

# Briefing on the Evaluation of the Seattle Sweetened Beverage Tax

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Sweetened Beverage Tax Community Advisory Board

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# EVALUATION QUESTIONS



Do **prices** of taxed beverages change?



Does the tax result in **revenue loss** for stores?



Is the tax associated with changes in **weight gains** among adults and kids?



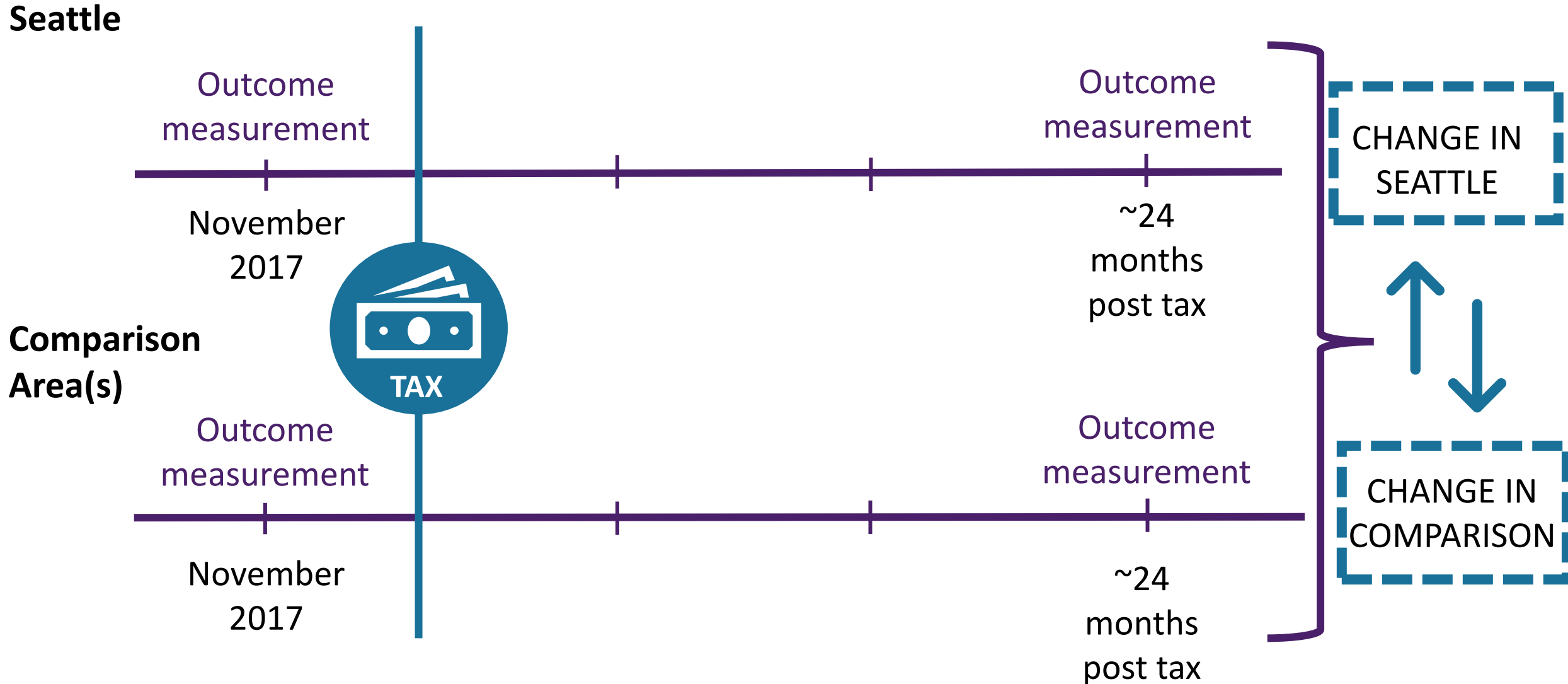
Does **individual consumption** among children and adults change?



How can we understand the consumption results?

# SBT TAX IMPACT DESIGN OVERVIEW

## QUASI-EXPERIMENTAL DESIGN WITH COMPARISON GROUPS

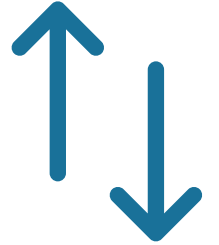


# SBT TAX IMPACT DESIGN OVERVIEW

## QUASI-EXPERIMENTAL DESIGN WITH COMPARISON GROUPS

The degree to which there is change in Seattle above and beyond change in the comparison area is the impact we attribute to the tax

CHANGE IN  
SEATTLE



CHANGE IN  
COMPARISON

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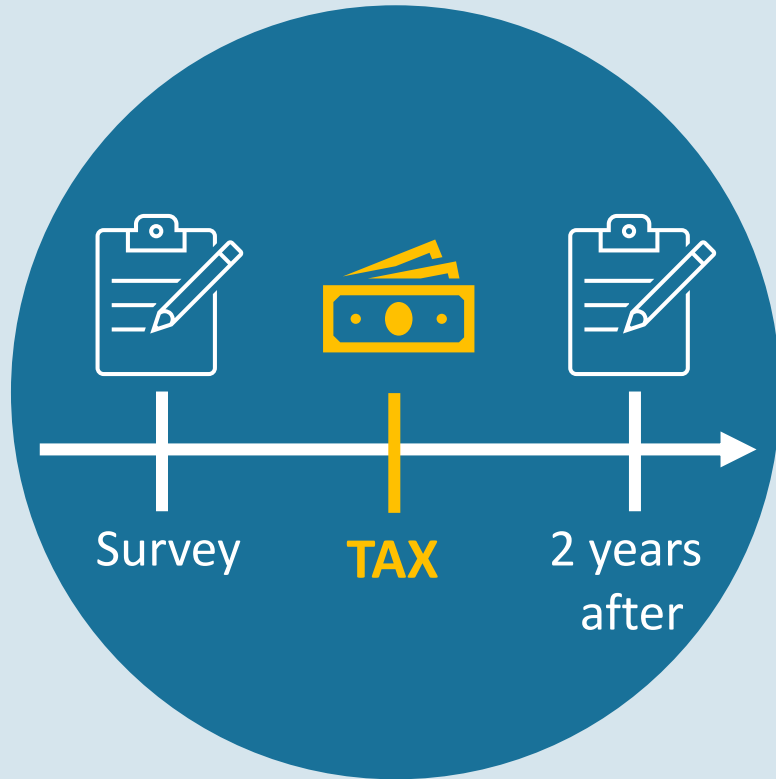
Does **individual consumption** among children and adults change?



