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Sugar Tax of Sweetened Beverages to Combat Health Outcomes in African American and Latinx
Communities

A thesis submitted in partial satisfaction
of the requirements for the degree Master of Arts
in African American Studies

by

Zachary Ray Byrge

2024

ABSTRACT OF THE THESIS

Sugar Tax of Sweetened Beverages to Combat Health Outcomes in African American and Latinx
Communities

by

Zachary Ray Byrge

Master of Arts in African American Studies

University of California, Los Angeles, 2024

Professor Walter R. Allen, Chair

Obesity and dental caries formation have a strong correlation with sugar sweetened beverage consumption amongst African American and Latino children. The trend of obesity and high caries rates increase drastically when looking at economically disadvantaged African American and Latino housing districts such as the Watts district of Los Angeles, California. The rationale for this paper is to address the knowledge gap between dental caries formation and the cost of sugar sweetened beverages. The methods used in this research project consist of collection of quantitative data and qualitative data. The research aims to be observation, experimental, analytic, and descriptive.

The hypothesis: Primary school children living in low socioeconomic districts of Los Angeles will display a lower prevalence of dental caries formation and obesity over a 2-year period after a Sugar Sweetened Beverage tax is implemented within the borders of their respective housing district. The null hypothesis: Primary school children living in low socioeconomic districts of Los Angeles will display no difference in dental caries formation and

obesity over a 2-year period after a Sugar Sweetened Beverage tax is implemented within the borders of their respective housing district. The alternative hypothesis: Primary school children living in low socioeconomic districts of Los Angeles will display differences in dental caries formation and obesity recorded over a 2-year period after a Sugar Sweetened Beverage tax is implemented within the borders of their respective housing district.

The thesis of Zachary Ray Byrge is approved.

Kyle T. Mays

Caroline A. Streeter

Walter R. Allen, Committee Chair

University of California, Los Angeles

2024

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List of Acronyms

BMI: Body Mass Index

SES: Socioeconomic Status

SNAP: Supplemental Nutritional Assistance Program

SSB: Sugar Sweetened Beverages

UCLA: University of California, Los Angeles

US: United States of America

USC: University of Southern California

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Overview

Obesity and dental caries formation have a strong correlation with sugar sweetened beverage consumption amongst African American and Latino children. The trend of obesity and high caries rates increase drastically when looking at economically disadvantaged African American and Latino housing districts such as the Watts district of Los Angeles, California. The rationale for this paper is to address the knowledge gap between dental caries formation and the cost of sugar sweetened beverages. The methods used in this research project consist of collection of quantitative data and qualitative data. The research aims to be observation, experimental, analytic, and descriptive.

The hypothesis: Primary school children living in low socioeconomic districts of Los Angeles will display a lower prevalence of dental caries formation and obesity over a 2-year period after a Sugar Sweetened Beverage tax is implemented within the borders of their respective housing district. The null hypothesis: Primary school children living in low socioeconomic districts of Los Angeles will display no difference in dental caries formation and obesity over a 2-year period after a Sugar Sweetened Beverage tax is implemented within the borders of their respective housing district. The alternative hypothesis: Primary school children living in low socioeconomic districts of Los Angeles will display differences in dental caries formation and obesity recorded over a 2-year period after a Sugar Sweetened Beverage tax is implemented within the borders of their respective housing district.

Outline

Background and Significance

Objectives

Methodology

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The Intervention and Evaluation

Limitations

Summary, Conclusions and Future Research

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Appendix

Background and Significance

Obesity and overweight are defined via a body mass index (BMI) as weight divided by height (Madsen et al., 2019). Since the 1970s, the widespread presence of obesity has increased steadily amongst the adult population in the United States (U.S.). This trend has been observed across all ethnic groups, ages, and educational levels. However, there is convincing evidence that suggests certain subpopulations are experiencing obesity at disproportionate rates. For example, African Americans and Mexican Americans, “have a higher prevalence of obesity than Caucasian women, or men of any ethnic background” (Mitchell et al., 2011). Obesity is a public health crisis; however, it is an even more pressing matter for racial and ethnic minorities. Many of the world’s leaders are aware of the current obesity epidemic in the U.S. and more broadly the world. The high concentration of processed foods and sugar filled beverages available to the public is at an all-time high. Consumption of extremely processed foods and sugar sweetened beverages (SSBs) show strong correlation with the development of many illnesses including obesity.

