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SUGAR-SWEETENED BEVERAGE TAXES IN VERMONT: MEDIA FRAMING  
AND PUBLIC PERCEPTION

A Thesis Presented

by

Benjamin L. Crosby

to

The Faculty of the Graduate College

of

The University of Vermont

In Partial Fulfillment of the Requirements  
For the Degree of Master of Science  
Specializing in Community Development and Applied Economics

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## ABSTRACT

This thesis explores the conversation surrounding the recent attempts by the Vermont Legislature to pass a Sugar-Sweetened Beverage tax in the years 2014-2016. We explore the common perceptions expressed by a sample of Vermont residents and also look at how Vermont media outlets portrayed the tax through frames of reference. Framing is a method of emphasizing certain points of an issue. This thesis reports the common opinions of Vermonters, the media framing of the issue, and if there is any relationship between them in two academic journal articles.

The first article looks at the common frames used in Vermont media during the 2014-2016 period. Classifying 10 pro- and anti-tax frames from 30 common arguments, the article analyzes the use of these frames, their prevalence in different news outlets, and their frequency during time periods. The article also looks at sponsors of these frames and measures which frames individuals and organizations are sponsoring. The study finds that anti-tax advocates most often cite economic hindrances as a reason to oppose the tax and pro-tax advocates predominately cite health benefits and economic tax benefits as a reason to support the tax. In the final year, pro-tax advocates sponsored economic benefits more than any other frames and this argument coincided with the statewide discussion of a budget shortfall.

The second article measures the relationship between the media portrayal of the Sugar-Sweetened Beverage tax and the opinions of Vermont citizens regarding the tax. By looking at the prevalence of pro- and anti-tax frames usage in each year, a logistic regression model was built to measure the odds of people favoring tax based off of independent variables, including frames. Vermont residents fluctuated in their opinion of the tax over the years. It was found that in 2015, pro-tax frames made people more likely to support the tax. Democrats were also more likely to support the tax and Republicans were more likely to oppose the tax.

This thesis provides insight into the conversation surrounding Sugar-Sweetened Beverage taxes in Vermont. It helps to shed light on the issue, how different groups feel about the issue, and how frames of thought presented through the media can relate to Vermonters' opinion of the tax.

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## INTRODUCTION

Sugar Sweetened Beverages (SSB) have achieved national attention over the past few years. Proponents for the tax have cited a growing body of researchers and academics who argue that SSBs are not only a part, but the single largest contributor to rising obesity rates in the United States (Brownell & Friedan, 2009). In addition to being linked to obesity, the consumption of SSBs has also been associated with nearly 184,000 deaths per year worldwide (Singh et al., 2010). Due to this health crisis, researchers have sought to understand plausible ways to combat the obesity epidemic. Studies have shown that taxing SSBs can reduce consumption, obesity rates, and raise revenue (Sturm et al., 2010; Andreyeva et al., 2011). Recently the Harvard Business Review published an article discussing the possible effectiveness of taxing bad foods and the positive impacts this could have on healthier food choices for Americans (Khan et al., 2016). In addition, both the New York Times and NPR, among others, have been publishing findings by the World Health organization (WHO), which discuss how soda taxes are necessary to combat SSBs' effect on obesity (Tavernise, 2016; Aubrey, 2016). Despite the studies and national attention, these SSB policies have seen and continue to receive considerable controversy in the U.S. political arena (Dorfman, 2013).

The State of Vermont had unsuccessfully attempted to pass a sugary drink excise tax of \$0.01 per ounce during the 2011-2012 legislative session. Advocates recently revived the effort with Bill H24, a \$.02 per ounce excise tax a during the 2014-15 Legislative session, with no success (Vermont General Assembly, 2015). With the new bill, H24, this tax

would have caused a \$.24 price increase on a 12-ounce can of sugary drink or a \$1.34 tax on a 2-liter bottle. With these proposals, proponents have made it clear to the State that taxing SSBs, which include fruit drinks, non-diet sodas, and energy drinks, among others (Ludwig et al., 2001; Vartanian et al., 2007; Forshee et al., 2008), is an effective way to mitigate rising health costs surrounding obesity (Vermont General Assembly, 2015).

Numerous cities and states have already attempted to pass SSB taxes (e.g. California, New York, Pennsylvania), but have done so with little success (Hartocollis, 2010). Only recently, Berkeley, CA and Philadelphia, PA were able to pass an excise tax on SSBs (Falbe et al., 2015; Aubrey, 2016-2). Strong financial investment has been injected into the geographies proposing SSB taxes and those organizations against the tax have been financing the opposition far more than pro-tax advocates (Mejia et al., 2013). With the failure of the proposed \$.02/ounce SSB tax in Vermont, some researchers point to the sugar industry organization's effectiveness at framing the debate for having a hand in the failure of these SSB legislations (Brownell & Warner, 2009; Yale Rudd Center).

Understanding how the media has represented information in frames can inform how the public and political process is informed. Framing is the process of emphasizing or including certain points, while excluding others and/or providing more or less emphasis (Entman, 1993). Tuchman (1978) discusses that mass media can intentionally create and implement frames of reference to impact how consumers interpret events. By implementing frames of reference, the media can selectively present information that meets their, or their sponsors best interest (Entman, 1993; McCombs & Shaw, 1993).

Understanding if media framing and exposure has any relation to public support of SSB legislation would shed light onto the legislative debate and how the public conversation takes place.

The first article in this thesis explores how Vermont media sources have covered the debate of SSB tax legislation over the years 2013-2016. This article does a content analysis of Vermont media articles discussing the tax. Using a list of ten common pro- and anti-tax frames, we studied their prevalence and use in the media articles. Through different analysis, the article attempts to understand what emphasis is being placed on different frames and how that emphasis changes each year. It also measures what individuals or organizations are sponsoring the frames. The first article seeks to provide a better understanding of the SSB tax debate, how it is being portrayed, and who it is being portrayed by. This information will allow individuals more insight when making decisions.

The second article builds off of the first article. The first article sheds light onto the frame usage in Vermont media. The second article takes that frame usage, takes Vermont opinion data of the tax, and seeks to find a relationship between the two. Building a logistic regression model, we measure if demographic variables and frame usage will have any impact on the odds of respondents being in support of the tax or being opposed to the tax. Understanding a relationship between media framing and opinion has important implications for both sides of the debate and will help inform their future decision-making.

## COMPREHENSIVE LITERATURE REVIEW

### Obesity and Sugar-Sweetened Beverages

Obesity has become a major topic of discussion among health advocates and policy experts as its prevalence grows globally and across the United States. Studies of the U.S. population have shown a consistent growth in obesity rates over past decades (Flegal et al., 2002; Mokdad et al., 2001; Ogden et al., 2002). In their 2002 study, Flegal et al. found that among U.S. adults, obesity rates had more than doubled since 1980. Along with adult males, much of this rapid increase in obesity rates can also be seen in children (Ogden et al., 2006). In 2008, it was seen that obesity outranked smoking as the largest cause of preventable loss of quality-adjusted life (Jia & Lubetkin, 2010). More recently, obesity rate increases among U.S. adults have been slowing (Flegal et al., 2012). Despite this measured slowdown, experts continue to watch the obesity epidemic closely because U.S. obesity rates remain high in comparison with similar countries (Flegal et al., 2012; An R, 2014) and a recent report showed two thirds of adults and one third of children were overweight or obese (Glickman et al., 2012; Cawley & Meyerhoefer, 2012). In 2012, the U.S. spent approximately \$190 billion, or 20.6% of all health expenditures treating conditions tied to obesity (Cawley & Meyerhoefer, 2012). This obesity epidemic has caused researchers and medical experts to look for contributing factors.

Evidence indicates a link between SSBs and obesity (Ludwig et al., 2001; Vartanian et al., 2007; Forshee et al., 2008). In addition to the connection, excessive SSB consumption has also been linked to lower milk, calcium, and other important nutrient intake amongst

individuals (de Ruyter et al., 2012; Malik et al., 2006). Some researchers argue that SSBs are the single largest contributor to rising obesity rates in the United States (Brownell & Friedan, 2009). Along with the U.S., global intake of SSBs has greatly increased over past decades. Mexico's caloric intake of SSBs doubled between 1999 and 2006 and between 1977 and 2002, the caloric intake of SSBs doubled for all age groups in the U.S. (Duffey & Popkin, 2007). It has been estimated that soda consumption is responsible for one fifth of the weight gain in the U.S. between 1977 and 2007 (Woodward-Lopez et al., 2011). With the increasing levels of SSB consumption, SSBs have become the single greatest contributor to energy intake (Block, 2004; Duffey & Popkin, 2007). This reality leads to health, economic, and societal costs (National Center for Health Statistics, 2008).

#### Excise Taxes versus Sales Taxes

As legislative options to combat obesity are being weighed, many academics, researchers, and politicians discuss the option of taxes. More specifically, excise taxes and sales taxes. An excise tax or an excise duty is a 'tax levied on the manufacture, sale, use, or distribution of beverages' (Chriqui et al., 2013, p. 407). This tax can also include a fixed fee or a tax imposed on an activity or an occupation (Chriqui et al., 2013, p. 407). A sales tax is a tax imposed on the sale of goods and services at the point of purchase, and is calculated in proportion to the estimated value of the goods or transaction concerned (Chriqui et al., 2013, p. 407). Sales taxes are often referred to as *ad valorem*, referring to the estimation based off of proportion and excise taxes are often referred to as *specific taxes* (Chriqui et al., 2013).

According to Chriqui et al. (2013), *specific taxes* offer a number of advantages over *ad valorem taxes*. These advantages include: their impact does not depend on product price; meaning they can reduce relative price gaps making substitution less likely; *specific taxes* can create a more stable and predictable revenue streams, which is important if they will be supporting programs; they are less susceptible to industry price manipulation; and they can be easy to administer because they are solely based on volume (Chriqui et al., 2013; Smith et al., 2010; Powell & Chriqui, 2011). A drawback to *specific taxes* is the need to adjust them to keep up with inflation (Chriqui et al., 2013). *Ad valorem taxes*, on the other hand, do not need to be adjusted for inflation (Chriqui et al., 2013).

*Ad valorem* taxes produce less stable revenues. Because it is tied to price, these taxes will produce revenue proportional to the price of the goods. Research has found that these taxes can cause people to ‘trade down’ to less expensive brands, which would produce less revenue (Chriqui et al., 2013; Smith et al., 2010; Powell & Chriqui, 2011). A benefit to these taxes is that, as prices change with inflation, so does the tax revenue (Chriqui et al., 2013). This style tax was often used in taxing tobacco. It was found to work, but required strong oversight to avoid transfer pricing (Chriqui et al., 2013).