How can we understand the consumption results?



# SBT Price Impact: Methods



Surveyed stores before tax and again 2 years after tax



# SBT Price Impact: Results



Overall average **24-month**  
Seattle price pass-through results  
for taxed beverages



# SBT Price Impact: Results

99%

**99% of the tax on average was passed through to Seattle consumers**



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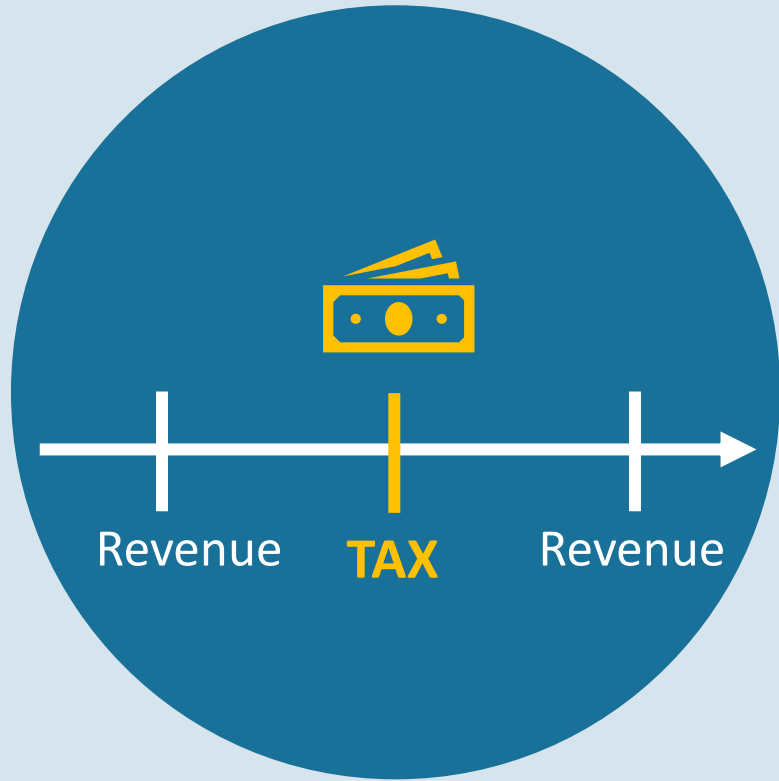
Does **individual consumption** among children and adults change?



How can we understand the consumption results?



# SBT Small Store Revenue: Methods



Total revenue data from Washington State Department of Revenue

Compare small store revenue trends in Seattle to other large cities in WA using a method called Synthetic Control



# SBT Small Store Revenue: Results

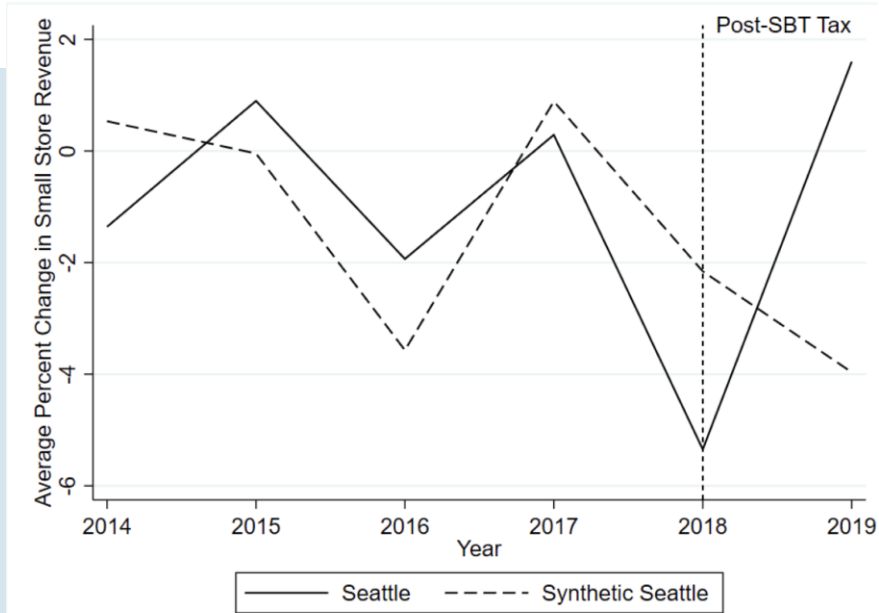


Figure 2- Average Percent Change in Small Food Store Revenue in Seattle and comparison area,

Overall, **no evidence of negative impact** on total revenue in small stores in Seattle

- 1<sup>st</sup> year, larger decline in revenue in Seattle, but not statistically different from zero
- 2<sup>nd</sup> year post tax, statistically significant increase in revenue

**No impact on business closures**

**TABLE 1. EFFECT OF SBT ON CHANGES IN AVERAGE REVENUE GROWTH FOR SMALL STORES FOR UNBALANCED STORE SAMPLE**

YEAR	PERCENTAGE POINT DIFFERENCE IN REVENUE GROWTH	P-VALUE
2018	-3.2	0.33 (NS)
2019	5.6	<0.01

# EVALUATION QUESTIONS



Do **prices** of taxed and untaxed beverages change?



Does the tax result in **revenue loss** for stores?



Is the tax associated with changes in **weight gains** among adults and kids?



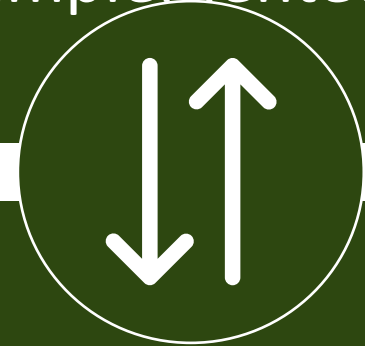
Does **individual consumption** among children change?



How can we understand the consumption results?



