AN EXCISE TAX ON SUGAR-SWEETENED DRINKS AS HEALTH POLICY:

CAN TAXATION INFLUENCE WEIGHT?

A Thesis

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Abstract

of

AN EXCISE TAX ON SUGAR-SWEETENED DRINKS AS HEALTH POLICY:

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Weight related health issues have become a focal point for health policy as two-thirds of adults in the United States are overweight or obese. California lawmakers at the state and local levels of government have taken a proactive approach to reducing this health issue by proposing a one-cent per ounce excise tax on sugar-sweetened drinks. The rationale behind such taxes is that the increased cost of these goods will reduce consumption, thus reducing weight, as people will choose less expensive, healthier food options. However, prior literature suggests that excise taxes may not have the effect anticipated, underscoring the need for further research. By developing a logistic regression analysis using California Health Interview Survey data, I examine the effect a one-cent per ounce tax will have if it were to be applied to soda at the state level in California. I find that this tax will result in a negligible reduction of overweight and obesity prevalence for a small subsection of California's overall population. I conclude

that a one-cent per ounce excise tax on sugar-sweetened drinks will not have the policy effect desired by advocates.

_____, Committee Chair
Su Jin Jez, Ph.D.

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Date

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Chapter 1

INTRODUCTION

Obesity prevalence has increased significantly in the United States over the past three decades. Two-thirds of adults are above a healthy weight, one-third of adults are medically obese (Wang & Beydoun, 2007), and 17% of children and adolescents are obese (Ogden et al., 2012). These staggering numbers have prompted medical professionals to declare the obesity epidemic to be a national health crisis. In an effort to reduce the prevalence of this health problem, governments at the national, state, and local levels have begun to look towards health policy for solutions.

Many governments in the United States have turned to the taxation of what are considered unhealthy consumable goods, such as snack foods and sugar-sweetened drinks, as a way to limit this health issue. The rationale behind these taxes is that the increased cost of these goods will reduce consumption, thus reducing obesity, as people will choose less expensive, healthier food options. In California, such taxation has been proposed at the state and local levels of government with a majority of the proposed laws opting to implement a one-cent per ounce excise tax on sugar-sweetened drinks. As this policy option gains support and variations of this tax continues to appear on ballots as local level measures and as bills in the California State Legislature, it is necessary to answer the question, “Will a one-cent per ounce tax on sugar-sweetened drinks reduce overweight and obesity prevalence in the California?”

Weight Related Health Concerns

Obesity and above average weight in adults and adolescents is associated with numerous health concerns and has become the number one cause of preventable deaths in the United States (U.S. Department of Health and Human Services, 2012). For adults, being medically obese can be directly linked to type 2 diabetes, heart disease, high blood pressure, osteoarthritis, respiratory problems, metabolic syndrome, and numerous types of cancer (U.S. Department of Health and Human Services, 2012; Stanford Health Care, 2015). For children and adolescents, obesity can be linked to several medical issues such as musculoskeletal problems, prediabetes, sleep apnea, and psychological issues (Kelly, 2013; Centers for Disease Control and Prevention, 2014). Statistically, 80% of adolescents that are overweight between the ages of 10 and 15 will become obese by the age of 25 and experience obesity-related health problems throughout their lives (Frieden et al., 2010, Center for Disease Control and Prevention).

The increased obesity prevalence in the United States is also an economic burden and has led to increased medical costs (Finkelstien et al., 2009; Cawley & Meyerhoefer, 2012). On average, obese people incur $1,429 more in medical costs annually than people of healthy weight (Finkelstien et al., 2009). The overall medical costs that can be linked to the treatment of overweight and obesity related health issues has nearly doubled between 1998 and 2008 from $78.5 billion to $147 billion. These estimates are alarming as approximately half of these costs are publicly financed through Medicare and Medicaid (Finkelstien et al., 2009).

Governmental Preventative Policy Efforts

The health and economic concerns associated with the obesity epidemic have prompted federal, state, and local level governments to examine the use of policy implementation to aid in the reduction of obesity. These preventative policy measures have taken numerous forms.

The federal government has implemented several policies and programs to address the obesity epidemic in the United States in recent years (Novak & Brownell, 2012). First Lady Michelle Obama has made childhood obesity a focal point of her political agenda as she has promoted obesity preventive measures through her "Let's Move" campaign and the Healthy, Hunger Free Kids Act of 2010 (Let's Move, n.d.; Wojcicki & Heyman, 2010). With a focus on childhood obesity, these programs employ strategies for obesity awareness and the need for increased levels of physical activity. They also employ the restructuring of the national public school breakfast and lunch programs by the United States Department of Agriculture to increase the nutritional value of school meals (Wojcicki & Heyman, 2010; United States Department of Agriculture, 2014).

In California, there have been several attempts to use public policy at the state level to aid in the reduction of obesity. In 2014, SB 1000 was introduced in the California State Senate. This bill would have forced manufacturers of drinks with high sugar content to put health warnings on 12-ounce drinks containing more than 75 calories. The goal of this bill was to reduce soft drink consumption as it asserts that there is a correlation between soft drink consumption and obesity prevalence (McGreevy, 2014). Despite being

unable to pass this bill, similar legislation continues to be introduced in the California Legislature. In the same year, SB 622 was introduced to the California State Senate (California Chamber of Commerce, 2014). Had this bill been passed, it would have imposed a one-cent per ounce excise tax on sugar-sweetened drinks in the state to deter consumption of such products, with the revenue generated being earmarked for programs to prevent childhood obesity (Rosenhall, 2013).

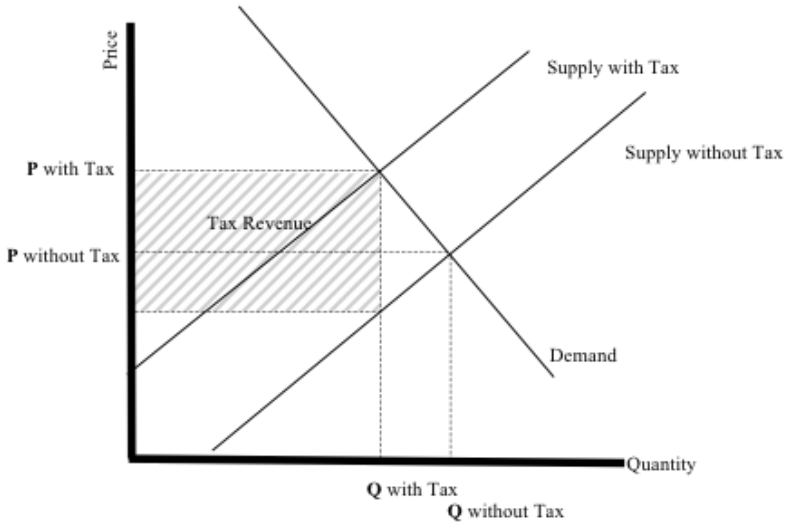
Local level governments have also addressed the taxation of sugar-sweetened drinks to reduce obesity. There have been approximately 30 cities throughout the country that have attempted to impose excise taxes on sugar-sweetened drinks (Knight, 2014). Only recently have such efforts been successful. In November of 2014, Berkeley, California passed Measure D making it the first city in the country to levy a per ounce excise tax on sugar-sweetened drinks (Knight, 2014).

The Rationale of a Sugar-Sweetened Drink Excise Tax

The use of taxes on food and drinks that are understood to be unhealthy has been a common tool for health policy throughout the country. It has taken many shapes such as per unit excise taxes or simply increased rates for which a good is taxed. It is argued that it is a logical approach to this health issue as it can potentially limit consumption of harmful goods and generate revenue for governmental entities to further combat the obesity epidemic (Brownell & Frieden 2009). While the use of excise taxes on sugar-sweetened drinks is limited, approximately 20 states tax sugar-sweetened beverages at a higher rate than other consumable goods (Bridging the Gap, 2014).

Excise taxes function by increasing the price point of a product, which in turn reduces the demand due to price elasticity (% change in quantity demanded/% change in price). A good is said to be elastic if it is responsive to a change in price, conversely a product is considered inelastic if shifts in prices have little or no effect on demand (Gamble, 1989). Price elasticity of a good becomes the dominant predicting factor in the effectiveness of an excise tax for changes in tax revenue and demand.

Figure 1.1 Excise Taxation's Economic Effect



Health policy discussions in the United States have begun to move toward per unit excise taxes on sugar-sweetened drinks for several reasons. Previous and current taxes on snacks and candy have been difficult to implement. This is because these commodities lack commonly accepted definitions, leading different states to develop unique descriptions of what constitutes a snack or candy, which can in turn lead to legal debate (Drenkard, 2011; Jacobson & Brownell, 2000). Sugar-sweetened drinks have a generally accepted definition, making tax policy for such beverages easy to develop and

enforce. It is generally accepted that sugar-sweetened drinks are considered beverages that contain caloric sweeteners such as soft drinks, fruit drinks, sports drinks, energy drinks, teas, and sweetened milks (California Department of Public Health, 2010; Brownell & Frieden, 2009)

The movement towards a per unit excise taxes rather than increased sales tax, which is currently the more commonplace form of taxation (Brownell & Frieden, 2009), is due to its increased ability to deter consumption. Increased sales tax rates can act as an enticement to buy in bulk and to purchase inexpensive brands of a taxed commodity rather than actually limiting consumption (Brownell & Frieden, 2009). Excise taxes structured as fixed costs per weight interval provide incentive to buy less while still generating increased revenue for a governmental entity.

Proponents of a one-cent per ounce tax on sugar-sweetened drinks argue that the additional revenue gained through this tax can be earmarked for further obesity preventative measures (Jacobson & Brownell, 2000). Throughout the United States ad campaigns and earmarked governmental revenue have been used to promote healthy dietary patterns and physical activity in an effort to reduce obesity prevalence. Despite these efforts funding is drastically one sided in favor of manufacturers of sugar-sweetened drinks and calorie-dense food. Companies that manufacture these products collectively spend over $1 billion per year on advertisements whereas the most prominent national health campaigns receive an average of $1 million annually (Jacobson & Brownell, 2000). The oversaturation of ad campaigns for these products can lead to information asymmetry as consumers are provided comparatively limited exposure to

information regarding the health hazards related to over consumption of these goods (Powell & Chaloupka, 2009).

Purpose of Thesis

A one-cent per ounce tax on sugar-sweetened drinks has become the focal point for obesity preventative policy. Throughout California, at the state and local levels of government, variations of this tax have been proposed in numerous capacities. Despite the limited success governments have experienced in getting these taxes approved by voters or the California State Legislature, experts and politicians predict that proponents will continue to lobby for such taxation (Knight, 2014; California Chamber of Commerce, 2014).

The purpose of this thesis is to examine the potential impact a one-cent per ounce tax on sugar-sweetened drinks will have on overweight and obesity prevalence if it were to be implemented at the state level in California. I develop a logistic regression analysis to predict how this tax will influence weight. This thesis contributes to health policy research by determining if an excise tax on sugar-sweetened drinks is an effective policy for California.

Chapter 2

LITERATURE REVIEW

There are three essential themes that must be reviewed to provide context to the discussion of how a one-cent per ounce tax on sugar-sweetened drinks may limit overweight and obesity prevalence. The first is understanding this health issue: how it is measured and what population are affected. The second component is the understanding of current tax methods for taxing unhealthy foods and drinks: the use of excise taxes, taxation to deter consumption, and taxation to decrease obesity. The third theme is the examination of the association between sugar-sweetened drinks and obesity: is the consumption of sugar-sweetened drinks an explanatory factor for obesity?

In this chapter I will examine peer-reviewed academic literature is it relates to these themes. I will identify gaps in the current literature and discuss how it may affect my study. Based on my findings I will theorize the effect a one-cent per ounce tax on sugar-sweetened drinks will have on overweight and obesity prevalence in California.

Overweight and Obese Populations in the United States

As the implementation of a tax on sugar-sweetened drinks is being used as a tool to combat weight related health issues in adults and adolescents, it is necessary to examine measurements and trends as they relate to overweight and obesity prevalence. The purpose of this section is to review the literature on the association between these components. I begin by identifying the measurements of obesity to provide context as to how weight is categorized in related research and throughout this thesis. I will then

identify trends in obesity as they relate to demographics and socioeconomic status to determine if different populations are affected by this health issue at different rates.

Definitions and Measurements Used in Health Research

"Overweight" and "obesity" have specific definitions that are used throughout related literature to categorize an individual's weight. The World Health Organization developed the most common definition for obesity; it defines obesity as a disease wherein body fat is in excess to the point health is impaired. "Overweight" is defined as weight above what is considered normal for a person based on their height, age and sex; wherein weight can begin to contribute to health issues (Centers for Disease Control and Prevention, 2012).

The standard unit of measurement in obesity discussions is Body Mass Index (BMI). BMI is calculated by dividing an individual's weight, in kilograms, by the squared sum of the individual height, measured in meters (kg/m^2). Adults with a BMI over 25 kg/m^2 and 30 kg/m^2 are considered overweight and obese, respectively. These cut points are recommended by the National Heart, Lung, and Blood Institute and the North American Association for the Study of Obesity, Expert Committee to provide a national consensus for cut points (Wang & Beydoun, 2007). BMI is a correlation, it does not directly measure body fat, thus it is possible for a healthy person to have an overweight BMI score due to factors such as an unusually large amount of muscle mass (Centers for Disease Control and Prevention, 2012).

Adolescent obesity is also measured using BMI with a key difference being the employment of methods to account for growth. Age-sex specific BMI percentiles for ages

6 through 19 were originally developed using the National Health and Nutrition Examination Survey (NHANES) data collected from 1971-1974. Youth in the 85th percentile are considered "overweight" while youth in 95th percentile are considered "obese" (Wang & Beydoun, 2007). In recent years, research has relied on the 2000 Center for Disease Control and Prevention Growth Chart for interpreting adolescent BMI scores. This method uses the same cut points of the 85th and 95th percentiles, however, measurements include national data sets collected over a 40-year period to provide increased accuracy and includes calculations for children ages 2 through 5 (Wang & Beydoun, 2007).

Growing Racial and Ethnic Differences in Overweight and Obesity Prevalence Persist

Obesity has been a point of increasing concern over the past four decades in the United States as prevalence has steadily risen. In a meta-regression analysis using the 1971-1974, 1976-1980, 1988-1994 and 1999-2004 NHANES data sets, Wang and Beydoun (2007) find that there has been a steady increase in average BMI for men and women in the United States between 1971 and 2001 (male from 25.3 to 27.6; female from 24.4 to 28.2, respectively). The authors speculate that between 2003 and 2004, 29.1% of adults over the age of 20 were overweight and 37.2% were obese. When controlling for race and ethnicity, terms that are used interchangeably throughout the literature, patterns of disparities emerge. The authors conclude that Non-Hispanic Blacks and Mexican Americans both, on average, have a 10% higher rate of obesity prevalence than Non-Hispanic Whites. In a recent study, using the 2011-2012 NHANES data, Ogden, Carroll, Kit and Flegal (2014) find that 33.6% of adults over the age of 20 are

overweight and 34.9% are obese. In comparison with the past NHANES analyses of adult weight, there has been a 4.5% increase in overweight prevalence and a 2.6% decrease in obesity prevalence between the survey cycles. These trends allow the authors to conclude overweight and obesity prevalence in adults has begun to plateau but remains precariously high.

Adolescent obesity trends have exhibited patterns similar to adults in the United States (Wang & Beydoun, 2007; Ogden et al., 2012). Using the NHANES 2009-2010 data sets Ogden, Carroll, Kit, and Flegal (2012) find that of the 4,111 adolescents, ages 2 to 19 years old, surveyed, 16.9% are obese. In a review of regression models developed using the five prior NAHNES survey cycles from 1999 through 2008, the authors find disparities in obesity when controlling for race. When comparing obesity rates of Mexican Americans and Non-Hispanic Blacks to Non-Hispanic Whites, for each sex, they find distinct differences among prevalence of obesity across age groups. In comparison to adolescent Non-Hispanic White males, Non-Hispanic Black and Mexican American males have increased odds of being obese (odds-ratio of 1.27 and 1.81 and statistically significant at the 95% confidence level, respectively). The same pattern exists when comparing Non-Hispanic White females to Non-Hispanic Black and Mexican American females (odds-ratios of 1.99 and 1.47 and statistically significant at the 95% confidence level, respectively). Similar to adult populations, obesity prevalence in adolescents has begun to plateau over the past decade (Ogden et al., 2014) and is no longer experiencing the rapid growth that was present in 1980's and 1990's (Ogden et al., 2012). Besides children between the ages of 2 and 5 experiencing a 5.5% decrease (P-

value 0.03) in obesity prevalence between the 2003-2004 and the 2011-2012 NAHNES survey cycles (Ogden et al., 2012), obesity prevalence remains at an unhealthily high level in all adolescent age categories.

