

# TAX POLICY AND THE OBESITY EPIDEMIC

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## I. INTRODUCTION

Over the past forty years, the number of obese adults in the U.S. dramatically increased.<sup>1</sup> Similarly, obesity rates among children tripled over the past three decades.<sup>2</sup> The growing obesity problem in the U.S. has been attributed to an

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<sup>1</sup> See Katherine M. Flegal et al., *Prevalence and Trends in Obesity Among US Adults, 1999-2008*, 303 JAMA 235, 235 (2010) (finding that from 2007-2008, “the prevalence of obesity was 32.2% among adult men and 35.5% among adult women”); Ali H. Mokdad et al., *The Continuing Epidemics of Obesity and Diabetes in the United States*, 286 JAMA 1195, 1195 (2001) (finding that “the prevalence of obesity in the U.S. is continuing to increase”).

<sup>2</sup> Cynthia L. Ogden et al., *Prevalence of High Body Mass Index in US Children and Adolescents, 2007-2008*, 303 JAMA 242, 242 (2010) (observing that since 1980, the obesity rate among school-age children and adolescents has tripled to approximately 17%).

increased consumption of nutrient lacking food and beverages and a decline in physical activity.<sup>3</sup> Obesity has significant adverse lifelong health and social consequences.<sup>4</sup> Furthermore, obesity imposes dramatic economic costs, including increased direct health costs for the overweight individual, reduced earning potential, embedded costs borne by employers, increased transportation costs, and increased expenditures by government.<sup>5</sup> The externality of costs borne by society arising out of obesity prompted some to call for the assessment of taxes on unhealthy eating and sedentary lifestyles to shift the true costs associated to the related behavior back to individuals.<sup>6</sup>

National polls suggest that Americans are generally reluctant to support tax assessment on unhealthy foods and beverages as a policy response to the obesity problem.<sup>7</sup> Recent public opinion polls, however, appear to have shifted noticeably with almost one quarter of the public identifying obesity as one of the top three health problems facing America today.<sup>8</sup> This shift in perception may have convinced more individuals to support the use of narrowly targeted tax assessments to address the issue.<sup>9</sup>

In an attempt to control the medical and social costs borne by society at large incidental to the obesity epidemic, federal and state governments adopted various tax policies aimed at encouraging individuals to engage in more physical exercise and eat healthier.<sup>10</sup> The goal of such tax legislation is to create a climate in which engaging in unhealthy behavior becomes “less desirable, less acceptable, and less accessible.”<sup>11</sup> Some of the more commonly adopted government tax policies to address the obesity epidemic include increasing individual consumption of healthy

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<sup>3</sup> Bruce M. Spiegelman & Jeffrey S. Flier, *Obesity and the Regulation of Energy Balance*, 104 CELL 531, 531 (2001) (“The propensity for obesity must have been in our midst for a long time, only to emerge recently on a large scale as a result of changes in the environment, in particular the availability and composition of food and reduced requirement for physical exertion.”).

<sup>4</sup> See *infra* notes 49-61 and accompanying text.

<sup>5</sup> See *infra* notes 64-89 and accompanying text.

<sup>6</sup> See *infra* note 121 and accompanying text.

<sup>7</sup> See *infra* note 141 and accompanying text.

<sup>8</sup> See *infra* note 147 and accompanying text.

<sup>9</sup> See *infra* notes 148-151 and accompanying text.

<sup>10</sup> See Marice Ashe et al., *Local Venues for Change: Legal Strategies for Healthy Environments*, 35 J. L. MED. & ETHICS 138, 138 (2007) (“In response to America’s growing obesity problem, local policymakers have been looking for legal strategies to adopt in their communities to encourage healthful behaviors.”). Some have argued that government interventions are not necessary to address the obesity problem. See Richard Epstein, *Let the Shoemaker Stick to His Last Perspective*, 46 PERSP. IN BIOLOGY & MED. S138, S139 (2003). Public health interventions should be directed at communicable diseases and pollutions, problems partly caused by individuals making choices without accounting for the cost they impose on others. See *id.* Obesity is not a communicable disease as one person’s diet and lifestyle choices do not put others at greater risk of obesity. See *id.* at S154.