Moreover, obesity is linked to pervasive and costly medical conditions, “including type 2 diabetes, hypertension, coronary artery disease, many forms of cancer, and cognitive dysfunction (Mitchell et al., 2011). Obesity is a risk factor for children and adolescents for various diseases and ailments usually displayed at much later stages in life, “such as dyslipidemia, hypertension, and hyperinsulinemia” (Mitchell et al, 2011). These conditions are beginning to develop in younger adults at earlier stages than ever before (Mitchell et al, 2011). Compelling evidence suggests that obesity in children and adolescents progresses the development of cardiovascular disease and other heart related issues (Freedman et al., 1999). The leaders of the future are on pace to live shorter lives than the generation prior due to the epidemic of obesity. Obesity as an

epidemic in the U.S. arose for several reasons, one being the low levels of physical activity required in the daily lives of modern Americans. Additionally, the availability of calorie-packed, highly palatable food is seemingly abundant, inexpensive, and often served in large portions. Obesity or rather becoming obese, is an adaptation to the current conditions people find themselves in and appears to represent a new “settling point” (Mitchell et al., 2011).

Legislation processes via mandated taxation of products such as tobacco have been successful in repurposing taxed funds to address public health disparities. Notably, Proposition 99: Tobacco Tax Increase (1988), was successful in imposing an additional tax on cigarettes amounting to twenty-five cents per pack. The proceeds from the tax were used to run counter campaigns and raise awareness for the health disparities associated with the use of Tobacco products (Hu et al., 1994). Similarly, beverage taxes are being implemented in an attempt to combat the adverse health disparities associated with over consumption of SSBs.

Sugar Sweetened Beverages consumption is a major contributor to obesity and dental caries. Berkeley, California was one of the few cities in northern California to pass a \$0.01/ounce (oz) tax in 2014. SSB consumption was assessed before the tax proposal was passed, and after using a beverage frequency questionnaire (BFQ). Studies showed that 50% of adults in the U.S. and 61% of children in the U.S. consume SSBs daily (Lee et al, 2019). Researchers gathered data 3 years after Berkeley implemented a \$0.01/ounce (oz) tax to assess the level of SSB consumption. Sugar Sweetened Beverages were being consumed 1.25 times/day in Berkeley and 1.27 times/day in comparable city neighborhoods. After adjusting for “covariates,” consumption of SSB in Berkeley declined by 0.55 times/day for SSB and increased by 1.02 time/day for water consumption from 2014-2017 (Lee et al., 2019). Changes in consumption of SSB in Berkeley

were significantly different from the changes observed in comparable city neighborhoods. Similar trends were observed in Philadelphia, Pennsylvania as well (Madsen et al., 2019)

Comparatively, in 2014, Mexico implemented a nationwide sugar tax on SSB to combat the high levels of diabetes associated with SSB consumption. Mexico's one peso per liter tax went into effect January 1st, 2014, by December 2014, Mexican households' purchase of SSB had declined by an average of 6%, reaching 12% overall in 2014. Although there was some short-term success, Mexican health officials used simulation-based data analysis to project the health outcomes in terms of mortality, diabetes, cardiovascular disease, and stroke. The finding of the simulations based on gathered data from both Mexico and U.S. expressed significant declines in all major disease categories evaluated based on predictions associated with 10% reduction in consumption of SSBs over the long term (Romero et al., 2016). It is important to further understand and more closely examine how SSBs are linked to obesity/overweight children among Black people and Latinos communities as health disparities associated with high consumption of sugar sweetened beverages disproportionately impact Black and Latinos peoples specifically when it comes to obesity and heart related illnesses and diseases (Aaron et al., 2021). There is robust evidence that suggests that obesity, heart disease, and dental caries are correlated to the amount of SSBs being consumed within Black and Latinos communities. Dental caries disease has recently been proven to be a transmittable disease (Caulfield et al., 2021).

Objectives

The goal of this study is to decrease the amount of dental caries formation in children ages 10-13 in the intervention group to generate empirical evidence that supports a tax on SSBs in minority communities. The empirical evidence will be created through an evaluation of the proposed policy by comparing middle school children's dental caries formation prevalence and

BMI rates in Watts, Los Angeles, California, where the tax will be implemented versus a comparable middle school in Westchester, Los Angeles, California where the SSB tax will not be implemented. In theory, increasing the cost of SSB by twenty-five cents in communities living below the poverty line like Watts, should significantly reduce the amount of added sugar consumption by primary school children attending Gompers middle school. Moreover, most of the parents of the children attending Gompers qualify for the Supplemental Nutrition Assistance Program (SNAP) and have limited funds to spend on their food budget each month. The expected impact of a twenty-five cent/ounce SSB tax in Watts on primary school children at Samuel Gompers Middle School is a significant reduction in the amount of dental caries prevalence and a decrease in BMI recorded.