The California Perspective

Analysis as to how obesity effects various populations in California is limited. To increase the understanding of adolescent obesity specifically in the state of California, Babey, Hastert, Wolstein, and Diamant (2010) examine the correlation between overweight and obesity prevalence and the explanatory variables gender, family income and race. Using panel data collected from 17,535 adolescent respondents to the California Health Interview Survey (CHIS) between 2001 and 2007, the authors developed a logistic regression analysis. They conclude that over this time period, a gap in obesity prevalence grew between adolescents with the lowest (incomes below the federal poverty line) and highest (income 300% or more above the federal poverty line) family incomes. In 2001 adolescent obesity prevalence was 70% higher (P-value 0.01) among adolescents from low income families than adolescents from high income families, whereas in 2007 obesity prevalence was 185% higher (P-value 0.001) among adolescents from low income families than adolescents from high income families. This study fails to produce any other statistically significant results, however it demonstrates that a multitude of factors can be related to obesity prevalence in California.

Summary

A review of the literature as it relates to the measurements of overweight and obesity prevalence and demographic trends provides useful information for

understanding this health issue. All studies use the BMI measurement system to examine overweight and obesity. Disparities emerge when choosing to analyze overweight populations. There are no studies that analyze overweight populations in California making it difficult to determine if California follows national trends for this health issues.

It is clear that there are racial disparities in obesity prevalence. Non-Hispanic Blacks and Mexican Americans suffer from obesity at a greater rate than Non-Hispanic Whites across gender and age groups. Noticeably missing from the literature is the comprehensive review of races and ethnicities other than Non-Hispanic blacks, Mexican Americans and Non-Hispanic Whites. The lack of data is discussed in varying capacities with authors citing such issues as inadequate data for other racial subcategories and variations in how subgroups are defined (Wang & Beydoun, 2007).

Similar to racial and ethnic disparities, the literature fails to provide an in depth analysis of socioeconomic variables that may be associated with overweight and obesity prevalence. As Babey, Hastert, Wolstein, and Diamant (2010) find an association between weight and income in California adolescents is present, it is necessary to analyze income as well as other socioeconomic variables such as education and geographic location to determine if such factor effect overweight and obesity prevalence in California.

Taxation as Obesity Prevention

As the California legislature considers the implementation of an excise tax on sugar-sweetened drinks to curb the obesity epidemic, it is necessary to develop an understanding of how such a tax will discourage consumption. This section will review

how these taxes are currently being used in the United States. It will examine the taxes effect on demand and weight prevalence.

The Politics of Taxing Food and Drinks

Taxation of sugar-sweetened drinks and calorie dense food, such as snacks (i.e. chips, candy, etc.) to generate revenue and deter spending is used in varying capacities across the United States. Currently the use of this taxation is piecemeal, as states and jurisdictions use a multitude of methods to design and define such taxes (Powell et al., 2013). Governmental entities may choose to levy such taxes at the wholesale or retail level and vary in the percentage rate or fixed amount for which a good is taxed. Governments also choose what goods to tax and how to define them such as opting only to tax soft drinks or all artificially sweetened drinks (Jacobson et al., 2000). As such, it is estimated that between 19 and 39 states and jurisdictions implement variations of such taxes with exact estimations being dependent on the definition of the tax (Jacobson et al., 2000; Powell et al., 2009; Fletcher et al., 2010).

Increased taxes for calorie dense food and sugar-sweetened drinks can often be associated with political and legal difficulties for governments implementing these taxes (Jacobson et al., 2000). As the intention of per unit excise taxes, as well as sales tax increases based on percentage, is to reduce consumption, producers of such goods have begun to lobby against increased taxes for their products (Kim & Kawachi, 2006). These industries have taken such action as threatening to close plants and cancel contracts with companies in effected jurisdiction. This political pressure has resulted in the repeal of

snack and beverage related taxes in 12 jurisdictions between 1991 and 2000 (Jacobson et al., 2000).

Snack taxes have created a legal burden for governmental entities as the definition of a snack is often subjected to interpretation. As there is no general accepted definition for a candy or junk food, each jurisdiction must develop a specific definition for these goods so that it can identify a base for the tax, such as categorizing these goods by ingredients or calorie content (Drenkard, 2011). The discretion as to what constitutes a snack or junk food can cause governing bodies to enter costly legal battles as these laws are subject to judicial review (Jacobson et al., 2000). Conversely, taxes on sugar-sweetened drinks can face limited legal obstacles as sugar-sweetened drinks have a generally accepted definition (California Department of Public Health, 2010; Brownell & Frieden, 2009).

Tax Effects on Weight and Demand

Research on the effects of the taxes as it relates to demand and weight has produced a wide range of conclusions. In a logistic regression analysis, Kim and Kawaschi (2006) examine the association between state-level snack and soft drink taxes and obesity using state level tax data combined with Behavior Risk Factor Surveillance System (BRFSS) survey data collected between 1991 and 1998. After controlling for race, median age, and mean income they conclude that states without a soda or snack tax are more than four times as likely (odds-ratio of 4.2 at the 95% confidence level) to experience increases in obesity prevalence than states with such tax policy (defined as being above the 75^{th} percentile in the relative increase). Despite the potential significance

of this finding the study suffers from a small sample size and fails to control for local level taxes that may skew the results.

Numerous studies find a limited association between taxes on unhealthy foods and obesity that contradict the 2006 of Kim and Kawaschi study (Powel & Chaloupka, 2009). In one such study, Kuchler, Tegene, and Harris (2004) predict changes in consumption of snack foods using Harris ACNielsen Homescan panel data collected over a ten-month period from 7,195 households in 1999. By calculating consumer response to tax increases the authors conclude that tax increases ranging from 0.4% to 30% would only reduce consumption by 0.19 to 13.89 ounces, annually. This limited change in consumption suggests that an increased tax on these goods would be associated with a negligible overall change in consumption. This study has significant limitations as it fails to apply an elasticity rate of demand, instead the authors apply a range of inelastic rates ranging from -0.2 to -1.0. Failing to include an elastic rate effect (Elasticity greater than -1.0) skews the results of this study.

The analysis of price elasticity of various calorie-dense foods provides little evidence to support the use of taxation to curb consumption of these products (Kim & Kawachi, 2006; Powell et al., 2013; Powell & Chaloupka, 2009). However, as policy discussions have begun to move towards the implementation of excise taxes on beverages, it is necessary to analyze the research as it relates directly to the price elasticity of sugar-sweetened drinks. In a study examining price elasticity as it relates to consumption, Powell, Chriqui, Khan, Wada, and Chaloupka (2012) identify 12 studies between 2007 and 2012 that calculate price elasticity of sugar-sweetened drinks. The

aggregation of predicted price elasticity for regular carbonated soft drinks, sports drinks, and fruit drinks developed in these studies allow the authors to conclude that sugar-sweetened drink are in fact price elastic with a price elasticity of -1.21. This price elasticity equates to a 20% increase in cost causing a 24% reduction in consumption of sugar-sweetened drinks (Powell et al., 2012).

Summary

The literature shows that a one-cent per ounce tax on sugar-sweetened drinks may be met with resistance from industries and stakeholders that have a vested interest in the manufacturing and sale of these products. While states vary in how they develop taxes on sugar-sweetened drinks and calorie dense food, there are limited and conflicting findings as to the effects these taxes have on overweight or obesity prevalence. Despite the limitations in these findings, the research has developed a significant conclusion in finding sugar-sweetened drinks to be price elastic. The prices elasticity of sugar-sweetened drinks is small, however, it does prove that a price increase will reduce consumption of this product.

Dietary Factors Influence on Weight

Sugar-sweetened drinks are theorized to be a contributing factor to obesity as the high caloric content of these beverages can contribute to over consumption of calories in one's daily diet (Fletcher et al., 2010; Sun & Empie, 2007). An excise tax policy suggests that the increased cost of this commodity will reduce consumption of sugar-sweetened drinks. This is relationship is found to exist in that sugar-sweetened drinks are price elastic (Powell et al., 2012). To determine if this policy will be effective it is also

necessary to examine the relationship between consumption of sugar-sweetened drinks and overweight and obesity prevalence in adults, adolescents, and children. Is the consumption of this product associated with increased weight in these populations and will a price increase reduce weight.

The Relationship Between Sugar-Sweetened Drinks and Weight

Taxing sugar-sweetened drinks as a means of obesity preventative policy suggests that there is a positive association between the consumptions of sugar-sweetened drinks and obesity. In a logistic regression analysis, Sun and Empie (2007) examine this relationship by combining data from the Continuing Survey of Food Intakes by Individuals (CSFII) from 1989-1991 and 1994-1996 with the NHANES 1988-1994, 1999-2000, and 2001-2002 data sets. Examining the dichotomous dependent variable of obesity and the explanatory variables of sugar-sweetened drink consumption, gender, age, smoking, education level, hours of television watched, fat intake level and daily energy intake level, the authors' findings mirror previous studies. While the results show that obesity has increased for men and women between 1989 and 2002 (14.5% to 27.5% and 14.9% to 34.4%, respectively), the results showed no relationship between consumption of sugar-sweetened drinks or energy intake with obesity prevalence. Instead, variables such as age, education, smoking habit, physical activity, television watching and diet have statistically significant relationships with obesity prevalence across data sets. However, as the data is collected from multiple survey sets using different descriptions for each variable, the authors had to compromise the definitions of

the data points in order to aggregate the data. This can act to limit the accuracy of the findings as the study may have low internal validity.

In an effort to understand the association between the consumption of sugar-sweetened drinks and obesity in adolescents, Ludwig, Peterson, and Gortmaker (2001) examine 548 6th and 7th grade students in the Boston, Massachusetts metropolitan between 1995 and 1997. Using the panel data collected, the authors develop a logistic regression analysis examining the association between the dependent variable BMI and the explanatory variables sugar-sweetened drink consumption, dietary intake, physical activity and television viewing. After controlling for these explanatory variables, the authors conclude that a positive relationship exists between consumption of sugar-sweetened drinks and obesity. One's odds of becoming obese increases for every sugar-sweetened drinks consumed per day by 60% (statistically significant with a 95% confidence interval). Despite the dramatic correlation exhibited in the study, the external validity of this research is limited. As the data collected is regional specific, with a limited number of data points, of which only 37 are observed cases of obesity, it is difficult to generalize these findings.

The Relationship Between Price of Sugar-Sweetened Drinks and Weight

As sugar-sweetened drinks are proven to be price elastic, it is necessary to analyze how taxation will directly affect obesity. Fletcher, Fresvold and Tefft (2010) examine this relationship in adults using a two-way fixed effects ordinal least squared regression analysis using soft drink tax data and BRFSS survey data collected between 1990 and 2006. Defining soft drinks as non-alcoholic, artificially sweetened drinks and carbonated

water they analyze the effects tax increases have on the dependent variables BMI. The results suggest soft drink taxes have a small yet statistically significant negative relationship with adult BMI. An increase in state soft drink tax by one percentage point decreases BMI by at least 0.003 and decreases overweight and obesity prevalence by 0.02% and 0.01%, (99.9% confidence level), respectively. When controlling for income taxation of soft drinks has an increased influence on overweight and obesity prevalence for populations with the highest and lowest income levels. A one percentage point increase in a tax causes overweight and obesity prevalence to decrease by 0.08% and 0.05% (99.9% confidence level), respectively, for the highest income bracket (income above $50,000). A one percentage point increase causes a decrease in overweight and obesity prevalence by 0.10% and 0.08% (99.9% confidence level), respectively, for the lowest income bracket (income below $10,000).

Literature on the implementation of taxes as obesity prevention has largely focused on adolescent consumption of sugar-sweetened drinks (Sturm et al., 2010; Powell et al., 2009, Freiden et al., 2010). Using a multivariate linear regression analysis, Powell, Chriqui, and Chaloupka (2009) examine the associations of state-level grocery store soda tax and vending machine soda tax with national high school student BMI data drawn from the Monitoring the Future survey collected between 1997 and 2006. The authors find no statistically significant relationship between state-level grocery store soda taxes and adolescent weight outcomes. The authors do find a statistically significant negative association between vending machine taxes and BMI in adolescents at risk of being overweight (defined as adolescents whose BMI was equal to or greater than the

age-gender specific 85th percentile) in that a 1.0% increase in a tax can be associated with a 0.006 decrease in BMI (P value 0.09).

When analyzing price increases of sugar-sweetened drinks and its effects on consumptions for children, outcomes can vary when examining socioeconomic and racial characteristics. Combining data from the Early Childhood Longitudinal Study with state level soda taxes, Sturm, Powell, Chriqui and Chaloupka (2010) develop a regression analysis that analyzes this relationship for 7,300 kindergarten age survey respondents. In this study, no statistically significant findings are found for the change in consumption for the overall population. However, the authors find that a 1.0% price increase created a statistically significant reduction in BMI for African American students, students with family incomes less than $25,000, and students who watch 9 hours or more of television per week (-0.103, -0.039, and -0.029 reduction in average BMI, respectively).

Summary

The literature finds a small, statistically significant, relationship between consumption of sugar-sweetened drinks and individual BMI. Research has found no relationship between sugar-sweetened drinks and weight for adults, however, a relationship between these variables is present in adolescent populations. There is no substantial information on the effects of consumption of sugar-sweetened drinks and child populations.

The studies have limitations in that they are observational and are not controlled experimental studies. The data sets have the potential to be skewed in that participants

may underreport consumption of sugar-sweetened drinks and other potentially unhealthy habits while over reporting exercise and consumption of healthy food.

Despite the limited findings regarding the relationship between sugar-sweetened drinks and weight, a negative relationship is found to exist between the price of sugar-sweetened drinks and BMI for adults, adolescents and children. A 1.0% price increase in sugar-sweetened drinks will cause a small, yet statistically significant, reduction in BMI for these populations. The methods for examining this relationship vary significantly, they often focus on state level taxes. Studies that control for demographic and socioeconomic characteristics find increased correlation between price and weight reduction.

What the Literature Tells Us

The three themes discussed in this literature review provide context as to the effect a one-cent per ounce tax on sugar-sweetened drink may have on obesity and overweight prevalence. Despite the push for an excise tax on sugar-sweetened drinks, the research on this and related policy options has thus far failed to provide substantial data that would suggest that such a tax would have a significant effect on weight. The discretion that governments have in how they develop these laws and define the commodities being taxed limits the ability to study the impacts of these policies. Studies often combine multiple, varying tax policies to provide a broad understanding of how they can effect weight. This contributes to the limited literature on the effect of excise taxes on sugar-sweetened drinks as such taxes often fail to be a focal point of these studies.

While gaps in the literature are present, it provides important findings for my study:

- sugar-sweetened drinks are price elastic;
- a 1.0% increase in prices is related to a 0.003 reduction in BMI; and
- minorities are affected by obesity and overweight prevalence at a higher rate than Non-Hispanic Whites

This literature review discusses several important findings as they relate to the implementation of a per unit excise tax on sugar-sweetened drinks, however the gaps in the literature provide evidence for the need to further analyze this tax policy. There is a need for a study to isolate excise tax policy from other, similar, tax policies to determine if this specific tax structure has an effect on weight. It is also necessary to develop an analysis that focuses on the study of California populations.

In the following chapters, I examine this tax policy as it relates specifically to California and prevalence of weight related health issues in the state. I examine multiple socioeconomic and racial variables to identify how they may affect overweight and obesity prevalence for Californians. I examine price elasticity for sugar-sweetened drinks and predict how an excise tax on this product would affect demand and weight outcomes. I conclude with my predictions for how a one-cent per ounce tax on sugar-sweetened drinks will effect overweight and obesity prevalence if this tax policy were to be implemented in California.

Chapter 3

METHODOLOGY

The literature on taxation as a method of overweight and obesity prevention suggests that there is a small, statistically significant, negative relationship between the cost of the sugar-sweetened drinks and weight. Building on this research, I quantitatively analyze how a one-cent per ounce tax on sugar-sweetened drinks will affect overweight and obesity prevalence in California. In this chapter, I describe my methodology and provide the framework for the analysis.