<sup>11</sup> Ashe et al., *supra* note 10, at 138.

foods through a tax subsidy, imposing taxes on unhealthy foods and beverages, and providing tax incentives for individuals to become more physically active.<sup>12</sup>

The goals of this Article are: (1) to present a comprehensive synthesis of legislative efforts throughout the country to address the obesity epidemic through the tax system; (2) to review the body of research on the efficacy of tax legislation to improve eating patterns and active lifestyle; and (3) to identify tax legislative strategies that may offer promising future pathways to address the obesity problem.

This Article begins with a brief summary of the growing obesity epidemic in the U.S. It then explores some of the central contributing factors to the mounting obesity problem among U.S. children and adults. It also examines the adverse impact and costs associated with the obesity problem. Next, this Article discusses the justification for government intervention, as well as the benefits and disadvantages of using the tax system as a way of shaping consumption and physical activity patterns. It then summarizes recent efforts by various levels of government in the U.S. to use the tax system to affect eating and physical activity levels. Lastly, this Article reviews the research on the impact that current tax legislations have on healthy eating and physical activity. This Article concludes with suggested future research on tax legislations that may offer promising future pathways to address the problem.

## II. THE GROWING PREVALENCE OF THE OBESITY PROBLEM IN THE UNITED STATES

Obesity is a major public health issue that challenges the health care system. The prevalence of obesity significantly increased over the past three decades.<sup>13</sup> About one third of adults in the United States are obese.<sup>14</sup> The rates of obesity in the U.S. are disproportionately higher among disadvantaged groups.<sup>15</sup> U.S. minorities represent the highest rates of obesity and overweight individuals.<sup>16</sup> Also, according to an analysis by the Centers for Disease Control and Prevention (“CDC”), the highest obesity rates are found among individuals with low income and low educational attainment.<sup>17</sup>

While obesity rates among adults drastically increased over the last thirty years,<sup>18</sup> obesity rates among children have become a growing concern, tripling to 17%.<sup>19</sup>

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<sup>12</sup> See *infra* notes 163-200 and accompanying text.

<sup>13</sup> See Mokdad et al., *supra* note 1, at 1195 (finding that “the prevalence of obesity in the U.S. is continuing to increase”); see also Youfa Wang & May A. Beydoun, *The Obesity Epidemic in the United States—Gender, Age, Socioeconomic, Racial/Ethnic, and Geographic Characteristics: A Systematic Review and Meta-Regression Analysis*, 29 EPIDEMIOLOGIC REV. 6 (2007) (reporting that the obesity prevalence among adults has increased from 13% to 32% between the 1960s and 2004).

<sup>14</sup> See Flegal et al., *supra* note 1, at 239 (finding that “in 2007-2008, the prevalence of obesity was 32.2% among adult men and 35.5% among adult women”).

<sup>15</sup> See Katherine M. Flegal et al., *Prevalence and Trends in Obesity Among U.S. Adults 1999–2000*, 288 JAMA 1723 (2002).

<sup>16</sup> See Flegal et al., *supra* note 15, at 1723.

<sup>17</sup> Charlotte A. Schoenborn et al., *Body Weight Status of Adults: United States, 1997-98*, 330 ADV DATA 1 (2002).

<sup>18</sup> See Wang & Beydoun, *supra* note 13.

Nearly one-third (31%) of youth ages 6 to 19 years old are considered overweight or at risk for becoming overweight.<sup>20</sup> Children with low socio-economic status have higher obesity prevalence rates.<sup>21</sup> Recent data from the National Health and Nutrition Examination Survey found that “low income children and adolescents are more likely to be obese than their higher income counterparts.”<sup>22</sup> Also, children living in households where the head of household does not have a college degree are more likely to be obese than those living in households where the head of household has a college education.<sup>23</sup>

### III. CAUSES OF OBESITY AMONG ADULTS AND CHILDREN

The growing obesity problem in the U.S. is attributed to an increased consumption of unhealthy foods and a decline in physical activity.<sup>24</sup> Data suggests that the number of calories consumed by Americans rose significantly during the period of increased obesity rates.<sup>25</sup> The increased caloric consumption is largely attributed to an increased consumption of carbohydrates<sup>26</sup> and sweetened beverages.<sup>27</sup> Similarly, the increase in obesity in the U.S. is correlated with an

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<sup>19</sup> Cynthia L. Ogden et al., *supra* note 2, at 242.

<sup>20</sup> See Allison A. Hedley et al., *Prevalence of Overweight and Obesity Among U.S. Children, Adolescents, and Adults, 1999-2002*, 291 JAMA 2847, 2849 (2004).

