Estimating the Potential Impact of Sugar-Sweetened and Other Beverage Excise Taxes in Illinois

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Over the past few decades, obesity rates in the United States have risen rapidly, with recent estimates indicating that more than one-third of adults are obese, up from less than one in seven in the early 1960s, with another one-third overweight. Recent estimates for children and adolescents show that more than one in six is obese, more than triple the rate of the early 1970s. Illinois is experiencing the same rise in obesity. Between 1995 and 2009, the prevalence of obesity among Illinois adults rose by nearly 65 percent, from 16.7 percent to 27.4 percent, with another 37.1 percent overweight in 2009. Similarly, more than one in five Illinois youth ages 10 through 17 were obese in 2007, and more than one in three were overweight or obese.

The sharp rise in obesity has resulted from a change in the ‘energy balance’ – more calories being taken in than expended. Many factors have contributed to this imbalance, from increased caloric intake following reductions in the prices of energy dense foods and beverages to fewer calories expended as technological changes reduced physical activity. Among these, the parallel rise in calories consumed from sugar sweetened beverages (SSBs) has drawn particular attention. SSBs include carbonated soft drinks, sports drinks, fruit drinks, flavored waters, sweetened teas, ready-to-drink coffees, and other non-alcoholic drinks containing added sugars. One recent study concludes that SSBs account for at least twenty percent of the increases in weight in the United States from 1977 through 2007.

The increasing recognition of the role of SSBs in contributing to the growing obesity epidemic has spurred interest in policy and other interventions that aim to reduce SSB consumption. Given the demonstrated effectiveness of increased tobacco taxes in reducing cigarette smoking and other tobacco product use, many have proposed SSB taxes that would lead to sizable increases in prices as a promising policy option for curbing obesity and its health and economic consequences. To date, however, existing taxes are mostly small sales taxes that are applied to both sugar-sweetened and diet beverages. In Illinois, the state’s 6.25 percent sales tax is applied to many beverages, including: regular and diet sodas; juice drinks containing 50 percent or less real juice; sweetened, ready-to-drink coffees; and sports drinks and other isotonic beverages. Research assessing the impact of the small taxes applied in many states generally finds that they have modest effects on beverage consumption and a limited impact on weight. At the same time, estimates from these studies suggest that sizable taxes that result in large price increases would, by sharply reducing SSB consumption, have a substantial impact on the prevalence of obesity at the population level.
Given the potential for SSB taxes to reduce obesity, we use the best available data and research-based evidence to estimate the impact of alternative beverage taxes in Illinois. Specifically, we consider four alternative beverage taxes – a one cent per ounce excise tax on SSBs and their diet versions (‘all beverages’); a one cent per ounce excise tax on SSBs only; a two cent per ounce excise tax on all beverages; and a two cent per ounce excise tax on SSBs only. Using recent data, we predict their impact on overall beverage consumption, tax revenues, age and gender-specific frequency of SSB consumption, average daily caloric intake, body weight, body mass index (BMI), obesity prevalence, diabetes incidence, and health care costs of diabetes and obesity. The table below summarizes our estimates.

### Table 1
Estimated Impact of Alternative Beverage Excise Taxes, Illinois, 2011

<table>
<thead>
<tr>
<th>Tax Rate</th>
<th>Reduction in Number of Obese Youth (2-17) (%)</th>
<th>Reduction in Number of Obese Adults (18+) (%)</th>
<th>Reduction in Diabetes Incidence</th>
<th>Reduction in Health Care Costs of Diabetes (millions)</th>
<th>Reduction in Obesity-Related Health Care Costs (millions)</th>
<th>New Tax Revenues (millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Cent - All</td>
<td>6.2%</td>
<td>3.5%</td>
<td>123,418</td>
<td>2,924</td>
<td>$13.8</td>
<td>$100.5</td>
</tr>
<tr>
<td>1 Cent - SSBs Only</td>
<td>9.3%</td>
<td>5.2%</td>
<td>185,127</td>
<td>3,442</td>
<td>$20.7</td>
<td>$150.8</td>
</tr>
<tr>
<td>2 Cents - All</td>
<td>12.3%</td>
<td>7.0%</td>
<td>246,836</td>
<td>4,911</td>
<td>$27.6</td>
<td>$201.0</td>
</tr>
<tr>
<td>2 Cents - SSBs Only</td>
<td>18.5%</td>
<td>10.5%</td>
<td>370,253</td>
<td>6,888</td>
<td>$41.3</td>
<td>$301.6</td>
</tr>
</tbody>
</table>

In 2011, we estimate that Illinoisans will consume more than 620 million gallons of SSBs, and almost 200 million gallons of diet alternatives. We estimate that a one-cent per ounce tax on SSBs only would lead to about a 23.5 percent drop in SSB consumption, while generating more than $600 million in new revenues. A higher tax would lead to even larger declines in consumption and increases in revenues; a broader based tax on all beverages would have a smaller impact on SSB consumption while generating more revenue.

The increased prices that result from SSB taxes will reduce SSB consumption and its consequences. Given the research demonstrating that increased SSB consumption leads to an increased risk of type 2 diabetes, we estimate the impact of alternative beverage taxes on the incidence of diabetes and related costs. For example, we estimate that a one-cent per ounce tax on SSBs only would prevent nearly 3,500 new cases of type 2 diabetes in 2011, reducing health care costs by more than $20 million. Higher taxes would lead to larger reductions in the incidence of type 2 diabetes and the resulting costs of treating it, while a broader based tax would have a smaller impact.

Similarly, the reductions in SSB consumption that would result from a tax on SSBs will lead to reductions in weight. Using the relatively conservative assumption that half of the reduction in caloric intake from SSBs following an SSB tax is offset by increases in caloric intake from other sources, we estimate that a one-cent per ounce tax on SSBs only will reduce average weight among Illinoisans by about 1.7 pounds, with larger reductions in the younger and male populations that are heavier consumers. We estimate that these reductions in weight will lead to reductions in the prevalence of obesity in Illinois. For example, we estimate that a one-cent per ounce tax on SSBs only will reduce obesity prevalence among Illinoisans two years and older from 25.2 percent to 23.7 percent – a drop of over 185,000 in the number of obese persons in the state. Almost one-quarter of the drop – more than 45,000 – would be among children ages 2 through 17 years. Again, a higher tax on SSBs would lead to a larger decline in weight and obesity, while a broader based tax on all beverages would have a smaller impact.