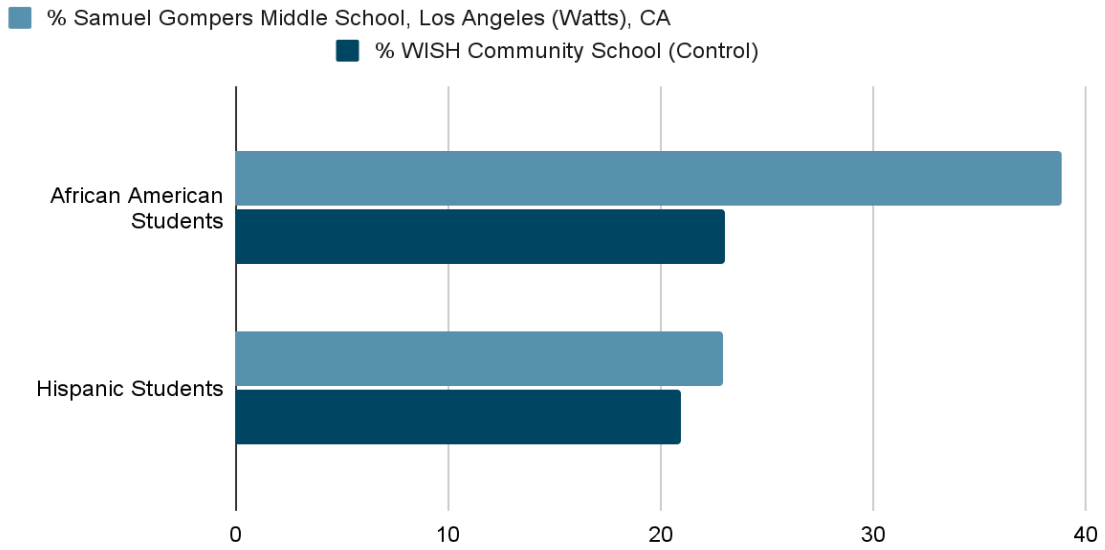
Thus, with a significant increase in the cost of SSB the author hypothesizes there will be an observed decline in the prevalence of dental caries and BMI in primary school children attending Samuel Gompers Middle School in California, compared to primary school children attending WISH Community Middle School in Westchester, Los Angeles, California.

AIM 1: The study proposes to implement a SSB tax of 25 cents per ounce (cents/ounce) to be utilized specifically to reduce the amount of obesity (measured health outcome: BMI) and dental caries in ethnic minorities (measured health outcome: prevalence of disease), specifically in African Americans and Latino Americans primary school children. Furthermore, the author will use the empirical evidence gathered by this study to: a) utilize 20% of SSB Tax revenue to address African American and Latino community needs via the allocation of tax towards increasing access to healthy foods through subsidizing fruit and vegetables costs, b) 30% to expand child care subsidies and programs supporting early childhood development c) and 50% to