Evaluate whether youth & adults in Seattle experienced a **change in weight trajectories** from before to after tax was implemented

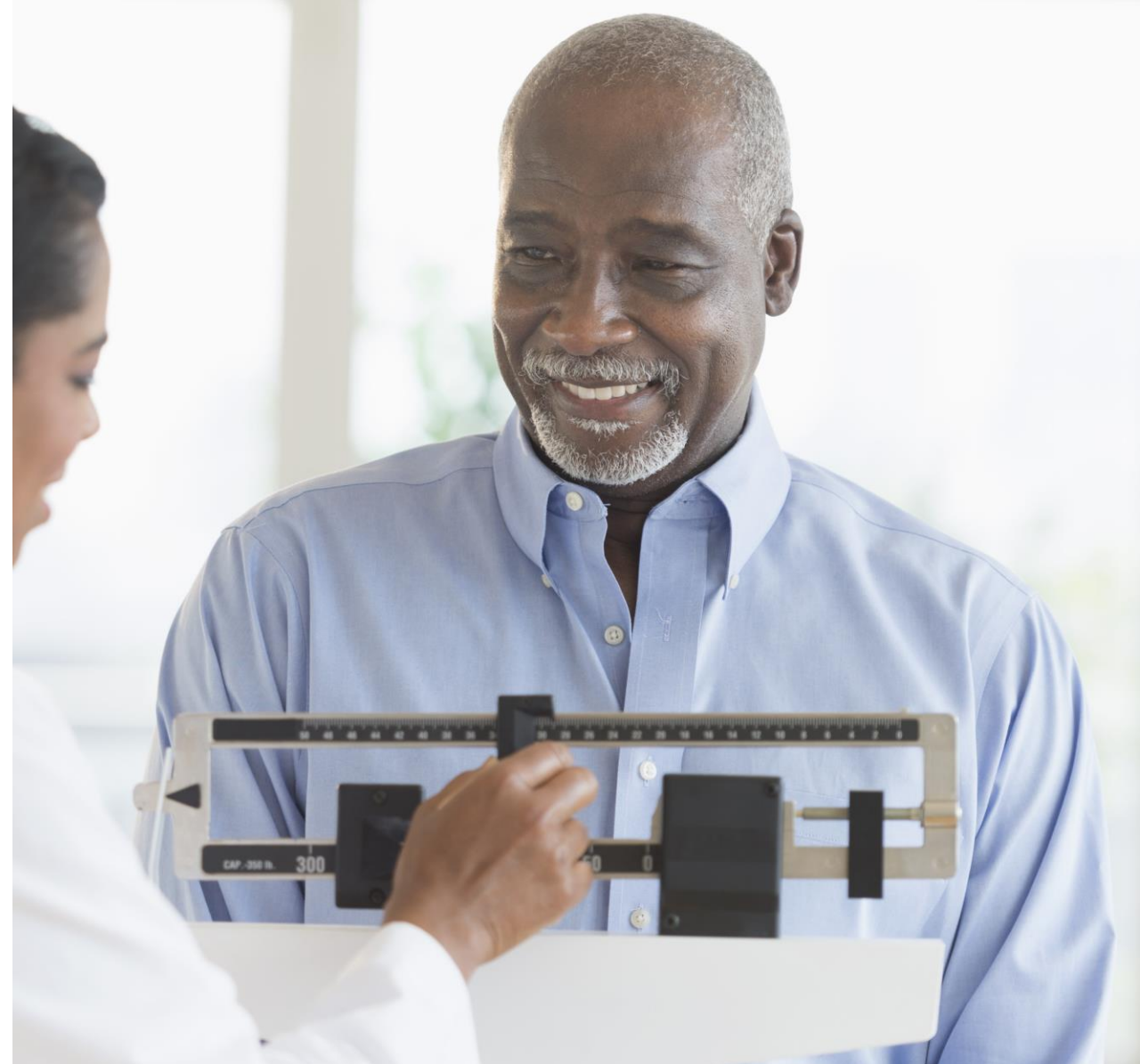


Compared to a well-matched sample of people living in nearby, untaxed cities & towns





Data from nearly 100,000 adults and 6,000 children



A small, but statistically significant reduction in weight gain for adults in Seattle vs. those in comparison area





*tax*

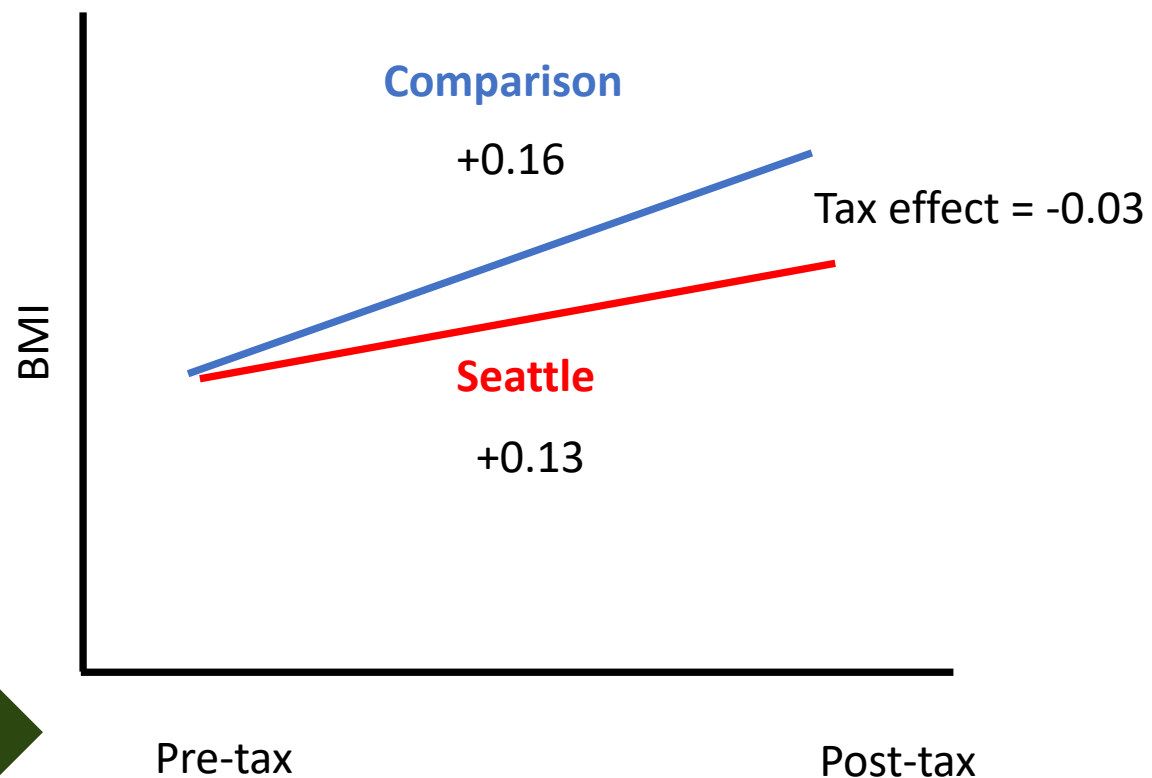
# SBT & BMI ADULT RESULTS

ANNUALIZED CHANGE MODEL

FSATE WEIGHTED (N=98,787)

