; What they have seen, heard, read about the SSB tax.	Include responses to the questions that specifically ask about the information they have received about the tax.	May overlap with codes above, but if the response reflects the content of the information the participant received, rather than their own experiences with the tax, then no need to overlap.
	10. Tax-influence	Whether the participant perceives the tax to have influenced their own SSB habits and/or others' SSB habits.	Code responses to the questions that ask specifically about this. Do not overlap with social-norms code for the responses to the tax influence question.	May overlap with other codes above to describe the way that the participant believes the tax has influenced them—e.g., higher prices, signaling a health risk.
Indicator codes (can be used on the same text coded with the above determinants of beverage consumption)				
	11. Intake	Use to capture responses about the participant's SSB intake or their children's SSB intake. Focus on quantifiable responses that often detail the beverage type, amount, frequency. If reporting none, code that response and the info about non-SSBs. Include responses about adding sweeteners at home.	Often accompanying the amount that they drink and types of beverages they drink. Include responses to what parents recall serving to their children in the pre-tax/beginning of the cohort period.	Can overlap with Child, Pre-cohort. Do not use when coding the determinants of the intake and/or change. Describe the determinants using the codes above instead. Do not include sources of the SSBs; code with Bev-sourcing/access instead

	12. Child	To indicate the excerpt relates to the determinants of or reasons for their child/children's SSB intake. Also use when capturing descriptions of the child's intake and what the participant serves to their child, overlapping with the Intake code.	Include responses to the questions that specifically what the parent serves or buys for their children and the influences of those decisions, including information received, taxes.	
	13. Cohort-period	Indicates that a determinant of SSB intake or a change in SSB intake occurred (or did not occur) during the cohort study period, 2017-2019. Overlap with determinant codes and other indicator codes as needed. E.g., Child and Cohort study period would describe a factor of the child's SSB intake during the study period.	Combine with Child to code answers to the question about changes to what parents served their children from 2017 to now, and the top reasons for these changes or no changes.	Do not use with the Change 12mo and Change 24mo codes. Exclude determinants that clearly occurred after the study: 2020-2022
	14. Pre-cohort	To indicate that the excerpt relates to determinants of SSB intake or a change to SSB intake or reasons for the participant's SSB intake, or the SSB intake itself, prior to the SeaSAW study and tax (prior to 2017). Can overlap with determinant codes and indicator codes as needed.	Combine with Child to code answers to the question about what parents served their children around 2017 or earlier.	

	15. Quote	Capture quotes that reflect larger themes and main ideas in the data		Not counted in the interrater agreement calculations
	16. Children-age	Code responses to the question about number of children and their ages		Not counted in the interrater agreement calculations
	17. Change-12mo	Code responses to the question about the top reasons for change or no change in the cohort study from baseline to 12 months		Do not overlap with Intake or Cohort-period. Code the response to the specific question. Overlap with determinant codes above as needed.
	18. Change-24mo	Code responses to the question about the top reasons for change or no change in the cohort study from baseline to 24 months		Do not overlap with Intake or Cohort-period. Code the response to the specific question. Overlap with determinant codes above as needed.
	19. Unclear: E	(English speakers) Request for clarification on what was said or meant.	Flag the excerpt to potentially bring back to interviewer or listen to audio.	Not counted in the interrater agreement calculations
	20. Unclear: Sp	(Spanish speakers) Request for clarification on what was said or meant.	Flag the excerpt to potentially bring back to interviewer or listen to audio.	Not counted in the interrater agreement calculations

	21. Unclear: So	(Somali speakers) Request for clarification on what was said or meant.	Flag the excerpt to potentially bring back to interviewer or listen to audio.	Not counted in the interrater agreement calculations
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