<sup>21</sup> Cynthia L. Ogden et al., *Obesity and Socioeconomic Status in Children and Adolescents: United States 2005-2008*, 51 NCHS DATA BRIEF 1 (2010).

<sup>22</sup> *Id.*

<sup>23</sup> *Id.* (finding that “the relationship is not consistent across race and ethnicity groups”).

<sup>24</sup> Spiegelman & Flier, *supra* note 3, at 531 (“The propensity for obesity must have been in our midst for a long time, only to emerge recently on a large scale as a result of changes in the environment, in particular the availability and composition of food and reduced requirement for physical exertion.”).

<sup>25</sup> See Judy Putnum et al., *U.S. Per Capita Food Supply Trends: More Calories, Refined Carbohydrates, and Fats*, 25 FOOD REV. 2, 2 (2002) (finding that caloric intake rose by approximately 12%, or 300 calories per day, between 1985 and 2000).

<sup>26</sup> Centers for Disease Control and Prevention, *Trends in the Intake of Energy and Macronutrients-United States, 1971-2000*, 53 MORBIDITY & MORTALITY WKLY. REP. 80, 81 (2004) (finding that the increase in energy intake among men and women between 1971 and 2000 was “attributable primarily to an increase in carbohydrate intake, with a 62.4 gram increase among women and a 67.7 gram increase among men”); Prithiva Channugam et al., *Did Fat Intake in the United States Really Decline Between 1989-1991 and 1994-1996?*, 103 J. AM. DIETARY ASS’N 867 (2003) (finding that the increased energy intake between 1989-1991 and 1994-1996 was caused primarily due to higher carbohydrate intake).

<sup>27</sup> See Vasanti S. Malik et al., *Intake of Sugar-Sweetened Beverages and Weight Gain: A Systematic Review*, 84 AM. J. CLINICAL NUTRITION 274, 274 (2006) (based on review of prior studies finding that a greater consumption of sugar-sweetened beverages is associated with weight gain and obesity); see also Samara J. Nielsen & Barry M. Popkin, *Changes in Beverage Intake Between 1977 and 2001*, 27 AM. J. PREVENTATIVE MED. 205, 206-07 (2004) (reporting that the increase in soft drink consumption is a significant contributor to total caloric intake for adults and children in the U.S.).

increased prevalence of snacking and in the energy density of snacks consumed, particularly among children and young adults.<sup>28</sup>

Some researchers link the recent increase in high-caloric-food consumption to the decline in food prices over the last century.<sup>29</sup> Some contend that federal infrastructure created incentives to produce highly processed, caloric dense food, which resulted in a price reduction of those food items.<sup>30</sup> The relative price reduction of energy-dense food items may have resulted in an increase in the amount of food consumed at each meal, as well as in the amount of food consumed between meals.<sup>31</sup> Aside from a reduction in relative price, increased consumption of high caloric food is also linked to a rise in the availability and accessibility of fast food restaurants,<sup>32</sup> as well as an increase in television viewing.<sup>33</sup>

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<sup>28</sup> Claire Zizza et al., *Significant Increase in Young Adults' Snacking Between 1977-1978 and 1994-1996 Represents a Cause for Concern!*, 32 PREVENTATIVE MED. 303, 305-06 (2001) (finding that not only snacking prevalence among young adults increased from 77% to 84%, but also the proportion of total daily energy intake from snacks has increased from 20% to 23% between 1977-78 and 1994-96); see also Lisa Jahns et al., *The Increasing Prevalence of Snacking Among U.S. Children from 1977 to 1996*, 138 J. PEDIATRICS 493, 495 (2001) (finding that the prevalence of snackers among children increased from 77% to 91% between 1977 and 1996, as well as finding that children report a greater number of snacking occasions per day).

<sup>29</sup> Shin-Yi Chou et al., *An Economic Analysis of Adult Obesity: Results from the Behavioral Risk Factor Surveillance System*, 23 J. HEALTH ECON. 565, 584 (2004) (concluding that the increase in weight outcomes is attributable in part to the decline in food prices).

<sup>30</sup> ZOLTAN J. ACS ET AL., THE INFRASTRUCTURE OF OBESITY, IN OBESITY, BUSINESS AND PUBLIC POLICY 135 (Zoltan J. Acs & Alan Lyles, eds., 2007).