At the time of their report, Chriqui et al. (2013) noted that 35 states had a sales tax on sodas, 31 had sales taxes on sports drinks, 28 had sales taxes on sweetened teas, and 16 had taxes on juices containing sweeteners. The authors noted that the mean sales taxes ranged as high as 5.16 percent and as low as 3.69 percent. At the time of writing, two

communities have passed excise taxes on SSBs: Berkeley, CA and Philadelphia, PA (Falbe et al., 2015; Aubrey, 2016-2).

### Legislative Options and Public Opinion

Many different legislative avenues have been pursued to address the issue with curbing SSB consumption. There have been access-oriented policies, which seek to restrict access to these types of beverages. These access-oriented policies are often seen in school districts as a way to curb childhood consumption (Chriqui et al., 2013; Craddock et al., 2011; Johnson et al., 2009). From a different angle, price-side legislative options have also been pursued. With the proven effectiveness of taxes placed on tobacco in recent decades, it is a major avenue being pursued to reduce SSB consumption (Chriqui et al., 2013). Academic studies show the effectiveness that SSB taxes have on decreasing consumption, increasing health benefits, and potential public revenue gains (Falbe et al., 2015; Waterlander et al., 2014; Andreyeva et al., 2011; Steenhuis et al., 2011; Smith et al., 2010; Waterlander et al., 2010; Brownell et al., 2009). Because of this, many public health researchers advocate for taxes on SSBs (Brownell et al., 2009). Public health experts are looking for an excise tax of at least 1 penny-per-ounce as a way to increase prices and reduce consumption (Chriqui et al., 2013; Brownell et al., 2009; Chaloupka et al., 2011). With most tax plans in the United States only including small sales taxes on SSBs and related beverages (Chriqui et al., 2008), it has been generally accepted that these are not enough to curb consumption or aid in weight loss (Finkelstein et al., 2010; Sturm et al., 2010; Powell et al., 2009; Fletcher et al., 2009; Fletcher et al., 2010). A tax

policy could be especially effective for the health of lower socio-economic groups because price is one of the strongest determinants of food choice (Steenhuis et al., 2011; Waterlander et al., 2010).

In a 2010 Report by the U.S. Department of Agriculture, the authors published a comprehensive study on potential impacts of implementing a tax on SSBs. The study looked at the hypothetical effect of taxing SSBs and found that higher prices, induced by taxation, would lead to lower consumption (Smith et al., 2010). Using two national data sets, the National Health and Nutrition Examination Survey (NHANES) and the Nielsen Homescan panels looking at actual consumer grocery purchases of beverages, the authors were able to create a demand system to measure how consumption of beverages would change do to changes in price (Smith et al., 2010). The authors note the increase in price would lead to a substitution effect, with individuals switching to other beverage options. The study found a 20% increase in price could cause a 37 calorie/day drop in consumption for adults and a 43 calorie/day drop for children (Smith et al., 2010). The researchers found this consumption shift could reduce national overweight and obesity levels from 66.9% to 62.4% (Smith et al., 2010). They attribute much of this decrease to two factors: A large group of overweight and obese individuals are only a few pounds over the threshold and many overweight and obese individuals consume large amounts of SSBs (Smith et al., 2010).

Using a model predicting national consumption patterns, Andreyeva et al. (2011) mapped the effect of a 1 penny per ounce tax on SSBs and how that would impact caloric

consumption and revenue. The authors measured that, when a penny per ounce tax is applied to SSBs, a possible \$79 billion could be generated in tax revenue over the 2010-2015 period. Tax revenue rose to \$118 billion when SSB's diet varieties were also included in the model (Andreyeva et al., 2011). In addition to possible tax revenues, the authors estimated a possible 24% decrease in consumption of SSBs, assuming consumers do not substitute purchasing to other caloric beverages (Andreyeva et al., 2011).

Waterlander et al. (2014) utilized a simulated shopping environment to measure the impact of a price increase on SSBs in Europe. Participants were divided into groups, each with a different pricing scenario. The group that experienced an SSB price increase considerably reduced their purchases of SSBs. By moving SSBs from the existing 6% tax rate to a higher 15% tax rate, shoppers were seen to purchase .90 Liters, or 168 kcals, less in SSBs per week (Waterlander et al., 2014). In 2012, Waterlander et al. performed a similar experiment to the previous one with a web-based supermarket. This experiment measured the effects of different food pricing strategies including taxes and subsidies. In controlled trials, the researchers created three levels of price reductions for healthy foods, and three levels of price increases for unhealthy foods. The researchers found that price decreases (subsidies) are an effective way to stimulate healthy food purchases. They found price increases on unhealthy foods up to 25% did not have any significant impact on food purchases (Waterlander et al., 2012). The authors note that it is important to validate these findings in real supermarket settings.

In their 2013 study, Elbel et al. measure effects of various legislative options to help consumers purchase healthier food options. By opening an actual store, the researchers were able to measure consumer responses to different tactics in real time. The researchers created multiple conditions including a baseline, highlighting ‘less healthy foods’, a 30% non-itemized tax, a 30% non-itemized tax with labeling, and a 30% itemized tax with labeling (Elbel et al., 2013). After the business ran its course, it was found that beverage purchases accounted for roughly 30% of all in-store purchases (Elbel et al., 2013). The researchers also found that the taxed items and labeling unhealthy items both led to consumers choosing healthier options. Coefficients were generally seen to be larger and more significant under the taxation conditions (Elbel et al., 2013).

Brownell et al. (2009) noted a number of benefits from legislative options surrounding SSBs. The authors note that an excise tax on soft drinks would have a greater impact than a traditional sales tax. A 10% tax increase in cost on soft drinks could have the potential to decrease consumption 8-10%. In addition, if the tax is targeted specifically at SSBs and not as broadly as soft drinks, the authors assert that for every 10% increase in price, there will be at least a 10% reduction in consumption. Based off of their findings, this drop in consumption could equate to a reduction of 20 kcal/day, which could be sufficient for weight loss (Brownell, 2009). Beyond health benefits, the article suggests that a nation-wide penny-per-ounce tax on SSBs could raise approximately \$14.9 billion in tax revenue during the first year (Brownell, 2009).

Americans rarely look favorably upon taxes and a tax on SSBs is no different (Barry et al., 2013). In a 2011 survey, Barry et al. utilized a public opinion survey measuring respondents' agreement with common pro-tax and anti-tax arguments. No pro-tax arguments were endorsed by a majority of respondents. For pro-tax arguments, response rates included: 'SSBs are the single largest contributor to the current obesity epidemic' with roughly 49% of respondents in agreement and 'it is a good way to raise revenue' with approximately 41% in agreement (Barry et al., 2013). The highest respondent agreement was found with the anti-tax argument 'SSB taxes are arbitrary because they do not affect other unhealthy options (60%)'. In addition, many respondents indicated that taxes were a quick way for politicians to fill a budget gap (58%). Other popular arguments included that the tax is a government intrusion into people's lives, they are harmful to the poor, and the common belief that they are opposed by most Americans (Barry et al., 2013). The argument asserting that taxes will reduce consumption garnered the second lowest agreement level with 32% (Barry et al., 2013).

In addition to the Barry et al. study, Gollust et al. (2014) sought to measure public opinion of SSB taxes using an internet based, nationally representative survey. The study concluded that of a number of common health legislation options, SSB taxes had the lowest support (21.6%) and portion restrictions held the second lowest rate of agreement (25.5%). These least popular policies also contained the strongest opposition with approximately one-quarter of respondents selecting "strongly opposed" when expressing their opinion (Gollust et al., 2014). The most agreed upon choices included prominently placing calorie labels on SSBs (65.0%) and restricting the sale of SSBs on school

properties (61.5%). Child-focused marketing choices both exhibited roughly 50% support. The study also found statistically significant differences in support depending on political party affiliation for 5 of the 6 variables (Gollust et al., 2014). The authors found that their results supported findings by previous authors including Rivard et al.

Rivard et al. (2011) used a random, nationally representative, telephone survey to measure: respondent's consumption patterns, knowledge and attitudes of health effects of SSBs, and their potential reaction to an added 20% tax on SSBs. The authors found that 69% of respondents had consumed SSBs in the week previous to their completion of the survey, consistent with previous literature. The authors also found that the largest reported consumption happened among African Americans, those in the highest BMI brackets, and those with lower levels of education. In addition, of the respondents, 91% were aware of the obesity risks associated with SSBs. 36% of the respondents supported a tax on SSBs. Those most in favor of this tax were those between the ages of 18 and 24, those in the lowest BMI group, and those with higher levels of education. Despite the strong levels of opposition, the authors found that over one third of respondents would reduce consumption in the event of a 20% tax (Rivard et al., 2011).

In their study of the SSB tax debate in a mid-Atlantic state, Donaldson et al. (2014) used a survey design to measure public perception of a one penny-per-ounce tax on SSBs. The survey also collected numerous types of sociodemographic data. Unlike Rivard et al.'s (2011) findings, 50% of the respondents in the survey reported to be in agreement with the SSB tax (Donaldson et al., 2014). The authors found that support of the tax was

stronger with democrats, those who believe the connection between SSBs and childhood obesity, as well as those who believe childhood obesity needs intervention (Donaldson et al., 2014). It was also seen that women, independent voters, and those concerned about childhood obesity were more likely to be convinced by SSB taxes (Donaldson et al., 2014). The study did have a large number of high income earners and a high number of highly educated respondents. Donaldson et al. (2014) discusses that this could have had an impact on the outcomes and that more low socio-economic respondents were most likely needed.

Despite the general acceptance of the tax found by Donaldson et al. in their analysis of a mid-Atlantic state (2014), a general lack of support has also been seen manifest in a number of common arguments made by opponents of the taxes. As pointed out by Brownell et al. (2009), objections to SSB taxes have ranged from labelling them as regressive, that they will not change anything, and that they can be a blunt and arbitrary tax. Watts et al. (2014) also shows opposition arguments, including economic concerns and concerns about the size and intrusion of the government, in their study of the SSB legislation conversation. Neiderdeppe et al. (2013) also shows similar arguments confirming those stated above. Brownell et al. (2009) among others, have stated that there are numerous possible benefits associated with these SSB taxes and legislative options, despite common concerns.