Method

To determine how a one-cent per ounce excise tax on sugar-sweetened drinks effects adult weight I develop a two-part logistic regression analysis. I mirror similar studies by examining the weight categories of overweight and obese as defined by the Center for Disease Control and Prevention. By comparing current consumption rates of sugar-sweetened drinks and predicted consumption rates with a one-cent per ounce tax applied to these drinks, I determine if the likelihood of a person being overweight or obese is reduced as a result of this tax.

Model

Overweight/Obesity = f(Soda Consumption, Demographic, Socioeconomic, Health)

The two-part logistic regression analysis examines 20 independent variables to determine how each variable affects the odds of an adult being overweight or obese. The independent variables selected are based on demographic, socioeconomic and health characteristics identified in the literature to have a statistically significant relationship

with overweight and obesity prevalence. As the focus of the study is to predict how a tax on sugar-sweetened drinks effects overweight and obesity prevalence, soda consumption is the key explanatory variable. In the two parts, soda consumption takes on two different forms – pre-tax and post-tax. This allows for the comparison of the likelihood of being overweight or obese before a tax and after a tax is applied to these drinks.

Data

This study uses the 2011-2012 California Health Interview Survey (CHIS) Adult data set. The CHIS consists of individual level survey data collected from 42,935 adults living in California between 2011 and 2012 that are between the ages of 18 and 85. It is an ongoing biennial, cross-sectional health survey first implemented in 2001 collected by the University of California Los Angeles (UCLA), Center for Health Policy. The survey respondents are selected using random-digit-dialing and consists of approximately 80% landlines and 20% cellular phones numbers. Phone numbers selected for the random-digit-dialing process are based on 56 geographically stratified areas developed by the UCLA Center for Health Policy to increase the accuracy of identifying adult demographic populations throughout California. The data set is weighted to reflect 2012 population estimates developed by the California Department of Finance to increase the accuracy in developing a cross-section of demographic populations in California (California Health Interview Survey, 2014). As only 2% of the American population lacks access to a cellular phone or a landline (Pew Research Center, 2015), the sample data should reflect the 2012 California population to a high degree.

Dependent Variable: Whether or not Respondent is Overweight/Obese

My dependent variable is whether or not an adult respondent is overweight or obese, measured by a BMI score of 25 or greater. I group overweight and obese respondents together to expand the focus of my study. As overweight and obese populations both experience increased susceptibility to health problems (Frieden et al., 2010), combining these variables increases the ability to analyze how tax policy will effect weight related health issues in California.

Key Explanatory Variable$_1$ = f(Sodas per Week)

The key explanatory variable for this study is the number of sodas drank per week for individual adults. The CHIS survey set defines soda or "pop" as sugar-sweetened drinks that contain sugar; excluding teas and juices, diet drinks (California Health Interview Survey, 2014). SB 622, the latest tax on sugar-sweetened drinks to be considered in the California State Legislature, identifies sugar-sweetened drinks as beverages that include soda, soft drinks, sports drinks, energy drinks, juice drinks, ice teas, and vitamin fortified waters (Velten, 2013). Similar to studies discussed in the literature review, these data fail to be perfectly collinear with the current tax being proposed. The CHIS survey only asks about sugar-sweetened sodas, which excludes teas, juices, sports drinks and diet drinks. This limitation affects the ability to generalize the findings in this study, but if an effect is found in this study, one may assume that the effect is more conservative than a tax on all sugar-sweetened beverages would be. However, as the CHIS survey set is the most comprehensive health survey developed to

analyze California populations (California Health Interview Survey, 2014) it is the most effective method for identifying the potential effect of the proposed tax.

Independent Variables

The literature review finds that many demographic and socioeconomic variables can be associated with overweight and obesity prevalence. My own regression model expands on these findings (See Appendix A).

Demographic=ƒ(Latino, Non-Hispanic Pacific Islander or Non-Hispanic Alaskan, Non-Hispanic Asian, Non-Hispanic African American, Non-Hispanic Other/Two or More Races, Naturalized, Non-Citizen, Age, Male)

The literature suggests that minorities are affected by overweight and obesity prevalence at a higher rate than non-Hispanic whites (whites). I will parallel these studies by using the self-reported whites as the reference category for racial variables. Past studies have limited the focus of the research to only include the racial categories of non-Hispanic black (black) and Latinos due to the limitations of the data (Wang and Beydoun, 2007). The robustness of the CHIS data set allows the ability to include several other racial identification categories. I include categorical variables for non-Hispanic Asians (Asian), non-Hispanic Pacific Islanders (Pacific Islander), non-Hispanic Native Americans or non-Hispanic Alaskans (Native American or Alaskan), and a category for respondents who identify as multiple races or a different race. This allows for the increased analysis of ethnic and racial populations in California by determining their overweight and obesity prevalence in comparison to white respondents.

The literature largely fails to analyze the effect of citizenship on overweight and obesity prevalence. There is justification in expanding the study to include these relationships. Health research finds that ethnic minorities and low-income populations both suffer from a high prevalence of weight related health issues (Wang & Beydoun, 2007; Sturm, et al., 2010). Naturalized and non-citizens living in the United States are comparably less wealthy and less educated than those born in the United States (Grieco et al., 2012). The similarities between these populations may cause them to exhibit similar patterns of overweight and obesity prevalence. To explore this theory I include two dummy variables, Non-Citizen and Naturalize Citizen, which I compare to the reference category of U.S. Born Citizen.

Past studies show distinct differences in overweight and obesity prevalence when examining age and sex (Wang & Beydoun, 2007). As such, I will include the continuous variable of adult ages. I will examine the male respondents in comparison to the dummy category of female respondents.

Socioeconomic=f(100-199% of the Poverty Line, 200%-299% of the Poverty Line, 300% or more of Poverty Line, No Formal Education, High School Graduate, Vocational/AA/AS Degree, College Graduate, Post-Bachelor Degree)

The literature review finds that the relationship between socioeconomic variables and weight levels can be influenced by taxes on sugar-sweetened drinks. I will include several of these variables in my analysis to determine if the national trends discussed in the literature hold true for California populations.

Research posits that educational attainment has a negative relationship with weight (Sun & Empie, 2007). I examine this relationship as it relates to California populations. There are five dummy variables for categorizing educational attainment of the survey respondents including no formal education, GED or high school diploma, some college or possession of a vocational or associates degrees, college graduates, and post-bachelor degrees. These educational categories are compared to the reference category of respondents who did not complete high school.

The examination of the association between wealth and weight has provided a multitude of results. In adult populations, increased income is associated with lower weight levels (Babey et al., 2010). When analyzing price increases for sugar-sweetened drinks and weight levels, adults with comparatively low and comparatively high incomes can be associated with an increased reduction of weight when compared to people of average wealth (Fletcher et al. 2010). To further analyze the relationship between wealth and weight the regression models in this study examine wealth as it relates to the federal poverty line. Three dummy variables, identifying household income between 100% and 199% of the poverty line, household income between 200% and 299% of the poverty line, and household incomes 300% above the poverty line are compared to the reference category of households below the federal poverty line. When defining poverty, household income can vary based on the number of people within the household. For reference, in 2012 a family of four whose monthly income is below $23,050 is considered to be in poverty (Department of Health & Human Services, 2012).

Health=ƒ(1-5 Cigarettes, 6 or More Cigarettes)

Several health factors beyond consumption of sugar-sweetened drinks are identified as possible explanatory factors for overweight and obesity prevalence. Exercise, hours of television one watches, and smoking habits, are all found to have a statistically significant relationship with above average weight (Sun & Empie, 2007). This regression models exams the smoking habits of survey respondents by including categories for adults who smoke one to five cigarettes per a day in the past 30 day, and adults who smoke six or more cigarettes per day in the past 30 day. These variables are compared to the reference category of zero cigarettes smoked per day in the past 30 days.

Interaction Variable=ƒ(Key Explanatory Variable X Independent Variable)

Soda consumption is the key explanatory variable in the first part of this study as I seek to examine how soda, and other caloric sweetened drinks, affect the likelihood of one being overweight or obese. To understand how soda consumption influences the relationship between weight and other explanatory variables selected for this study, I develop interaction variables by multiplying Sodas Consumed per Week by each independent variable. This allows the analysis to determine how consumption of sugar-sweetened drinks and the selected independent variable simultaneously affect weight.

Testing for Multicollinearity

As these variables are adapted from a non-experimental survey there is the possibility that multicolliniarity is present in the data set (Berk, 1999). To test for multicollinearity I calculate the Variance Inflation Factors (VIF) for each regression variable (See Appendix C). This test calculates how much each standard error is inflated

(The Pennsylvania State University, 2014). Variables with a VIF above six are considered to have a negative effect on the validity of a logistic regression. As the highest VIF present in this study is 3.19 (College Graduate), I determine that multicolliniearity is not present in the data set.

Predicting Price Increases and its Effect on Demand as a Result of an Excise Tax

The second part of the study examines the likelihood of being overweight or obese if a one-cent per ounce tax on sugar-sweetened drinks were to be implemented in the state of California. I develop a logistic regression model using the same dependent and independent variables as my previous regressions. I modify my key explanatory variable of Sodas Consumed per Week to reflect the estimated reduction in consumption that would result from a one-cent per ounce tax on sugar-sweetened drinks.

To accurately develop a predicted price increase of sugar-sweetened beverages, several variables are considered. A one-cent per ounce tax, as proposed in SB 622, would raise the price of all consumable products that have artificial sweeteners, excluding diet drinks (Velten, 2013). The added cost to a beverage that results from this tax is dependent on the size of the beverage, as the increased cost is relative to the number of ounces in the beverage (Ex. 20-ounce drink will cost an additional 20 cents). The percent increase in overall price of a taxed good will be dependent on the original price of the beverage (Ex. Cost increase of $1.75 to $1.95 creates an 11.4% price increase). As a single type of sugar-sweetened beverage can vary significantly in price based on size and brand, I review multiple price points to develop a predict price increase for the model.

I estimate percentage price increase using multiple price points for the carbonated beverage cola. Cola is selected as the focal point for this study as it is a commonly produced sugar-sweetened drink that is manufactured by multiple companies and produced in several different sizes and price points. I examine three different sized containers for this product that are commonly found in grocery and convenience stores: 12 ounce, 20 ounce, 2-liter. For each size container four price points are selected (Table 3.1).

12-Ounce Container: 12-ounce containers of soda are selected as 12-fluid ounces are commonly considered to be a serving size (Food and Drug Administration, 2013). As 12-ounce cans of soda are commonly packaged in 12 packs, I select a regular price and a sale price of a name brand cola as well as a price point for a store brand cola. I then include a 12-ounce can of cola sold in individually as the fourth price point.

20-Ounce Container: 20-ounce bottles are a second size commonly found in many convenience stores and vending machine. I examine the standard price and sale price of a six-pack of 20-ounce name brand cola. I then select the price point of 20-ounce containers purchased from a vending machine and convenience store, two common methods for purchasing cola packaged in 20-ounce containers. As store brand or generic brand cola are not commonly sold in 20-ounce containers I do not include these price points in the study.

2-Liter Container: The 2-liter containers are selected as the third container size. This is one of the largest sizes available for purchase (a select few brands now

offer 3-liters containers). It is selected as it is often the best value per ounce when purchasing colas and soft drinks. I identify a standard price and a sale price for a name brand cola as well as a store brand price. As this size fails to have any unique forms of packaging (six-pack, vending machine etc.), I select a second common price of a name brand cola to keep my analysis consistent by examining four price points for each size.

Key Explanatory Variable$_2$ = f (Elastic consumption of Soda per Week)

For each price point I determined the cost of the beverage with a one-cent per ounce tax rate applied ($0.01 multiplied by the number of ounces). I then calculate the percent change in price of the beverage that is a result of the tax. The percent change in price is multiplied by an elasticity of -1.21, the predicted price elasticity of sugar-sweetened drinks as discovered in the literature. I then calculate the average reduction in demand for all 12 cola products examined to determine the average reduction in demand (-31.7%). The percent reduction in demand is then applied to the key explanatory variable of Sodas per Week to create a new variable – Elastic Consumption of Soda per Week (Soda per Week X 0.683). The new variable is used as the key explanatory variable for the second part of the study.

Table 3.1 Reduction in Demand of Soda (Cola)

Description: *Packaging/ Type of Cola*	Drink Size in ounces *(o)*	Cost *(p1)*	Cost per Ounce *(p1)/(o)=n*	Price with 1 ₵ per Ounce excise Tax *((n)+(0.01))*(o)= p2*	Percent Price Increase *((p2-p1)/p1) *100=y*	Reduction in Demand Elasticity of -1.21 *(y)*(-1.21) =%ΔD*
12 Pack/Name Brand (Reg. Price)	12	$0.54	$0.05	$0.66	22.2%	-26.9%
12 Pack/Name Brand (Sale Price)	12	$0.33	$0.03	$0.45	36.4%	-44.0%
12 Pack/Store Brand	12	$0.30	$0.03	0.42	40%	-48.4%
Single 12-Ounce /Name Brand	12	$0.92	$0.08	$1.04	13.0%	-15.8%
6 pack/Name Brand (Reg. Price)	20	$0.67	$0.03	$0.87	29.9%	-36.1%
6 Pack/Name Brand (Sale-Price)	20	$0.50	$0.03	$0.70	40%	-48.4%
Single-Vending Machine/Name Brand	20	$1.75	$0.09	$1.95	11.4%	-13.8%
Single-Convenience Store/Name Brand	20	$1.79	$0.09	$1.99	11.2%	-13.5%
Single/Name Brand (Reg. Price)	67.6 (2 liter)	$1.89	$0.03	$2.57	35.8%	-43.3%
Single/Name Brand (Reg. Price)	67.6	1.99	$0.03	$2.67	34.0%	-41.1%
Singe/Name Brand (Sale Price)	67.6	1.66	$0.02	$2.34	40.7%	-49.3%
Single/Store Brand	67.6	1.49	$0.02	$2.17	45.4%	-54.9%

Equations

This study uses a logistic regression equation to interpret how each independent variable affects the likelihood that an adult is overweight or obese. The key explanatory variable is used to predict the likelihood of overweight and obesity prevalence before (part-one) and after (part-two) a one-cent per ounce tax on sugar-sweetened drinks is applied in California. The equation used for each regression is as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_1\_X_2 + \ldots + \beta_i \beta_i + \varepsilon$$

The study is comprised of two parts. Each part consists of 20 individual logistic regression analyses as each of the 20 independent variables is interacted with the key explanatory variable. For equations in part-one, X_1 represents the first key explanatory variable of Sodas per Week. This is expressed as where Y is whether or not a respondent is overweight or obese, X_1 is equal to the number of Sodas per Week, X_2 is equal to the select independent variable, and $X_1\_X_2$ is equal to the number of Sodas per Week interacted with the select independent variable. For equations in part-two, X_1 is equal to the Elastic Consumption of Soda per Week. This is expressed as where Y is whether or not a respondent is overweight or obese, X_1 is equal to the Elastic Consumption of Soda per Week, X_2 is equal to the select independent variable, and $X_1\_X_2$ is equal to the Elastic Consumption of Soda per Week interacted with the select independent variable. This allows for the prediction of how soda consumption, and a select independent variable,

simultaneously effect the likelihood of being overweight or obese before a tax is applied and after a tax is applied, with all else held constant.

Limitations

There are several limitations to this study. First, the data set does not examine all sugar-sweetened drinks as defined in SB 622, the most recent bill put forward to limit consumption of sugar-sweetened drinks. It is limited to the analysis of soda or "pop" as defined as sugar-sweetened drinks that contain sugar, excluding diet drinks, teas and juices (California Health Interview Survey, 2014). The second limitation is that it focuses on the change in demand of a single taxed beverage – cola. It does not seek to understand the changes in price or demand of other drinks potentially affected by this legislation such as energy or sport drinks. This limits the ability to generalize my findings to SB 622 and other similar legislation. Finally, the CHIS has limited information related to health variables such as exercise and hours of television watched. This may affect the understanding of overweight and obesity prevalence in California as national survey sets find strong relationships between weight and such variables (Sun & Empie, 2007).

Conclusion

The methodology described in this section provides the framework for my analysis. By developing variables found to have an effect on overweight and obesity prevalence in national studies I am able to determine if California adults exhibit similar weight trends. Applying price elasticity to the number of sodas consumed per week allows for the analysis of the number of drinks consumed per week before and after a one-cent per ounce tax is applied to the sugar-sweetened drink, cola. The interaction

variable used in each set of logistic regressions allows for the determination of how soda consumption and a given independent variable affect the likelihood of an adult being overweight or obese simultaneously. In the next chapter, I describe and interpret the results of my study.