<sup>31</sup> See Samara J. Nielsen & Barry M. Popkin, *Patterns and Trends in Food Portion Sizes, 1977-1998*, 289 JAMA 450, 451 (2003) (finding a growth in the portion sizes for the majority of foods examined between 1977 and 1996 among Americans aged 2 years old and older); see also Lisa R. Young & Marion Nestle, *The Contribution of Expanding Portion Sizes to the U.S. Obesity Epidemic*, 92 AM. J. PUB. HEALTH 246, 247 (2002) (finding that the serving sizes of largely all food and beverages consumed away from home have increased over time).

<sup>32</sup> See Chou et al., *supra* note 29, at 584 (linking rise in adults' body weight to the increase in the availability of fast-food and full-service restaurants).

<sup>33</sup> See William H. Dietz & Steven L. Gortmaker, *Do We Fatten Our Children at the Television Set? Obesity and Television Viewing in Children and Adolescents*, 75 PEDIATRICS 807, 810 (1985) (finding a "highly significant and reproducible associations of television watching with obesity in children and adolescents in both cross-sectional and prospective studies"); Robert W. Jeffery & Simone A. French, *Epidemic Obesity in the United States: Are Fast Foods and Television Viewing Contributing?*, 88 AM. J. PUB. HEALTH 277, 278 (1998) (finding that hours of television viewing per day was positively associated with body mass index). The association of television viewing and obesity may be influenced in part by the tendency of people to consume more high-calorie foods while watching television. See generally Katharine A. Coon & Katherine L. Tucker, *Television and Children's Consumption Pattern, A Review of the Literature*, 54 MINERVA PEDIATRICA 423 (2002) (finding that "greater TV use has been associated with higher intakes of energy, fat, sweet and salty snacks, and carbonated beverages and lower intakes of fruit and vegetables. Several large studies have documented associations between number of hours of TV watched and both the prevalence and incidence of obesity.").

The growing obesity epidemic is also attributed to the increased sedentary nature of Americans.<sup>34</sup> Engaging in physical activity affects daily energy expenditure level and helps to prevent obesity.<sup>35</sup> Less than one quarter of American adults engage in physical activity on a regular basis, and more than half of adults pursue an almost entirely sedentary lifestyle.<sup>36</sup> Physical activity declines dramatically across age groups, starting in childhood and continuing into adulthood.<sup>37</sup> For example, 42% of children ages 6 to 11 years old meet the recommended 60 minutes per day of physical activity, but only 8% of adolescents do the same.<sup>38</sup> Among adults, less than 5% meet the recommended 30 minutes per day of physical activity.<sup>39</sup>

The growing sedentary nature of American society is attributed to industrialization,<sup>40</sup> technological advancements,<sup>41</sup> and urban sprawl.<sup>42</sup> Furthermore, the increased distance of children's home from their school, as well as traffic danger along walking routes, prevents many children from walking to school.<sup>43</sup> Recent educational policy (i.e., No Child Left Behind, also known as "NCLB") also

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<sup>34</sup> Russell Rising et al., *Determinants of Total Daily Energy Expenditure: Variability in Physical Activity*, 59 AM. J. CLINICAL NUTRITION 800, 802 (1994) (concluding that obesity is associated with lower levels of physical activity).

<sup>35</sup> See John M. Jakicic & Amy D. Otto, *Physical Activity Considerations for the Treatment and Prevention of Obesity*, 82 AM. J. CLINICAL NUTRITION 226S, 227S (2005) (indicating that physical activity is an important component on long-term weight control).

<sup>36</sup> CENTERS FOR DISEASE CONTROL AND PREVENTION, NATIONAL CENTER FOR CHRONIC DISEASE PREVENTION AND HEALTH PROMOTION, *PHYSICAL ACTIVITY AND HEALTH: A REPORT OF THE SURGEON GENERAL*, 180, 200 (U.S. Department of Health and Human Services ed., 1996) (finding that the percentage of U.S. adults meeting this definition of regular, sustained activity during leisure time was about 22 % and that one fourth of U.S. adults do not engage in any leisure-time physical activity).

<sup>37</sup> See Richard P. Troiano et al., *Physical Activity in the United States Measured by Accelerometer*, 40 MED. & SCI. IN SPORTS & EXERCISE 181 (2008).