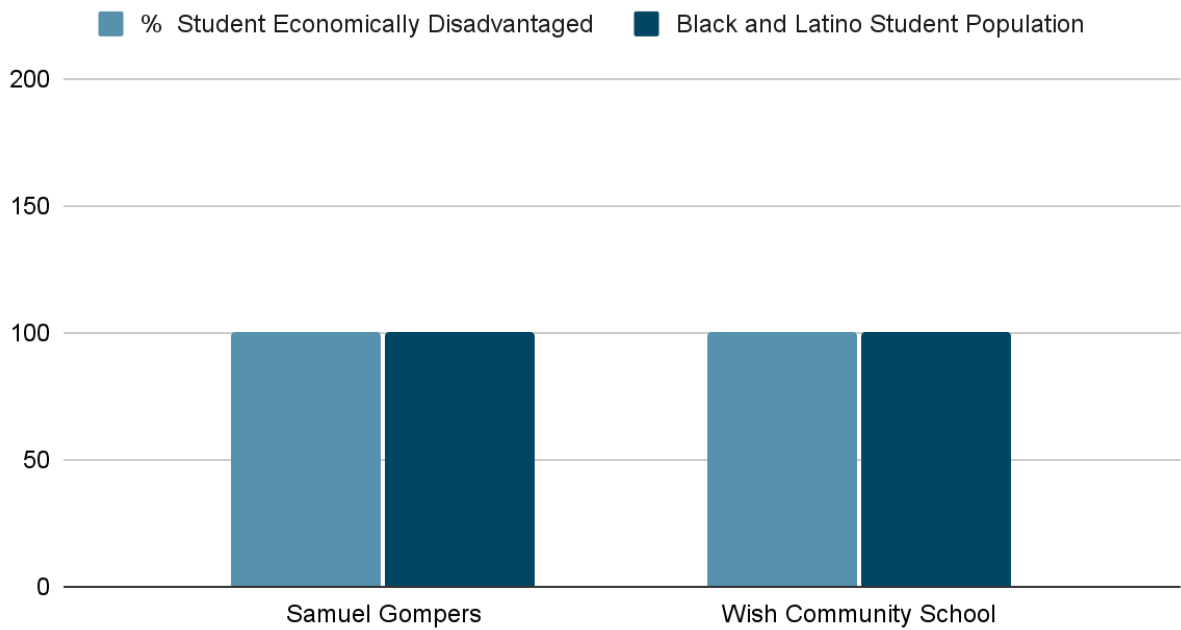
produce culturally targeted advertisements that explain the health risk associated with high consumption of SSBs such as obesity, heart disease, and dental caries formation in areas local to each school district.

AIM 2: To generate empirical evidence in support of an increase in SSB taxing, researchers will conduct a trial comparing two demographically similar middle schools (Watts, California vs. Westchester, California), where an SSB tax is imposed in Watts, California while Westchester, California serves as a control. To measure the impact of the tax, researchers will conduct pre and post BMI assessments on middle schools in each district. Additionally, researchers will request access to the dental records of students at these schools to assess the impact of increased SSB tax on dental caries formation. For those students that are lacking timely dental records (within three months of pre and post intervention), their mobile dental office will acquire this information.

RACE DEMOGRAPHIC



Economically Disadvantaged Students



Watts, Los Angeles, California is a low socio-economic and poverty-stricken subsection in the United States. “Socioeconomic status is the position of an individual or group on the socioeconomic scale, which is determined by a combination of social and economic factors such as income, amount and kind of education, type and prestige of occupation, place of residence, and... ethnic origin or religious backgrounds” (American Psychological Association).

Comparatively, Westchester, Los Angeles is located approximately seven miles away from Watts and is also considered an area of low socioeconomic status. This project has an epidemiological nature; thus, the project strives to study health (oral health) and disease (dental caries formation) in primary school populations in Watts and Westchester, Los Angeles.

The study further attempts to understand the significant causes of disease by examining the distribution of determinants of disease such as risk factors and exposure). The distribution of determinants will aid researchers as they try to understand patterns in group yield insights concerning health and disease. This project employs comparative analysis of SSB consumption and the correlation of disease prevalence and incidence in Watts and Westchester primary school children. The research project is systemic, and data driven, and applies of the knowledge the medical and dental community at present (Hosseinpour et al., 2012) Other health outcomes experienced by its inhabitants of Watts and Westchester are mediated by the prevalence and severity of dental caries formation and malnutrition.

These outcomes can be assessed in Latino and African American children living in and around Watts and Westchester. Health outcomes in these populations serve as indicators supporting the correlation of obesity and over-consumption of SSBs. Dental caries formation and high prevalence of obesity have strong correlation in both adults and children who report consuming elevated levels of added sugar via the consumption of SSB and other processed goods

(Alharkey, 2021). The relative severity of obesity and dental caries formation in primary school children living in the low-socioeconomic status, such as the districts of Watts and Westchester, are much more severe in comparison to other districts of higher socio-economic status (Alharkey, 2021).

Excessive sugar intake is the major cause of dental caries formation in children. Many studies denote the role added sugars play in the development of dental caries and other obesity related health disparities. Excessive sugar intake is not exclusive to the United States. Furthermore, children all around the world have reported record levels of added sugar intake (Alharkey, 2021). Given the health risk factors associated with dental caries and obesity, several interventions have been proposed over the years, “including a ban on its [SSB] sale in schools/colleges, limiting its advertisements, and altering the composition and introducing tax against it” (Alharkey, 2021). However, many factors are preventing the large-scale reduction of SSB in Watts and similar areas, specifically amongst Latinos and African Americans primary school children. There are two major factors hindering the progression of the aims of this proposal.