Additionally, given the significant costs of treating the diseases caused by obesity, we estimate that the reductions in the number of obese Illinoisans following a tax on SSBs would lead to reduced health care spending in the state. For example, we estimate that a one-cent per ounce tax on SSBs only would reduce obesity-related health care costs by more than $150 million in the first year. Given that a sizable share of the obesity-related health care costs in Illinois are paid for by publicly funded insurance programs, an SSB tax will not only raise new revenues for the state, but it also will reduce state Medicaid spending.

Given the continued reduction in SSB consumption following the alternative beverage taxes, the impact of the tax will grow over time as additional new diabetes cases will be prevented and as the long term costs resulting from childhood obesity are averted. To the extent that a portion of the new revenues generated by the tax are used to support obesity prevention and reduction programs in Illinois, the future declines in obesity prevalence and the resulting disease and costs will be even larger.

In summary, sizable new SSB taxes would be a win-win for Illinois – they would generate considerable new revenues, and lead to reductions in SSB consumption, obesity, and the resulting disease burden and health care costs. As seen with tobacco tax increases that earmarked a portion of new revenues for comprehensive tobacco prevention and cessation programs that further reduced tobacco use and its consequences, using the same approach with SSB tax revenues would lead to further reductions in obesity while at the same time increasing public support for such taxes.
Section I
INTRODUCTION

U.S. obesity rates have risen rapidly over the past several decades. By 2007-08, more than one-third of adults 20 and older were obese (body mass index (BMI) $\geq 30$), compared with fewer than one in seven in 1960-62; an additional one-third of adults were overweight (BMI $\geq 25$) (Flegal, et al., 2010; National Center for Health Statistics (NCHS), 2008). Among children and adolescents ages 2-19, more than one in six were obese ($\geq 95$th percentile) in 2007-08, more than triple the five percent obesity rate in the early 1970s (Ogden and Carroll, 2010).

Illinois has experienced the same upward trend in obesity rates. From 1995 through 2009, the prevalence of obesity among adults in Illinois rose by nearly 65 percent, from 16.7 percent in 1995 to 27.4 percent in 2009 (see Figure 1). An additional 37.1 percent of Illinois adults were overweight in 2009. Among youth ages 10-17 in 2007, more than one in five (20.8 percent) were obese while more than one in three (34.9 percent) were overweight or obese ($\geq 85$th percentile) (Singh, et al., 2010).

There are considerable disparities in the prevalence of obesity, with rates varying by gender, race/ethnicity, and socio-economic status. In 2009 in Illinois, for example, 72.6 percent of adult men were either overweight or obese (44.0 and 28.6 percent, respectively), while 56.5 percent of women were overweight or obese (26.2 percent and 30.4 percent, respectively). Similarly, 14.7 percent of high school boys in Illinois were obese in 2009, compared to 9.0 percent of high school girls. Obesity prevalence among Illinois adults generally rises from adolescence and young adulthood through middle age, before declining among older adults (see Figure 2). Racial/ethnic differences are similarly large, with the highest obesity prevalence among youth and adult Blacks and the lowest among non-Hispanic Whites (see Figure 3). Finally, there are striking differences in obesity prevalence across different socioeconomic groups, with considerably lower rates among the most educated and highest income Illinoisans than among their less educated and lower income counterparts (see Figure 4).
The sharp rise in obesity has resulted from a change in the ‘energy balance’ – more calories being taken in than expended. Many factors have contributed to this imbalance, from increased caloric intake following reductions in the prices of energy dense foods and beverages to fewer calories expended as technological changes reduced physical activity (Lakdawalla and Philipson, 2009). Among these, the parallel rise in calories consumed from SSBs has drawn particular attention. SSBs include carbonated soft drinks, sports drinks, fruit drinks, flavored waters, sweetened teas, ready-to-drink coffees, and other non-alcoholic drinks containing added sugars. Nielsen and Popkin (2004) found that caloric intake from SSBs accounted for 3.9 percent of total intake in 1977-78, increasing to 9.2 percent by 1999-2001 – a rise of more than 120 calories per day. Similarly, cross-sectional comparisons for California adults (see Figure 5; comparable data not available for Illinois) suggest that SSB consumption is positively associated with the prevalence of obesity. Recent evidence on the metabolism of “liquid calories” suggests that caloric consumption from beverages does not lead to offsetting reductions in reduced caloric intake from food, providing additional evidence on the link between higher SSB consumption and increased obesity (Popkin and Duffey, 2010). One recent study concludes that SSBs account for at least 20 percent of the increases in weight in the United States from 1977 through 2007 (Woodward-Lopez, et al., 2011).

The public health and economic consequences of the rise in obesity are enormous. Obesity increases the risks of coronary heart disease, hypertension, stroke, type 2 diabetes, various cancers, osteoarthritis, sleep apnea, other respiratory problems, and other health ailments (National Heart, Lung and Blood Institute (NHLBI), 1998). In 2008, the nation spent as much as $147 billion to treat the consequences of obesity – nearly ten percent of overall health care spending, and with about a half of costs paid by Medicaid and Medicare (Finkelstein, et al., 2009). In the state of Illinois, obesity-attributable health care costs were almost $4.4 billion per year with Medicaid and Medicare funds covering about 54 percent of the burden (Finkelstein, et al., 2004).
Both Vartanian and colleagues (2007) and Gortmaker and colleagues (2009) note that studies funded by the food and beverage industry are more likely to find smaller or less consistent associations between SSB consumption and weight. In addition, SSB consumption is linked to numerous adverse health and nutrition consequences. Vartanian and colleagues’ (2007) review highlights the negative impact of SSB consumption on calcium intake – largely from lower milk consumption among those consuming more SSBs – and on other nutrient intake (including fiber, protein, and riboflavin), as well as various health outcomes. Similarly, Gortmaker and colleagues (2009) summarize the evidence relating SSB consumption to type 2 diabetes, lower bone density, dental problems, headaches, anxiety, and sleep loss.