With ample evidence suggesting positive outcomes from SSB taxes through revenue gains and reduced consumption, and ample anti- SSB tax sentiment from public

respondents (Barry et al., 2013; Gollust et al., 2014; Andreyeva et al., 2011; Waterlander et al., 2014), Chaufan et al. (2010) discusses a critical issue with the idea of a legislated SSB tax. Respondents have expressed concern about the arbitrary nature of an SSB tax as a way to combat obesity when numerous other factors exist contributing to the epidemic (Gollust et al., 2014). Chaufan et al. (2010) echoes the concern about targeting one specific contributor of a large and complex obesity epidemic. Often used in the defense of ‘sin taxes’, the battle to combat the use and/or overuse of alcoholic beverages and tobacco products had clear consequences in public health and a decrease in their consumption directly lead to a decrease in illnesses created by them. The authors note that the logic used for alcohol and cigarette use does not transfer to the obesity epidemic because of the larger and more complex network of contributing factors to the disease. It is argued that more than one behavior needs curbing to change obesity (Chaufan et al., 2010).

Along with with issues raised by Chaufan et al. (2010), the role of big industries can not be ignored in the context of the SSB tax debate. In their analysis of corporate philanthropy and lobbying expenditures, Aaron & Siegel (2016) discovered soda/retail companies funding many causes and/or organizations. From 2011-2015, the Coca-Cola Company and PepsiCo were seen to sponsor 96 different health organizations (Aaron & Siegel, 2016). These included many medical and public health institutions whose primary vision is combating the obesity epidemic. During the same time period, those companies were also seen lobbying against 29 different public health bills aimed at reducing soda consumption or reducing low nutrition drink intake (Aaron & Siegel, 2016). The authors

note the conflict of interest in their study. Despite the two soda company's support of health organizations, they were seen to lobby against 97% of public health interventions during the measured time span. It would be expected for health organizations to be in favor of reducing SSB consumption. Due to the large amount of funding coming from the soda companies, more public health organizations have removed themselves from the SSB public debate, are not opposing soda legislation, and have been seen to partner more with soda companies on producing educational materials (Lowe & Hacker, 2013; Simon, 2013; National Black Nurses Association, 2014).

### Framing in the Media

Entman (1993) provides one of the most cited definitions of the framing and explains it as the process of “[selecting] some aspects of a perceived reality and make them more salient in a communicating text, in such a way as to promote a particular problem definition, causal interpretation, moral evaluation, and/or treatment recommendation” (pg. 52). In addition to this, it can also be said that mass media intentionally creates and implements frames of reference for readers and viewers to perceive and interpret events (Tuchman, 1978). Gamson and Modigliani (1989) go on to note that the media discourse plays a role in how individuals create meaning. The study of frames has existed for some time and according to Entman (1993), is a disjointed study with many definitions and disciplines attempting to define and use it. Some of those disciplines using this approach include sociology, psychology, and media study (Goffman, 1974; Kahneman and Tversky, 1984; Tuchman, 1978; Gitlin, 1980).

Frame research originating from a sociological approach gives us ‘frames of communication’ (Chong & Druckman, 2007; Vliegenthart & van Zoonen, 2015) and from this, the study of media frames and their impact on individual frames can be traced (Tuchman, 1978; Gitlin, 1980; Borah, 2011). In their comprehensive analysis of the early study of frames, Vliegenthart and van Zoonen (2011) list a number traits including that frames “...used by audiences are the result of socially situated articulations between particular issues, individual and collective differences, experiential knowledge, popular wisdom and media discourse” (pg. 105). This approach has been studied by many and Scheufele (1999) created a model to show the relation of media effects and their frames and how it had been approached to that point. Within the created model, Scheufele (1999) illustrates the process from inputs to outcomes with media and audience. Frame building originates from ideologies, elites, and organizational pressures and becomes media frames. Frame setting turns these into audience frames, which have individual-level effects that create attitudes, behaviors, and attributions of responsibility (Scheufele, 1999). Furthermore, Scheufele (1999) lays out different questions to ask when looking at media frames as either independent or dependent variables.

Media frames were seen to favor a particular political view in Neiderdeppe et al.’s (2013) analysis of national media frames done within the context of the SSB debate. The authors created a list of 30 common pro- and anti-tax arguments to use in their content analysis. Largely democratic districts and their news sources were seen to produce more news stories on SSB tax legislation than other districts and appeared to view the issue as more

newsworthy than republican news outlets (Neiderdeppe et al., 2013). Because of the differences in representation, the authors suggest that viewers of left-leaning news sources may be more informed of the issue than viewers of right-leaning news sources (Niederdeppe et al., 2013). The authors viewed the political orientation of news sources by the political parties endorsed by the news organization (Niederdeppe et al., 2013).

In their 2014 study of Tobacco and Soda Taxes, Watts et al. performed a content analysis comparing the media discourse surrounding a tobacco tax increase and an SSB tax in the years 2001-2002 and 2011-2012. The authors used Vermont media news sources that discussed the proposed tobacco and SSB tax. They looked at the frequency of core actors and the frames of meaning represented in the pieces. The tobacco tax passed, but the SSB tax did not pass. One notable difference between the two issues is the debate on health concerns. In the time of the tobacco tax, there was no doubt about the effect of smoking on one's health, for the SSB tax, the direct correlation with health concerns was less obvious. The authors found that the pro-tax frame sponsors did not alter the debate enough with their framing of the health impacts of SSBs (Watts et al., 2014). The authors note the emphasis placed by opponents on the economic impacts of SSB taxes. While the opposition has clear messaging, it appeared the supporters of SSB tax legislation still had to prove to people the tax was necessary for the health concerns (Watts et al., 2014).

Watts et al. (2014) found the negative economic benefits of shoppers going across state lines to make purchases was emphasized by anti-tax sponsors. Many countries in Europe, including Denmark, France, and Hungary have implemented taxes on foods and

beverages that do not provide good nutritional value (Villanueva, 2011; Mytton et al., 2012; French Republic, 2012). Denmark found a 4%-5% decrease in sales of butter and cookies but ended up repealing the tax for fear that residents where shopping across the border (Nielsen ScanTrak Convenience Index, 2012; Pedersen et al., N.D.). This has become a large talking point for anti-tax sponsors but there is little economic evidence in the United States to support it.

A great deal of research has been done on how frames impact individuals, but little research delves into how power influences frames (Carragee & Roefs, 2004). As shown, frames can come from social and cultural settings, but they can also be introduced and promoted by sponsors pushing a desired message or meaning (Watts & Kaza, 2013). Due to the fact that frames do not just originate in vacuums, but are influenced by organizations, social movements, and political actors (Beckett, 1996; Gamson & Modigliani, 1989), media and news stories become an arena for a competition with political actors competing by “sponsoring their preferred definitions of issues” (Carragee & Roefs, 2004, pg. 216). Knowing the successes with sponsoring of frames and the resources behind them, these framing competitions regularly favor political figures and elites (Carragee & Roefs, 2004; Gitlin, 1980; Keller, 1990; Tuchman, 1978).

#### Berkeley, CA Example

In November of 2014, Berkeley, California became the first city in the U.S. to pass a tax on Sugar Sweetened Beverages. Approved was a measure that instituted a 1-penny per ounce excise tax on the distribution of SSBs (Alameda County, 2014). This tax was

pushed forward with the hopes of producing public health benefits. Because excise taxes are aimed at the producer, the best way to understand an early effectiveness of this tax is to see how much of the tax is passed through to the consumer (Falbe et al., 2015).

Researchers conducted two studies, one three months after the implementation of the excise tax, and one the following year to measure the impact of the excise tax.

In their first study, Falbe et al. (2015) measured the pre and post tax change in price of SSBs in a number of area retailers three months after its implementation. The researchers compared these to proximity communities where the tax was not implemented (Falbe et al., 2015). Through their price analysis, it was seen that on average, 69% of the tax was passed through to consumers on soda. More broadly, on average, 47% of the tax was passed through on all SSBs (Falbe et al., 2015). The authors found that many stores did adjust pricing schemes in different ways. For example, drug stores showed the lowest price changes, which the authors hypothesize could be due to regional pricing rather than store-to-store (Falbe et al., 2015). It was also found that Dollar Tree, a national retailer, discontinued their sale of SSBs at the two Berkeley locations as of the writing of this paper (Falbe et al., 2015). The authors note the importance of successful pass through in mediating consumption (Falbe et al., 2015).

Falbe et al. (2016) repeated the design of their previous study done three months after the implementation of a SSB excise tax. This study focused on SSB consumption in low-income neighborhoods and consisted of a questionnaire administered after the tax (Falbe et al., 2016). This study provides the first evidence of SSB tax impacts on consumption in

the U.S. The researchers found that in low-income neighborhood, SSB consumption reduced by 21% over a one-year period starting before the tax went into effect and ending after the implementation (Falbe et al., 2016). During that same time period, SSB consumption in comparison communities around Berkeley saw a 4% increase in SSB consumption (Falbe et al., 2016). These findings show similarity to studies done in Mexico and France where SSB excise taxes showed a 12% and 6.7% reduction in consumption, respectively (Colchero et al., 2016; The Netherlands: European Competitiveness and Sustainable Industry Policy Consortium, 2014).

### Gaps in the Literature

In reviewing the literature, it became evident that numerous studies and articles exist about obesity, SSBs, taxation, and also how these debates are framed. There are a number of studies showing how the media has framed the SSB specific debate and implications of that. There were two areas that were not evident in the body of literature: How opinion of taxes is related to framing, and the influences behind the frame making. It works in our favor that one area lacking in literature is the main topic of the second article in this thesis. This reality also raises difficulty. The lack of previous studies measuring any relationship between media framing and public opinion of SSB taxes means there is little precedent to build on. This, in a sense, is unfamiliar territory. This study will begin to inform the gap surrounding the relationship between media framing and the public opinion of SSB taxes in the State of Vermont. In beginning to inform this void, this research will set a foundation for future research to build on. Future research should look

specifically at the Vermont populous and include an analysis of national news sources, should look at geographic regions of the U.S., and should look at this issue in the entire U.S.

## ARTICLE 1

### **Media Coverage of Sugar-Sweetened Beverage Taxes in Vermont: A Case Study of Pro- and Anti- tax frames from 2013-2015.**

Benjamin L. Crosby, Jane Kolodinsky, Richard Watts, Jean Harvey

#### Introduction

Increasing evidence in the scientific community points towards Sugar-Sweetened Beverages (SSBs) as factors contributing to obesity. SSBs include fruit drinks, non-diet sodas, and energy drinks, among others (Ludwig et al., 2001; Vartanian et al., 2007; Forshee et al., 2008). Studies of the U.S. population has shown a consistent growth in obesity rates over past decades (Flegal et al., 2002; Mokdad et al., 2001; Ogden et al., 2002). Due to this consistent growth in obesity, experts within the public health field suggest different policy methods to curb consumption of these beverages (Pomeranz, 2012). In order to slow consumption of SSBs and help alleviate the obesity epidemic, many researchers believe taxing SSBs can reduce consumption, obesity rates, and raise revenue (Sturm et al., 2010; Andreyeva et al., 2011).