STRATA	CHANGE IN COMPARISON AREA		DIFFERENCE IN DIFFERENCE COEFFICIENT	P-VALUE
ALL	0.166* (0.148, 0.185)	<0.001	-0.03* (-0.063, 0.0002)	0.049

Changes in BMI among Adults from pre- to post tax







*tax*



A small, but statistically significant reduction of BMI among children

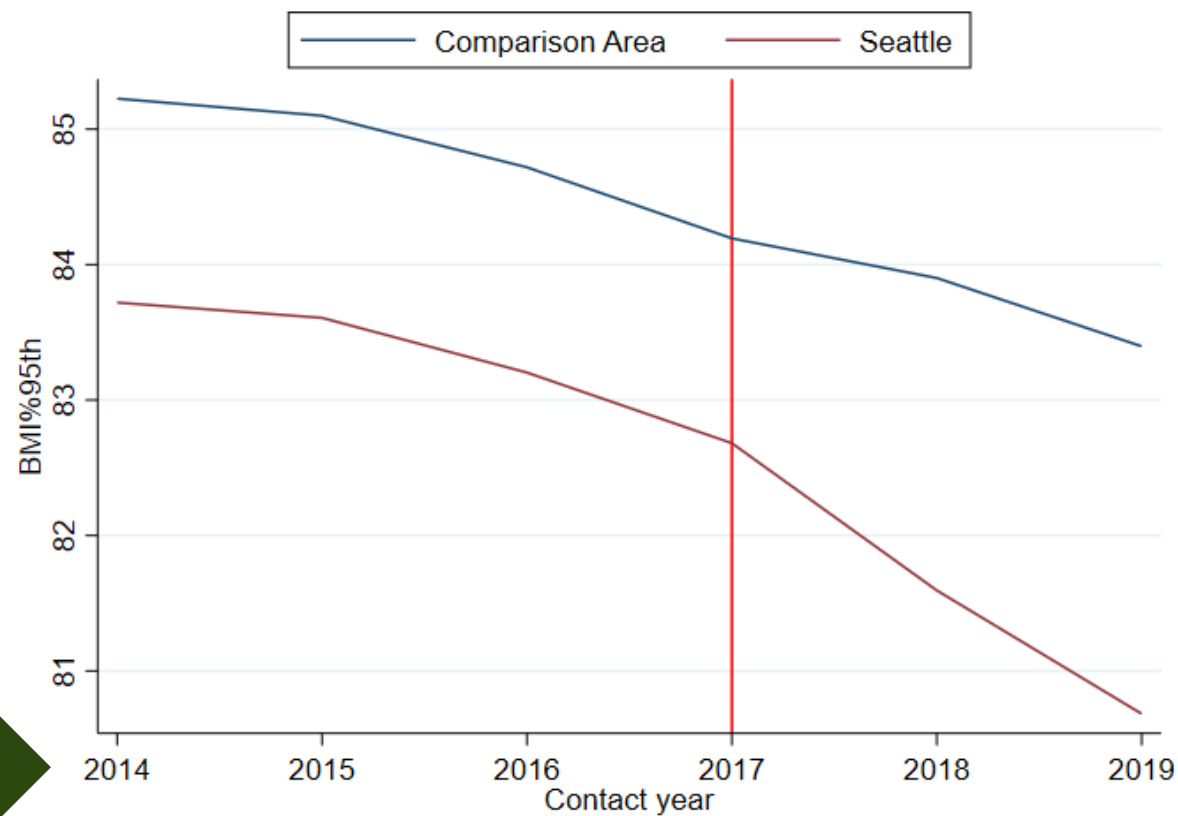


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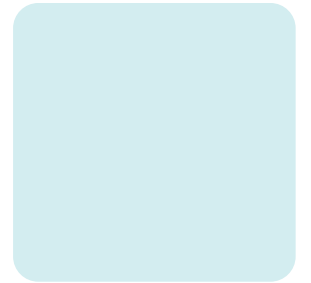
## SBT & BMI CHILD RESULTS

	COEFFICIENT (95% CI)	P-VALUE
SYNTHETIC DIFFERENCE- IN-DIFFERENCE ESTIMATE	-0.999 (-1.23, -0.76)***	<0.001

\*\*\* $p < 0.01$







# Seattle Child Cohort 24 Month Results

Presented by Brian Saelens, PhD



# 24-Month Evaluation Objective



- To examine changes in consumption of taxed beverages from right before to 24 months after the Seattle Sweetened Beverage Tax (SBT) went into effect (January 1, 2018; \$0.0175/oz) among children and parents in lower income families living in Seattle versus a non-taxed comparison area
- To better understand participant awareness and perception of the SBT



**Recontact:** Participants were re-contacted November 2019-February 2020 using both office and community-based approaches

# Data Collection Tools

Tool

Completed By

Time Points



*Modified BevQ- Parent & child beverage consumption (frequency & volume)*



or



All



*DSQ- Child dietary habits*



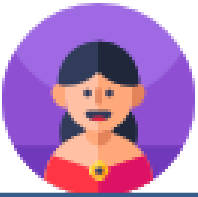
or



All



*Household Information Survey*



All (Qs added at 6 and 24 months)



*Consumption Change Report & Tax Questions*



or



24 months



*Social Desirability Scale*



or



24 months

# Participant Flow

## Seattle

Completed Baseline Survey (n=222)  
- Duplicate (n=5)  
- Not eligible - recruited after deadline (n= 27)

Approached for 12 Month Survey (n=187)  
Returned Complete Data (n=153)

Approached for 24 Month Survey (n=175)  
Returned Complete Data (n=143)

## Comparison Area

Completed Baseline Survey (n=305)  
- Duplicate (n=1)

Approached for 12 Month Survey (n=299)  
Returned Complete Data (n=212)

Approached for 24 Month Survey (n=281)  
Returned Complete Data (n=187)