SSB consumption and its contribution to caloric intake are most pronounced among young people (see Figure 6). Using data from the 1999-2004 National Health and Nutrition Examination Survey (NHANES), Wang and colleagues (2008) estimated that youth ages 12-19 consumed about 16 percent of total caloric intake – or 356 calories per day – from SSBs; among children ages 2-5 and 6-11, SSB consumption accounted for about 11 percent of intake (176 and 229 calories per day, respectively). Using the same data, Bleich and colleagues (2009) estimated that SSBs accounted for about 12 percent of total caloric intake among 20-44 year olds (289 calories per day), before falling to 6 percent and 5 percent among those 45-64 and 65 and older, respectively. Rates of SSB consumption rise from 70 percent among 2-5 year olds in 1999-2004, peaking at 84 percent for ages 12-19, falling to 72 percent for 20-44 year olds, and decline among older ages (Wang, et al., 2008; Bleich, et al., 2009).

Numerous studies demonstrate the persistence of body weight over the life cycle, showing that obese children are likely to become obese adults (McTigue, et al., 2002). Contributions of SSB consumption to high rates of obesity among children and adolescents will most likely lead to greater prevalence of adult obesity in the future. The habitual nature of SSB consumption is also well known, suggesting that higher caloric intake from SSBs among younger populations can persist into adulthood, further increasing the risk for obesity (Popkin and Duffey, 2010). Obesity among adolescents and young adults is of particular concern given its links to severe obesity at older ages. For example, using National Longitudinal Study of Adolescent Health data, The and colleagues (2010) found that obese youth at baseline (ages 12-21) were significantly more likely to be severely obese twelve years later.

### Figure 6

**Per Capita Daily Consumption of Calories from SSBs, by Type, 1999-2004**

*Source: Adapted from Wang, et al. (2008) and Bleich, et al., (2009).*

<table>
<thead>
<tr>
<th>SSB Type</th>
<th>Age 2-5</th>
<th>Age 6-11</th>
<th>Age 12-19</th>
<th>Age 20-44</th>
<th>Age 45-65</th>
<th>Age 65+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soda</td>
<td>150</td>
<td>175</td>
<td>200</td>
<td>225</td>
<td>250</td>
<td>275</td>
</tr>
<tr>
<td>Fruit Punch</td>
<td>100</td>
<td>125</td>
<td>150</td>
<td>175</td>
<td>200</td>
<td>225</td>
</tr>
<tr>
<td>Sport Drinks</td>
<td>50</td>
<td>75</td>
<td>100</td>
<td>125</td>
<td>150</td>
<td>175</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
<td>25</td>
<td>50</td>
<td>75</td>
<td>100</td>
<td>125</td>
</tr>
</tbody>
</table>

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### Section II  TAXATION AS PUBLIC HEALTH POLICY

Increased awareness of the obesity epidemic and its health and economic consequences has spurred policy makers, public health practitioners, advocates, and others to look for interventions to promote healthier eating and increased physical activity (Institute of Medicine (IOM), 2005). Some of the proposed policy solutions have explicitly targeted SSB consumption by limiting access to SSBs in public facilities (schools, government worksites, and recreation centers); increasing access to drinking water and encouraging water as an alternative to SSBs; restricting marketing of SSBs to children; and adopting policies that alter relative prices of SSBs and healthier alternatives (Centers for Disease Control and Prevention (CDC), 2009; IOM, 2009). These strategies have, at least in part, been identified as having potential to curb obesity based on successful experiences with similar approaches to reducing other unhealthy behaviors, notably tobacco use and harmful drinking.

In The Wealth of Nations, Adam Smith (1776) wrote “Sugar, rum, and tobacco are commodities which are nowhere necessities of life, which are become objects of almost universal consumption, and which are therefore extremely proper subjects of taxation.” Since Smith focused on the revenue generating potential of these taxes, nearly every government worldwide has taxed tobacco products and alcoholic beverages to raise revenues. In recent years, the beneficial public health impact of tobacco and alcohol taxes has become clear as extensive research has demonstrated the effectiveness of higher taxes in reducing tobacco and alcohol use and their consequences (International Agency for Research on Cancer (IARC), in press; Wagenaar, et al., 2009, 2010). Reduced use is a result of preventing uptake in youth, promoting cessation among current users or reducing their frequency and intensity of consumption, and deterring relapse among former users (IARC, in press; Wagenaar, et al., 2009). This improves public health by reducing the disease burden of tobacco and alcohol use, and lowering accidents, violence, and other consequences of harmful drinking (IARC, in press; Wagenaar, et al., 2010).

In the United States, evidence on the effectiveness of higher taxes in reducing tobacco use and its consequences has led to sharp increases in tobacco taxes and prices. This significantly reduced tobacco use among youth and adults, while generating considerable new revenues that some states have used to support other prevention and cessation activities, leading to reductions in tobacco use beyond those that result from the tax increase alone (Chaloupka, 2010) (see Figure 7 for trends in cigarette taxes and cigarette sales). In contrast, despite similarly strong evidence on the impact of higher alcohol taxes and prices, the real value of alcohol taxes has been eroded over time by inflation, contributing to falling alcohol prices and higher rates of drinking and its consequences than would exist had these taxes kept pace with inflation over time (Xu and Chaloupka, in press) (see Figure 8 for trends in beer taxes and beer sales).
In Illinois, the 6.25 percent state sales tax is applied to many beverages, including: regular and diet carbonated soft drinks; juice drinks containing 50 percent or less juice; sweetened, ready-to-drink teas; and sports drinks and other isotonic beverages. This is more than two percentage points higher than the average sales tax applied to these beverages across all states. Juice drinks containing more than 50 percent juice, bottled waters, and other beverages are subject to the 1.00 percent sales tax that applies to most foods and beverages.

The success with significant tobacco excise tax increases in reducing tobacco use and health consequences has led to calls for sizable new taxes on SSBs (e.g. Brownell and Frieden, 2009). Many state and local governments have debated such taxes in recent years, with proposed taxes varying widely. Some proposals call for significantly higher sales taxes on SSBs than those that already exist, while others propose ad valorem (value-based) or specific (volume or weight-based) excise taxes (see Figure 10 for states with recent legislative proposals for SSB taxes).