Obesity rates have more than doubled since 1980 among U.S. adults (Flegal et al., 2002). Along with adult males, much of the rapid rise in obesity rates can also be seen in children (Ogden et al., 2006). In 2008, obesity became the number one cause of losing preventable, quality-adjusted life, overtaking smoking in it's shortening of the public's lifespan. (Jia & Lubetkin, 2010). In 2012, the U.S. spent approximately \$190 billion, or 20.6% of all health expenditures treating conditions tied to obesity (Cawley &

Meyerhoefer, 2012). Analyzing obesity's steady increase and societal burden, researchers argue that SSBs are the single largest contributor to those rising obesity rates in the United States (Brownell & Friedan, 2009). To reduce the consumption of SSBs, many researchers point towards legislative policies, including taxation, as an effective way to decrease consumption and increase health (Sturm et al., 2010; Andreyeva et al., 2011; Chiqui et al., 2013).

All attempts to implement an SSB tax have been met with strong opposition from interest groups and coalitions, such as the American Beverage Association. As a way to reduce consumption of SSBs, the Alliance for a Healthier Vermont introduced a Bill to add a \$0.02 per ounce excise tax for all SSBs sold in the State of Vermont (Vermont General Assembly, 2015). Despite the mounting justification among health experts in favor of a tax, the Vermont proposal did not pass. To date, other states, such as California, New York, and Pennsylvania have attempted to put through SSB excise taxes with little success (Hartocollis, 2010). The anti-tax advocates have been supported by far greater resources than pro- tax advocates (Mejia et al., 2013). Against these odds, in November of 2014, Berkeley, California became the first city in the U.S. to pass a tax on Sugar Sweetened Beverages. The city passed a measure that instituted a 1-penny per ounce excise tax on the distribution of SSBs (Alameda County, 2014). Researchers found that in low-income neighborhoods, SSB consumption reduced by 21% (Falbe et al., 2016). These results confirm numerous studies' expectations of SSB taxes (Falbe et al., 2015; Waterlander et al., 2014; Andreyeva et al., 2011; Steenhuis et al., 2011; Smith et al., 2010; Waterlander et al., 2010; Brownell et al., 2009). Even with their victory, Berkeley,

CA still faced large opposition. In addition to the financial opposition seen by geographies trying to implement SSB taxes (Hartocollis, 2010), some researchers also point to industry messaging, or framing, for being partially responsible in the failure of these SSB legislations (Brownell & Warner, 2009; Yale Rudd Center).

By analyzing the way in which media outlets frame their messages, there can be a better understanding of political discourse and the public thought process surrounding SSB tax legislation. Framing is the process of emphasizing or including certain points, while excluding others and/or providing more or less emphasis (Entman, 1993). By selecting points of emphasis, researchers suggest that mass media intentionally creates and implements frames of reference for readers and/or viewers to perceive and interpret events (Tuchman, 1978). By creating frames of reference, media can selectively present information in ways that can cause audiences to interpret information in the media's or sponsor's best interest (Entman, 1993; McCombs & Shaw, 1993).

Knowing frames can have an effect on audiences, we now can look at opinion from a different angle. Taxes on SSBs have not been a popular subject among most Americans (Barry et al., 2013). In fact, in numerous surveys, respondents have shown little desire for SSB legislations and even less desire for taxes on SSBs (Barry et al., 2013; Gollust et al., 2014). In their 2014 article, Donaldson et al. measured 50% support for SSB taxes in their survey of a mid-Atlantic state. This is the highest support seen thus far and the support was strongly influenced by the belief that SSBs played a key role in childhood obesity (Donaldson et al., 2014).

Previous to this study, Watts et al. (2014) performed an analysis of Vermont media and how the cigarette and SSB tax discussions were covered. The authors found strong anti-tax frames presenting ideas such as negative economic consequences and government overreach, while pro-tax advocates emphasized health benefits (Watts et al., 2014). Neiderdeppe et al. (2013) looked nationally at frames and their sponsors in the SSB tax conversation. The authors labelled 30 pro- and anti- tax arguments, which were used to analyze the content of media articles. The objective of this study is to analyze how media framed the debate surrounding Vermont's attempt to legislate a SSB excise tax. This study will provide a new approach and an updated analysis of the issue, which is garnering more attention than when the Watts et al. (2014) study measured it.

## Methods

The study sought to answer the following research questions:

- 1) What is the frequency of Pro- and Anti- Tax frames for each given year?
- 2) What are the common sponsors of these frames?
- 3) How are the news frames represented among the different news outlets?

Articles were collected for content analysis to view frame usage. Articles between the years of 2013-2015 were collected if they met certain criteria. Three Vermont print news sources were selected. These include the highest circulating traditional newspaper, the paper representing the State Capital, and an alternative news source (Niederdeppe et al., 2013). These were the Burlington Free Press, the Times Argus, and Vermont Digger,

respectively. Television news was collected from Vermont's largest provider, WCAX and radio was collected from VPR. Articles from these outlets were searched using ProQuest and news outlet archives. The search terms tax, soda, soft drink, sugar-sweetened beverage, and SSB were used. An article was pulled for review if one of the search terms was found and if an additional search term was found in the title, abstract, or lead paragraph (Niederdeppe et al., 2013). The article was kept for analysis if 50% or more discussed the subject matter. Opinion pieces, letters to the editor, duplicate stories from newswires, and lead-ins were excluded from review. This selection process led to the analysis of 54 individual news pieces. Articles were grouped by their publication date.

The Vermonter Poll is a state-wide survey conducted annually by the University of Vermont Center for Rural Studies. It is a phone survey collected in the months of February or March and as of 2015, is including mobile devices in its random selection. The survey is designed with numerous questions to collect socioeconomic information including age, residence, and household income. In addition to socioeconomic information, individual's reactions towards SSB legislation, their SSB drinking habits, and their households SSB habits were recorded by the survey. "2013" Articles were those published after the 2013 Vermonter Poll and before the 2014 Vermonter Poll. Articles published between the 2014 and 2015 Vermonter Polls were assigned 2014. And Articles published between the 2015 and 2016 Vermonter Polls were assigned 2015. The Vermonter Poll was used to define time segments to aid in future research.

The qualitative methodology for the data collection used a Directed content analysis approach (Hsieh & Shnnon, 2005). The methods are based off of the previous work of Niederdeppe et al. (2013) and Watts et al. (2014). Niederdppe et al. (2013) created a list of 30 common arguments found in the National Media surrounding SSB taxes. These arguments were reviewed and assigned to 5 frames each for pro- and anti- tax positions, as seen in Table 1 (Watts & Kaza, 2013). This keeps with the theory of frame analysis used in *Talking Politics* (Gamson, 1992). An example of this frame selection can be seen with the frame *slippery slope/government intrusion*. Within that frame, opposition arguments include: (1) in opposition to SSB tax because it represents and inappropriate approach to raising revenue, saving money, or balancing budgets; (2) argues in opposition to SSB tax using analogy to tobacco tax; (3) argues in opposition to SSB tax using analogy to alcohol tax; (4) argues in opposition to SSB tax as a slippery slope to more government taxation (Niederdeppe et al., 2013). Chosen frames were compared to those used by Watts et al. (2014) in their Vermont specific study of SSB and tobacco media frames for consistency and comparability. These frames were consistent with those used in Watts et al. (2013). Frame Coding was done in HyperRESEARCH version 3.5.1.

<b>Anti-Tax Frames</b>	<b>Pro-Tax Frames</b>
Arbitrary	Health benefits
Economic Hindrance	Economic Benefits
Low Support	Support
Positive Private Sector Engagement	Poor Private Sector Engagement
Slippery Slope / Government Intrusion	Comparison to Sin Taxes

**Table 1. Ten frame groups for Pro- and Anti- tax arguments.**

To check the reliability of the coded articles, a second researcher was brought in to code a 10% sample of articles. The second researcher's coding produced a 100% match on the overall article emphasis from their 10% coding in comparison to the first researcher's coding.

According to Borah (2011), media frames can be measured with equivalency or emphasis. In this research, we looked at the emphasis placed on frames of thought in media articles. This approach looks at how, by "emphasizing a subset of potentially relevant considerations," news can cause individuals to focus on the group of considerations emphasized by the presenter (Druckman, 2004, p.672). The selected news sources were analyzed and measured with regard to the emphasis placed on the 10 frames. Articles were analyzed for the types of frames used, for the sponsors of frames, and also had a proportion given to them based off of the amount of pro- and anti-tax frames present.

## Results

News specific articles in the three-year period totaled 54. Over the three-year period, articles were balanced with 19 showing anti-tax representation, 19 showing pro-tax representation, and 16 with an unbiased representation.

### *Over the Three Year Period*

In the 2013 period, articles with an anti-tax representation and articles with a pro-tax representation both measured 30%. Unbiased articles comprised the remaining 40% of

all articles in that time period. In 2014, Pro-tax articles had the highest proportion with 47.4% of the total articles. Neutral articles were the most common in the 2015 time period, totally 40%. Anti-tax articles were more prevalent than pro-tax articles in the 2015 period.

	2013	2014	2015
Anti-Tax	30.0% (6)	42.1% (8)	33.3% (5)
Neutral	40.0% (8)	10.5% (2)	40.0% (6)
Pro-Tax	30.0% (6)	47.4% (9)	26.7% (4)

**Table 2. Percentage and quantity of media articles with emphasis bias.**

Anti-tax proponents used the Economic Hindrance frame more than any other in all time periods (Table 3). An example of this can be seen in the *Burlington Free Press* in 2015 with a store owner being quoted:

*“Some distributors and store owners said the tax would hurt small businesses. ‘All this tax is going to do is drive sales elsewhere, and we can’t afford that,’ said Pam Tag, owner of Quality Market in Barre.” (Achin, 2015)*

In two of the three time periods, this Economic Hindrance frame represented at least 50% of all frames. 2013 saw the smallest proportion, with 42.6% of all articles. The Arbitrary frame was also used frequently by anti-tax sponsors. The following caption from VPR shows this:

*“Jim Harrison is the President of the Vermont Grocers Association. His group is one of many beverage related businesses that are opposed to the new tax. He disputes the link*

*between the rise in obesity and the consumption of soda. 'It's not caused by sweetened beverages it's caused by in general many of us consume too many calories and we don't expend enough,' said Harrison. 'It's really simple math. To single out one item and try and make it a scapegoat is very unfortunate and really misses the point.'"* (Kinzel, 2013)

The slippery slope/government intrusion frame was represented far more than others in 2013. 2014 and 2015 saw its use, but to a much lesser extent. Despite the prevalence of the positive private sector engagement frame described by Niederdeppe et al. (2013), this frame was not seen in the Vermont media articles.