Firstly, many minority legislators value the donations made by big SSB companies over potential health benefits associated with limiting added sugar consumption in primary school children (Mekonnen et al., 2013). Secondly, advertisements of SSB products are so pervasive and widespread, and children of low SES tend to trend towards blind consumerism as fundamental understanding of health outcomes is only achievable through proper education, and further application of the said education at a communal level (Mekonnen et al., 2013). This study aims to shed light on the knowledge gap that exists on the subject of SSB consumption and its correlation to dental caries formation and BMI. To overcome the obstacles preventing a SSB tax,

\$1.5 million will be used to evaluate the effects of a twenty-five cent/ounce soda tax on dental caries formation and obesity (BMI) in primary school children.

Main points: Watts, Los Angeles and Westchester, Los Angeles are subsections of Los Angeles existing below the poverty line. Thus, Watts and Westchester have lower socioeconomic status. Although Westchester, Los Angeles has a slightly higher annual income per capita, most of its residents live below the poverty line as well. This project employs both clinical and population research approaches to highlight the correlation of the risk factor of SSB consumption and the health outcomes of dental caries formation and obesity in primary school children in the Watts and Westchester districts of Los Angeles. The clinical aspect focuses on the study of patients and the impact of clinical interventions. The population research aspect focuses on the study of the communities existing in Watts and Westchester by examining the impact of behaviors, environments, and policies on the health outcomes of dental caries formation and obesity (high BMI amongst children).

Methodology

Data will be collected from four hundred primary school children aged 10-13 years: 200 children from Samuel Gompers Middle School in Watts, Los Angeles and two hundred children from WISH Middle School in Westchester. Both groups of two hundred consist of one hundred African Americans and one hundred Hispanic Americans from each school. Each group of one hundred is further divided into groups of fifty; twenty-five children assigned male at birth, and twenty-five children assigned female at birth. The presence of dental caries as a health outcome will be determined by dental examination, classification of the type of dental caries will be omitted. BMI ($\text{weight} / \text{height}^2$) will be used to assess obesity outcomes measured as

height/weight. The rate of SSB exposure (via oral consumption) is assessed through surveying of both parents and children on a biweekly basis.

This project will be both experimental and observational. The experimental nature of the project stems from the research allocating exposure (regular dental visits and presents of sealants) to preventative treatments as in regular dental visits and the presence of dental sealants on primary and secondary teeth in the treatment group (the group that will receive treatment, i.e. Watts), and non-allocation of sealants in the control group (the group that will not be given treatment, i.e. Westchester). The observational nature of the project stems from exposure (consumption) of SSBs, and the fact that exposure to SSBs will be measured in ounces/weeks as it is in the population. The project employs a quasi-experimental design comparing intervention groups (primary school children in Watts) and control groups (primary school children in Westchester). However, participants were assigned their groups based on their location, and therefore, group delegation is not randomized (the research acknowledges biases that may exist in non-randomized research projects and self-reported surveys).

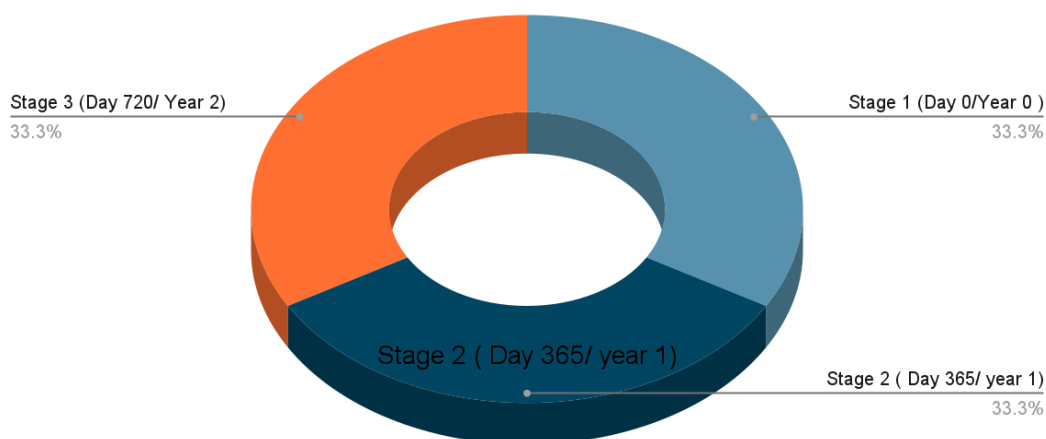
Researchers will impose a temporary twenty-five cent/ounce SSB tax applicable to the entire district of Watts over two years. They will also access school records regarding height and weight from each student at both schools pre and post intervention via surveying parents and accessing school medical records to adjust for variations. Researchers will utilize a mobile clinic to conduct oral health examinations before, during, and post intervention to assess the prevalence of already existing caries before the start of the project and the prevalence and incidence of new dental caries formation throughout the project and at the termination of the project. Thus, this project will also display descriptive and analytic characteristics. Additionally, researchers will describe the distribution of dental caries and obesity in Watts and Westchester primary school