<sup>38</sup> *Id.*

<sup>39</sup> *Id.*

<sup>40</sup> See Ann M. Swartz, Leah Squires & Scott J. Strath, *Energy Expenditure of Interruptions to Sedentary Behavior*, 8 INT'L J. BEHAV. NUTRITION & PHYSICAL ACTIVITY 69, 69 (2011) ("Based on well-executed epidemiological research, it has been suggested that large amounts of daily sedentary behavior is a challenge to the health of individuals living in industrialized nations.").

<sup>41</sup> Ross C. Brownson et al., *Declining Rates of Physical Activity in the United States: What Are the Contributors?*, 26 ANN. REV. PUB. HEALTH 421, 437 (2005) (attributing the increase in sedentary nature of Americans to technological changes in the workplace (fewer occupations involving physical labor), in the home (increase of "labor saving devices"), and in transport systems (pervasive use of cars)).

<sup>42</sup> See *id.* at 438; see also Reid Ewing et al., *Relationship Between Urban Sprawl and Physical Activity, Obesity, and Morbidity*, 18 AM. J. HEALTH PROMOTION 47, 54 (2003) (finding that residents of sprawling counties were likely to walk less during leisure time and weigh more).

<sup>43</sup> ACTIVE LIVING RESEARCH, *WALKING AND BIKING TO SCHOOL, PHYSICAL ACTIVITY AND HEALTH OUTCOMES 1* (Active Living Research ed., 2009).

prevents many children from obtaining sufficient physical education instruction during the school day.<sup>44</sup> Under NCLB legislation, schools are held accountable for core subjects such as math, reading, and science.<sup>45</sup> But NCLB does not hold schools accountable for physical education.<sup>46</sup> Consequently, teachers and administrators focus school hours on math, reading, and science, and place less emphasis on physical education.<sup>47</sup> Finally, an increase in the number of dual working parent families has contributed to children's inability to participate in a variety of after-school physical-activity programs.<sup>48</sup>

#### IV. THE IMPACT AND COSTS OF OBESITY

Obesity has a dramatic adverse impact on one's health. It serves as a major contributor to several other chronic diseases, including type II diabetes,<sup>49</sup> cardiovascular disease,<sup>50</sup> and cancer.<sup>51</sup> Obesity is linked to the following cancers: endometrial, postmenopausal breast, kidney, and colon.<sup>52</sup> It is a leading cause of preventable death among adults in the United States.<sup>53</sup> Studies have found a large

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<sup>44</sup> KELLEY V. KING & SASHA ZUCKER, CURRICULUM NARROWING 5 (Pearson Education ed., 2005).

<sup>45</sup> *Id.*

<sup>46</sup> *Id.*

<sup>47</sup> *Id.*

<sup>48</sup> See generally Kristen K. Davison et al., *Parents' Activity-Related Parenting Practices Predict Girls' Physical Activity*, 35 MED. SCI. IN SPORTS & EXERCISE 1589 (2003) (finding that "girls reported significantly higher levels of physical activity when at least one parent reported high levels of overall support in comparison to no parents"); see also James F. Sallis et al., *A Review of Correlates of Physical Activity of Children and Adolescents*, 32 MED. SCI. SPORTS EXERCISE 93, 966 (2000) (variables associated with physical activity included direct support from parents).

<sup>49</sup> See Earl S. Ford et al., *Weight Change and Diabetes Incidence: Findings from a National Cohort of US Adults*, 146 AM. J. EPIDEMIOLOGY 214, 217 (1997) (finding that the increase in body mass index in the United States that occurred during the 1980s may have contributed to the increase in the incidence of non-insulin dependent diabetes mellitus).

<sup>50</sup> See Alison E. Field et al., *Impact of Overweight on the Risk of Developing Common Chronic Diseases During a 10-Year Period*, 161 ARCHIVES INTERNAL MED. 1581, 1582 (2001) (observing that the risk of developing diabetes, gallstones, hypertension, heart disease, and stroke increased with severity of overweight among both women and men); Aviva Must et al., *The Disease Burden Associated with Overweight and Obesity*, 282 J. AM. MED. ASS'N 1523, 1526 (1999) (finding an increase in prevalence ratio of gallbladder disease, high blood cholesterol level, high blood pressure, and osteoarthritis with an increasing severity of overweight and obesity among adults).

<sup>51</sup> See Franca Bianchini et al., *Overweight, Obesity, and Cancer Risk*, 3 LANCET ONCOLOGY 565 (2002) (summarizing prior research showing that overweight is directly related to the risk of cancer, including colon, breast, endometrium, esophagus, and kidney).