Chapter 4

RESULTS

To determine the affect a one-cent per ounce tax on sugar-sweetened drinks will have on weight for California adults I developed a two-part logistic regression analysis. Focusing on demand, I compared the current consumption of soda and the predicted consumption of soda when a one-cent per ounce tax is applied. I determined if the likelihood of being overweight or obese will change due to the predicted reduction in consumption of soda. In this section, I report my findings.

I find no overall impact on the likelihood of being overweight or obese as a result of a one-cent per ounce excise tax on soda for California adults. Instead, different subsections of the State's population are expected to experience small changes in their likelihood of being overweight or obese based on demographic, socioeconomic and health characteristics (See Table 4.1).

Expected Decreases in Likelihood of Overweight and Obesity Prevalence

In comparing the likelihood of being overweight or obese before and after an excise tax is applied to soda, four characteristics are associated with statistically significant reductions in the likelihood of exhibiting above average weight. When controlling for demographics, African Americans are expected to experience a 3.5% reduction in the likelihood of exhibiting above average weight compared to whites. Similarly, adults who identify as American Indian or Alaskan are likely to experience a 3.3% decrease in above average weight compared to whites. When controlling for sex,

California adult males are expected to experience a 1.5% decrease in the likelihood of being overweight or obese in comparison to females.

Cigarette smokers that smoke six or more cigarettes per day in a 30-day period are the lone non-demographic group that is associated with a reduction in above average weight due to an excise tax on soda. In comparison to non-smokers, adults that smoke six or more cigarettes per day for a 30-day period are expected to experience a 0.7% decrease in overweight or obesity prevalence.

Expected Increases in Likelihood of Overweight and Obesity Prevalence

In comparing the likelihood of being overweight or obese before and after an excise tax is applied to soda, four characteristics are associated with small, yet statistically significant, increases in the likelihood of exhibiting an above average weight when the tax is applied. Asians are expected to experience a 0.5% increase in overweight or obesity prevalence compared to whites. For each additional year of age, adults are expected to experience a 0.1% increase in likelihood of being an above average weight. Naturalized citizens in California are expected to experience a 1.4% increase in the likelihood of being overweight or obese compared to U.S. born citizens.

A single socioeconomic variable yields a statistically significant change in weight as a result of a one-cent per ounce excise tax on soda. College graduates are expected to experience an increase in the likelihood of being overweight or obese by 0.6% compared to adults that did not graduate high school.

Table 4.1 Expected Changes in Overweight or Obesity Prevalence as a Result of a One-Cent per Ounce Tax on Soda

	Independent Variable$_1$ Odds-Ratio *(x_1)*	Interaction Variable$_1$ Odd-Ratio *(y_1)*	Soda per Week =1; product of Independent Variable$_1$ OR and Interaction Variable$_1$ OR *[(x_1)*(y_1)]=(o_1)*	Likelihood of Overweight or Obesity Prevalence$_1$ *[(o_1)-1] *100=(l_1)*	Independent Variable$_2$ Odds-Ratio *(x_2)*	Interaction Variable$_2$ Odd-Ratio *(y_2)*	Elastic Consumption of Soda=1; product of Independent Variable$_2$ OR and Interaction Variable$_2$ OR *[(x_2)*(y_2)]=(o_2)*	Likelihood of Overweight or Obesity Prevalence$_2$ *[(o_2)-1]=(l_2)*	Expected Decrease in Overweight and Obesity Prevalence due to reduction in Soda Consumption *(l_1)-(l_2)*
Non-Hispanic American Indian or Non-Hispanic Alaskan	2.57	0.97	2.50	149.94%	2.57	0.96	2.47	146.59%	3.35%
Non-Hispanic Asian	0.41	1.03	0.42	-58.45%	0.41	1.04	0.42	-57.92%	-0.53%
Non-Hispanic African American	2.17	0.96	2.09	108.80%	2.17	0.95	2.05	105.34%	3.47%
Naturalized Citizen	0.92	1.03	0.95	-4.65%	0.92	1.05	0.97	-3.27%	-1.38%
Age	1.01	1.00	1.01	0.80%	1.01	1.00	1.01	0.90%	-0.10%
Male	1.86	0.98	1.83	82.65%	1.86	0.97	1.81	81.16%	1.49%
College Graduate	0.56	1.02	0.57	-42.87%	0.56	1.03	0.58	-42.26%	-0.61%
6 or More Cigarettes	0.90	0.98	0.88	-11.71%	0.90	0.97	0.88	-12.43%	0.72%

Conclusion

This chapter answers my research question of whether or not a one-cent per ounce excise tax on sugar-sweetened drinks will affect overweight and obesity prevalence for California adults. Based on the analysis of the consumption of soda I find that there is no overall change for the likelihood of being overweight or obese for California adults due to this tax. Instead, I find that specific demographic, socioeconomic and health characteristics can be associated with small changes in the likelihood of overweight or obesity prevalence due to an excise tax on soda. Of the 20 characteristics examined four traits are found to be associated with a reduction in the likelihood of being overweight or obese. Four characteristics examined in this study are found to be associated with an increased likelihood of being overweight or obese. In the next chapter, I interpret these findings and discuss the impact it has on health policy in California.

Chapter 5

CONCLUSION

State and local level governments in California are considering health policy to curb overweight and obesity prevalence in the state. A one-cent per ounce excise tax on sugar-sweetened drinks has been the focal point of these policy discussions. At the state level, it was introduced as SB 622 (2013). At the local level, it has appeared in the form of city ballot initiatives. National research on the taxation of unhealthy food and drinks has yielded minimal findings to suggest that the increased cost of these beverages will have a dramatic effect on weight. Fewer studies examine the effects excise taxes may have on weight for California populations.

This study examines the effect a one-cent per ounce tax on sugar-sweetened drinks has on overweight and obesity prevalence by examining the predicted reduction in demand of soda if such a tax were implemented at the state level in California. Based on my findings, I conclude that this tax will result in a negligible reduction of overweight and obesity prevalence for a small, subsection of California's overall population.

A State Level Excise Tax on Soda – A Limited Impact on Weight

My research suggests that in California, a one-cent per ounce excise tax on soda may reduce the likelihood of being overweight or obese for a small portion of California's adult population. While these findings are suggestive and not definitive, it demonstrates that this tax may be associated with only minimal changes in weight. The largest reductions in weight will be African Americans and those that identify as American Indian or Alaskan, demographic groups that make up 5.8% of California's total

population. These groups will likely experience a 3.5% and 3.3% reduction in above average weight as a result of this tax, in comparison to whites, respectively. This impact may act as evidence for the implementation of an excise tax as these two groups are the most likely to be overweight or obese in comparison to whites (odds-ratio of 1.76 and 2.01, statistically significant at the 99.9% confidence level, respectively). However, while these two ethnicities are likely to benefit from this tax, Latinos will be unaffected. As Latinos, who make up 22.1% California's population, also suffer from overweight and obesity prevalence at a far higher rate than whites (odds-ratio of 1.76, statistically at the 99.9% confidence level), these finding may show that not all demographic groups in need of health policy intervention will benefit from this tax.

An excise tax on soda will affect the likelihood of being an above average weight when controlling for sex. In comparison to females, males are expected to experience a 1.5% decrease in the likelihood of being overweight or obese. This will be a beneficial impact of an excise tax as males are more likely to be overweight or obese than females in California (odds-ratio of 1.81, statistically at the 99.9% confidence level).

An excise tax on soda may cause a reduction in weight for California adults that do not experience issues with overweight or obesity prevalence. In California, heavy smokers are less likely to be overweight or obese than non-smokers (odds-ratio of 0.85, statistically at the 99.9% confidence level). An excise tax on soda is expected to cause a 0.7% reduction in the likelihood of smokers being overweight or obese in comparison to non-smokers. This may suggest that a tax on soda will target populations that do not have weight-related health issues.

The results of this study show that an excise tax on soda may have a counterintuitive effect on several California adult populations. Naturalized citizens, college graduates, and Asians are expected to experience a slight, but statistically significant, increase in overweight or obesity prevalence as a result of this tax (1.4%, 0.6%, and 0.5%, respectively). Similarly, with each year of age, adults are likely to experience a 0.1% increase in the likelihood of being an above average weight as result of an excise tax on soda. This may be because a reduction in the consumption of soda could lead to an increased consumption of other beverages that are contributing overweight and obesity prevalence. As this study only examines soda, it fails to analyze the consumption of sports drinks, energy drinks, juice drinks, ice teas, and vitamin fortified waters. As such, these populations may be substituting soda with these or other beverages that, like soda, have a high sugar or calorie content.

An Excise Tax as Health Policy – An Unfounded Approach to Weight Reduction

The results of this study mirror similar studies on consumption of soda, and other sugar-sweetened drinks, by finding that the increased taxation of these drinks will have a negligible effect on overweight and obesity prevalence. In California, only a small subsection of the population will experience a reduction in overweight or obesity prevalence. Some California populations will likely experience a small increase in overweight and obesity prevalence. A majority of adults will not experience a change in weight as a result of the reduced consumption of soda expected to be associated with this tax. As a result of these findings, I posit that a one-cent per ounce tax on sugar-sweetened

drinks will not have the desired effect of reducing overweight and obesity prevalence in California.

The results that are expressed in this study are conservative estimates of the predicted affects of a statewide one-cent per ounce tax on sugar-sweetened drinks as only a portion of all sugar-sweetened drinks are studied. Actual affects of a statewide excise tax may be greater as the reduction in consumption will also apply to sports drinks, energy drinks, juice drinks, ice teas, and vitamin fortified waters. While these results are conservative, a review of the literature supports my findings and conclusions. National studies find that increasing the tax rate on soda and other sugar-sweetened drinks is only associated with a limited reduction in consumption. Additionally, national studies find that consumption of sugar-sweetened drinks is only associated with a minimal affect on overweight and obesity prevalence. Given the similarities between the results of this study and national tax policy research, it is reasonable to conclude that health policy targeting the increased taxation of soda or sugar-sweetened drinks will not be an effective solution for reducing overweight or obesity prevalence in California.

The taxation, and proposed taxation, of food and beverages that are considered unhealthy are often subjected to immense political scrutiny (Jacobson et al., 2000). The manufacturers of these goods have adamantly lobbied against these taxes by threatening to close factories and cancel contracts with jurisdiction affected by these policies (Kim & Kawachi, 2006). If an excise tax were to be implemented in California, or a major jurisdiction within the state, there is the possibility that California may experience similar fallout from the industries that manufacture and sell these goods. Knowing that an excise

tax will lead to limited health benefits, it may prove to be an unsound political and economic decision to pursue the implementation of a one-cent per ounce excise tax on sugar-sweetened drinks.

Limitations and Further Research on the Taxation of Sugar-Sweetened Drinks

This study examines the affect a one-cent per ounce tax on soda will have on adult weight in California. Further exploration and additional approaches to the study of per-ounce excise taxes on sugar-sweetened drinks may help solidify my findings. As this study does not include all beverages that are subjected to sugar-sweetened drink taxes being proposed in California, broadening the scope of the study to better parallel these tax policies may be warranted. To do this, survey data must be developed to include the consumption of sports drinks, energy drinks, and vitamin fortified waters. This modification of the key explanatory will increase the validity of these findings and policy recommendations that result from these studies.

This study only analyzes a single elasticity for the demand of sugar-sweetened drinks at a single estimated price for soda. A more comprehensive approach could use a range of elasticities and range of prices. This would improve the validity of the predicted changes in consumption due to an excise tax implementation. Such an in depth approach was unattainable in this analysis due to time constraints and scope of the study.

Future studies on excise tax policy will have the opportunity to analyze weight and consumption of sugar-sweetened drinks in Berkeley, California. In November of 2014, the City of Berkeley became the first city in California to pass a one-cent per ounce tax on sugar-sweetened drinks. This legislation gives health policy research a viable

option for studying changes in consumption of sugar-sweetened drinks due to an excise tax and its longitudinal effects on overweight and obesity prevalence.

Conclusion

The purpose of this thesis is to determine if a one-cent per ounce tax on sugar-sweetened drinks will reduce overweight and obesity prevalence in California. This taxation continues to be pursued at the state and local levels of government in California as way to curb the weight related health epidemic that the country is currently experiencing. A review of the literature finds that increased taxes on sugar-sweetened drinks has a minimal effect on overweight and obesity prevalence in national studies. Few studies examine how such a tax will affect adult weight in California. I fill this gap in health policy research by developing a two-part logistic regression analysis to determine how a one-cent per ounce tax on sugar-sweetened drinks will affect overweight and obesity prevalence in California.

By simulating soda consumption before a tax on soda and after a tax on soda, based on the predicted decrease in soda consumption associated with an excise tax, I estimate the change in likelihood of overweight or obesity prevalence for California adults. In the analysis of demographic, socioeconomic and health variables, I find that a one-cent per ounce tax on soda will have a negligible effect on weight for a subset of the state's population. Based on these results, and studies discussed in the literature review, I determine that a one-cent per ounce tax on sugar-sweetened drinks will not have the desired effect of reducing overweight and obesity prevalence in California.

Appendix A: Variable Descriptions

Dependent Variable	Description
Overweight/Obese	Dummy variable for adults with BMI of 25 or more
Key Independent variable	
Sodas per Week	Number of sodas or pop drank per week that contain sugar, not including diet soda
Elastic Consumption of Soda	Predicted number of sodas or pop drank per week that contain sugar, not including diet soda based on a price elasticity of (-1.21)
Explanatory Variables	
Demographic	
Latino	Dummy variable for adults that identify as Latino
Non-Hispanic Pacific Islander	Dummy variable for adults that identify as Non-Latino Specific Islander
Non- Hispanic American Indian or Non-Latino Alaskan	Dummy variable for adults that identify as Non-Latino American Indian or Non-Latino Alaskan
Non-Hispanic Asian	Dummy variable for adults that identify as Non-Latino Asian
Non-Hispanic African American	Dummy variable for adults that identify as African American
Non-Hispanic Other/Two or more Races	Dummy variable for adults that identify as unlisted race or multiple races.
Naturalized	Dummy variable for adult who is a naturalized citizen
Non-Citizen	Dummy variable for adult who is a not a United State citizen
Age	Continues variable for adult ages
Male	Dummy variable of adults who identify as male
Socioeconomic Variables	
100-199% of the Poverty Line	Dummy variable for household income ranging from the federal poverty line to 199% of the poverty line
200%-299% of the Poverty Line	Dummy variable for household income ranging from 200% to 299% of the federal poverty line.
300% or more of the Poverty Line	Dummy variable for household income ranging from 300% or more of the federal poverty line.
No Formal Education	Dummy variable for adult with no formal education
High School Graduate	Dummy variable for adult who completed high school or earned a GED
Vocational/AA/AS Degree	Dummy variable for adults who have attended some college or have earned an AS/AA/Vocational degree, trade school training or some college
College Graduate	Dummy variable for BS/BA Degree or some post bachelor educations
Masters/PhD	Dummy variable for adult has earned a post bachelors degree of any kind (i.e. Masters, PhD, JD)
Health	
1-5 Cigarettes	Dummy variable for adult who smoke between 1 and 5 cigarettes per day in the past 30 days
6 or More Cigarettes	Dummy variable for adult wo smokes 6 or more cigarettes per day in the past 30 days

Appendix B: Descriptive Statistics

Dependent Variable	Observations	Mean	S.D.	Min.	Max
Obese/Obese	42935	0.603	0.489	0	1
Key Independent variable					
Sodas per Week	42935	1.449	3.920	0	69
Elastic Consumption of Soda	42935	0.990	2.678	0	47.127
Explanatory Variables					
Demographic					
Latino	42935	0.221	0.415	0	1
Latino X Soda per Week	42935	0.514	2.306	0	69
Latino X Elastic Consumption of Soda	42935	0.351	1.574	0	47.127
Non-Hispanic Pacific Islander	42935	0.003	0.058	0	1
Non-Hispanic Pacific Islander X Soda per Week	42935	0.005	0.230	0	28
Non-Hispanic Pacific Islander X Elastic Consumption of Soda	42935	0.351	1.575	0	47.127
Non-Hispanic American Indian or Non-Hispanic Alaskan	42935	0.011	0.104	0	1
Non-Hispanic American Indian or Non-Hispanic Alaskan X Soda per Week	42935	0.032	0.794	0	55
Non-Hispanic American Indian or Non-Hispanic Alaskan X Elastic Consumption of Soda	42935	0.022	0.543	0	37.565
Non-Hispanic Asian	42935	0.098	0.298	0	1
Non-Hispanic Asian X Soda per Week	42935	0.079	0.744	0	35
Non-Hispanic Asian X Elastic Consumption of Soda	42935	0.054	0.508	0	23.905
Non-Hispanic African American	42935	0.047	0.211	0	1
Non-Hispanic African American X Soda per Week	42935	0.092	1.147	0	69
Non-Hispanic African American X Elastic Consumption of Soda	42935	0.063	0.784	0	47.127