# 24 Month: Child Demographics

	<b><i>BASELINE DESIGNATION</i></b>	
	<b>SEATTLE</b>	<b>COMPARISON AREA</b>
<b>SAMPLE SIZE</b>	n=140	n=184
<b>CHILD AGE (Mean, SD)</b>	12.3 (2.8)	12.3 (2.9)
<b>CHILD SEX (% FEMALE)**</b>	47.1%	46.7%
<b>CHILD RACE/ETHNICITY (%)**</b>		
- <i>BLACK/AFRICAN-AMERICAN/AFRICAN (NON-HISPANIC/LATINO)</i>	41.4%	23.9%
- <i>HISPANIC/LATINO</i>	22.1%	35.3%
- <i>WHITE (NON-HISPANIC/LATINO)</i>	15.0%	20.1%
- <i>ASIAN (NON-HISPANIC/LATINO)</i>	7.9%	2.7%
- <i>AMERICAN INDIAN OR ALASKA NATIVE (NON-HISPANIC/LATINO)</i>	0.7%	0.0%
- <i>NATIVE HAWAIIAN OR OTHER PACIFIC ISLANDER (NON-HISPANIC/LATINO)</i>	0.0%	1.1%
- <i>TWO OR MORE RACES (NON-HISPANIC/LATINO)</i>	10.0%	13.6%
- <i>RACE/ETHNICITY NOT REPORTED</i>	2.9%	3.3%

\*\* Reported at baseline (unweighted)

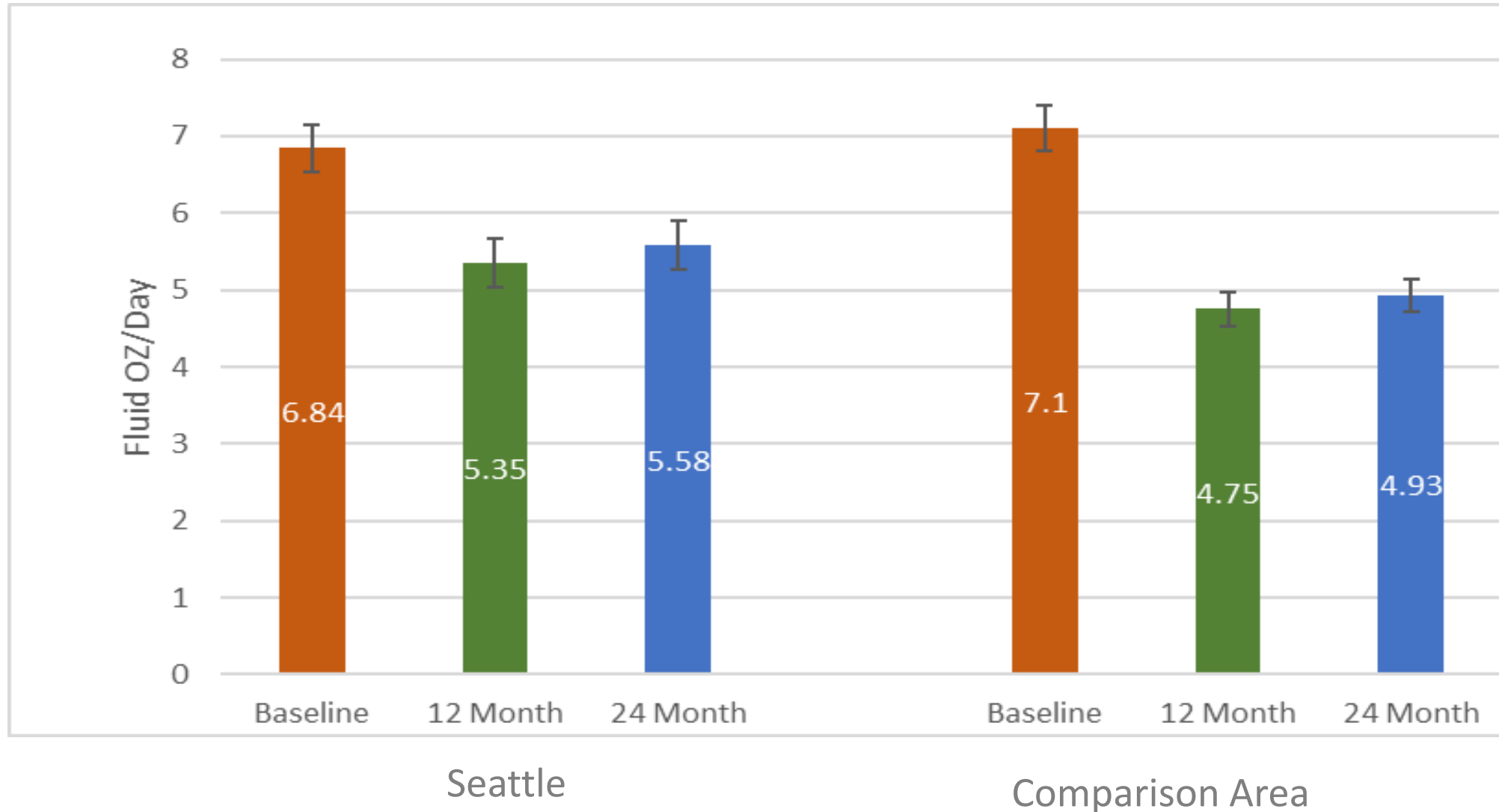
# 24 Month: Parent/Household Demographics

	<b><i>BASELINE DESIGNATION</i></b>	
	<b>SEATTLE</b>	<b>COMPARISON AREA</b>
<b>PARENT AGE AT BASELINE</b> (Mean, SD)	40.8 (8.8)	37.9 (7.1)
<b>PARENT SEX</b> (% FEMALE)	83.6%	94.5%
<b>HIGHEST LEVEL OF EDUCATION OF ANY ADULT IN THE HOUSEHOLD</b>		
- % COMPLETED COLLEGE	20.7%	27.2%
<b>ANNUAL HOUSEHOLD INCOME</b>		
- %<130% 2022 FEDERAL POVERTY LEVEL	57.1%	45.1%
<b>FOOD SECURITY (% RESPONDED "OFTEN" OR "SOMETIMES" IN THE PAST MONTH)</b>		
-% WORRIED ABOUT FOOD RUNNING OUT	46.4%	46.2%