<sup>52</sup> *Id.*

<sup>53</sup> See David B. Allison et al., *Annual Deaths Attributable to Obesity in the United States*, 282 J. AM. MED. ASS'N 530 (1999) (estimating that 300,000 U.S. adults die of causes related to obesity each year); Kelly D. Brownell et al., *The Public Health and Economic Benefits of Taxing Sugar-Sweetened Beverages*, 361 NEW ENG. J. MED. 1599, 1601-02 (2009).

decrease in life expectancy associated with obesity.<sup>54</sup> Similarly, overweight and obese youths are at risk for adverse health outcomes.<sup>55</sup> Childhood obesity has been linked to an increased onset of type II diabetes and a higher risk for cardiovascular disease.<sup>56</sup> Research also suggests that the risk of new-onset asthma is higher among overweight youth.<sup>57</sup> Other consequences of childhood obesity include metabolic syndrome, obstructive sleep apnea, and depression.<sup>58</sup> Finally, researchers have found that childhood obesity continues into adulthood where the problem persists.<sup>59</sup>

Being overweight also has important negative social consequences. This includes a lower likelihood that a woman will marry,<sup>60</sup> greater impairment at work, as well as impairment of routine daily activities when compared to non-obese individuals.<sup>61</sup>

Aside from the adverse health and social consequences, obesity imposes economic costs on three levels.<sup>62</sup> On an individual level, obesity results in increased health costs.<sup>63</sup> Studies suggest the healthcare costs for obese and overweight

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<sup>54</sup> See Anna Peeters et al., *Obesity in Adulthood and Its Consequences for Life Expectancy: A Life-Table Analysis*, 138 ANNALS OF INTERNAL MED. 24, 26-27 (2003) (finding large decreases in life expectancy were associated with overweight and obesity).

<sup>55</sup> See generally Stephen R. Daniels et al., *Overweight in Children and Adolescents: Pathophysiology, Consequences, Prevention, and Treatment*, 111 CIRCULATION 1999, 2001 (2005) (“Several studies suggest that early rebound of the BMI is associated with an increased risk of higher BMI in adulthood.”).

<sup>56</sup> See *id.* (“Obesity present in adolescence has been shown to be associated with increased overall mortality and specifically with increased risk of CVD and diabetes in adult men and women.”).

<sup>57</sup> See *id.* at 2002 (listing asthma as an adverse outcome of childhood obesity).

<sup>58</sup> See *id.* (“The prevalence of the metabolic syndrome in adolescents is 4% overall, but it is 30% to 50% in overweight children.”). Studies support the premise “that psychopathology is associated with obesity in children.” *Id.* at 2003. An increased BMI “was related to an increased risk of obstructive sleep apnea in children and adolescents.” *Id.*

<sup>59</sup> See *id.* at 2001 (“Several studies suggest that early rebound of the BMI is associated with an increased risk of higher BMI in adulthood.”).

<sup>60</sup> See Dalton Conley & Rebecca Glauber, *Gender, Body Mass, and Socioeconomic Status: New Evidence from the PSID*, 17 THE ECONOMICS OF OBESITY 253, 271 (Kristin Bolin & John Cawley eds., 2007) (finding that obesity reduces women’s likelihood of getting married by 16% compared to non-obese women).

<sup>61</sup> See Donna M. Gates et al., *Obesity and Presenteeism: The Impact of Body Mass Index on Workplace Productivity*, 50 J. OCCUPATIONAL ENVTL. 39, 42-43 (2008) (finding that extreme obesity is associated with significantly greater health-related limitations in the workplace); Helena W. Rodbard et al., *Impact of Obesity on Work Productivity and Role Disability in Individuals with and at Risk for Diabetes Mellitus*, 23 AM. J. HEALTH PROMOTION 353, 357 (2009) (concluding that obesity was associated with impairment of work productivity, routine daily activities, and overall impairment).

<sup>62</sup> C. Ford Runge, *The Economic Consequences of the Obese*, 1 (University of Minnesota Center for International Food and Agricultural Policy, Working Paper No. 07-1, 2007), available at <http://ageconsearch.umn.edu/bitstream/7261/2/wp07-01.pdf>.