Governments have yet to heed Smith’s call for sugar taxes, with some taking the opposite approach and subsidizing sugar and other high calorie sweeteners. In the United States, SSB taxation is largely limited to subjecting SSBs and other select beverages to sales taxes that add a few percent to prices (in contrast to cigarette taxes which account for nearly half of cigarette prices), and a few states adopting small excise taxes or fees on carbonated and other beverages (Chriqui, et al., 2008; Bridging the Gap Research Program, 2010) (see Figure 9).
Experiences with excise and other taxes on tobacco products provide some insights concerning alternative types of SSB taxes. As described by the World Health Organization (WHO, 2010) in its Technical Manual for Tobacco Tax Administration, uniform specific taxes on all tobacco products will have the greatest public health impact, while also generating significant tax revenues that are relatively stable over time. A uniform specific excise tax sends the message that all tobacco products are equally harmful, in contrast to tiered-specific or ad valorem taxes which apply different taxes to similar products based on their characteristics (e.g., cigarette length or presence/absence of a filter) or prices. Moreover, a uniform specific excise tax minimizes the price gap between higher and lower-priced products, reducing opportunities for consumers to avoid at least some of the tax by substituting to cheaper products.

With respect to SSB taxes, a uniform specific tax based on volume (e.g., per ounce) or sugar-content (e.g., per gram of added sugar) should have a greater impact on consumption than a comparable ad valorem excise tax or a sales tax, given the potential for consumers to purchase larger volumes that are less expensive per ounce (e.g., a two-liter bottle rather than a 12-ounce can) or cheaper brands in response to the price increases resulting from the tax (Chriqui, et al., in progress; Powell and Chriqui, in press). Likewise, specific excise taxes are easier administratively and reduce opportunities for tax avoidance and evasion as they do not require valuation of a product. The main disadvantage of a specific excise tax is that it needs to be regularly adjusted for inflation over time in order to maintain its public health and revenue impact. Finally, excise taxes are likely to have a greater impact on consumption than sales taxes given that excise taxes are reflected in the shelf-prices of SSBs while sales taxes are imposed at the checkout after purchase decisions have largely been made (Chriqui, et al., in progress; Powell and Chriqui, in press).

Given the parallel trends in SSB consumption and obesity, a growing number of researchers have recently assessed the impact of beverage taxes and prices on beverage consumption. This research clearly demonstrates that higher beverage prices significantly reduce consumption, with one recent comprehensive review concluding that a 10 percent price increase could reduce soft drink consumption by about eight percent (Andreyeva, et al., 2010). Estimates from studies that have focused on the demand for SSBs find even larger reductions in consumption for a 10 percent price increase. Lin and colleagues (2010) estimate that a ten percent increase in SSB prices would reduce consumption by 9.5 to 12.6 percent.

Less clear is the impact of SSB taxes on weight outcomes. Existing research finds little or no impact of existing low taxes on BMI or obesity rates, noting that this is likely due to the low current tax rates and that the point estimates imply that sizable taxes would significantly reduce obesity in at least some populations (Finkelstein, et al., 2010; Sturm, et al., 2010; Powell et al., 2009). Others conclude that even large SSB taxes would have little impact on weight outcomes suggesting that reductions in caloric intake from SSBs would be largely offset by increased calories from other beverages such as whole milk (Fletcher, et al., 2010). Still others find only partial substitution in response to changes in relative prices of SSBs and other beverages, concluding that sizable SSB taxes could significantly reduce net caloric intake, body weight, and obesity among children and adults (Smith, et al., 2010). Further, these studies find that price responsiveness is greater among young people, those on lower incomes, and those already at higher weight (Powell and Chriqui, in press).

Despite this mixed evidence that likely reflects very low existing taxes on SSBs, the weight of the evidence suggests that taxes on the order of a cent or two per ounce will raise prices enough to reduce net caloric intake and obesity. Indeed, recent increases in SSB prices have been accompanied by reductions in obesity prevalence among adolescents although other factors are also likely contributing to the decline (see Figure 11). More research is needed to understand the impact of large changes in relative prices of SSBs on weight outcomes. At the very least, such taxes would have little impact on overall caloric intake, while promoting substitution of healthier beverages for the empty calories contained in SSBs, reducing some of the health consequences associated with SSB consumption.

Significant SSB taxes can generate substantial new revenues; one recent estimate suggests that a national penny per ounce SSB tax could raise nearly $15 billion in the first year (Brownell, et al., 2009). These revenues could support other costly components of a comprehensive obesity prevention strategy, including mass-media education campaigns, subsidies that lower the relative prices of healthier foods and beverages, and programs to make safe, free drinking water more widely available. As seen with tobacco tax increases that earmark revenues for tobacco control efforts, there is considerable public support for SSB taxes when the revenues generated are used to support activities to reduce obesity among children and adults (Yale Rudd Center, 2009).
Section III  Potential Impact of Sugar-Sweetened and Other Beverage Excise Taxes in Illinois

We estimate the potential impact of an excise tax on SSBs in Illinois drawing from the presented science on the impact of SSB consumption on weight outcomes and the effects of beverage prices on beverage consumption, as well as published research on the impact of SSB consumption on diabetes risk, and recent national and state-level data on beverage consumption, prices, obesity prevalence, diabetes incidence, and health care costs of diabetes and obesity. Figure 12 illustrates the analytic framework of our estimation.

Specifically, we estimate the impact of four alternative excise taxes: a one-cent per ounce excise tax on SSBs only; a one-cent per ounce excise tax on SSBs and their diet/low-calorie versions (i.e., all beverages); a two-cent per ounce excise tax on SSBs only; and a two-cent per ounce excise tax on all beverages. The outcomes assessed are beverage consumption; tax revenues; frequency of SSB consumption; diabetes incidence; health care costs of diabetes; obesity prevalence; and obesity-related health care costs.

Impact on Price

Recent studies estimate that the average price for carbonated soft drinks (CSDs) in the United States is about 4.5 cents per ounce (Andreyeva, et al., in press; Hahn 2009). Based on an assessment of prices from a variety of vendors, Andreyeva and colleagues (in press) estimated that the average prices per ounce of other beverages are: 7 cents for fruit drinks; 5 cents for sports drinks, 9 cents for ready-to-drink (RTD) teas; 5.5 cents for flavored waters; 17.5 cents for energy drinks; and 20 cents for RTD coffees. Based on market shares of different beverages, the weighted average price for all beverages in 2010 is 5.3 cents per ounce. Future prices, exclusive of taxes, are assumed to rise with the average rate of CSD inflation over the period from 1978 through 2010 (Andreyeva, et al., in press), producing an estimated average price of all beverages in 2011 of 5.45 cents per ounce. Given this, a one-cent per ounce tax will result in about an average 18.3 percent increase in price, if fully passed on to consumers. Similarly, a two-cent per ounce tax will result in about an average 36.7 percent increase in price, if fully passed on to consumers.