Pro-Tax advocates used two frames far more than others, Economic Benefits and Health Benefits. In all three years, the two never had a share lower than a combined 62.5% of all pro-tax frames.

*"Citing a study by the Yale Rudd Center for Food and Policy, the coalition estimate the tax would raise \$27 million in revenue, which they propose to direct towards state health care subsidies and a handful of other public health initiatives."* (Rudarakanchana, 2013)

The economic benefits frame was used the most in 2015. This same time period includes public discussions surrounding a projected \$31 million reduction in revenue for the State of Vermont (True, 2015). Another pro-tax frame, Health benefits was use consistently across all time periods. Because the SSB tax was introduced to aid in curbing the obesity

epidemic, the constant prevalence of these frames makes sense. According to Representative Alison Clarkson,

*“I’m a big supporter of – instead of paying for the problem, which is what we’re currently doing, for the obesity and the diabetes and all the issues that surround high-fructose corn syrup and sugar-sweetened beverages – I would rather tax its consumption,” Clarkson said. “I’d rather put the money into prevention than paying for the problem at the far end.” (O’Gorman, 2015)*

A common frame used by advocates of the tax was showing the support of the public and other prominent individuals. This was used, but not to the extent of other pro-tax frames. Despite the Neiderdeppe et al.’s (2013) study finding arguments talking about private sector engagement, there were no pro-tax frames found suggesting a poor private sector engagement in the Vermont media.

	2013	2014	2015
<i>Anti-Tax Frames</i>			
Arbitrary	32.7%	16.7%	25.0%
Economic Hindrance	53.8%	42.6%	50.0%
Low Support	5.8%	11.1%	12.5%
Pos. Private Sector Engagement	0%	0%	0%
Slippery Slope / Gov’t Intrusion	7.7%	29.6%	12.5%
<i>Pro-Tax Frames</i>			
Economic Benefits	40.4%	34.5%	37.5%
Health Benefits	51.1%	44.8%	25.0%
Poor Private Sector Engagement	0%	0%	0%
Sin Tax	2.1%	6.9%	25.0%
Support	6.4%	13.8%	12.5%

**Table 3. Use of Pro- and Anti-tax frames over three-year period**

*Media and Frame Usage*

As shown in Table 4 and Table 5, there was substantial consistency in the frames presented by different media outlets. All media outlets except the Burlington Free Press reported Economic Hindrance more frequently than any other anti-tax frame. The Burlington Free Press presented the Economic Hindrance and Arbitrary frames equally as the most frequently used anti-tax frame.

	BFP	Times Argus	VTDigger	VPR	WCAX
Arbitrary	38.5%	8.3%	27.7%	28.6%	6.7%
Economic Hindrance	38.5%	58.3%	48.9%	42.9%	60.0%
Low Support	7.7%	8.3%	14.9%	5.7%	0%
Pos. Private Sector Engagement	0%	0%	0%	0%	0%
Slippery Slope / Gov't Intrusion	15.4%	25.0%	8.5%	22.9%	33.3%

**Table 4. Use of Pro-tax frames in different media outlets.**

Except for VT Digger, all news outlets reported Health Benefits more than any pro-tax frame. Economic Benefits was reported the most in VT Digger for pro-tax frames. For both sides of the tax debate, VT Digger mainly reported Economic related frames.

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	BFP	Times	VT Digger	VPR	WCAX
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		Argus			
Economic Benefits	31.3%	11.1%	41.3%	40.5%	38.5%
Health Benefits	50.0%	66.7%	34.8%	45.9%	53.8%
Poor Private Sector	0%	0%	0%	0%	0%
Engagement					
Sin Tax	12.5%	0%	2.2%	13.5%	7.7%
Support	6.3%	22.2%	21.7%	0%	0%

**Table 5. Use of Anti-tax frames in different media outlets**

*Frames and Sponsors*

Over all time periods, politicians were some of the most cited sponsors among the media outlets (BFP: 28.6%; TA: 42.3%; VPR: 34.9%; WCAX: 45.5%). Except for VTDigger, all media outlets cited politician sponsors more than any other sponsor and politicians were the second most cited in VTDigger articles. Food and Beverage Organizations or Hospitality representatives were the most cited sponsors in VTDigger articles (27.9%). They were the second most cited sponsor for the Burlington Free Press (21.4%), the Times Argus (26.9%), and VPR (27%). They were the third most cited sponsors in WCAX pieces (18.2%). Citizens were not highly represented except for WCAX, in which 27.3% of sponsors were citizens. With regards to those who sponsored frames, Food and Beverage Organizations or Hospitality representatives only sponsored anti-tax frames. Politicians produced a mix of pro- and anti-tax frames. Members of Coalitions or interest organizations were cited third most frequently by all news outlets except for WCAX. These sponsors almost exclusively presented pro-tax frames of thought through media articles

In 2013, 37.9% of frame sponsors came from politicians. The 2014 time period was heavily represented by Food and Beverage Organization or Hospitality sponsors (30.4%), and 2015 also showed Food and Beverage Organization or Hospitality sponsors as the highest represented with 37.8%. In all three time periods, Politicians, Members of Coalitions or interest organizations, and Food and Beverage Organization or Hospitality sponsors were the three largest represented sponsor groups. Citizens never represented more than 4.9% of the sponsors (2013) and there were none in the 2015 time period.

## Discussion

The conversation surrounding the SSB tax debate stayed fairly constant throughout the three-year sample. Proposed as a bill to combat obesity in the State of Vermont, opponents of the tax instantly crafted their response and overwhelmingly chose to focus on the negative economic consequences this would impose. This confirms what Watts et al. (2014) found during the 2011-2012 time period. Driving this narrative were representatives of the Food and Beverage industry. Surprisingly, despite the constant sponsoring of this economic hindrance frame of thought, there was relatively little citizen input into this. Citizen input was found the most with WCAX, interviewing local Vermonters and asking how these taxes would impact their local small businesses. By also including the narrative of local business owners and the citizens that support them, Anti-Tax frame sponsors were able to build upon their argument of negative economic

implications of the tax. Negative economic implication frames were consistent through all three years.

Pro-tax frames were largely based on health benefits for the first two years studied.

Interestingly, the 2015 time period had health benefits move from the most frequent pro-tax frame to the second most frequent. For the final year, Economic benefits were the largest represented pro-tax frame. This is interesting because the Vermont Legislature was dealing with a large budget deficit during the 2015-2016 time period. It would appear that advocates of the tax were changing their frames of emphasis to a theme that might resonate more with the citizens and the legislature. It is also interesting to note that this final time period included the pro-tax advocates using the same theme to promote the tax that anti-tax individuals were using to stop it, economic impacts.

Advocates for the tax did not have the privilege of another state or community passing this tax in time to influence the debate. Those against the tax had the ability to use other geographies failed attempts to bolster their frames of thought. With the recent passing of the excise tax in Berkely, CA, and the early signs of success, pro- tax advocates could have taken a different angle to argue their case. In addition, anti-tax sponsors pushed forward negative economic consequences and tried to make the tax look arbitrary and ineffective. These tactics match those seen by Watts et al. in their 2014 study. It wil be interesting to see if these frames can stand up against new evidence coming out of Berkeley, CA and Philadelphia, PA.

## Conclusion

The findings in this study illustrate the current conversation about SSB tax legislation in the State of Vermont. It is evident, as shown in Watt et al.'s 2014 research, that the anti-tax movement has a firm grasp on their message and it has been consistent over time. Despite mounting evidence, the pro-tax message of health benefits is failing to turn the tide. The sponsors of pro-tax frames began shifting the arguments to more economic benefit based positions in the final year of this study. This change did not alter the legislative outcome. By exploring the different frames used in the SSB tax debate, players in the public conversation can better understand if these messages have a relationship to individual's opinions. These findings suggest that the anti-tax advocates have found an effective message that does not need to be changed. These findings also suggest that pro-tax advocates need to continue to streamline their message and create a better balance between arguments that get at the heart of their belief, and arguments that effectively influence decision-making.

Further research is necessary on this subject to better know the messaging being portrayed to consumers. Future studies need to not only look at Vermont-specific media outlets, but also look at national news sources that are also consumed in Vermont. With the growth of online media and news, geographic boundaries have disappeared for consumers of news and media. Understanding the intersection between framing and opinion of legislation is another important area for future research.

## Limitations

Limitations to this study included the scope and areas of data collection. The media collected were only Vermont based news sources when other state and national news sources are also used for information gathering by residents in Vermont. Another limitation is that this article does not look into the power behind the frames. Frames of reference do not appear out of nowhere and are often produced by individuals and/or groups looking to promote an agenda. The authors did not have the means to look into the actors behind the frames and measure their influence and affiliation with political orientations.

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## ARTICLE 2

### **An Analysis of the Potential Relationship Between Citizen Support of Sugar-Sweetened Beverage (SSB) Legislations and Media Coverage in Vermont.**

Benjamin L. Crosby, Jane Kolodinsky, Richard Watts, Jean Harvey

#### Introduction

The introduction of Bill H24, a proposed \$0.02 per ounce excise tax on Sugar-Sweetened Beverages (SSB)s, by advocates signaled to the State of Vermont that taxing SSBs is a plausible way to deal with the rising health costs surrounding obesity (Vermont General Assembly, 2015). SSBs, which include fruit drinks, non-diet sodas, and energy drinks, among others, have been identified as factors contributing to obesity (Ludwig et al., 2001; Vartanian et al., 2007; Forshee et al., 2008). Proponents of the tax have cited a growing body of researchers and academics who argue that SSBs are the single largest contributor to rising obesity rates in the United States (Brownell & Friedan, 2009). Further, studies have shown that taxing SSBs can reduce consumption, obesity rates, and raise revenue (Strum et al., 2010; Andreyeva et al., 2011). Despite the studies, these SSB policies remain considerably controversial in the U.S. political arena (Dorfman, 2013).