Non-Hispanic Other/Two or more Races	42935	0.020	0.140	0	1
Non-Hispanic Other/Two or more Races X Soda per Week	42935	0.041	0.860	0	69
Non-Hispanic Other/Two or more Races X Elastic Consumption of Soda	42935	0.028	0.588	0	47.127
Naturalized	42935	0.157	0.364	0	1
Naturalized X Soda per Week	42935	0.158	1.144	0	48
Naturalized X Elastic Consumption of Soda	42935	0.108	0.781	0	47.127
Non-Citizen	42935	0.102	0.303	0	1
Non-Citizen X Soda per Week	42935	0.232	1.473	0	42
Non-Citizen X Elastic Consumption of Soda	42935	0.158	1.006	0	28.686
Age	42935	55.068	17.975	18	85
Age X Soda per Week	42935	67.203	190.177	0	4830
Age X Elastic Consumption of Soda	42935	45.900	129.891	0	3298.89
Male	42935	0.4160	0.493	0	1
Male X Soda per Week	42935	0.812	3.036	0	69
Male X Elastic Consumption of Soda	42935	0.555	2.074	0	47.127
Socioeconomic Variables					
100-199% of the Poverty Line	42935	0.184	0.388	0	0
100-199% of the Poverty Line X Soda per Week	42935	0.357	2.150	0	69
100-199% of Poverty Line X Elastic Consumption of Soda	42935	0.244	1.468	0	47.127
200%-299% of the Poverty Line	42935	0.142	0.349	0	1
200%-299% of the Poverty Line X Soda per Week	42935	0.208	1.468	0	62
200%-299% of the Poverty Line X Elastic Consumption of Soda	42935	0.142	1.003	0	42.346
300% or more of the Poverty Line	42935	0.527	0.499	0	1
300% or more of the	42935	0.539	2.320	0	69

Poverty Line X Soda per Week					
300% or more of the Poverty Line X Elastic Consumption of Soda	42935	0.368	1.584	0	47.127
No Formal Education	42935	0.008	0.088	0	1
No Formal Education X Soda per Week	42935	0.0127	0.346	0	35
No Formal Education X Elastic Consumption of Soda	42935	0.009	0.236	0	23.905
High School Graduate	42935	0.227	0.419	0	1
High School Graduate X Soda per Week	42935	0.465	2.517	0	69
High School Graduate X Elastic Consumption of Soda	42935	0.318	1.719	0	47.127
Vocational/AA/AS Degree	42935	0.272	0.445	0	1
Vocational/AA/AS Degree X Soda per Week	42935	0.394	2.123	0	69
Vocational/AA/AS Degree X Elastic Consumption of Soda	42935	0.269	1.450	0	47.127
College Graduate	42935	0.227	0.419	0	1
College Graduate X Soda per Week	42935	0.208	1.313	0	69
College Graduate X Elastic Consumption of Soda	42935	0.142	0.897	0	47.127
Masters/PhD	42935	0.155	0.362	0	1
Masters/PhD X Soda per Week	42935	0.104	0.913	0	69
Master/PhD X Elastic Consumption of Soda	42935	0.071	0.624	0	47.127
Health					
1-5 Cigarettes	42935	0.044	0.205	0	1
1-5 Cigarettes X Soda per Week	42935	0.122	1.344	0	69
1-5 Cigarettes X Elastic Consumption of Soda	42935	0.083	0.918	0	47.127
6 or More Cigarettes	42935	0.072	0.258	0	1
6 or More Cigarettes X Soda per Week	42935	0.258	2.172	0	69
6 or More Cigarettes X Elastic Consumption of Soda	42935	0.176	1.483	0	47.127

Appendix C: Variance Inflation Factors

Variable	VIF
Sodas per Week	1.08
Latino	1.78
Non-Hispanic Pacific Islander	1.00
Non-Hispanic American Indian or Non-Hispanic Alaskan	1.02
Non-Hispanic Asian	1.49
Non-Hispanic African American	1.04
Non-Hispanic Other/Two or more Races	1.02
Naturalized	1.49
Non-Citizen	1.51
Age	1.21
Male	1.03
100-199% of the Poverty Line	1.91
200%-299% of the Poverty Line	1.85
300% or more of the Poverty Line	2.90
No Formal Education	1.07
High School Graduate	2.75
Vocational/AA/AS Degree	3.18
College Graduate	3.19
Masters/PhD	2.75
1-5 Cigarettes	1.03
6 or More Cigarettes	1.07

Appendix D: Pre-Tax Logistic Regression Analyses

Select Independent Variable:	None		
Dependent Variable	Overweight/Obese		
Variable	Odds Ratio	Robust Standard Error	P>|*z*|
Constant	0.976	0.061	0.701
Sodas per Week	1.005	0.003	0.059
Hispanic	1.764	0.059	0.000
Non-Hispanic Pacific Islander	1.081	0.188	0.655
Non-Hispanic American Indian or Non-Hispanic Alaskan	2.345	0.265	0.000
Non-Hispanic Asian	0.415	0.017	0.000
Non-Hispanic African American	2.014	0.107	0.000
Non-Hispanic Other/Two or more Races	1.087	0.079	0.252
Naturalized	0.953	0.033	0.167
Non-Citizen	0.980	0.042	0.633
Age	1.009	0.001	0.000
Male	1.812	0.039	0.000
100-199% of the Poverty Line	1.019	0.038	0.615
200%-299% of the Poverty Line	0.962	0.039	0.336
300% or more of the Poverty Line	1.033	0.036	0.355
No Formal Education	1.469	0.211	0.007
High School Graduate	0.762	0.0322	0.000
Vocational/AA/AS Degree	0.790	0.034	0.000
College Graduate	0.572	0.026	0.000
Masters/PhD	0.532	0.025	0.000
1-5 Cigarettes	0.839	0.042	0.001
6 or More Cigarettes	0.853	0.035	0.000

Select Independent Variable:	Latino		
Dependent Variable	Overweight/Obese		
Variable	Odds Ratio	Robust Standard Error	P>|*z*|
Constant	0.978	0.061	0.704
Sodas per Week	1.005	0.003	0.115
Hispanic	1.761	0.063	0.000
Hispanic X Soda per Week	1.000	0.006	0.903
Non-Hispanic Pacific Islander	1.081	0.188	0.655
Non-Hispanic American Indian or Non-Hispanic Alaskan	2.346	0.265	0.000
Non-Hispanic Asian	0.415	0.017	0.000
Non-Hispanic African American	2.014	0.107	0.000
Non-Hispanic Other/Two or more Races	1.087	0.079	0.251
Naturalized	0.953	0.033	0.168
Non-Citizen	0.980	0.042	0.630
Age	1.009	0.001	0.000
Male	1.812	0.039	0.000
100-199% of the Poverty Line	1.019	0.038	0.615
200%-299% of the Poverty Line	0.962	0.037	0.336
300% or more of the Poverty Line	1.033	0.036	0.355
No Formal Education	1.470	0.211	0.007
High School Graduate	0.762	0.032	0.000
Vocational/AA/AS Degree	0.790	0.034	0.000
College Graduate	0.572	0.026	0.000
Masters/PhD	0.532	0.026	0.000
1-5 Cigarettes	0.839	0.042	0.001
6 or More Cigarettes	0.853	0.035	0.000

Select Independent Variable:	Non-Hispanic Pacific Islander		
Dependent Variable	Overweight/Obese		
Variable	Odds Ratio	Robust Standard Error	P>|*z*|
Constant	0.976	0.061	0.695
Sodas per Week	1.005	0.003	0.071
Hispanic	1.765	0.59	0.000
Non-Hispanic Pacific Islander	0.972	0.181	0.881
Non-Hispanic Pacific Islander X Sodas per Week	1.088	0.069	0.181
Non-Hispanic American Indian or Non-Hispanic Alaskan	2.346	0.265	0.000
Non-Hispanic Asian	0.415	0.017	0.000
Non-Hispanic African American	2.014	0.107	0.000
Non-Hispanic Other/Two or more Races	1.087	0.079	0.250
Naturalized	0.953	0.033	0.165
Non-Citizen	0.980	0.042	0.631
Age	1.009	0.001	0.000
Male	1.813	0.039	0.000
100-199% of the Poverty Line	1.019	0.038	0.610
200%-299% of the Poverty Line	0.962	0.039	0.336
300% or more of the Poverty Line	1.033	0.036	0.353
No Formal Education	1.469	0.211	0.007
High School Graduate	0.762	0.0322	0.000
Vocational/AA/AS Degree	0.790	0.034	0.000
College Graduate	0.572	0.026	0.000
Masters/PhD	0.532	0.026	0.000
1-5 Cigarettes	0.840	0.035	0.000
6 or More Cigarettes	0.852	0.035	0.000

Select Independent Variable:	Non-Hispanic American Indian or Non-Hispanic Alaskan		
Dependent Variable	Overweight/Obese		
Variable	Odds Ratio	Robust Standard Error	P>|z|
Constant	0.975	0.061	0.681
Sodas per Week	1.006	0.003	0.028
Hispanic	1.762	0.060	0.000
Non-Hispanic Pacific Islander	1.081	0.188	0.656
Non-Hispanic American Indian or Non-Hispanic Alaskan	2.574	0.319	0.000
Non-Hispanic American Indian or Non-Hispanic Alaskan X Sodas per Week	0.971	0.014	0.042
Non-Hispanic Asian	0.415	0.017	0.000
Non-Hispanic African American	2.012	0.107	0.000
Non-Hispanic Other/Two or more Races	1.086	0.079	0.256
Naturalized	0.954	0.033	0.171
Non-Citizen	0.980	0.042	0.631
Age	1.009	0.001	0.000
Male	1.812	0.039	0.000
100-199% of the Poverty Line	1.019	0.038	0.605
200%-299% of the Poverty Line	0.962	0.039	0.338
300% or more of the Poverty Line	1.034	0.036	0.343
No Formal Education	1.470	0.211	0.007
High School Graduate	0.762	0.032	0.000
Vocational/AA/AS Degree	0.790	0.034	0.000
College Graduate	0.571	0.026	0.000
Masters/PhD	0.52	0.026	0.000
1-5 Cigarettes	0.839	0.042	0.001
6 or More Cigarettes	0.852	0.035	0.000

Select Independent Variable:	Non-Hispanic Asian		
Dependent Variable	Overweight/Obese		
Variable	Odds Ratio	Robust Standard Error	P>|*z*|
Constant	0.979	0.061	0.730
Sodas per Week	1.004	0.003	0.126
Latino	1.764	0.059	0.000
Non-Latino Pacific Islander	1.081	0.188	0.654
Non-Latino American Indian or Non-Latino Alaskan	2.348	0.265	0.000
Non-Latino Asian	0.405	0.0178	0.000
Non-Latino Asian X Sodas per Week	1.026	0.015	0.071
Non-Latino African American	2.015	0.107	0.000
Non-Latino Other/Two or more Races	1.088	0.079	0.246
Naturalized	0.955	0.033	0.186
Non-Citizen	0.980	0.042	0.633
Age	1.009	0.001	0.000
Male	1.810	0.039	0.000
100-199% of the Poverty Line	1.018	0.038	0.623
200%-299% of the Poverty Line	0.961	0.039	0.325
300% or more of the Poverty Line	1.032	0.036	0.369
No Formal Education	1.471	0.212	0.007
High School Graduate	0.761	0.032	0.000
Vocational/AA/AS Degree	0.788	0.034	0.000
College Graduate	0.570	0.026	0.000
Masters/PhD	0.531	0.255	0.000
1-5 Cigarettes	0.839	0.042	0.001
6 or More Cigarettes	0.853	0.035	0.000

Select Independent Variable:	Non-Hispanic African American		
Dependent Variable	Overweight/Obese		
Variable	Odds Ratio	Robust Standard Error	P>|*z*|
Constant	0.972	0.060	0.647
Sodas per Week	1.008	0.003	0.006
Latino	1.759	0.59	0.000
Non-Latino Pacific Islander	1.080	0.188	0.658
Non-Latino American Indian or Non-Latino Alaskan	2.333	0.264	0.000
Non-Latino Asian	0.415	0.017	0.000
Non-Latino African American	2.166	0.124	0.000
Non-Latino African American X Soda per Week	0.964	0.010	0.000
Non-Latino Other/Two or more Races	1.084	0.078	0.265
Naturalized	0.954	0.033	0.173
Non-Citizen	0.979	0.042	0.614
Age	1.081	0.001	0.000
Male	1.810	0.039	0.000
100-199% of the Poverty Line	1.018	0.038	0.637
200%-299% of the Poverty Line	0.961	0.037	0.325
300% or more of the Poverty Line	1.032	0.036	0.372
No Formal Education	1.470	0.212	0.007
High School Graduate	0.761	0.032	0.000
Vocational/AA/AS Degree	0.790	0.034	0.000
College Graduate	0.790	0.034	0.000
Masters/PhD	0.533	0.026	0.000
1-5 Cigarettes	0.841	0.042	0.001
6 or More Cigarettes	0.852	0.035	0.000

Select Independent Variable:	Non-Hispanic Other/Two or more Races		
Dependent Variable	Overweight/Obese		
Variable	Odds Ratio	Robust Standard Error	P>|*z*|
Constant	0.977	0.061	0.707
Sodas per Week	1.005	0.003	0.079
Hispanic	1.764	0.59	0.000
Non-Hispanic Pacific Islander	1.081	0.788	0.655
Non-Hispanic American Indian or Non-Latino Alaskan	2.346	0.265	0.000
Non-Hispanic Asian	0.415	0.017	0.000
Non-Hispanic African American	2.014	0.107	0.000
Non-Hispanic Other/Two or more Races	1.075	0.83	0.350
Non-Hispanic Other/Two or more Races X Soda per Week	1.006	0.013	0.671
Naturalized	0.953	0.033	0.167
Non-Citizen	0.980	0.042	0.633
Age	1.009	0.001	0.000
Male	1.812	0.039	0.000
100-199% of the Poverty Line	1.019	0.038	0.615
200%-299% of the Poverty Line	0.962	0.039	0.337
300% or more of the Poverty Line	1.033	0.036	0.355
No Formal Education	1.469	0.211	0.008
High School Graduate	0.762	0.032	0.000
Vocational/AA/AS Degree	0.790	0.034	0.000
College Graduate	0.572	0.025	0.000
Masters/PhD	0.532	0.026	0.000
1-5 Cigarettes	0.839	0.042	0.001
6 or More Cigarettes	0.852	0.035	0.000

Select Independent Variable:	Naturalized		
Dependent Variable	Overweight/Obese		
Variable	Odds Ratio	Robust Standard Error	P>|*z*|
Constant	0.980	0.061	0.748
Sodas per Week	1.003	0.003	0.273
Hispanic	1.759	0.592	0.000
Non-Hispanic Pacific Islander	1.079	0.186	0.662
Non-Hispanic American Indian or Non-Hispanic Alaskan	2.350	0.266	0.000
Non-Hispanic Asian	0.417	0.017	0.000
Non-Hispanic African American	2.014	0.107	0.000
Non-Hispanic Other/Two or more Races	1.089	0.079	0.240
Naturalized	0.923	0.034	0.028
Naturalized X Soda per Week	1.032	0.012	0.004
Non-Citizen	0.982	0.042	0.664
Age	1.009	0.001	0.000
Male	1.809	0.039	0.000
100-199% of the Poverty Line	1.019	0.038	0.611
200%-299% of the Poverty Line	0.961	0.039	0.328
300% or more of the Poverty Line	1.033	0.036	0.356
No Formal Education	1.472	0.213	0.007
High School Graduate	0.761	0.032	0.000
Vocational/AA/AS Degree	0.788	0.034	0.000
College Graduate	0.570	0.026	0.000
Masters/PhD	0.531	0.026	0.000
1-5 Cigarettes	0.838	0.042	0.000
6 or More Cigarettes	0.854	0.035	0.000