At least one study suggests that beverage sales taxes lead to larger increases in prices than accounted for by the tax alone, with prices rising by about 129 percent of the amount of the tax (Besley and Rosen, 1999). However, in order to produce conservative estimates of the impact of the tax on obesity, diabetes, and related health care costs, we assume that the tax results in a comparable increase in the retail prices of the taxed beverages. A greater pass through of the tax to price would result in greater reductions in SSB consumption, obesity, and related consequences/costs, but somewhat lower tax revenues. A less than full pass through of the tax to price (partial absorbing of the tax by beverage companies, distributors, and/or retailers) would lead to smaller reductions in beverage consumption, obesity, and related public health consequences and economic costs, but somewhat higher tax revenues. When modeling the impact of a SSB-only tax, we assume that the prices of diet beverages do not change following the imposition of the tax. In practice, however, the beverage industry may spread the tax across all beverages, but modeling such strategic behavior is beyond the scope of our paper.
Impact on Overall Consumption

Illinois-specific data on beverage consumption are not available; however, comparable data are available nationally and regionally and we use these to estimate consumption levels in Illinois, using the approach described by Andreyeva and colleagues (in press). Specifically, we used 2006 regional sales volume data for the consumption of carbonated soft drinks (CSDs), fruit beverages and ready-to-drink (RTD) teas from the Beverage Marketing Corporation (2009,a,b,c) and 2008 national sales volume data for sports drinks, flavored/enhanced waters, energy drinks, and RTD coffees from the Beverage World (2009). We estimated beverage consumption in Illinois based on the state’s share of population in the total U.S. population, adjusting for variability in per capita beverage consumption in the East Central region (consisting of Illinois, Indiana, Kentucky, Michigan, Ohio, West Virginia and Wisconsin) for CSDs and fruit drinks, and in the Midwest region (consisting of Illinois, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin) for RTD teas. This approach does not account for possible variation in beverage consumption within regions that could be due to differences in demographic characteristics, consumer tastes, and other factors. It is nevertheless preferable to assuming constant per capita beverage consumption across the nation and is the best option available given existing data.

Following Andreyeva and colleagues (in press), we estimate future SSB and diet beverage consumption based on beverage specific historic trends in consumption. Given available data and perceived stability of trends in consumption, average annual rates of change over the period of 2000-2009 are used for CSDs, 2006-2009 for fruit beverages, 2007-2009 for sports drinks, 2007-2009 for RTD teas, 2008-2009 for flavored/enhanced water, 2008-2009 for energy drinks, and 2007-2009 for RTD coffee (Beverage Marketing Corporation, 2009,a,b,c; Beverage World 2007-2010). Based on this approach, for example, we assumed that CSD consumption (the largest category of consumption) would fall by 0.7 percent annually between 2010 and 2015. The share of diet varieties in CSDs in 2008 was 30.85 percent for the United States, but varied across regions, with a share of 29 percent in the East Central region that includes Illinois (Beverage Marketing Corporation, 2009a). Given the lack of available data, we assumed the same share of diet varieties in RTD teas as for CSDs and that only non-diet varieties of other beverages are available. Based on the increasing market share of diet CSDs, we assumed that the share of diet varieties in CSDs and RTD teas will increase by 0.5 percentage points annually.

Based on this approach, we estimate that Illinoisans will consume more than 814 million gallons of refreshment beverages in 2011. Most of this will come in the form of carbonated soft drinks, with most of these sugar-sweetened carbonated soft drinks. SSBs will account for more than 80 percent of total consumption—an estimated 620.12 million gallons. Figure 13 shows the estimated distribution of beverage consumption across beverage types.

In estimating the reductions that would result from alternative excise taxes on SSBs and their diet versions, we assumed that all beverage purchases would be subject to the excise tax being modeled. Specifically, we did not exempt purchases made by participants in the Supplemental Nutritional Assistance Program (SNAP) (as is currently done with the sales tax on beverages bought with SNAP benefits). If the excise tax is not collected on purchases made by SNAP participants, the impact of the tax on revenues, obesity and its consequences/costs will be smaller than estimated below.

**Impact on Overall Consumption**

**Estimated Annual Beverage Consumption by Beverage Type, Illinois, 2011**

Note: Estimates are in millions of gallons; textured slices are for non-SSBs.

Source: Andreyeva, et al., unpublished data.
Impact on Frequency of SSB Consumption

We estimate age- and gender-specific frequency of self-reported SSB consumption for Illinois using data from the 2007-08 National Health and Nutrition Examination Survey (NHANES). Specifically, we estimate the percentage of males and females ages 2-19, 20-44, 45-64, and 65 and older consuming SSBs less than once per week; one or more times per week but less than daily; one to two times per day, and two or more times per day (assuming 12 ounces consumed per occasion). Tax-induced changes in the frequency of SSB consumption are estimated for each tax scenario, assuming the same price elasticities as used in the revenue estimation (-0.8 for a broad based tax and -1.2 for an SSB only tax). Given a lack of age- and gender-specific price elasticities, we assumed it to be constant across subpopulations. Figures 16-20 depict the predicted changes in the frequency of SSB consumption for age groups 2-19, 20-44, 45-64, 65 and older, and 2 and older.

Revenue Impact

The revenue generating potential of beverage excise taxes is considerable. Using the consumption estimates obtained above under the alternative scenarios and applying the tax modeled in each scenario, we estimate the revenue generated by each option. As expected, broader based taxes (those that include diet as well as SSBs) generate higher revenues, as do higher taxes (although not proportionately given the additional reductions in consumption as the tax rises). We estimate that a one-cent per ounce tax on SSBs only would generate for the government of Illinois about $607 million in 2011, while a two cent per ounce tax on SSBs and diet beverages would generate more than $1.4 billion in 2011. The excise tax revenues generated under each scenario are illustrated in Figure 15.