Obesity rates have more than doubled since 1980 among U.S. adults (Flegal et al., 2002). Along with adult males, much of the rapid rise in obesity rates can also be seen in children (Ogden et al., 2006). In 2012, the U.S. spent approximately \$190 billion, or 20.6% of all health expenditures treating conditions tied to obesity (Cawley & Meyerhoefer, 2012). Analyzing obesity's steady increase and societal burden, researchers

argue that SSBs are the single largest contributor to those rising obesity rates in the United States (Brownell & Friedan, 2009). To reduce the consumption of SSBs many researchers discuss targeting legislative options, such as taxation, as an effective way to decrease consumption and increase health (Sturm et al., 2010; Andreyeva et al., 2011; Chiqui et al., 2013). Many geographies have started discussing this option.

Certain cities and states have attempted to pass SSB taxes (e.g. Berkeley, California, New York, Pennsylvania), with little success (Hartocollis, 2010). Much of this low success can be attributed to anti-tax advocates financing the debates far more than pro-tax advocates (Mejia et al., 2013). Despite opposition, Berkeley, California was the first city in the U.S. to successfully implement an excise tax on the distribution of SSBs (Falbe et al., 2015). In 2014, the city passed a 1-penny per ounce excise tax on the distribution of SSBs. In a recent study, researchers found that the pass-through of the excise tax to the consumer was an average of 69% for soda and 47% for all SSBs (Falbe et al., 2015). This pass through suggests that the tax is effective at increasing the price of SSBs and creating a price deterrent for their purchase. Studying the effects of this pass through in Berkeley's low income communities, Falbe et al.'s 2016 study found that consumption of SSBs decreased, relative to other nearby cities and their comparable communities. These results confirm numerous studies' expectations of SSB taxes (Falbe et al., 2015; Waterlander et al., 2014; Andreyeva et al., 2011; Steenhuis et al., 2011; Smith et al., 2010; Waterlander et al., 2010; Brownell et al., 2009). Despite Berkeley's success and the growing body of evidence supporting SSB taxes, the proposed \$.02/ounce SSB tax in Vermont did not pass. Some researchers owe this failure, in part, due to the efforts of anti-tax industry

organizations' effectiveness at framing the debate (Brownell & Warner, 2009; Yale Rudd Center).

Understanding how the media represents information in frames can inform how the public and political decision-making process happens. Framing is the process of emphasizing or including certain points, while excluding others and/or providing more or less emphasis (Entman, 1993). Understanding this, Tuchman (1978) explains that mass media can intentionally create and implement frames of reference to influence how consumers interpret events. By implementing frames of reference, the media can selectively present information that serves their best interest (Entman, 1993; McCombs & Shaw, 1993). This selective use of information can play a role in how individuals create meaning from news (Gamson & Modigliani, 1989). Watts et al. (2014) performed an analysis of Vermont media and measured how cigarette and SSB tax discussions were covered by the media. The authors found clear anti-tax frames presenting arguments such as negative economic consequences and government overreach, while pro-tax advocates emphasized health benefits (Watts et al., 2014). Neiderdeppe et al. (2013) viewed frames and their sponsors in the SSB tax conversation from a national perspective. The authors labelled 30 pro- and anti- tax arguments, which were used to analyze the content of media articles. These arguments provided the foundation for this study's analysis. Because framing can be used to influence how individuals interpret events and create meaning and because frames have been recognized for pushing an agenda, it is important to know how people feel about issues.

Many studies measure public opinion of SSB taxes and most have found little desire for SSB legislations and even less desire for taxes on SSBs amongst respondents (Barry et al., 2013; Gollust et al., 2014). In their 2014 article, Donaldson et al. found that 50% of respondents were in support of SSB taxes in a mid-Atlantic state. This is the highest support seen thus far and the support was strongly influenced by the belief that SSBs played a key role in childhood obesity (Donaldson et al., 2014).

There is little analysis of the intersection between framing and public opinion with SSB legislation. Similar analyses include one by authors Nielsen & Bonn (2008) who measure the intersection of media exposure and drug addiction spending. The authors used media exposure as an independent variable to estimate the public perception of drug addiction spending legislation. This gave the researchers an understanding of how exposure relates to opinion. In a different study, Iyengar & Simon (1993) looked at media exposure and public support of military operations in the Gulf States, also looking at how exposure can relate to opinion. With similar studies examining how media has impacted support for policy, understanding if media framing has any relation to public support of SSB legislation would shed light on to the legislative process and how public conversation takes place. This article will analyze how media framed the debate surrounding Vermont's attempt to legislate a SSB excise tax and if there is any relationship between the framing and public opinion of the taxes.

## Methods

Analysis was done to answer the following research questions:

- 1) Does the media present pro- or anti-tax frames more than others in given time periods?
- 2) What is the public opinion of the Vermont SSB tax legislation?
- 3) Is there a relationship between the frame representation in the media and public opinion of the VT SSB tax legislation?

### *Data*

Opinion data for this study came from the Vermonter Poll. The Vermonter Poll is a state-wide survey conducted annually by the University of Vermont Center for Rural Studies. It is a phone survey collected in the months of February or March and as of 2015, is including mobile devices in its random selection. The survey is designed with numerous questions to collect socioeconomic information including age, residence, and household income. In addition to socioeconomic information, individual's reactions towards SSB legislation, their SSB drinking habits, and their households SSB habits were recorded by the survey. The specific question to be measured asks respondents their opinion of the Vermont Sugar Sweetened Beverage Tax in the form of a Likert scale. This scale ranged from "Strongly Oppose" to "Strongly Favor". Data was taken from the years 2014, 2015, and 2016. These years were selected for containing the above question and its connection with the research questions.

In addition to the data collected with the Vermonter Poll, we also did an in depth media analysis of the Sugar Sweetened Beverage tax coverage. This looked at Vermont media outlets for the time periods between at 2013/2014, 2014/2015, and 2015/2016. This was done to match the Vermonter Poll data with the relevant time frame in the media.

Modeled off of the media analysis methods used by Niederdeppe et al.'s (2013) study, we selected 3 newspapers in Vermont. These newspapers included the highest circulating (Burlington Free Press), the newspaper representing the state capital (Times Argus), and an additional alternative paper (Vermont Digger). Transcripts from a Televised News Program and radio were also analyzed including Vermont's most popular TV station, WCAX (CBS), and Vermont Public Radio (VPR).

To search media outlets, ProQuest, and news outlet archives were used with the following search terms: tax, soda, soft drink, sugar-sweetened beverage, and SSB. A hit on any of these terms was used to generate an initial list and, as done by Niederdeppe et al. (2013), if any of the other terms were found in the title, abstract, or lead paragraph, the article was further explored. Continuing to utilize the methods of Niederdeppe et al. (2013), if more than 50% of the article did not discuss the subject matter, the article was discounted from further analysis. Letters to the Editor, duplicate stories from newswires, opinion pieces, and lead-ins on television news networks were also excluded. Once news stories were selected, frames were then analyzed.

According to Borah (2011), media frames can be measured with equivalency or emphasis. For this study, we will take the emphasis approach. By "emphasizing a subset

of potentially relevant considerations,” media articles can cause individuals to focus on the group of considerations emphasized by the presenter (Druckman, 2004, p.672). After an initial study, it was found that the arguments coded by Niederdeppe et al. (2013) created a comprehensive list for Vermont and the 30 pro- and anti-tax arguments will be applied to this study. These 30 arguments were then gathered into 10 frames. The news sources meeting the initial cut were analyzed and measured with regard to the emphasis placed on each frame and for the sponsors or authors of those frames. The methods used to classify frames and sponsors can be seen in Appendix A and Appendix B. Articles were analyzed for the frames used, and also had a proportion given to them based off of the amount of pro- and anti-tax frames present. A second researcher was brought in to code a 10% sample of the articles. The second researcher confirmed a 100% match on the pro- and anti-tax leanings of their sampled articles.

### *Variables*

The dependent variable is the opinion of the VT SSB tax, OPIN. This variable originates from a 5-point Likert scale spanning from strongly oppose to strongly agree. It has been transformed into a 3-point ordered variable. In this variable 0=opposes (Strongly oppose and oppose), 1=neutral, and 2=supports (Strongly support and support) the tax.

Independent variables included demographics, which were deemed consistent with similar studies and the remaining independent variables were those measured through the media analysis. Gender was accounted for by MaleGender, where 1=Male and 0=all else. Education was measured with SomeCollege, where 1=those who have completed up through some college and 0 being all else. Education was also measured with

CollegeMore, where 1=those with a bachelor's degree or higher and 0 being all else.

Political orientation was measured with Democrat, where 1=Democrat and 0=all else and Republican, with 1=Republicans and 0 being all else. Levels of income were measured with IncMed, where 1=those who's Household income is at least \$50,000/year pre tax and 0 =all else. IncHigh accounted for those who's household income is at least \$75,000/year pre tax, with 1=those who meet it and 0=all others.

Finally, the representation of media articles was accounted for with two different variables. ProFrames provided a constant for the amount of Pro-Tax frames represented each year by Vermont media. AntiFrames provided a constant for the quantity of anti-tax arguments represented each year by Vermont media.

### *Analysis*

Different statistical analyses were used to answer the research questions. The first research question used data from the content analysis of Vermont media. Descriptive statistics measured the frequency of pro- and anti- tax arguments. This allowed the researchers to measure magnitude for individual years and over all years. To answer the second research question, Vermont Poll data was used to measure public opinion of the tax. Descriptive statistics were calculated to find measures of central tendencies. These statistics showed opinion for all years and year-by-year. Descriptive statistics were also used to parse out opinion by different demographic groups. In addition to descriptive statistics, crosstabs were used to measure demographics and public opinion of the tax.

To answer the third research question, a model was created that effectively measured any relationship between Vermont citizen opinion of SSB taxes and an array of independent variables. Opinion was measured with a 5-point Likert scale. For measurability, we used transformed the 5-point opinion variable into a 3-point variable, OPIN. With an ordered dependent variable, we chose an Ordered Probability regression as the modeling framework. The key independent variables of interest were ProFrames and AntiFrames. An independent variable with a negative coefficient indicated that it was less likely for the dependent variable to support the tax, while a positive coefficient represented the opposite. Partial effects were also measured because it is difficult to discern actual movements and probabilities from the coefficients of the Ordered Probability model. These partial effects better represent the probability that an independent variable will have on the outcome of the dependent variable.

For analysis, the first model included the Frame variables and the second model excluded frame variables. This is done to gauge the effect that the two frame variables have on the model. The Ordered Probability analysis was done with LimDep v.9.0.