Select Independent Variable:	Non-Citizen		
Dependent Variable	Overweight/Obese		
Variable	Odds Ratio	Robust Standard Error	P>|z|
Constant	0.978	0.061	0.715
Sodas per Week	1.005	0.003	0.118
Latino	1.762	0.059	0.000
Non-Hispanic Pacific Islander	1.080	0.188	0.657
Non-Hispanic American Indian or Non-Hispanic Alaskan	2.347	0.265	0.000
Non-Hispanic Asian	0.415	0.174	0.000
Non-Hispanic African American	2.015	0.107	0.000
Non-Hispanic Other/Two or more Races	1.087	0.079	0.250
Naturalized	0.953	0.033	0.163
Non-Citizen	0.967	0.045	0.450
Non-Citizen X Soda per Week	1.007	0.009	0.423
Age	1.009	0.001	0.000
Male	1.811	0.039	0.000
100-199% of the Poverty Line	1.019	0.038	0.614
200%-299% of the Poverty Line	0.962	0.039	0.337
300% or more of the Poverty Line	1.033	0.036	0.354
No Formal Education	1.472	0.212	0.007
High School Graduate	0.762	0.032	0.000
Vocational/AA/AS Degree	0.790	0.034	0.000
College Graduate	0.572	0.026	0.000
Masters/PhD	0.532	0.026	0.000
1-5 Cigarettes	0.839	0.042	0.001
6 or More Cigarettes	0.853	0.035	0.000

Select Independent Variable:	Age		
Dependent Variable	Overweight/Obese		
Variable	Odds Ratio	Robust Standard Error	P>|z|
Constant	1.014	0.064	0.0821
Sodas per Week	0.983	0.007	0.027
Hispanic	1.765	0.059	0.000
Non-Hispanic Pacific Islander	1.083	0.188	0.648
Non-Hispanic American Indian or Non-Hispanic Alaskan	2.344	0.265	0.000
Non-Hispanic Asian	0.415	0.0174	0.000
Non-Hispanic African American	2.006	0.107	0.000
Non-Hispanic Other/Two or more Races	1.086	0.079	0.255
Naturalized	0.953	0.033	0.162
Non-Citizen	0.978	0.042	0.610
Age	1.008	0.001	0.000
Age X Soda per Week	1.000	0.000	0.002
Male	1.812	0.039	0.000
100-199% of the Poverty Line	1.017	0.0378	0.643
200%-299% of the Poverty Line	0.960	0.038	0.000
300% or more of the Poverty Line	1.031	0.036	0.394
No Formal Education	1.466	0.211	0.008
High School Graduate	0.763	0.032	0.000
Vocational/AA/AS Degree	0.790	0.034	0.000
College Graduate	0.571	0.026	0.000
Masters/PhD	0.532	0.026	0.000
1-5 Cigarettes	0.840	0.042	0.001
6 or More Cigarettes	0.850	0.035	0.000

Select Independent Variable:	Male		
Dependent Variable	Overweight/Obese		
Variable	Odds Ratio	Robust Standard Error	P>|*z*|
Constant	0.964	0.060	0.559
Sodas per Week	1.015	0.004	0.000
Hispanic	1.764	0.059	0.000
Non-Hispanic Pacific Islander	1.077	0.187	0.670
Non-Hispanic American Indian or Non-Hispanic Alaskan	2.329	0.263	0.000
Non-Hispanic Asian	0.414	0.017	0.000
Non-Hispanic African American	2.009	0.107	0.000
Non-Hispanic Other/Two or more Races	1.086	0.079	0.255
Naturalized	0.954	0.033	0.175
Non-Citizen	0.982	0.042	0.666
Age	1.009	0.001	0.000
Male	1.860	0.042	0.000
Male X Soda per Week	0.982	0.005	0.001
100-199% of the Poverty Line	1.021	0.038	0.579
200%-299% of the Poverty Line	0.965	0.039	0.380
300% or more of the Poverty Line	1.036	0.037	0.311
No Formal Education	1.472	0.212	0.007
High School Graduate	0.762	0.032	0.000
Vocational/AA/AS Degree	0.790	0.034	0.000
College Graduate	0.571	0.026	0.000
Masters/PhD	0.531	0.026	0.000
1-5 Cigarettes	0.839	0.042	0.001
6 or More Cigarettes	0.853	0.035	0.000

Select Independent Variable:	100-199% of the Poverty Line		
Dependent Variable	Overweight/Obese		
Variable	Odds Ratio	Robust Standard Error	P>|z|
Constant	0.973	0.061	0.661
Sodas per Week	1.007	0.003	0.035
Hispanic	1.764	0.059	0.000
Non-Hispanic Pacific Islander	1.080	0.187	0.658
Non-Hispanic American Indian or Non-Hispanic Alaskan	2.347	0.265	0.000
Non-Hispanic Asian	0.414	0.017	0.000
Non-Hispanic African American	2.013	0.107	0.000
Non-Hispanic Other/Two or more Races	1.087	0.079	0.251
Naturalized	0.953	0.033	0.166
Non-Citizen	0.980	0.042	0.641
Age	1.009	0.001	0.000
Male	1.812	0.039	0.000
100-199% of the Poverty Line	1.031	0.040	0.437
100-199% of the Poverty Line X Soda per Week	0.994	0.006	0.334
200%-299% of the Poverty Line	0.964	0.039	0.356
300% or more of the Poverty Line	1.035	0.037	0.326
No Formal Education	1.470	0.211	0.007
High School Graduate	0.762	0.032	0.000
Vocational/AA/AS Degree	0.790	0.034	0.000
College Graduate	0.572	0.026	0.000
Masters/PhD	0.533	0.026	0.000
1-5 Cigarettes	0.840	0.042	0.001
6 or More Cigarettes	0.852	0.035	0.000

Select Independent Variable:	200%-299% of the Poverty Line		
Dependent Variable	Overweight/Obese		
Variable	Odds Ratio	Robust Standard Error	P>|z|
Constant	0.979	0.061	0.728
Sodas per Week	1.004	0.003	0.142
Hispanic	1.762	0.060	0.000
Non-Hispanic Pacific Islander	1.080	0.188	0.657
Non-Hispanic American Indian or Non-Hispanic Alaskan	2.347	0.265	0.000
Non-Hispanic Asian	0.414	0.017	0.000
Non-Hispanic African American	2.013	0.107	0.000
Non-Hispanic Other/Two or more Races	1.087	0.079	0.250
Naturalized	0.953	0.033	0.167
Non-Citizen	0.980	0.042	0.635
Age	1.009	0.001	0.000
Male	1.812	0.039	0.000
100-199% of the Poverty Line	1.018	0.038	0.626
200%-299% of the Poverty Line	0.951	0.040	0.230
200%-299% of the Poverty Line X Soda per Week	1.008	0.009	0.348
300% or more of the Poverty Line	1.032	0.036	0.378
No Formal Education	1.468	0.211	0.008
High School Graduate	0.762	0.0322	0.000
Vocational/AA/AS Degree	0.790	0.034	0.000
College Graduate	0.572	0.026	0.000
Masters/PhD	0.532	0.026	0.000
1-5 Cigarettes	0.840	0.042	0.001
6 or More Cigarettes	0.852	0.035	0.000

Select Independent Variable:	300% or more of the Poverty Line		
Dependent Variable	Overweight/Obese		
Variable	Odds Ratio	Robust Standard Error	P>|z|
Constant	0.979	0.061	0.729
Sodas per Week	1.004	0.003	0.197
Hispanic	1.764	0.059	0.000
Non-Hispanic Pacific Islander	1.081	0.188	0.655
Non-Hispanic American Indian or Non-Hispanic Alaskan	2.344	0.265	0.000
Non-Hispanic Asian	0.414	0.017	0.000
Non-Hispanic African American	2.014	0.107	0.000
Non-Hispanic Other/Two or more Races	1.086	0.079	0.253
Naturalized	0.953	0.033	0.167
Non-Citizen	0.980	0.042	0.637
Age	1.009	0.001	0.000
Male	1.812	0.039	0.000
100-199% of the Poverty Line	1.019	0.038	0.622
200%-299% of the Poverty Line	0.961	0.039	0.327
300% or more of the Poverty Line	1.029	0.037	0.426
300% or more of the Poverty Line X Soda per Week	1.003	0.006	0.656
No Formal Education	1.468	0.211	0.008
High School Graduate	0.762	0.032	0.000
Vocational/AA/AS Degree	0.790	0.034	0.000
College Graduate	0.572	0.026	0.000
Masters/PhD	0.533	0.026	0.000
1-5 Cigarettes	0.839	0.042	0.001
6 or More Cigarettes	0.853	0.035	0.000

Select Independent Variable:	No Formal Education		
Dependent Variable	Overweight/Obese		
Variable	Odds Ratio	Robust Standard Error	P>|z|
Constant	0.993	0.063	0.913
Sodas per Week	1.007	0.003	0.028
Hispanic	1.763	0.59	0.000
Non-Hispanic Pacific Islander	1.081	0.188	0.654
Non-Hispanic American Indian or Non-Hispanic Alaskan	2.345	0.265	0.000
Non-Hispanic Asian	0.414	0.0173	0.000
Non-Hispanic African American	2.013	0.107	0.000
Non-Hispanic Other/Two or more Races	1.086	0.079	0.256
Naturalized	0.953	0.033	0.161
Non-Citizen	0.980	0.042	0.639
Age	1.009	0.001	0.000
Male	1.812	0.039	0.000
100-199% of the Poverty Line	1.019	0.038	0.616
200%-299% of the Poverty Line	0.962	0.039	0.341
300% or more of the Poverty Line	1.034	0.036	0.348
No Formal Education	1.443	0.209	0.011
No Formal Education X Soda per Week	0.991	0.007	0.229
High School Graduate	0.747	0.034	0.000
Vocational/AA/AS Degree	0.561	0.027	0.000
College Graduate	0.561	0.026	0.000
Masters/PhD	0.523	0.026	0.000
1-5 Cigarettes	0.839	0.042	0.001
6 or More Cigarettes	0.853	0.035	0.000

Select Independent Variable:	High School Graduate		
Dependent Variable	Overweight/Obese		
Variable	Odds Ratio	Robust Standard Error	P>|z|
Constant	0.974	0.061	0.670
Sodas per Week	1.007	0.004	0.060
Hispanic	1.764	0.059	0.000
Non-Hispanic Pacific Islander	1.081	0.188	0.656
Non-Hispanic American Indian or Non-Hispanic Alaskan	2.346	0.265	0.000
Non-Hispanic Asian	0.414	0.017	0.000
Non-Hispanic African American	2.013	0.107	0.000
Non-Hispanic Other/Two or more Races	1.087	0.079	0.251
Naturalized	0.953	0.033	0.168
Non-Citizen	0.980	0.042	0.635
Age	1.009	0.001	0.000
Male	1.812	0.039	0.000
100-199% of the Poverty Line	1.019	0.038	0.615
200%-299% of the Poverty Line	0.962	0.039	0.332
300% or more of the Poverty Line	1.033	0.036	0.356
No Formal Education	1.471	0.212	0.007
High School Graduate	0.768	0.034	0.000
High School Graduate X Soda per Week	0.996	0.006	0.526
Vocational/AA/AS Degree	0.791	0.034	0.000
College Graduate	0.573	0.028	0.000
Masters/PhD	0.534	0.026	0.000
1-5 Cigarettes	0.839	0.042	0.001
6 or More Cigarettes	0.853	0.035	0.000

Select Independent Variable:	Vocational/AA/AS Degree		
Dependent Variable	Overweight/Obese		
Variable	Odds Ratio	Robust Standard Error	P>|*z*|
Constant	0.974	0.061	0.668
Sodas per Week	1.007	0.003	0.046
Hispanic	1.764	0.59	0.000
Non-Hispanic Pacific Islander	1.080	0.788	0.656
Non-Hispanic American Indian or Non-Hispanic Alaskan	2.345	0.265	0.000
Non-Hispanic Asian	0.415	0.017	0.000
Non-Hispanic African American	2.014	0.107	0.000
Non-Hispanic Other/Two or more Races	1.087	0.079	0.251
Naturalized	0.954	0.033	0.170
Non-Citizen	0.980	0.042	0.628
Age	1.009	0.001	0.000
Male	1.812	0.039	0.000
100-199% of the Poverty Line	1.019	0.038	0.620
200%-299% of the Poverty Line	0.962	0.039	0.333
300% or more of the Poverty Line	1.033	0.036	0.359
No Formal Education	1.471	0.217	0.007
High School Graduate	0.762	0.032	0.000
Vocational/AA/AS Degree	0.796	0.035	0.000
Vocational/AA/AS Degree X Soda per Week	0.995	0.006	0.457
College Graduate	0.573	0.026	0.000
Masters/PhD	0.534	0.026	0.000
1-5 Cigarettes	0.839	0.042	0.001
6 or More Cigarettes	0.853	0.035	0.000

Select Independent Variable:	College Graduate		
Dependent Variable	Overweight/Obese		
Variable	Odds Ratio	Robust Standard Error	P>|*z*|
Constant	0.984	0.061	0.790
Sodas per Week	1.003	0.003	0.318
Hispanic	1.762	0.059	0.000
Non-Hispanic Pacific Islander	1.080	0.188	0.658
Non-Hispanic American Indian or Non-Hispanic Alaskan	2.349	0.265	0.000
Non-Hispanic Asian	0.414	0.017	0.000
Non-Hispanic African American	2.011	0.107	0.000
Non-Hispanic Other/Two or more Races	1.086	0.079	0.255
Naturalized	0.953	0.033	0.168
Non-Citizen	0.980	0.042	0.637
Age	1.009	0.001	0.000
Male	1.810	0.039	0.000
100-199% of the Poverty Line	1.018	0.038	0.636
200%-299% of the Poverty Line	0.960	0.039	0.316
300% or more of the Poverty Line	1.033	0.036	0.3569
No Formal Education	1.466	0.211	0.008
High School Graduate	0.761	0.032	0.000
Vocational/AA/AS Degree	0.788	0.034	0.000
College Graduate	0.559	0.026	0.000
College Graduate X Soda per Week	1.022	0.009	0.014
Masters/PhD	0.530	0.025	0.000
1-5 Cigarettes	0.839	0.42	0.001
6 or More Cigarettes	0.854	0.035	0.000

Select Independent Variable:	Masters/PhD		
Dependent Variable	Overweight/Obese		
Variable	Odds Ratio	Robust Standard Error	P>|*z*|
Constant	0.980	0.061	0.742
Sodas per Week	1.005	0.003	0.121
Hispanic	1.763	0.059	0.000
Non-Hispanic Pacific Islander	1.080	0.188	0.657
Non-Hispanic American Indian or Non-Hispanic Alaskan	2.347	0.265	0.000
Non-Hispanic Asian	0.414	0.017	0.000
Non-Hispanic African American	2.012	0.107	0.000
Non-Hispanic Other/Two or more Races	1.086	0.079	0.252
Naturalized	0.953	0.033	0.167
Non-Citizen	0.980	0.042	0.637
Age	1.009	0.001	0.000
Male	1.812	0.039	0.000
100-199% of the Poverty Line	1.019	0.038	0.616
200%-299% of the Poverty Line	0.962	0.039	0.331
300% or more of the Poverty Line	1.033	0.036	0.358
No Formal Education	1.467	0.211	0.008
High School Graduate	0.762	0.032	0.000
Vocational/AA/AS Degree	0.790	0.034	0.000
College Graduate	0.571	0.026	0.000
Masters/PhD	0.527	0.026	0.000
Masters/PhD X Soda per Week	1.015	0.012	0.224
1-5 Cigarettes	0.839	0.042	0.001
6 or More Cigarettes	0.853	0.035	0.000