Table 2
Impact of Alternative Beverage Excise Taxes on Beverage Consumption by Type, Illinois, 2011

<table>
<thead>
<tr>
<th>Regular CSDs</th>
<th>Diet CSDs</th>
<th>Fruit Drinks</th>
<th>Sports Drinks</th>
<th>RTD Tea - Regular</th>
<th>RTD Tea - Diet</th>
<th>Flavored Water</th>
<th>Energy Drinks</th>
<th>RTD Coffee</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Tax</td>
<td>447.0</td>
<td>181.2</td>
<td>62.3</td>
<td>47.2</td>
<td>27.3</td>
<td>13.1</td>
<td>18.3</td>
<td>15.6</td>
<td>2.4</td>
</tr>
<tr>
<td>1 Cent - All</td>
<td>369.6</td>
<td>149.8</td>
<td>55.4</td>
<td>39.8</td>
<td>25.0</td>
<td>11.9</td>
<td>15.7</td>
<td>14.9</td>
<td>2.3</td>
</tr>
<tr>
<td>1 Cent - SSBs Only</td>
<td>330.9</td>
<td>181.2</td>
<td>51.9</td>
<td>36.2</td>
<td>23.8</td>
<td>13.1</td>
<td>14.4</td>
<td>14.6</td>
<td>2.2</td>
</tr>
<tr>
<td>2 Cents - All</td>
<td>292.2</td>
<td>118.4</td>
<td>48.5</td>
<td>32.5</td>
<td>22.6</td>
<td>10.8</td>
<td>13.1</td>
<td>14.2</td>
<td>2.2</td>
</tr>
<tr>
<td>2 Cents - SSBs Only</td>
<td>214.8</td>
<td>181.2</td>
<td>41.5</td>
<td>25.1</td>
<td>20.2</td>
<td>13.1</td>
<td>10.5</td>
<td>13.5</td>
<td>2.1</td>
</tr>
</tbody>
</table>

Figure 14

Source: Andreyeva, et al., unpublished data.
As expected, the frequency of heavy SSB consumption (2 or more times per day) falls sharply in response to the imposition of a beverage tax, with larger reductions for a SSB only tax and for a higher tax, while the frequency of occasional SSB consumption (less than once per week) rises sharply. Changes for occasional (less than daily) and moderate users (1-2 times per day) are fairly modest, reflecting the movement of some previously in these categories to less frequent consumption categories and the movement of some from more frequent consumption categories into these categories. Given the more frequent consumption of SSBs among younger populations and males, the greatest reductions occur in youth and young adult males, while relatively smaller reductions are seen in older populations and women.
### Impact on the Incidence and Health Care Costs of Diabetes

Several studies have demonstrated the role of SSB consumption in development of type 2 diabetes (e.g. Schulze, et al., 2004; Malik, et al., 2010). The CDC estimates that the age-adjusted incidence of diabetes was 8.8 per 1,000 population 18 to 79 years old in 2009 (CDC, 2011). The incidence of type 2 diabetes rises dramatically with age, from 4.6 per 1,000 among 18-44 year olds to 15.2 per 1,000 among 45-64 year olds. While still rare, the incidence of type 2 diabetes among youth (under age 20) is rising; based on data from the SEARCH Writing Group (2007), we estimate that the incidence is 5 per 100,000. The risk differs across adult population subgroups, with somewhat higher risk for men than women (9.2 and 8.4 per 1,000, respectively) and significantly higher risks for Blacks and Hispanics (11.7 and 13.1 per 1,000, respectively) than for Whites (8.5 per 1,000).

Using data on these risks and the age, gender, and racial/ethnic composition of the Illinois population, we estimate that approximately 94,500 new cases of diabetes are diagnosed each year in Illinois, with disproportionately higher shares among minority populations. Most of these new cases are preventable, including through tax-induced reductions in SSB consumption. The best clinical evidence on the impact of SSB consumption on diabetes risk comes from the prospective cohort study conducted by Schulze and colleagues (2004). They followed 91,249 women free of diabetes and other chronic diseases at baseline and found 741 cases of type 2 diabetes in these women between 1991 and 1999. Of relevance for our estimates, they found that women who consumed one or more SSBs per day increased their risk of type 2 diabetes by 83 to 98 percent compared to those consuming less than one per week. Using their age adjusted results, we estimate that the relative risks for different frequencies of SSB consumption are 1 (< 1 per week), 1.32 (once or more but less than daily), 1.63 (>1 but <2 per day), and 2.37 (≥2 per day). Using the population impact fraction framework described by Wang (2010), we estimate the proportion of new diabetes cases that would be prevented in 2011 by the tax-induced reductions in SSB consumption described in the previous section, with age- and gender-specific estimates. These estimates are presented in Table 3. The predicted reductions in the frequency of SSB consumption described in the previous section, with age- and gender-specific estimates. These estimates are presented in Table 3. The predicted reductions in the incidence of type 2 diabetes vary between 2.4 and 7.3 percent of the new cases estimated to occur in 2011, with relatively larger reductions among younger, male populations given their greater frequency of SSB consumption.

### Table 3

Reduction in New Cases of Type 2 Diabetes, Alternative Tax Scenarios, Illinois, 2011

<table>
<thead>
<tr>
<th></th>
<th>Ages 2-19</th>
<th>Ages 20-44</th>
<th>Ages 45-64</th>
<th>Ages 65+</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Cent - All</td>
<td>3</td>
<td>729</td>
<td>1,252</td>
<td>310</td>
<td>2,295</td>
</tr>
<tr>
<td>1 Cent - SSBs Only</td>
<td>5</td>
<td>1,094</td>
<td>1,878</td>
<td>485</td>
<td>3,443</td>
</tr>
<tr>
<td>2 Cents - All</td>
<td>7</td>
<td>1,459</td>
<td>2,505</td>
<td>620</td>
<td>4,590</td>
</tr>
<tr>
<td>2 Cents - SSBs Only</td>
<td>10</td>
<td>2,188</td>
<td>3,757</td>
<td>930</td>
<td>6,895</td>
</tr>
</tbody>
</table>

Note: Numbers may not add to total given rounding of estimates.

The estimated tax-induced reductions in the incidence of diabetes in the first year underestimate the long-run impact of the tax on diabetes. New cases of diabetes will continue to decline in the years to come driven by further reductions in SSB consumption due to the tax. Assuming a constant reduction in the incidence of diabetes each year, we estimate a cumulative reduction of about 23,000 to 69,000 new cases of diabetes in the coming decade, depending on the size and extent of the beverage tax.