children (amount of dental caries and obesity) and determine the associations of dental caries and obesity with the possible risk factor of SSB exposure. The data gathered from determining the prevalence and incidence of dental caries and obesity in Watts and Westchester primary school children will speak to the portion of the population that have dental caries and are obese and develop dental caries or become obese throughout the study.

Moreover, the analytic nature will provide causal inference; to be used for the process of expressing supported conclusions on cause and effect from data collected by researchers. The methodology of this project can further be described as bidirectional as it has a combination of prospective and retrospective elements. This research project uses both prospective (data and exposure are collected before the project begins, i.e., the number of dental caries present in students before the research project starts) and retrospective (data and exposure collected prior to the study not for the purpose of research, i.e., height and weight of students).

The rate at which students drink SSB will be influenced by demographics, such as income level, taste preferences, culture, and SES, and education levels within households. Consequently, researchers will need to create advertisement strategies consistent with the economic and demographic obstacles faced by the students in and outside of school. A recent study suggests that the perceptions of SSBs by ethnic minorities are associated with the consumption of SSBs. Additionally, the study found that there were racial and ethnic and socioeconomic disparities in SSB “consumption and perceptions” (Roesler et al., 2021). Therefore, to promote a reduction in dental caries and obesity amongst the target group, researchers will promote the effects on SSB to target communities living in Watts, CA, via culturally relevant and age-appropriate fact driven advertising strategies such as posters and social media campaigns.

Stages/ Time Frame of Research Project



Stages of the Research Project:

Stages	Day/Years	Caries Reported: Prevalence/ Incidence	Survey of BMI / Survey of Cost of SSB
Stage 1	Day 0/ 0 years	Prevalence of caries present in Watts and Westchester intervention groups	Assess BMI/ Assess relative amount of monthly budget spent on SSBs
Stage 2	Day 365/ 1 year	Prevalence and Incidence of caries in Watts and Westchester intervention group	Assess BMI/ Assess knowledge and effect of price increase of SSB in both intervention groups.
Stage 3	Day 730/ 2 years	Prevalence and Incidence of Watts and Westchester intervention group	Assess BMI/ Assess knowledge and effect of price increase of SSB in both intervention groups

Study Participants

The study population consists of four hundred sixth graders: 200 African Americans and two hundred Latino Americans from each intervention group; one hundred students assigned male at birth, and one hundred students assigned female at birth. These will be followed over a period of two years (until they are eighth graders). Students participating in the study will be volunteers attending Samuel Gompers Middle School located in Watts and WISH Community School located in Westchester aged 10- 13 years. This age group of children is ideal for this study because most primary teeth have fallen out by the ages of 10-13 years old. Moreover, the early formation of high BMI is correlated to methods of nutrition acquisition in school and home settings (Roesler et al., 2021). Samuel Gompers Middle School and WISH Community Middle School are predominantly African American and Latino American, which is ideal for this project given that low SES is correlated with childhood obesity and dental caries.

Although other demographics of students attend both Gompers and WISH Community Middle School, this study will focus on the comparable demographics of African American and Latino American students attending both schools. All participants must live within the zoning district in which their respective school is located. The reasoning behind the exclusion of other demographics of students is to eliminate outliers and other factors influencing bias related to data collection, SSB consumption, dental caries formation, and obesity (BMI) outside the target group.

The Intervention and Evaluation

Step 1: SSB Tax Implementation (24 months): In this stage, researchers will allow the SSB tax to run its course and record any significant observation that may take place.

Step 2 Pre-Intervention Assessment (3 weeks): At this stage of the evaluation, students will be given consent forms to be approved by their parents/ guardians along with brochures to explain the nature of the study being conducted. Because the treatment and control groups of the study are children, parental consent is necessary at every stage of evaluation of their children. Students attending Gompers and Wish Community Middle School will provide any existing medical/dental records to allow researchers to gauge the amount of dental caries present in African American and Latino students prior to the intervention. However, because laws are inconsistent regarding dental record requirements, researchers will need to recruit volunteers to assess the amount of dental caries present in sixth graders at both schools.