## Results

The first research question asked if the media portrayed pro- or anti- tax frames more than the other in given time periods. Table 6 illustrates that in 2013/14, the pro- and anti-tax frame representation was even. In 2014/15, there were roughly 10% more pro-frames

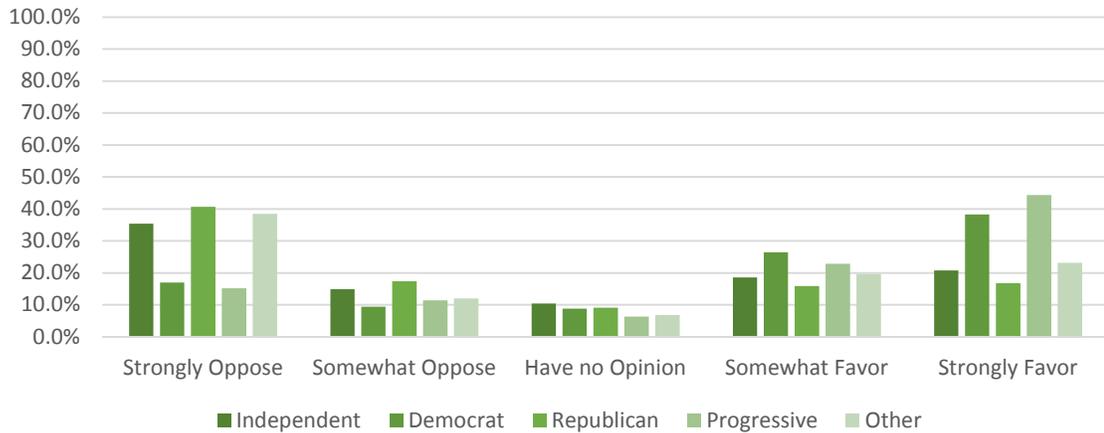
than anti-tax frames. 2015/16 had two more anti-frames than pro-frames. The media differs from year to year on representation of frames in articles.

	2013/14	2014/15	2015/16
Anti-Tax	67	65	25
Pro-Tax	67	72	23

**Table 6. Quantity of Pro- and Anti-tax frames by year.**

The second research question asks what Vermonter opinions are of the proposed SSB tax. In table 7, the mean level of agreement changed from year to year. In 2014, more individuals supported the tax than opposed it. In 2015, more people opposed the tax than supported it, and in 2016, more people supported the tax. The all year mean shows slightly more individuals supporting the tax than opposing it.

Figure 1 shows that there is a significant relationship between individuals' political affiliation and their support for the SSB tax. Democrats are more likely to favor the tax and republicans are more likely to oppose it. Figure 1 also illustrates that respondents are very polarized on the issue. Far more respondents are strongly opposed or strongly in favor of the SSB tax legislation than moderate respondents.



**Figure 1. All year SSB tax by political affiliation. (P = .000)**

The third research question asked whether or not there was any relationship between the framing of media arguments and citizen support for the SSB tax. An Ordered Probability regression was used and the estimated marginal effects for the two ordered probability models are shown in Table 8. The dependent variable, OPIN, is the focal point and all independent variables, including demographic variables, are also shown. For model 1, all variables exhibited significant results except IncHigh. CollegeMore, Democrats, Republican, IncMed, ProFrame, and AntiFrame were all significant at the 1% level. Model 2 omits frame variables to understand the model based solely on demographics. Model 2 has all independent variables being significant except IncHigh and CollegeMore, Democrat, and Republican were significant at the 1% level. The independent variable coefficients in model 2 changed slightly with the omission of frame variables in comparison to model 1. The largest changes were exhibited in the Democrat and Republican variables and were seen to change by between one and two probability points.

**Table 7. Descriptive statistics of selected variables**

		Mean
Opin	0= Against Tax, 1= Neutral, 2= For tax	1.005 (.950)
MaleGender	1 = Male	.453 (.498)
SomeCollege	1 = Attended some college (No Bachelors degree)	.282 (.450)
CollegeMore	1 = Achieved Bachelors degree or higher	.442 (.497)
Democrat	1 = Democrat	.264 (.441)
Republican	1 = Republican	.185 (.388)
IncMed	1 = HH income of >= \$50,000/year	.531 (.499)
IncHigh	1 = HH income of >= \$75,000/year	.333 (.471)
ProFrames	Number of Pro-tax Frames represented in a given year	52.62 (22.513)
AntiFrames	Number of Anti-tax Frames represented in a given year	51.045 (19.734)
		N=1878

Standard deviations in parentheses

The high income variables remained insignificant despite the changes. Model 2 also experienced a change in the IncMed variable with the omission of frame variables, although the size of the effect was trivial.

Partial effects were measured to better understand how the independent variables related to opinion of the SSB tax. The basic demographic partial effects remained consistent between the two models with minimal changes. Those who are male, individuals with some college, and republicans were all significantly more likely to oppose the tax and less likely to support the tax. Those with a college education or more, those who are democrat, and those with medium incomes were significantly less likely to oppose the tax and more likely to support it. Political party affiliation had the strongest effects on the model in either direction. In model 1, Democrats had a twenty percent higher probability of supporting the tax as opposed to opposing it or being neutral and Republicans has a ten

percent higher probability of opposing the tax than being neutral or supporting it. In the same model, those with a college education or higher had a nine percent higher probability of supporting the tax than being neutral or opposed. The key independent variables exhibited interesting partial effects with ProFrames having a higher probability of opposing the tax and AntiFrames having a higher probability of supporting the tax. It is important to note that the size of the partial effects was very small for ProFrames and AntiFrames with none greater than one probability point.

There were minimal results for independent variables having a relationship with opinion being neutral. Only the Democrat variable had a significant result and the size of the effect was below one probability point. Being democrat decreased the probability for a respondent being neutral with a minimal effect.

	Model 1				Model 2			
	Coefficient	Partial Effects			Coefficient	Partial Effects		
		Opin = 0	Opin = 1	Opin = 2		Opin = 0	Opin = 1	Opin = 2
Constant	-.2396**(.1168)				-.0015			
MaleGender	-.1175**(.0579)	.0464**	.0001	-.0465**	-.1191**(.0578)	.0470**	.0001	-.0471**
SomeCollege	-.1509**(.0756)	.0598**	-.0004	-.0594**	-.1478**(.0753)	.0586*	-.0003	-.0582**
CollegeMore	.2261***(.0710)	-.0889***	-.0005	.0895***	.2041***(.0704)	-.0803***	-.0005	.0808***
Democrat	.5128***(.0694)	-.1956***	-.0067***	.2024***	.5082***(.0689)	-.1939***	-.0066***	.2006***
Republican	-.2570***(.0782)	.1021***	-.0019	-.1002***	-.2705***(.0764)	.1074***	-.0021	-.1054***
IncMed	.1520***(.0766)	-.0600**	-.0001	.0601**	.1573**(.0765)	-.0621**	-.0001	.0622**
IncHigh	-.0636(.0811)	.0251	0	-.0251	-.0563(.0810)	.0222	0	-.0223
ProFrame	-.0316***(.0098)	.0125***	0	-.0125***	--	--	--	--
AntiFrame	.0370***(.0112)	-.0146***	0	.0147***	--	--	--	--

Standard deviations in parentheses

\*  $p \leq 0.1$

\*\*  $p \leq 0.05$

\*\*\*  $p \leq 0.01$

**Table 8. Estimated probabilities on Opinion of SSB Tax Legislation**

## Discussion

Content analysis of the news media confirmed Watts et al.'s (2014) findings for Vermont and Neiderdeppe et al.'s (2013) findings for the Nation, that different news outlets report varying levels of frames from both sides of the argument. Year to year, the emphasis of pro-tax or anti-tax arguments changed from various sources and sponsors. There was also changing sentiment expressed by respondents of the Vermonter Poll. In 2014, a majority of Vermont residents were in support of the tax. They were more opposed to the tax in 2015, and they were more supportive of the tax in 2016. Despite what was seen in the literature, over the three-year timespan, more Vermont residents were seen to support the SSB tax than oppose it (Barry et al., 2013; Gollust et al., 2014). With that said, Vermont respondents were more likely to identify as as democrat or progressive and fewer identified as republican or conservative leaning orientations.

In Neiderdeppe et al.'s (2013) study, the researchers found that democratic papers and geographies were more likely to support the legislation of SSB taxes. In both models of this study, democrat respondents followed similar suit. In model 1, democrats had a twenty percent higher probability of supporting the tax and this remained roughly the same with both models. Higher education levels also lead to more support of SSB taxes. The demographics reflect what prior research has shown with different socioeconomic and political affiliations' impact on support. Men, lower levels of education, and

republicans were less likely to support the tax while higher levels of education, being democrat, and middle income were more likely to support the tax.

This study used an ordered probability model to measure if frames impact consumer opinion of SSB taxes. The results provided little evidence that these frames have a sizeable impact on opinion. Despite the significance of the partial effects for ProFrames and AntiFrames, the size of the effects were less than two percent when other demographic variable exhibited as high as 20 percent effect on the probability for a dependent variable outcome. This does not confirm the findings of other studies looking at the intersection between media coverage and opinion (Iyengar & Simon, 1993; Nielsen & Bonn, 2008). With the Iyengar & Simon (1993) and Nielsen & Bonn (2008) studies, overall coverage of the issue was used whereas this study looks at the specific frames. It appears that the actual frames and their position on tax policy did not have as strong of an impact on opinion as the coverage metrics used in other studies.

Along with their small partial effects on opinion, the frame variable were seen to exhibit directions opposite to what was expected. ProFrames were seen to make a respondent more likely to be opposed to a tax and AntiFrames were measured to make a respondent more likely to favor a tax. This is counterintuitive because studies have seen most democrats being pro-tax, and most republicans being anti-tax (Barry et al., 2013; Watts et al., 2013; Gollust et al., 2014; Donaldson et al., 2014). These variables exhibit very different directions, despite their small size, and more research is needed to understand possible reasons.

By removing the frame variables from model 2, the partial effects show little change in most variables. The removal of the frame variables did cause a change small effect change in the education variables. This could suggest that there is a slight relationship between the usage of frames and how differently educated individuals form opinions about the SSB taxes. Despite the small changes to the independent variables from the removal of the Frame variables, the changes that do occur suggest that even though Frames present a minimal effect on the model, they are important and should be included. Future research should include these variables when trying to better understand opinion of SSB taxes.

### Conclusion

This study emphasizes the complexity of trying to pass an SSB tax. It is important to understand differing media perspectives and how they relate to the support of the populous. In this study, frames were not found to add a sizeable effect to respondent's opinion of the SSB tax debate in Vermont. Despite the lack of size of the partial effects, frame variables should be included in the model for opinion because without them, there are small changes in the model suggesting a bias. This study is the first to try and measure any relationship between framing and public opinion, and it provides a foundation for future research to build off of. This study looked specifically at Vermont respondents and Vermont media, but it provides an initial glimpse into the effects of how the media's emphasis of frames can relate to people's policy decision-making process.