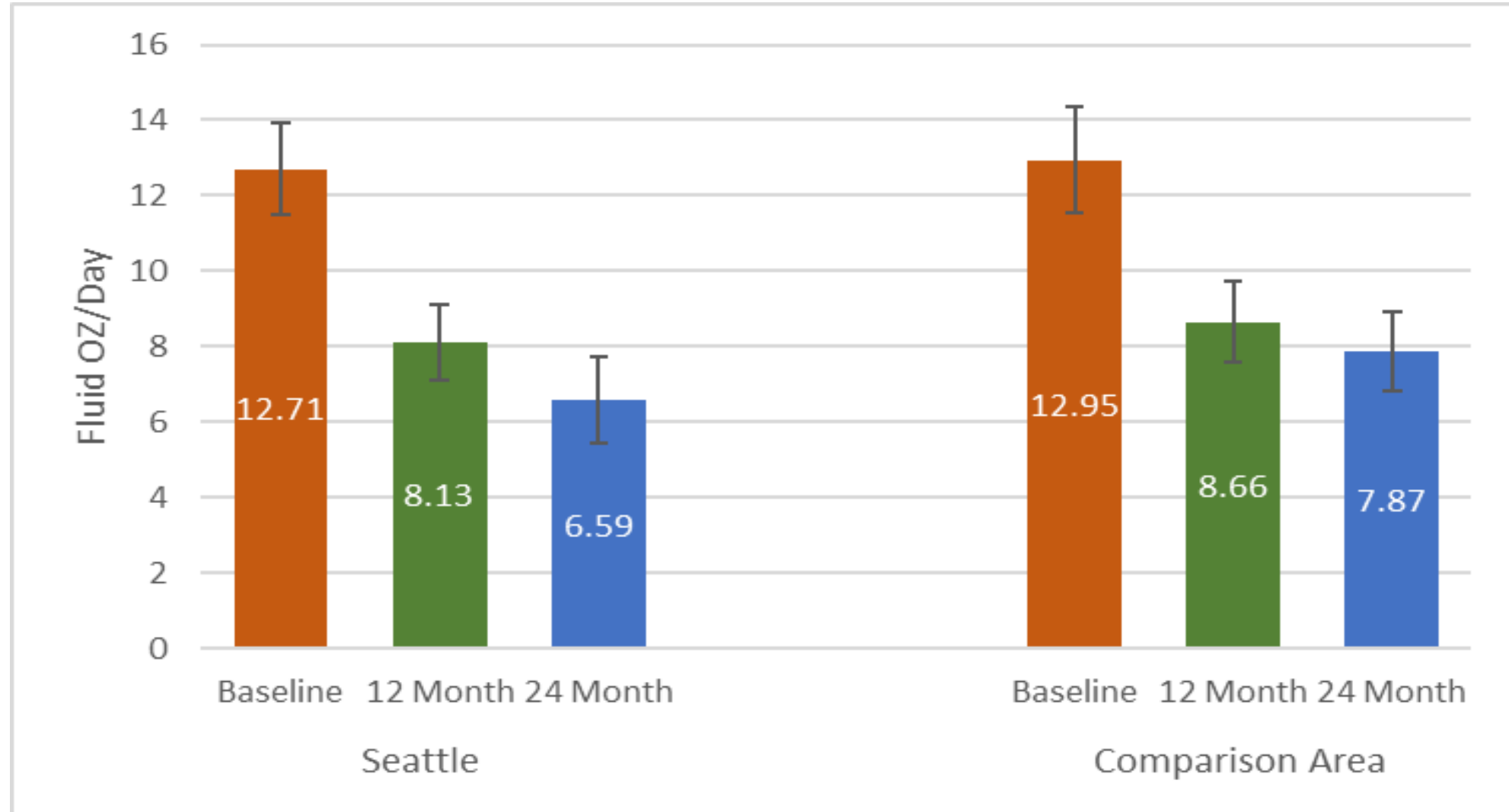


# CHILD CONSUMPTION OF TAXED SUGARY BEVERAGES



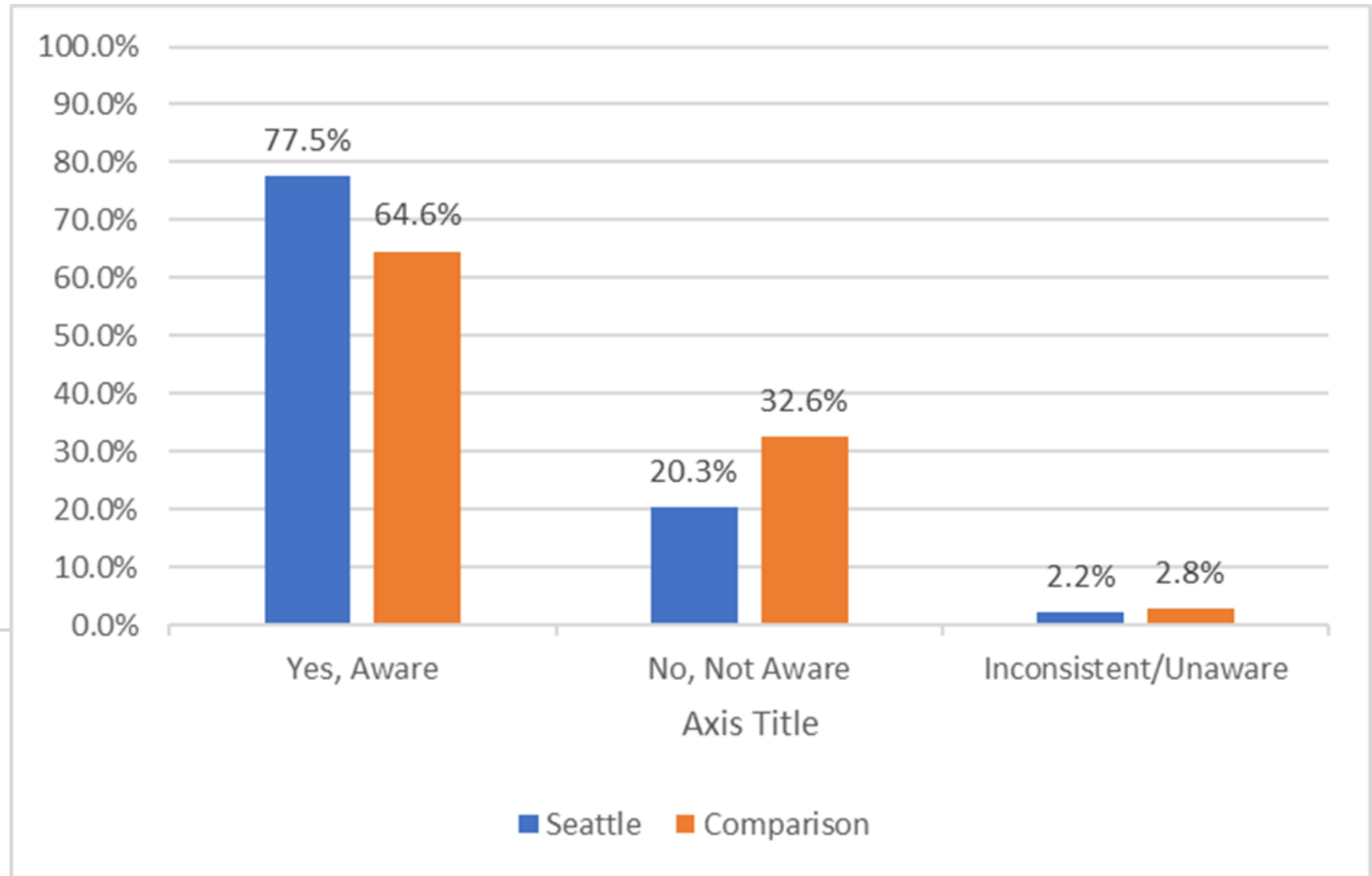
BASED ON BASELINE LOCATION WITH ADJUSTMENT FOR SOCIAL DESIRABILITY

## PARENT CONSUMPTION OF TAXED SUGARY BEVERAGES

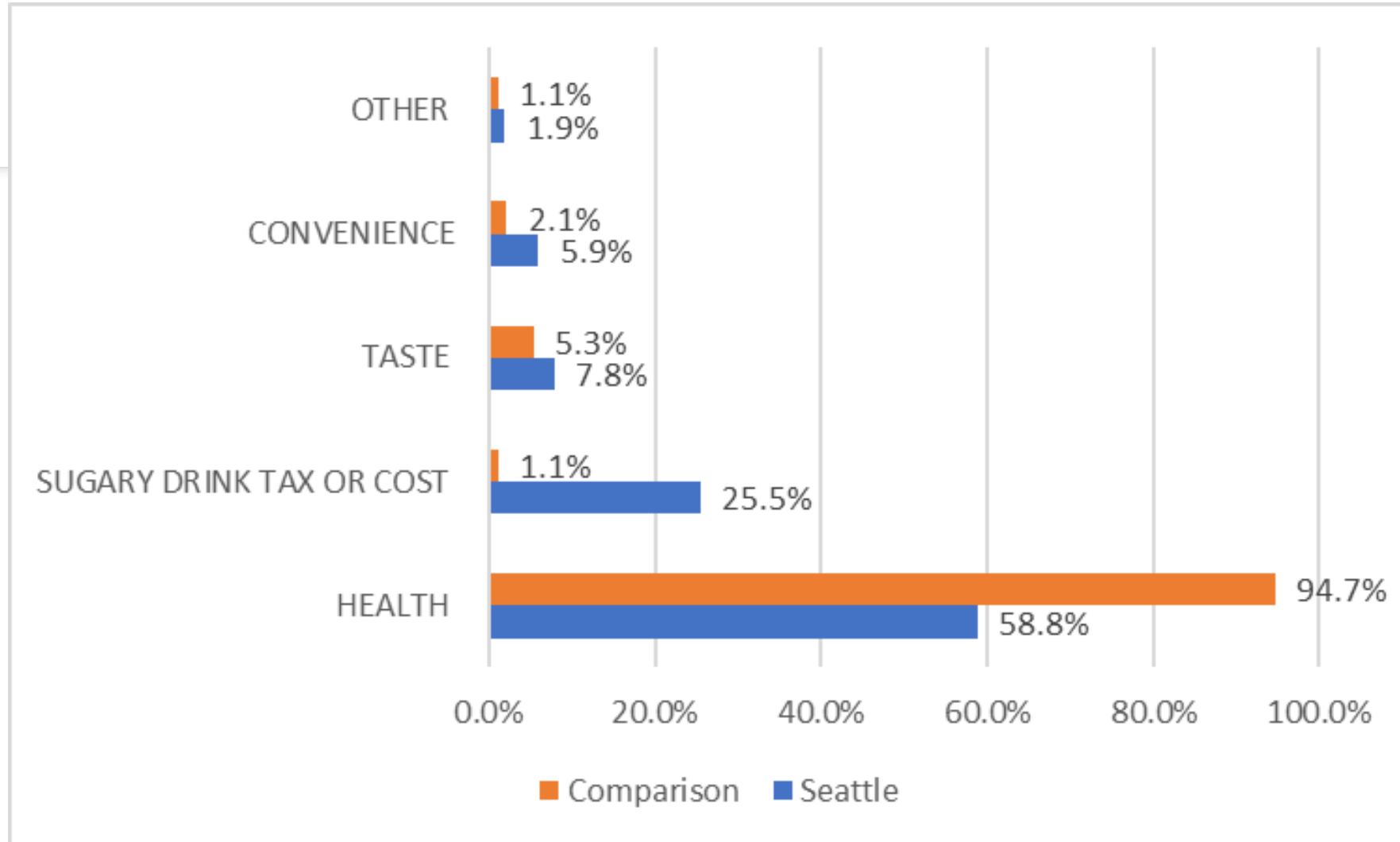


BASED ON BASELINE LOCATION WITH ADJUSTMENT FOR SOCIAL DESIRABILITY

# PARENT AWARENESS OF SEATTLE'S SWEETENED BEVERAGE TAX



# REASONS FOR CHANGING SSB CONSUMPTION AMONG PARENTS WHO REPORTED A CHANGE





# COMMUNITY FEEDBACK SESSIONS (Late 2021)

*95 Seattle and Comparison area parents and children  
attended 6 Zoom sessions in English, Somali and  
Spanish*

## Major Themes

Health

Finances

Confusion about tax revenue

Cultural norms

Mixed feelings about SBT

# Strengths

- **Cohort design** surveyed same lower income families
- **24 month follow up** is among longest durations
- **Community events** were well attended
- **Social desirability** measure used in modeling

# Limitations

- Retention and **sample size**
- **Diverse & lower-income sample** does not represent all Seattle & Comparison Area residents
- **Self-report** of beverage consumption
- Questions about tax and perceptions **limited to adults and teens**
- **Focus of study** was not to understand reasons for consumption behaviors

# Discussion



Lack of difference between Seattle and comparison area is unexpected as prices in Seattle increased significantly more than in comparison area