Los Angeles, California has two nationally ranked dental schools located near economically challenged neighborhoods. Thus, researchers will recruit dental students at the University of California, Los Angeles School of Dentistry and The University of Southern California, School of Dentistry to provide oral health examinations to sixth graders in the early stages of data collected. Depending on the institution, dental students may be offered course credit, volunteer hours, or research credit as incentive for participating in the research project. The University of Southern California (USC) operates a mobile dental clinic to treat underserved communities (Mobile Dental Clinics, 2020). Additionally, The University of California, Los Angeles (UCLA) also offers service to underserved communities of Los Angeles and could also contribute to the recruitment of dentists and dental students to conduct examinations.

BMI is indicated as $\text{weight}/\text{height}^2$, thus, the relative BMI of students attending Gompers middle school and WISH Community Middle School both from medical records and by researchers periodically throughout the research process. This proposal calls for physical examinations to be taken during the first three weeks of the school year. Research speaks to the importance of proper utilization of schools to gauge whether students are under, over, or at appropriate weights (Center for Disease Control and Prevention). According to Wells, the “use of relative weight and body shape simultaneously gives a better estimate of risk of morbidity than either alone” (Wells, 2005). Accordingly, the author intends to assess waist circumference of primary school children participating in the study to supplement BMI measurements.

Stage 3: Post-Intervention Assessment (3 months): In this stage, researchers will access the end-of-the-year height, weight, and waist circumference measurements obtained for each eighth-grade student from the yearly physical assessments. During this period, the mobile dental clinic at USC will also return to the Gompers middle school campus to perform dental exams and record dental caries. Routine dental exams involve a check of each individual tooth to assess for carries manually with stand explorer handpieces. Following the manual oral exam students will have X-Rays taken to ensure there is no disease present below the gum line. After X-Rays are taken students in the treatment group will be given fillings and have sealants placed on the occlusal table of teeth lacking disease. Following sealings and sealant procedures, students will have their teeth cleaned. The control group at WISH Community Middle School will have cavities filled, but no sealants placed. The cavities will be filled to arrest the disease state in order to most accurately record the prevalence and incidence of the disease. The number of partially erupted teeth as well missing teeth will be recorded for both groups as well. Risk level for dental caries formation is assigned by ordered rank: Low, Medium, High, and Extreme;

where “low” is the lowest risk for caries formation and “extreme” is the highest risk for caries formation. The following table will outline the parameters of dental caries formation risk level.

Guide to assigning Dental Caries Formation Risk Level: CAMBRA RESEARCH UCSF Guidelines (Featherstone et al., 2018).

Risk Level	Disease Indicators	Risk Factors	Protective factors
Low	None	None	One or more
Medium	None	One or more	Need to increase
High	One or more	One or more	Need to increase
Extreme	One or more	Low Saliva Flow	Need to increase

Step 3: Data Analysis and Write Up (6 months): The statistical test that will be employed during this evaluation is a two-tailed t-test given that the population of students is nearly identical, but the conditions will be different for the experimental group in Watts, CA, and the control group in Richmond, VA. The researchers hope to obtain a p-value small enough (equal to or less than 0.05) to indicate significance of data. The results of the study will be used to support a wide-scale SSB tax, and the write-up will be made available to the scientific community.

There will be three steps to the intervention portion of the research project. The first step involves implementation of the sugar tax over the course of 24 months (two years). Step 2 involves the initial oral examination: manually tooth assessment, x-rays, filling of cavities (in both the treatment group and the control group in order to arrest caries formation in teeth), and the application of (sealants in only the control group). Step 2 also involves the middle, and final oral exam. Additionally, Step 2 involves the assessment of both the treatment and control

group's BMI (weight/height²) in order to assess the prevalence of obesity initially and both the prevalence and incidence of obesity as the intervention progresses.

Limitations

The predictive value for BMI as a measurement variable is more oscillatory in relation to the number of dental caries found in African American and Latino primary school children between the ages of 10- 13 years old. BMI may prove difficult to standardize due to children and adolescents constantly growing and developing. Simply dividing weight in kilograms/ height ² allows researchers to account for height, age, and sex, but it does not consider lean muscle content vs. fat content.