Reducing the incidence of diabetes would significantly lower the related health care spending. Recent estimates indicated that people with diabetes spend more than twice as much on medical care as they would have in the absence of the disease and that about 10 percent of overall health care expenditures can be attributed to diabetes (American Diabetes Association (ADA), 2008). To estimate the health care costs savings that would result from the tax-induced reductions in diabetes, we use the ADA’s (2008) estimates of diabetes-related costs by age in 2007, updated for inflation using the medical care component of the consumer price index. The average annual cost for diagnosed diabetes is about $6,000 per case. The total savings would be considerably higher given that an average diabetes case is also associated with $3,326 annually in nonmedical costs such as absenteeism, reduced productivity at work, disability that prevents working, reduced non-workforce labor and early mortality (Dall et al., 2010).

Figure 21 shows the estimated reductions in health care costs of diabetes for the four alternative beverage tax scenarios. Given the larger reductions in diabetes incidence from higher SSB-only taxes, the avoided costs from these taxes would be most substantial. The long-term cost savings would be considerably higher. Given the greater consumption of SSBs and, as a result, greater incidence of diabetes in low-income populations, a disproportionate share of these cost savings would accrue to the state’s Medicaid program.

### Figure 21


Impact on Caloric Intake and Body Weight

<table>
<thead>
<tr>
<th></th>
<th>$0.0</th>
<th>$5.0</th>
<th>$10.0</th>
<th>$15.0</th>
<th>$20.0</th>
<th>$25.0</th>
<th>$30.0</th>
<th>$35.0</th>
<th>$40.0</th>
<th>$45.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 Cents - SSBs Only</td>
<td>$41.3</td>
<td>$27.6</td>
<td>$20.7</td>
<td>$13.8</td>
<td>$11.7</td>
<td>$9.6</td>
<td>$7.5</td>
<td>$5.4</td>
<td>$3.3</td>
<td>$1.2</td>
</tr>
<tr>
<td>2 Cents - All</td>
<td>$41.3</td>
<td>$27.6</td>
<td>$20.7</td>
<td>$13.8</td>
<td>$11.7</td>
<td>$9.6</td>
<td>$7.5</td>
<td>$5.4</td>
<td>$3.3</td>
<td>$1.2</td>
</tr>
<tr>
<td>1 Cent - SSBs Only</td>
<td>$41.3</td>
<td>$27.6</td>
<td>$20.7</td>
<td>$13.8</td>
<td>$11.7</td>
<td>$9.6</td>
<td>$7.5</td>
<td>$5.4</td>
<td>$3.3</td>
<td>$1.2</td>
</tr>
<tr>
<td>1 Cent - All</td>
<td>$41.3</td>
<td>$27.6</td>
<td>$20.7</td>
<td>$13.8</td>
<td>$11.7</td>
<td>$9.6</td>
<td>$7.5</td>
<td>$5.4</td>
<td>$3.3</td>
<td>$1.2</td>
</tr>
</tbody>
</table>
Using the estimates above of the age- and gender-specific changes in SSB consumption frequency, we estimate the daily reduction in calories consumed from SSBs for each tax scenario. The estimated reductions are presented by age and gender in Figure 22. Younger men have the largest reductions in calories due to high SSB consumption. For a one cent per ounce tax on SSBs only, we estimate that 2-19 year old males would consume 46 fewer calories from SSBs daily and that 20-44 year old males would consume 55 fewer SSB calories per day, compared to 32 and 16 fewer calories for 45-64 year old and 65 and older males. Among women, the reductions would be 36, 38, 22, and 10 calories from SSBs per day among those ages 2-19, 20-44, 45-64 and 65 and older, respectively. As with SSB consumption, larger reductions in caloric intake result from a tax limited to SSBs only, as do higher taxes regardless of the base on which the tax is applied.

Figure 22
Reductions in Average Daily Caloric Intake from SSBs by Age and Gender, Alternative Tax Scenarios, Illinois, 2011

We use these estimated reductions in average daily caloric intake to model the impact of alternative beverage taxes on BMI and obesity prevalence. There are two key assumptions in translating reductions in caloric intake to reductions in body weight and obesity. The first relates to the extent to which the tax-induced reduction in calories from SSBs is offset by increases in calories from other sources such as food and non-taxed caloric beverages like juice and milk. Current research is mixed on the extent of substitution in response to changes in relative beverage prices, including those that result from the existing small sales taxes on various beverages. Fletcher and colleagues (2010), for example, conclude that reductions in SSB calories from higher SSB prices are largely offset in children and adolescents by increases in calories from other beverages, particularly whole milk, resulting in little impact on weight. In contrast, Smith and colleagues (2010) find only modest increases in calories from other caloric beverages when SSB calories fall in response to tax-induced SSB price increases. As a result, the authors predict that a 20 percent tax on SSBs would reduce obesity prevalence by 3 percentage points in adults and 2.9 percentage points in children. These are substantial reductions.

Based on these assumptions, we estimate that the alternative beverage taxes would lead to significant reductions in average body weight at the population level, with greater reductions among young males given their greater frequency of SSB consumption. The estimated age- and gender-specific reductions in average body weight are shown in Figure 23. We estimate that a one-cent tax on SSBs only would reduce average body weight among Illinoisans ages two and older by about 1.7 pounds.

Figure 23
Reductions in Body Weight by Age and Gender, Alternative Tax Scenarios, Illinois, 2011
Impact on Obesity and Obesity-Related Health Care Costs

Using the estimated reductions in weight described above, we further estimate the impact of alternative beverage taxes on the prevalence of obesity in Illinois and obesity-related health care costs. Data on adult obesity rates by age and gender come from the 2009 Behavioral Risk Factor Surveillance System data for Illinois, with the age-specific rates adjusted in proportion to the gender-specific rates to produce estimates for males and females ages 18-44, 45-64, and 65 and older. Gender specific estimates of obesity prevalence for children ages 2-17 are obtained using data from the 2007 National Survey of Children’s Health (Singh, et al., 2010), for gender specific rates for youth ages 10-17, and the 2007-2008 NHANES (assuming that the relative rates for 2-9 year olds and 10-17 year olds nationally apply to Illinois children). Using this approach, we estimate that 25.2 percent of the Illinois population ages two and older is obese, with age specific prevalence rates of 17.5, 24.5, 33.0, and 24.7 percent among those ages 2-17, 18-44, 45-64, and 65 and older, respectively. Obesity rates among males in each age group are about 10 percent higher than among females.

We use age- and gender-specific average height data from NHANES to translate the predicted reductions in weight into reductions in age- and gender-specific BMI. We further assume that reductions in BMI that result from the alternative taxes will move a fraction (1/5th) of people with BMI in the obese range (≥ 30) to the non-obese range. Given these assumptions, we estimate age and gender specific reductions in obesity prevalence that would result from the alternative beverage taxes. These estimates are shown in Figure 24.