Select Independent Variable:	1-5 Cigarettes		
Dependent Variable	Overweight/Obese		
Variable	Odds Ratio	Robust Standard Error	P>|*z*|
Constant	0.942	0.061	0.689
Sodas per Week	1.006	0.003	0.050
Hispanic	1.764	0.059	0.000
Non-Hispanic Pacific Islander	1.080	0.188	0.657
Non-Hispanic American Indian or Non-Hispanic Alaskan	2.347	0.265	0.000
Non-Hispanic Asian	0.415	0.017	0.000
Non-Hispanic African American	2.014	0.107	0.000
Non-Hispanic Other/Two or more Races	1.086	0.079	0.252
Naturalized	0.953	0.033	0.167
Non-Citizen	0.980	0.042	0.630
Age	1.009	0.001	0.000
Male	1.812	0.039	0.000
100-199% of the Poverty Line	1.019	0.038	0.614
200%-299% of the Poverty Line	0.962	0.039	0.336
300% or more of the Poverty Line	1.033	0.036	0.355
No Formal Education	1.470	0.211	0.007
High School Graduate	0.762	0.032	0.000
Vocational/AA/AS Degree	0.730	0.039	0.000
College Graduate	0.572	0.026	0.000
Masters/PhD	0.533	0.026	0.000
1-5 Cigarettes	0.849	0.047	0.003
1-5 Cigarettes X Soda per Week	0.995	0.009	0.589
6 or More Cigarettes	0.852	0.035	0.000

Select Independent Variable	6 or More Cigarettes		
Dependent Variable	Overweight/Obese		
Variable	Odds Ratio	Robust Standard Error	P>|*z*|
Constant	0.970	0.060	0.619
Sodas per Week	1.01	0.003	0.001
Hispanic	1.758	0.059	0.000
Non-Hispanic Pacific Islander	1.082	0.188	0.649
Non-Hispanic American Indian or Non-Hispanic Alaskan	2.344	0.265	0.000
Non-Hispanic Asian	0.415	0.017	0.000
Non-Hispanic African American	2.012	0.107	0.000
Non-Hispanic Other/Two or more Races	1.090	0.079	0.234
Naturalized	0.954	0.033	0.174
Non-Citizen	0.978	0.042	0.596
Age	1.009	0.001	0.000
Male	1.809	0.039	0.000
100-199% of the Poverty Line	1.018	0.038	0.635
200%-299% of the Poverty Line	0.961	0.039	0.323
300% or more of the Poverty Line	1.033	0.036	0.351
No Formal Education	1.470	0.212	0.007
High School Graduate	0.760	0.032	0.000
Vocational/AA/AS Degree	0.789	0.034	0.000
College Graduate	0.571	0.026	0.000
Masters/PhD	0.533	0.026	0.000
1-5 Cigarettes	0.834	0.042	0.000
6 or More Cigarettes	0.900	0.040	0.017
6 or More Cigarettes X Soda per Week	0.981	0.006	0.002

Appendix E: Post-Tax Logistic Regression Analyses

Select Independent Variable:	None		
Dependent Variable	Overweight/Obese		
Variable	Odds Ratio	Robust Standard Error	P>|z|
Constant	0.976	0.061	0.701
Elastic Consumption of Soda	1.007	0.004	0.059
Hispanic	1.764	0.059	0.000
Non-Hispanic Pacific Islander	1.081	0.188	0.655
Non-Hispanic American Indian or Non-Hispanic Alaskan	2.345	0.265	0.000
Non-Hispanic Asian	0.415	0.017	0.000
Non-Hispanic African American	2.014	0.107	0.000
Non-Hispanic Other/Two or more Races	1.087	0.079	0.252
Naturalized	0.953	0.033	0.167
Non-Citizen	0.980	0.042	0.633
Age	1.009	0.001	0.000
Male	1.812	0.039	0.000
100-199% of the Poverty Line	1.019	0.038	0.615
200%-299% of the Poverty Line	0.962	0.039	0.336
300% or more of the Poverty Line	1.033	0.036	0.355
No Formal Education	1.469	0.211	0.007
High School Graduate	0.762	0.032	0.000
Vocational/AA/AS Degree	0.790	0.034	0.000
College Graduate	0.572	0.026	0.000
Masters/PhD	0.532	0.026	0.000
1-5 Cigarettes	0.839	0.042	0.001
6 or More Cigarettes	0.853	0.035	0.000

Select Independent Variable:	Latino		
Dependent Variable	Overweight/Obese		
Variable	Odds Ratio	Robust Standard Error	P>|z|
Constant	0.967	0.061	0.704
Elastic Consumption of Soda	1.008	0.005	0.115
Hispanic	1.761	0.063	0.000
Hispanic X Elastic Consumption of Soda	1.001	0.009	0.903
Non-Hispanic Pacific Islander	1.081	0.188	0.655
Non-Hispanic American Indian or Non-Hispanic Alaskan	2.346	0.265	0.000
Non-Hispanic Asian	0.415	0.017	0.000
Non-Hispanic African American	2.014	0.107	0.000
Non-Hispanic Other/Two or more Races	1.087	0.079	0.251
Naturalized	0.953	0.033	0.168
Non-Citizen	0.980	0.042	0.630
Age	1.009	0.001	0.000
Male	1.812	0.039	0.000
100-199% of the Poverty Line	1.019	0.038	0.615
200%-299% of the Poverty Line	0.962	0.039	0.336
300% or more of the Poverty Line	1.033	0.036	0.355
No Formal Education	1.470	0.211	0.007
High School Graduate	0.762	0.032	0.000
Vocational/AA/AS Degree	0.790	0.034	0.000
College Graduate	0.572	0.026	0.000
Masters/PhD	0.532	0.026	0.000
1-5 Cigarettes	0.839	0.042	0.001
6 or More Cigarettes	0.853	0.035	0.000

Select Independent Variable:	Non-Hispanic Pacific Islander		
Dependent Variable	Overweight/Obese		
Variable	Odds Ratio	Robust Standard Error	P>|z|
Constant	0.976	0.061	0.695
Elastic Consumption of Soda	1.008	0.004	0.071
Hispanic	1.765	0.059	0.000
Non-Hispanic Pacific Islander	0.972	0.182	0.881
Non-Hispanic Pacific Islander X Elastic Consumption of Soda	1.132	0.105	0.181
Non-Hispanic American Indian or Non-Hispanic Alaskan	2.346	0.265	0.000
Non-Hispanic Asian	0.415	0.017	0.000
Non-Hispanic African American	2.014	0.107	0.000
Non-Hispanic Other/Two or more Races	1.087	0.079	0.250
Naturalized	0.953	0.033	0.165
Non-Citizen	0.980	0.042	0.631
Age	1.009	0.001	0.000
Male	1.813	0.039	0.000
100-199% of the Poverty Line	1.019	0.038	0.610
200%-299% of the Poverty Line	0.962	0.039	0.336
300% or more of the Poverty Line	1.033	0.036	0.353
No Formal Education	1.469	0.211	0.007
High School Graduate	0.762	0.032	0.000
Vocational/AA/AS Degree	0.790	0.034	0.000
College Graduate	0.572	0.026	0.000
Masters/PhD	0.532	0.026	0.000
1-5 Cigarettes	0.840	0.042	0.001
6 or More Cigarettes	0.852	0.035	0.000

Select Independent Variable:	Non-Hispanic American Indian or Non-Hispanic Alaskan		
Dependent Variable	Overweight/Obese		
Variable	Odds Ratio	Robust Standard Error	P>|z|
Constant	0.975	0.061	0.681
Elastic Consumption of Soda	1.009	0.004	0.028
Hispanic	1.762	0.059	0.000
Non-Hispanic Pacific Islander	1.081	0.188	0.656
Non-Hispanic American Indian or Non-Hispanic Alaskan	2.574	0.319	0.000
Non-Hispanic American Indian or Non-Hispanic Alaskan X Elastic Consumption of Soda	0.958	0.020	0.042
Non-Hispanic Asian	0.415	0.017	0.000
Non-Hispanic African American	2.012	0.107	0.000
Non-Hispanic Other/Two or more Races	1.086	0.079	0.256
Naturalized	0.954	0.033	0.171
Non-Citizen	0.980	0.42	0.631
Age	1.009	0.001	0.000
Male	1.811	0.039	0.000
100-199% of the Poverty Line	1.019	0.038	0.605
200%-299% of the Poverty Line	0.962	0.039	0.338
300% or more of the Poverty Line	1.034	0.036	0.343
No Formal Education	1.470	0.211	0.007
High School Graduate	0.762	0.032	0.000
Vocational/AA/AS Degree	0.790	0.034	0.000
College Graduate	0.571	0.026	0.000
Masters/PhD	0.532	0.026	0.000
1-5 Cigarettes	0.839	0.042	0.001
6 or More Cigarettes	0.852	0.034	0.000

Select Independent Variable:	Non-Hispanic Asain		
Logistic Regression			
Dependent Variable	Overweight/Obese		
Variable	Odds Ratio	Robust Standard Error	P>|z|
Constant	0.979	0.061	0.730
Elastic Consumption of Soda	1.006	0.004	0.126
Hispanic	1.764	0.059	0.000
Non-Hispanic Pacific Islander	1.081	0.188	0.654
Non-Hispanic American Indian or Non-Hispanic Alaskan	2.348	0.265	0.000
Non-Hispanic Asian	0.405	0.018	0.000
Non-Hispanic Asian X Elastic Consumption of Soda	1.039	0.023	0.071
Non-Hispanic African American	2.015	0.107	0.000
Non-Hispanic Other/Two or more Races	1.088	0.079	0.246
Naturalized	0.955	0.033	0.186
Non-Citizen	0.980	0.042	0.633
Age	1.009	0.001	0.000
Male	1.810	0.038	0.000
100-199% of the Poverty Line	1.018	0.038	0.623
200%-299% of the Poverty Line	0.961	0.039	0.325
300% or more of the Poverty Line	1.032	0.036	0.369
No Formal Education	1.471	0.212	0.007
High School Graduate	0.761	0.032	0.000
Vocational/AA/AS Degree	0.788	0.034	0.000
College Graduate	0.570	0.026	0.000
Masters/PhD	0.531	0.026	0.000
1-5 Cigarettes	0.840	0.042	0.001
6 or More Cigarettes	0.853	0.035	0.000

Select Independent Variable:	Non-Hispanic Black		
Dependent Variable	Overweight/Obese		
Variable	Odds Ratio	Robust Standard Error	P>|z|
Constant	0.972	0.060	0.647
Elastic Consumption of Soda	1.012	0.004	0.006
Hispanic	1.740	0.060	0.000
Non-Hispanic Pacific Islander	1.080	0.188	0.658
Non-Hispanic American Indian or Non-Hispanic Alaskan	2.334	0.264	0.000
Non-Hispanic Asian	0.415	0.017	0.000
Non-Hispanic African American	2.166	0.124	0.000
Non-Hispanic African American X Elastic Consumption of Soda	0.948	0.014	0.000
Non-Hispanic Other/Two or more Races	1.084	0.078	0.265
Naturalized	0.954	0.033	0.173
Non-Citizen	0.979	0.042	0.614
Age	1.009	0.001	0.000
Male	1.810	0.039	0.000
100-199% of the Poverty Line	1.018	0.038	0.637
200%-299% of the Poverty Line	0.961	0.039	0.325
300% or more of the Poverty Line	1.032	0.036	0.372
No Formal Education	1.470	0.212	0.007
High School Graduate	0.761	0.032	0.000
Vocational/AA/AS Degree	0.790	0.034	0.000
College Graduate	0.572	0.026	0.000
Masters/PhD	0.533	0.026	0.000
1-5 Cigarettes	0.841	0.042	0.001
6 or More Cigarettes	0.852	0.035	0.000

Select Independent Variable:	Non-Hispanic Other/Two or More Races		
Dependent Variable	Overweight/Obese		
Variable	Odds Ratio	Robust Standard Error	P>|z|
Constant	0.977	0.061	0.707
Elastic Consumption of Soda	1.007	0.004	0.079
Hispanic	1.764	0.059	0.000
Non-Hispanic Pacific Islander	1.081	0.188	0.655
Non-Hispanic American Indian or Non-Hispanic Alaskan	2.346	0.265	0.000
Non-Hispanic Asian	0.415	0.017	0.000
Non-Hispanic African American	2.014	0.107	0.000
Non-Hispanic Other/Two or more Races	1.075	0.083	0.350
Non-Hispanic Other/Two or more Races X Elastic Consumption of Soda	1.008	0.019	0.671
Naturalized	0.953	0.033	0.167
Non-Citizen	0.980	0.042	0.633
Age	1.009	0.001	0.000
Male	1.812	0.039	0.000
100-199% of the Poverty Line	1.019	0.038	0.615
200%-299% of the Poverty Line	0.962	0.039	0.337
300% or more of the Poverty Line	1.033	0.036	0.355
No Formal Education	1.470	0.211	0.008
High School Graduate	0.762	0.032	0.000
Vocational/AA/AS Degree	0.790	0.034	0.000
College Graduate	0.572	0.026	0.000
Masters/PhD	0.532	0.026	0.000
1-5 Cigarettes	0.840	0.042	0.001
6 or More Cigarettes	0.852	0.035	0.000

Select Independent Variable:	Naturalized		
Dependent Variable	Overweight/Obese		
Variable	Odds Ratio	Robust Standard Error	P>|z|
Constant	0.980	0.061	0.748
Elastic Consumption of Soda	1.005	0.004	0.273
Hispanic	1.759	0.059	0.000
Non-Hispanic Pacific Islander	1.079	0.188	0.662
Non-Hispanic American Indian or Non-Hispanic Alaskan	2.350	0.266	0.000
Non-Hispanic Asian	0.417	0.017	0.000
Non-Hispanic African American	2.014	0.107	0.000
Non-Hispanic Other/Two or more Races	1.089	0.079	0.240
Naturalized	0.923	0.034	0.028
Naturalized X Elastic Consumption of Soda	1.048	0.017	0.004
Non-Citizen	0.982	0.042	0.664
Age	1.009	0.001	0.000
Male	1.809	0.039	0.000
100-199% of the Poverty Line	1.019	0.038	0.611
200%-299% of the Poverty Line	0.961	0.039	0.328
300% or more of the Poverty Line	1.033	0.036	0.356
No Formal Education	1.472	0.212	0.007
High School Graduate	0.761	0.032	0.000
Vocational/AA/AS Degree	0.788	0.034	0.000
College Graduate	0.570	0.026	0.000
Masters/PhD	0.531	0.026	0.000
1-5 Cigarettes	0.838	0.042	0.000
6 or More Cigarettes	0.854	0.035	0.000

Select Independent Variable:	Non-Citizen		
Dependent Variable	Overweight/Obese		
Variable	Odds Ratio	Robust Standard Error	P>|z|
Constant	0.978	0.061	0.715
Elastic Consumption of Soda	1.007	0.004	0.118
Hispanic	1.762	0.059	0.000
Non-Hispanic Pacific Islander	1.080	0.188	0.657
Non-Hispanic American Indian or Non-Hispanic Alaskan	2.347	0.265	0.000
Non-Hispanic Asian	0.415	0.017	0.000
Non-Hispanic African American	2.015	0.107	0.000
Non-Hispanic Other/Two or more Races	1.087	0.079	0.250
Naturalized	0.953	0.033	0.163
Non-Citizen	0.966	0.045	0.450
Non-Citizen X Elastic Consumption of Soda	1.011	0.014	0.423
Age	1.009	0.001	0.000
Male	1.811	0.039	0.000
100-199% of the Poverty Line	1.019	0.038	0.614
200%-299% of the Poverty Line	0.962	0.039	0.000
300% or more of the Poverty Line	1.033	0.036	0.354
No Formal Education	1.472	0.213	0.007
High School Graduate	0.762	0.032	0.000
Vocational/AA/AS Degree	0.790	0.034	0.000
College Graduate	0.572	0.026	0.000
Masters/PhD	0.532	0.026	0.000
1-5 Cigarettes	0.840	0.042	0.001
6 or More Cigarettes	0.853	0.035	0.000

Select Independent Variable:	Age		
Dependent Variable	Overweight/Obese		
Variable	Odds Ratio	Robust Standard Error	P>|z|
Constant	1.014	0.064	0.821
Elastic Consumption of Soda	0.976	0.011	0.027
Hispanic	1.765	0.059	0.000
Non-Hispanic Pacific Islander	1.823	0.188	0.648
Non-Hispanic American Indian or Non-Hispanic Alaskan	2.344	0.265	0.000
Non-Hispanic Asian	0.415	0.017	0.000
Non-Hispanic African American	2.006	0.107	0.000
Non-Hispanic Other/Two or more Races	1.086	0.079	0.255
Naturalized	0.953	0.033	0.162
Non-Citizen	0.978	0.042	0.610
Age	1.008	0.001	0.000
Age X Elastic Consumption of Soda	1.001	0.000	0.000
Male	1.812	0.039	0.000
100-199% of the Poverty Line	1.017	0.038	0.643
200%-299% of the Poverty Line	0.960	0.039	0.309
300% or more of the Poverty Line	1.031	0.036	0.394
No Formal Education	1.466	0.211	0.008
High School Graduate	0.763	0.032	0.000
Vocational/AA/AS Degree	0.790	0.034	0.000
College Graduate	0.571	0.026	0.000
Masters/PhD	0.532	0.026	0.000
1-5 Cigarettes	0.840	0.042	0.001
6 or More Cigarettes	0.850	0.035	0.000