Many minority legislators receive a lot of funding from large SSB manufacturing companies thus, there is expected push back in terms of this tax proposal as those who represent the interest of big corporations rarely seem to adhere to the possible health benefits of taxing SSB producers. There exists a possibility for unintended consequences, studies report a “decline of 8.1% in the combined sales of beverages, food, and household products in Philadelphia. Cross-border purchasing, Cross-border...has raised concerns that businesses within taxed jurisdictions could lose sales to competitors across the border... economic effects on non-chain stores will be important to track” (Madsen et al., 2019). Moreover, the SSB industry has been known to employ two primary tactics to block diffusion of public health policy: “preemption and creating doubt about the science supporting SSB taxation and overall negative health outcomes related to consumption of SSBs. State preemption laws, which prohibit local jurisdictions from passing SSB taxes, are of particular concern because they undermine local democracy and prevent communities from making policy that reflect local values and priorities” (Madsen et al., 2019).

Summary, Conclusions and Future Research

Obesity and dental caries formation have a strong correlation with sugar sweetened beverage consumption amongst African American and Latino children. The trend of obesity and high caries rates increase drastically when looking at economically disadvantaged African American and Latino housing districts such as the Watts district of Los Angeles, California. The rationale for this research is to address the knowledge gap between dental caries formation and the cost of sugar sweetened beverages. This Thesis proposes a future research project that will collect descriptive, quantitative, qualitative, observational, and experimental data to empirically test the hypothesis.

The hypothesis: Primary school children living in low socioeconomic districts of Los Angeles will display a lower prevalence of dental caries formation and obesity over a 2-year period after a Sugar Sweetened Beverage tax is implemented within the borders of their respective housing district. The null hypothesis: Primary school children living in low socioeconomic districts of Los Angeles will display no difference in dental caries formation and obesity over a 2-year period after a Sugar Sweetened Beverage tax is implemented within the borders of their respective housing district. The alternative hypothesis: Primary school children living in low socioeconomic districts of Los Angeles will display differences in dental caries formation and obesity recorded over a two-year period after a Sugar Sweetened Beverage tax is implemented within the borders of their respective housing district.

This proposed future research project aims to explore the correlation between sugar sweetened beverage consumption and dental caries formation in Black and Latino primary school children, aged 10-13 years, and grades sixth - eighth. The project will use data from

previous research to create the parameters and procedures for the conduct of future research. This thesis proposes a study to explore the effects of increasing taxes of SSB on the prevalence of dental caries formation and obesity in African American and Latino primary school children living in economically disadvantaged areas of Watts and Westchester in Los Angeles. The proposed research methods are qualitative, quantitative, observational, and experimental. The preliminary results from the qualitative study conclude economically disadvantaged African American and Latino children have higher rates of dental caries formation and obesity compared to White children living about the poverty line. The results also highlight African American and Latino children's greater likelihood to consume SSB compared to their White counterparts. The experimental results of this paper are inconclusive as the experimental intervention and implementation of the sugar tax is prospective and has not taken place at present. Therefore, no concrete experimental conclusions can be reported at this time.

APPENDIX

Human Subjects Protection:

The author anticipates no significant risk to study participants. All personal identifiers will be removed from gathered data to protect participants' identity. However, the proposed study design and procedures will be submitted for IRB approval.

Questionnaire Example for Proposed Future Research:

1. How often does your child visit their local dentist?
2. About how far is your child's local dentist from your home.
3. Do you have to rely on public transit to get to your child's oral health care provider?
4. How much time do you spend with your child discussing oral health care and health practices to maintain a healthy smile?
5. How important teeth are to your family on a scale of 1-10.
6. How often would you say our child consumes sugar sweeten beverages?
7. How often does your child eat ultra processed foods?
8. Would you consider your child to be overweight?
9. What is the height and weight of your child?
10. Does your family receive government assistance such as SNAP or WIC?
11. What are your monthly expenses on food and groceries?
12. How often does your child eat fast food?

Budget: \$250,000

- Personnel: \$25,000
 - Research fellowship for PI and other essential staff (10%)
- Supplies

- Dental exam pre and post intervention kits \$37,500 (15%)
 - Field trip food and refreshments \$2,000 (2%)
- Equipment: \$87,000
 - Supplement Dental Mobile Clinic (35%)
- Travel:7,500 (3%)
 - Buses to and from ACU for field trips
 - Mobile Clinic Gas
- Other: \$87,000 (35%)

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