Results of other SBT and consumption evaluations continue to provide mixed evidence



There may be secular trends in the reduction of SSB consumption, pointing to the importance of a multi-pronged evaluation



Along with increasing interest in health, completing surveys may have heightened participants awareness of consumption and changed behavior



Participant reception of the SBT is mixed - most wish for more transparency about where money is going

# Thank you!



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# Understanding behavior changes in the SeaSAW Cohort Study

## *Qualitative follow-up interviews*

Leah Neff Warner, MPH  
PhD candidate, Dept. of Epidemiology



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# Outline

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- Background and rationale
- Methods and study sample
- Key findings

# Themes from Cohort Community Event Discussions

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- Growing awareness of health effects of SSBs
- High costs of SSBs in Seattle and the comparison area even before the tax
- Differences in community resources for families with lower income
- Increased awareness of one's beverage consumption after completing cohort surveys

# **Pre-study possible explanations**



Tax spillover effects: were comparison area participants somehow exposed to the tax due to a shared media market or spending time in Seattle?



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Just picking up secular trends and really no impact of the tax?  
Possible, but inconsistent with purchasing and health results



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Did we deliver a “brief intervention” by asking detailed questions about sugary beverages?



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Did we deliver a “brief intervention” by asking detailed questions about sugary beverages?



Were the study groups different in important ways in that the comparison area participants had different SSB consumption trends?



# Objectives and Methods



# Overview



Why did parents in the cohort decrease (or not decrease) their SSB consumption, and did the reasons differ between parents in Seattle and the comparison area?



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Enrolled a small sample from SeaSAW study: Focus on parents



# Overview



Why did parents in the cohort decrease (or not decrease) their SSB consumption, and did the reasons differ between parents in Seattle and the comparison area?



Enrolled a small sample from SeaSAW study: Focus on parents



Different reasons between taxed and non-taxed areas may help explain cohort study findings



# Methods

- Semi-structured phone interviews with 35 participants
- Offered in English (n=13), Somali (n=7), Spanish (n=15)
- Thematic analysis of transcripts

	Seattle N	Comparison area N
Decreased	10 4 English, 4 Somali, 2 Spanish	14 4 English, 10 Spanish
Did not decrease	6 2 English, 3 Somali, 1 Spanish	5 3 English, 2 Spanish

# Key Findings



1. The top reasons for consumption change were mainly **health-related**. Possible differences in the health reasons between Seattle and comparison area parents may be important to trends in SSB consumption.

*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.*

*– Seattle, Somali-speaker*



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*– Seattle, Somali-speaker*

*Yes, also I considered that I'm aging and I have a medical history of diabetic and hypertensive mom. So I realized I don't want those diseases or conditions affecting me, so I better start changing my habits. To set a good example for my son, too. And because I was very overweight.*

*– Comparison area, Spanish-speaker*



2. Parents in Seattle and the comparison area recalled information about the **SSB tax in the media**, which is consistent with a shared media market in the region.

*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.*

*- Comparison area, English-speaker*

*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.*

*- Comparison area, English-speaker*

*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.*

*– Comparison area, Spanish-speaker*



3. Some parents in the comparison area were exposed to and influenced by the tax, reflecting a mix of experiences with the tax.

*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? [...] 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 the tax increase, people have stopped consuming so much of these sugary drinks. [...] Because I believe in the same thing. Me too. No, I don't buy a soda to save my money.*

*– Comparison area, Spanish-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? [...] 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 the tax increase, people have stopped consuming so much of these sugary drinks. [...] Because I believe in the same thing. Me too. No, I don't buy a soda to save my money.*

*– Comparison area, Spanish-speaker*

*Because it was before we were that family that took in a lot of empty calories from sugary drinks. So I will say with having that tax, it does make you more mindful on buying it. But before I'm not going to lie, it was cheaper to buy a can of soda than it was to buy a bottle of water. You know, with that extra tax, you're a little more, especially if your income is limited and I don't receive food stamps anymore, so like I happen to pay that. So it helps you be more mindful.[...] Yeah, I would say that the tax [did] help it because of the fact that you knew now even though you may have caught it on sale, you still were paying that additional.*

*– Comparison area, English-speaker*



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



*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 we don't need it that bad, we got bottles of water at home. Then like the next time when I'm going to another city, I remember like if I'm in Renton, I will go through that city and then I'll pick up whatever it is that I was gonna get.*

*– Seattle, English-speaker*



5. Completing cohort beverage **surveys led some parents to become more aware** of the amount they consumed, particularly among comparison area parents.

*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.*

*– Seattle, Somali-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.*

*– Seattle, Somali-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.*

*– Comparison area, English-speaker*



# Conclusions



Some families in comparison area were exposed to media coverage about tax



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Combined with participation in the study



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Raised awareness of their consumption of sugary beverages



# Conclusions



Some families in comparison area were exposed to media coverage about tax



Combined with participation in the study



Raised awareness of their consumption of sugary beverages



Others bought fewer drinks due to price increases when shopping in Seattle



# Thank you

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# Appendix



# Interview Questions

- **16 interview questions. Topics explored:**
  - Current and past SSB intake (what, how much, how often, where, why?)
  - Household intake levels
  - Top reasons for decreasing or not decreasing sweetened beverage consumption over time
  - Information they notice about sweetened beverages and its influence on their consumption
  - Awareness of the SSB tax and any influence on consumption
  - Experience as a cohort study participant
- **Focused on timeframe from pre-tax (2017) to 12 months post-tax**



# Table 1. Participant Sample (N=35)

	Decreased SSB consumption		Did not decrease SSB consumption <sup>a</sup>	
	Seattle	Comparison area	Seattle	Comparison area
<b>n</b>	10	14	6	5
<b>Language spoken</b>	4 English, 4 Somali, 2 Spanish	4 English, 10 Spanish	2 English, 3 Somali, 1 Spanish	3 English, 2 Spanish
<b>Mean baseline SSB consumption, fl. oz., (SD)</b>	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
<b>Mean change in SSB consumption after 12 months, fl. oz., (SD)</b>	-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

<sup>a</sup> Sweetened beverage consumption either did not change or increased.

SSB: sugar-sweetened beverage; SD: standard deviation.

SSB consumption measured at baseline and 12 months post-tax.



# Limitations

- Participant recall of details from 2017-2019
- Small number of individuals who did not decrease SSB consumption
- Unable to compare findings to peers who were not cohort participants
- Interview participants may differ from non-participants