Select Independent Variable:	Male		
Dependent Variable	Overweight/Obese		
Variable	Odds Ratio	Robust Standard Error	P>|z|
Constant	0.964	0.060	0.559
Elastic Consumption of Soda	1.022	0.006	0.000
Hispanic	1.764	0.059	0.000
Non-Hispanic Pacific Islander	1.077	0.187	0.670
Non-Hispanic American Indian or Non-Hispanic Alaskan	2.329	0.263	0.000
Non-Hispanic Asian	0.414	0.017	0.000
Non-Hispanic African American	2.001	0.107	0.000
Non-Hispanic Other/Two or more Races	1.086	0.079	0.255
Naturalized	0.954	0.033	0.175
Non-Citizen	0.982	0.042	0.666
Age	1.009	0.001	0.000
Male	1.860	0.042	0.000
Male X Elastic Consumption of Soda	0.974	0.008	0.001
100-199% of the Poverty Line	1.021	0.0378	0.579
200%-299% of the Poverty Line	0.965	0.039	0.380
300% or more of the Poverty Line	1.036	0.37	0.311
No Formal Education	1.472	0.212	0.007
High School Graduate	0.762	0.032	0.000
Vocational/AA/AS Degree	0.571	0.026	0.000
College Graduate	0.571	0.026	0.000
Masters/PhD	0.531	0.0256	0.000
1-5 Cigarettes	0.839	0.042	0.001
6 or More Cigarettes	0.853	0.035	0.000

Select Independent Variable:	100-199% of the Poverty Line		
Dependent Variable	Overweight/Obese		
Variable	Odds Ratio	Robust Standard Error	P>|z|
Constant	0.973	0.061	0.661
Elastic Consumption of Soda	1.010	0.005	0.035
Hispanic	1.764	0.059	0.000
Non-Hispanic Pacific Islander	1.080	0.188	0.658
Non-Hispanic American Indian or Non-Hispanic Alaskan	2.347	0.265	0.000
Non-Hispanic Asian	0.415	0.017	0.000
Non-Hispanic African American	2.013	0.107	0.000
Non-Hispanic Other/Two or more Races	1.087	0.079	0.251
Naturalized	0.953	0.033	0.166
Non-Citizen	0.980	0.042	0.641
Age	1.009	0.001	0.000
Male	1.812	0.039	0.000
100-199% of the Poverty Line	1.031	0.040	0.437
100-199% of the Poverty Line X Elastic Consumption of Soda	0.991	0.009	0.334
200%-299% of the Poverty Line	0.964	0.039	0.356
300% or more of the Poverty Line	1.035	0.037	0.326
No Formal Education	1.470	0211	0.007
High School Graduate	0.762	0.032	0.000
Vocational/AA/AS Degree	0.790	0.034	0.000
College Graduate	0.572	0.026	0.000
Masters/PhD	0.533	0.026	0.000
1-5 Cigarettes	0.840	0.042	0.001
6 or More Cigarettes	0.852	0.035	0.000

Select Independent Variable:	200%-299% of the Poverty Line		
Dependent Variable	Overweight/Obese		
Variable	Odds Ratio	Robust Standard Error	P>|z|
Constant	0.979	0.061	0.728
Elastic Consumption of Soda	1.006	0.004	0.142
Hispanic	1.762	0.059	0.000
Non-Hispanic Pacific Islander	1.080	0.188	0.657
Non-Hispanic American Indian or Non-Hispanic Alaskan	2.347	0.265	0.000
Non-Hispanic Asian	0.414	0.017	0.000
Non-Hispanic African American	2.013	0.107	0.000
Non-Hispanic Other/Two or more Races	1.087	0.079	0.250
Naturalized	0.953	0.033	0.167
Non-Citizen	0.980	0.042	0.635
Age	1.009	0.001	0.000
Male	1.812	0.039	0.000
100-199% of the Poverty Line	1.018	0.038	0.626
200%-299% of the Poverty Line	0.951	0.040	0.230
200%-299% of the Poverty Line X Elastic Consumption of Soda	1.012	0.013	0.348
300% or more of the Poverty Line	1.032	0.036	0.378
No Formal Education	1.470	0.211	0.008
High School Graduate	0.762	0.032	0.000
Vocational/AA/AS Degree	0.790	0.034	0.000
College Graduate	0.572	0.026	0.000
Masters/PhD	0.532	0.026	0.000
1-5 Cigarettes	0.840	0.042	0.001
6 or More Cigarettes	0.852	0.035	0.000

Select Independent Variable:	300% or more of the Poverty Line		
Dependent Variable	Overweight/Obese		
Variable	Odds Ratio	Robust Standard Error	P>|z|
Constant	0.979	0.061	0.729
Elastic Consumption of Soda	1.007	0.005	0.197
Hispanic	1.764	0.059	0.000
Non-Hispanic Pacific Islander	1.081	0.188	0.655
Non-Hispanic American Indian or Non-Hispanic Alaskan	2.344	0.265	0.000
Non-Hispanic Asian	0.414	0.017	0.000
Non-Hispanic African American	1.086	0.079	0.253
Non-Hispanic Other/Two or more Races	0.953	0.033	0.167
Naturalized	0.953	0.033	0.167
Non-Citizen	0.980	0.042	0.637
Age	1.009	0.001	0.000
Male	1.802	0.039	0.000
100-199% of the Poverty Line	1.019	0.038	0.622
200%-299% of the Poverty Line	0.961	0.039	0.327
300% or more of the Poverty Line	1.029	0.037	0.426
300% or more of the Poverty Line X Elastic Consumption of Soda	1.004	0.008	0.656
No Formal Education	1.468	0.211	0.008
High School Graduate	0.762	0.032	0.000
Vocational/AA/AS Degree	0.790	0.034	0.000
College Graduate	0.572	0.026	0.000
Masters/PhD	0.523	0.026	0.000
1-5 Cigarettes	0.839	0.042	0.001
6 or More Cigarettes	0.853	0.035	0.000

Select Independent Variable:	No Formal Education		
Dependent Variable	Overweight/Obese		
Variable	Odds Ratio	Robust Standard Error	P>|z|
Constant	0.993	0.063	0.913
Elastic Consumption of Soda	1.010	0.005	0.028
Hispanic	1.763	0.059	0.000
Non-Hispanic Pacific Islander	1.081	0.188	0.654
Non-Hispanic American Indian or Non-Hispanic Alaskan	2.345	0.265	0.000
Non-Hispanic Asian	0.414	0.017	0.000
Non-Hispanic African American	2.013	0.107	0.000
Non-Hispanic Other/Two or more Races	1.086	0.079	0.256
Naturalized	0.953	0.033	0.161
Non-Citizen	0.980	0.042	0.639
Age	1.009	0.001	0.000
Male	1.812	0.039	0.000
100-199% of the Poverty Line	1.019	0.038	0.616
200%-299% of the Poverty Line	0.962	0.039	0.341
300% or more of the Poverty Line	1.034	0.036	0.348
No Formal Education	1.443	0.209	0.011
No Formal Education X Elastic Consumption of Soda	0.988	0.010	0.229
High School Graduate	0.747	0.034	0.000
Vocational/AA/AS Degree	0.561	0.027	0.000
College Graduate	0.561	0.027	0.000
Masters/PhD	0.523	0.026	0.000
1-5 Cigarettes	0.839	0.042	0.001
6 or More Cigarettes	0.853	0.035	0.000

Select Independent Variable:	High School Graduate		
Dependent Variable	Overweight/Obese		
Variable	Odds Ratio	Robust Standard Error	P>|z|
Constant	0.974	0.061	0.670
Elastic Consumption of Soda	1.010	0.005	0.060
Hispanic	1.764	0.059	0.000
Non-Hispanic Pacific Islander	1.081	0.188	0.656
Non-Hispanic American Indian or Non-Hispanic Alaskan	2.346	0.265	0.000
Non-Hispanic Asian	0.414	0.017	0.000
Non-Hispanic African American	2.013	0.107	0.000
Non-Hispanic Other/Two or more Races	1.087	0.079	0.251
Naturalized	0.953	0.033	0.168
Non-Citizen	0.980	0.042	0.635
Age	1.009	0.001	0.000
Male	1.812	0.039	0.000
100-199% of the Poverty Line	1.019	0.038	0.615
200%-299% of the Poverty Line	0.962	0.039	0.332
300% or more of the Poverty Line	1.033	0.036	0.356
No Formal Education	1.471	0.212	0.007
High School Graduate	0.768	0.034	0.000
High School Graduate X Elastic Consumption of Soda	0.995	0.008	0.526
Vocational/AA/AS Degree	0.791	0.034	0.000
College Graduate	0.573	0.026	0.000
Masters/PhD	0.534	0.026	0.000
1-5 Cigarettes	0.839	0.042	0.001
6 or More Cigarettes	0.853	0.035	0.000

Select Independent Variable:	Vocational/AA/AS Degree		
Dependent Variable	Overweight/Obese		
Variable	Odds Ratio	Robust Standard Error	P>|z|
Constant	0.974	0.061	0.668
Elastic Consumption of Soda	1.070	0.005	0.046
Hispanic	1.764	0.059	0.000
Non-Hispanic Pacific Islander	1.080	0.188	0.656
Non-Hispanic American Indian or Non-Hispanic Alaskan	1.081	0.265	0.000
Non-Hispanic Asian	0.415	0.017	0.000
Non-Hispanic African American	2.014	0.107	0.000
Non-Hispanic Other/Two or more Races	1.087	0.079	0.251
Naturalized	0.954	0.033	0.170
Non-Citizen	0.980	0.042	0.628
Age	1.009	0.001	0.000
Male	1.812	0.039	0.000
100-199% of the Poverty Line	1.018	0.038	0.620
200%-299% of the Poverty Line	0.962	0.039	0.333
300% or more of the Poverty Line	1.033	0.036	0.359
No Formal Education	1.471	0.212	0.007
High School Graduate	0.762	0.032	0.000
Vocational/AA/AS Degree	0.796	0.035	0.000
Vocational/AA/AS Degree X Elastic Consumption of Soda	.993	0.009	0.457
College Graduate	0.573	0.026	0.000
Masters/PhD	0.534	0.026	0.000
1-5 Cigarettes	0.839	0.042	0.001
6 or More Cigarettes	0.853	0.35	0.000

Select Independent Variable:	College Graduate		
Dependent Variable	Overweight/Obese		
Variable	Odds Ratio	Robust Standard Error	P>|z|
Constant	0.984	0.061	0.790
Elastic Consumption of Soda	1.004	0.004	0.318
Hispanic	1.762	0.059	0.000
Non-Hispanic Pacific Islander	1.080	0.188	0.658
Non-Hispanic American Indian or Non-Hispanic Alaskan	2.349	0.265	0.000
Non-Hispanic Asian	0.414	0.017	0.000
Non-Hispanic African American	2.011	0.107	0.000
Non-Hispanic Other/Two or more Races	1.086	0.079	0.255
Naturalized	0.953	0.033	0.168
Non-Citizen	0.980	0.042	0.637
Age	1.010	0.001	0.000
Male	1.810	0.039	0.000
100-199% of the Poverty Line	1.018	0.038	0.637
200%-299% of the Poverty Line	0.960	0.039	0.000
300% or more of the Poverty Line	1.033	0.36	0.359
No Formal Education	1.467	0.211	0.008
High School Graduate	0.761	0.032	0.000
Vocational/AA/AS Degree	0.788	0.032	0.000
College Graduate	0.559	0.026	0.000
College Graduate X Elastic Consumption of Soda	1.033	0.014	0.014
Masters/PhD	0.530	0.025	0.000
1-5 Cigarettes	0.839	0.042	0.001
6 or More Cigarettes	0.854	0.035	0.000

Select Independent Variable:	Masters/PhD		
Dependent Variable	Overweight/Obese		
Variable	Odds Ratio	Robust Standard Error	P>|*z*|
Constant	0.980	0.061	0.742
Elastic Consumption of Soda	1.007	0.004	0.121
Hispanic	1.763	0.59	0.000
Non-Hispanic Pacific Islander	1.080	0.188	0.657
Non-Hispanic American Indian or Non-Hispanic Alaskan	2.348	0.0265	0.000
Non-Hispanic Asian	0.414	0.017	0.000
Non-Hispanic African American	2.012	0.107	0.000
Non-Hispanic Other/Two or more Races	1.086	0.079	0.252
Naturalized	0.953	0.033	0.167
Non-Citizen	0.980	0.042	0.637
Age	1.009	0.001	0.000
Male	1.812	0.039	0.000
100-199% of the Poverty Line	1.019	0.038	0.616
200%-299% of the Poverty Line	0.962	0.039	0.000
300% or more of the Poverty Line	1.033	0.036	0.358
No Formal Education	1.469	0.211	0.008
High School Graduate	0.762	0.032	0.000
Vocational/AA/AS Degree	0.790	0.034	0.000
College Graduate	0.571	0.026	0.000
Masters/PhD	0.527	0.026	0.000
Masters/PhD X Elastic Consumption of Soda	1.022	0.018	0.224
1-5 Cigarettes	0.840	0.042	0.001
6 or More Cigarettes	0.853	0.035	0.000

Select Independent Variable:	1-5 Cigarettes		
Dependent Variable	Overweight/Obese		
Variable	Odds Ratio	Robust Standard Error	P>|*z*|
Constant	0.975	0.0361	0.689
Elastic Consumption of Soda	1.009	0.004	0.050
Hispanic	1.764	0.059	0.000
Non-Hispanic Pacific Islander	1.080	0.188	0.657
Non-Hispanic American Indian or Non-Hispanic Alaskan	2.347	0.265	0.000
Non-Hispanic Asian	0.415	0.017	0.000
Non-Hispanic African American	2.014	0.107	0.000
Non-Hispanic Other/Two or more Races	1.086	0.079	0.252
Naturalized	0.953	0.033	0.167
Non-Citizen	0.980	0.042	0.630
Age	1.009	0.001	0.000
Male	1.812	0.039	0.000
100-199% of the Poverty Line	1.019	0.038	0.614
200%-299% of the Poverty Line	0.962	0.039	0.336
300% or more of the Poverty Line	1.033	0.036	0.355
No Formal Education	1.470	0.211	0.007
High School Graduate	0.762	0.032	0.000
Vocational/AA/AS Degree	0.790	0.034	0.000
College Graduate	0.572	0.026	0.000
Masters/PhD	0.533	0.026	0.000
1-5 Cigarettes	0.849	0.047	0.003
1-5 Cigarettes X Elastic Consumption of Soda	0.993	0.013	0.589
6 or More Cigarettes	0.852	0.035	0.000

Select Independent Variable:	6 or More Cigarettes		
Dependent Variable	Overweight/Obese		
Variable	Odds Ratio	Robust Standard Error	P>|*z*|
Constant	0.970	0.060	0.619
Elastic Consumption of Soda	1.016	0.005	0.001
Hispanic	1.758	0.059	0.000
Non-Hispanic Pacific Islander	1.082	0.188	0.649
Non-Hispanic American Indian or Non-Hispanic Alaskan	2.344	0.265	0.000
Non-Hispanic Asian	0.415	0.017	0.000
Non-Hispanic African American	2.012	0.107	0.000
Non-Hispanic Other/Two or more Races	1.090	0.079	0.234
Naturalized	0.954	0.033	0.174
Non-Citizen	0.978	0.042	0.596
Age	1.009	0.001	0.000
Male	1.809	0.039	0.000
100-199% of the Poverty Line	1.018	0.038	0.635
200%-299% of the Poverty Line	0.961	0.039	0.323
300% or more of the Poverty Line	1.033	0.036	0.351
No Formal Education	1.470	0.212	0.007
High School Graduate	0.760	0.032	0.000
Vocational/AA/AS Degree	0.789	0.034	0.000
College Graduate	0.571	0.026	0.000
Masters/PhD	0.533	0.026	0.000
1-5 Cigarettes	0.834	0.042	0.000
6 or More Cigarettes	0.900	0.040	0.017
6 or More Cigarettes X Elastic Consumption of Soda	0.973	0.007	0.002

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