Knowing this relationship exists can have implications on how organizations and sponsors shape their conversation about SSB issues.

Understanding that there is a significant relationship between the use of frames and public perception, despite its small effect, only increases the need for more research and understanding into this issue. Further research should also look into, not only news outlets within the state, but national news, which is seen to be consumed across geographical lines. In addition, more research is needed on the overall coverage of the SSB debate in the state and compare the overall coverage to public opinion.

#### Limitations

Because this study only looked at Vermont media, it omitted a number of regional and national news outlets that Vermonters still read and consume. The Vermonter Poll is a telephone survey. Even though it is weighted to better account for Vermont demographics, a more comprehensive sample of the Vermont population would benefit this study. Finally, future content analysis research should also take into account neutral frames, or frames that discuss the issue, but have no apparent pro- or anti-tax argument.

## Article 2 References

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## GENERAL CONCLUSIONS

Obesity has become a national problem in the United States. The evidence suggests that taxes are effective ways to reduce SSB consumption, and are an effective way to reduce caloric consumption (Sturm et al., 2010; Andreyeva et al., 2011; Chiqui et al., 2013).

Despite these possible benefits, Vermont failed to pass an excise tax on Sugar-Sweetened Beverages (Vermont General Assembly, 2015). Many people have speculated on why the tax failed and this thesis aimed to add knowledge and empirical evidence to answer that question.

The media conversation surrounding the SSB tax debate was anything but neutral.

Frames blatantly advocating arguments in favor or in opposition to the tax were prevalent in the media. Certain media articles did a good job of balancing these arguments, and did not let one side have more emphasis than another. Other articles exhibited more arguments representing one side over another. It became quite clear that groups and organizations were framing arguments and were being represented in the media. Retail and beverage associations exclusively promoted anti-tax arguments. Health coalition overwhelmingly sponsored pro-tax arguments. It became clear that for a consumer of media to navigate this landscape, understanding the frames and who sponsored them is of utmost importance.

It is a fair assumption to think that media portrayal of a debate will influence those consuming the media. With Vermont's SSB tax debate, no studies have given validity to that assumption. In this thesis, we see that the emphasis on frames used in the media has

a significant relationship on how an individual perceives a tax. The implications of this finding are substantial. Knowing that frames used in the media can influence a consumers' opinion, actors on both sides of the policy debate can use this to better market their opinion and message.

This thesis tells a small part of the story. It looks at Vermont media and how it portrayed the SSB tax debate. This thesis has broken down the frames and provided information on what sponsors say and how they portray a message to try and sway public opinion. This thesis also shows that media frames have a significant relationship with public opinion. More analysis is needed on other media outlets that Vermont citizens use and how these outlets can also impact public opinion. Despite that, the obesity epidemic and its connection to SSBs will continue to garner fierce debate as health and policy experts attempt to find solutions. Furthermore, retail and beverage companies continue to protect their own.

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**APPENDIX A**  
**Discrete arguments for Niederdeppe et al., (2013) categorized into 10 pro- and anti-tax frames.**

<b>Arguments in Favor of an SSB tax (Article as the Coding Unit)</b>	<b>Pro-Tax Frames</b>
Argues in favor of SSB tax because the relative price of SSBs is lower than healthier food/beverage options	Health
Argues in favor of SSB tax as an appropriate approach to raising revenue, saving money or balancing budgets (NOTE: this code does NOT include specific mentions of reducing health care spending)	Economic Benefits
If yes, argues SSB tax revenue to be used specifically for obesity prevention/treatment	Economic Benefits
Argues in favor of SSB tax to reduce health care spending	Economic Benefits
If yes, mentions reduced health care spending specifically on obesity	Economic Benefits
Argues in favor of SSB tax because SSB consumption is a cause of obesity	Health
Argues in favor of SSB tax because SSB consumption is a cause of other health conditions (e.g., diabetes, heart disease)	Health
Argues in favor of SSB tax because it could decrease the prevalence of obesity	Health
Argues in favor of SSB tax because it could decrease morbidity/mortality or increase health	Health
Argues in favor of SSB tax because it could reduce SSB consumption	Health
Argues in favor of SSB tax because it could help children/adolescents (e.g., reducing consumption, improving health)	Health
Argues in favor of SSB tax because it could help the poor (e.g., not regressive, reducing consumption, improving health)	Economic Benefits
Argues in favor of SSB tax by noting increasing or high public support for SSB tax	Public Support
Argues in favor of SSB tax by noting that food/beverage industry unduly influences the political process (e.g., spending money, publicizing false claims, lobbying power)	Negative private sector engagement
Argues in favor of SSB tax using analogy to tobacco tax in support	Sin Tax
<b>Arguments in Opposition to an SSB tax (Article as the Coding Unit)</b>	<b>Anti-Tax Frames</b>
Argues in opposition to SSB tax because it could hurt the economy (e.g., job losses, penalizing customers who are already struggling in bad economy)	Negative economics consequences
Argues in opposition to SSB tax because it represents an inappropriate approach to raising revenue, saving money or balancing budgets (e.g., just filling budget holes, will decrease revenue due to decreased consumption/sales)	Slippery Slope/Government Intrusion
Argues in opposition to SSB tax because evidence is unclear/lacking whether or not SSB consumption is a cause of obesity	Low support
Argues in opposition to SSB tax because evidence is unclear/lacking whether or not SSB consumption is a cause of other health conditions (e.g., diabetes, heart disease)	Low support
Argues in opposition to SSB tax because evidence is unclear/lacking whether or not it could decrease the prevalence of obesity	Low support
Argues in opposition to SSB tax because evidence is unclear/lacking whether or not it could decrease morbidity/mortality or increase health	Low support

Argues in opposition to SSB tax because SSB taxes hurt the poor (e.g., are regressive)	Negative economics consequences
Argues in opposition to SSB tax by noting that few jurisdictions have enacted SSB taxes, or that proposals have failed to pass	Low support
Argues in opposition to SSB tax by noting low public support for SSB tax	Low support
Argues in opposition to SSB tax because the beverage industry is already making voluntary changes that are sufficient (e.g., removing SSB from schools, including calorie information on products and menus)	Positive private Sector engagement
Argues in opposition to SSB tax using analogy to tobacco tax	Slippery Slope/Government Intrusion
Argues in opposition to SSB tax using analogy to alcohol tax	Slippery Slope/Government Intrusion
Argues in opposition to SSB tax as an inappropriate intrusion of government (e.g., on people's personal lives, individual choices)	Slippery Slope/Government Intrusion
Argues in opposition to SSB tax because it does not target other unhealthy foods (e.g., arbitrary; not the sole cause of obesity; what matters is how many calories are consumed, not where calories come from)	Arbitrary
Argues in opposition to SSB tax as a slippery slope to more government taxation	Slippery Slope/Government Intrusion

**APPENDIX B**  
**Coding categories and descriptions from Neiderdeppe et al. (2013).**

**CODE 1: SSB Tax Source Categories**  
**What is a source?**

A source is any person or group who either (1) writes an op/ed or column that is pro- or anti- SSB tax, OR (2) is pro- or anti- SSB tax AND is quoted or paraphrased WITHIN an article.

### **What is a group or organization?**

A group or organization is any collection of individuals who have regular contact or frequent interaction, mutual influence, common feeling of camaraderie, and who work together to achieve a common set of goals.

#### **1. Politician (or Government entity)**

This category is intended to include any individual who holds a political office or is affiliated with a political office. If a retired politician is now working for a non-government coalition or company, we will code on his current position, not his prior position as a politician.

Examples:

- Congressman, Senator, Someone working on a Senator's campaign
- Washington DC City Council, New York State Assembly

#### **2. Spokesperson for Medical Interest Organization (Representative or Group itself)**

This category includes any organization/group, or any individual representing that organization/group, that is committed to a medical cause or the medical field that distributes research. Medical schools are not included in this group.

Examples:

- American Medical Association
- National Hispanic Medical Association

#### **3. Member of Food and Beverage Industry or Hospitality Organization (Representative or Group itself)**

This category includes members of groups or associations themselves that are exclusively involved in or connected to the beverage industry (i.e., the sellers of soda).

Examples:

- Pepsi Co., Fast food restaurants, American Beverage Association
- Labor Unions that represent workers in the industry
- Bottlers and distributors of beverages
- General manager for Clements Marketplace

#### **4. Member, Coalition or Interest Organization (Representative or Group itself)**

This category includes members of groups or associations themselves that are committed to a cause that is not exclusively medical or comprised solely of

members of the food industry, and distributes research but has not directly conducted the research described in the story.

Examples:

- League of United Latin American Citizens
- Americans Against Food Taxes
  - NOTE – this group includes the beverage industry but is larger, including non-beverage industry groups, so it should be coded here, not as the food and beverage industry

#### **5. Medical Doctor**

This category includes any individual who is referred to as a “Doctor,” “physician” or has an MD.

#### **6. Researcher (or Group of Researchers)**

This category includes a researcher or group of researchers who has conducted studies and published research that is discussed or referred to in the article.

Examples:

- Rand Corporation
- A researcher at Yale University (has to explicitly discuss the research that a professor has conducted)

#### **7. Other Medical or Academic Professional (an individual – nurse, hospital worker, dietician, etc.)**

This category includes any individual (not a group) who is not a doctor, but still involved in nutrition, public health, or the medical or health care field.

Examples:

- Nutrition or public health worker; Dietician, nurse, hospital worker
- Professor of any medical/ public health / nursing field or center/department/school who is NOT described as having done research on the topic
- A professor of some other field (e.g., government, communication) who is NOT described as having done research on the topic

#### **8. Citizen**

This category includes anyone who has no affiliation, usually writers of editorials. For this category, note the individual’s name and location if it is included (as seen in the editorial).

Examples:

- Student, medical or otherwise, unless they are representing a health organization

**9. Journalist / Staff Writer**

This category includes anyone who is a professional writer and is reporting on the soda-tax issue and clearly articulates a pro- or con- stance on SSB taxes. If there is no name (i.e., “Staff writer”) do not include as a source; however, do code when an “editorial board” for a newspaper takes a formal stance on the issue.

**CODE 2: SSB Source is Pro or Con**

**1. Pro-Source**

Sources that are in favor of the soda tax or discuss the merits of a soda tax.

**2. Con-Source**

Sources that are in opposition to the soda tax or discuss the cons of a soda tax.