The alternative beverage taxes would lead to significant reductions in obesity prevalence. For example, we estimate that a one-cent tax on SSBs only would reduce obesity prevalence among 12-17 year olds to 15.9 percent, implying 45,000 fewer obese children in Illinois. Similarly, this tax would reduce obesity prevalence among 18-44 year olds to 22.7 percent and among 45-64 year olds to 31.6 percent, reducing the number of obese adults in these age groups by about 85,000 and 45,000, respectively. The overall obesity rate in Illinois would fall from 25.2 percent to 23.7 percent, reflecting a more than 185,000 reduction in the number of obese Illinoisans. Again, SSB only taxes produce larger reductions in obesity prevalence than broader based taxes that include diet beverages, and higher taxes lead to more substantial declines in obesity rates.

Finally, given the considerable health care costs estimated to result from obesity, we use these reductions in obesity prevalence to estimate the impact of alternative beverage taxes on health care costs attributable to obesity in Illinois. A growing literature demonstrates that obese individuals spend significantly more on health care to treat the consequences of their obesity (Finkelstein, et al., 2009; Wee et al., 2005). To estimate the impact of the tax induced reductions in obesity prevalence on health care spending, we use age and gender specific adult cost estimates from Wee and colleagues (2005), updated for inflation using the Medical Care Price Index. They estimate that obesity-related health care costs are higher for women than for men and that these costs rise with age for both genders.

Based on the recent study by Skinner and colleagues (2008) that found no excessive health care costs for overweight children relative to normal weight peers, we assume no reduction in health care costs for the youngest age group (ages 2-17). As a result, our estimates will be conservative with respect to the long term cost savings that result from the tax induced declines in SSB consumption and obesity. That is, the reductions in obesity among young people will lead to significant reductions in future health care costs caused by obesity.

The estimated health care cost savings in Illinois in 2011 from tax-induced reductions in obesity are shown in Figure 25. We estimate that a one-cent tax on SSBs only, for example, would reduce health care spending attributable to obesity by more than $150 million in the first year alone. Over time, the cumulative effects of savings in health care spending will grow; assuming that the annual cost savings are constant over time a one-cent SSB only tax would save more than $1.5 billion in health care spending in Illinois over the next decade. Given the higher prevalence of obesity in lower-income populations, a disproportionate reduction in obesity-related health care spending would be seen in the state’s Medicaid program. As with the reductions in diabetes, the total benefits for the Illinois economy would be substantially higher and include reductions in other costs associated with obesity, including reduced productivity, absenteeism, and disability.
Section IV

DISCUSSION

The increasing recognition of the role of sugar-sweetened beverages (SSBs) in contributing to the growing obesity epidemic has spurred interest in policy and other interventions that aim to reduce SSB consumption. Given the demonstrated effectiveness of increased tobacco taxes in reducing cigarette smoking and other tobacco product use, many have proposed SSB taxes that would lead to sizable increases in prices as a promising policy option for curbing obesity and its health and economic consequences. To date, however, existing SSB taxes are mostly small sales taxes that are applied to both sugar-sweetened and diet beverages. Research assessing the impact of these small taxes generally finds that they have modest effects on beverage consumption and a limited impact on weight. At the same time, estimates from these studies suggest that larger taxes would have a substantial impact on the prevalence of obesity at the population level.

Given the potential for SSB taxes to reduce obesity, we use the best available data and research-based evidence to estimate the impact of alternative beverage taxes in Illinois. Specifically, we consider four alternative beverage taxes – a one cent per ounce excise tax on SSBs and their diet versions (i.e., all beverages); a one cent per ounce excise tax on SSBs only; a two cent per ounce excise tax on SSBs only. Using recent data, we predict their impact on overall beverage consumption, tax revenues, age and gender-specific frequency of SSB consumption, average daily caloric intake, body weight, body mass index (BMI), obesity prevalence, diabetes incidence, and health care costs of diabetes and obesity. Table 3 below summarizes our estimates.

Given the continued reduction in SSB consumption following the alternative beverage taxes, the impact of the tax will grow over time as additional new diabetes cases will be prevented and as the long-term costs resulting from childhood obesity are averted. To the extent that a portion of the new revenues generated by the tax are used to support obesity prevention and reduction programs in Illinois, the future declines in obesity prevalence and the resulting disease and costs will be even larger.

In summary, sizable new SSB taxes would be a win-win for Illinois – they would generate considerable new revenues, and lead to reductions in SSB consumption, obesity, and the resulting disease burden and health care costs. As seen with tobacco tax increases that earmarked a portion of new revenues for comprehensive tobacco prevention and cessation programs that further reduced tobacco use and its consequences, using the same approach with SSB tax revenues would lead to further reductions in obesity while at the same time increasing public support for such taxes.

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Reduction in Number of Obese Youth (2-17)</th>
<th>Reduction in Number of Obese Adults (18+)</th>
<th>Reduction in Number of Obese Illinoisans</th>
<th>Reduction in Diabetes Incidence</th>
<th>Reduction in Health Care Costs of Diabetes (millions)</th>
<th>Reduction in Obesity-Related Health Care Costs (millions)</th>
<th>New Tax Revenues (millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Cent - All</td>
<td>6.2%</td>
<td>3.5%</td>
<td>123,418</td>
<td>2,294</td>
<td>$13.8</td>
<td>$100.5</td>
<td>$876.1</td>
</tr>
<tr>
<td>1 Cent - SSBs Only</td>
<td>9.3%</td>
<td>5.2%</td>
<td>165,127</td>
<td>3,442</td>
<td>$20.7</td>
<td>$150.8</td>
<td>$600.7</td>
</tr>
<tr>
<td>2 Cents - All</td>
<td>12.3%</td>
<td>7.0%</td>
<td>246,836</td>
<td>4,591</td>
<td>$27.6</td>
<td>$201.0</td>
<td>$1,419.6</td>
</tr>
<tr>
<td>2 Cents - SSBs Only</td>
<td>18.5%</td>
<td>10.5%</td>
<td>370,253</td>
<td>6,885</td>
<td>$41.3</td>
<td>$301.6</td>
<td>$839.3</td>
</tr>
</tbody>
</table>