<sup>63</sup> See Eric A. Finkelstein et al., *National Medical Spending Attributed to Overweight and Obesity: How Much, and Who’s Paying?*, W-3 HEALTH AFF. 219 (2003).



individuals are 37% higher.<sup>64</sup> Obesity causes a 36% increase in in-patient and out-patient spending and a 77% increase in medication costs.<sup>65</sup> Obesity also impairs the ability of an individual to earn income from work. Research suggests the probability of employment is significantly lower for obese individuals.<sup>66</sup> Further, employers discriminate against an obese applicant at times, and regard obesity as a signal of lower productivity.<sup>67</sup> There is also evidence that obesity may reduce income levels for those who are employed.<sup>68</sup>

Obesity also imposes costs on the labor market.<sup>69</sup> Employees' absenteeism from work for obesity-related health reasons results in a productivity loss.<sup>70</sup> Researchers found a positive and statistically significant correlation between obesity and higher rates of absenteeism from work.<sup>71</sup> Productivity loss may also occur as a result of a

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<sup>64</sup> See *id.* at 222 (“The average increase in annual medical spending associated with obesity is 37.4 percent (\$732) and ranges from 26.1 percent (\$125) for out-of-pocket to 36.8 percent (\$1,486) for Medicare and 39.1 percent (\$864) for Medicaid.”).

<sup>65</sup> See Ronald Strum, *The Effects of Obesity, Smoking, and Drinking on Medical Problems and Costs*, 21 HEALTH AFFAIRS 245, 247 (2002) (researched analyzed national data in the U.S. and found that obesity is associated with a 36% increase in in-patient and out-patient spending, as well as a 77% increase in medication costs, with an average premium of \$395 in individual care costs over a non-obese person).

<sup>66</sup> See John Cawley & Sheldon Danziger, *Morbid Obesity and the Transition from Welfare to Work*, 24 J. POL'Y ANALYSIS & MGMT 727, 734 (2005) (“Specifically, being morbidly obese is associated with 17.6% greater probability of not working.”); Petter Lundborg et al., *Obesity and Occupational Attainment Among the 50+ of Europe*, 17 THE ECONOMICS OF OBESITY 219, at 242 (Kristin Bolin & John Cawley, eds., 2007) (finding that being obese was associated with a lower probability of being employed).

<sup>67</sup> See Jens Agerström & Dan-Olof Rooth, *The Role of Automatic Obesity Stereotypes in Real Hiring Discrimination*, 96 J. APPLIED PSYCH. 790, 797 (2011) (finding that employer's bias predicts labor-market discrimination against obese people).

<sup>68</sup> See John Cawley, *The Impact of Obesity on Wages*, 39 J. HUM. RESOURCES 451, 468 (2004) (finding that heavier-weight white females, black females, Hispanic females and Hispanic males tend to earn less than their normal weight counterparts); Steven L. Gortmaker et al., *Social and Economic Consequences of Overweight in Adolescence and Young Adulthood*, 329 NEW ENG. J. MED. 1008, 1009-10 (1993) (indicating that overweight young adults tend to marry less often and have lower household incomes compared to their non-overweight counterparts, regardless of their socioeconomic status and aptitude scores); Lundborg et al., *supra* note 66, at 243 (finding that obese European women over 50 earned 10% less than their non-obese counterparts).

<sup>69</sup> See Ross A. Hammond & Ruth Levine, *The Economic Impact of Obesity in the United States*, 3 DIABETES, METABOLIC SYNDROME AND OBESITY: TARGETS AND THERAPY 285, 288 (2010) (listing a number of sub-categories relating to productivity costs in the labor market).

<sup>70</sup> See *id.*

<sup>71</sup> See Emily D. Durden et al., *Economic Costs of Obesity to Self-Insured Employers*, 50 J. OCCUPATIONAL ENVTL. MED. 991, 994 (2008) (finding that obese employees were 194% more likely to use paid time off than their non-obese counterparts, while the severely obese were 278% more likely to do the same); Seth A. Serxner et al., *The Impact of Behavioral Health Risks on Worker Absenteeism*, 43 J. OCCUPATIONAL ENVTL. MED. 347, 350 (Table 3) (2001) (finding that employees who were at risk for obesity were 1.23 times more likely to be in the “high-absenteeism” group than those who were not at risk for obesity); Shan P. Tsai et al., *The Impact of Obesity on Illness Absence and Productivity in an Industrial Population of*

decrease in productivity from an employee while present at work.<sup>72</sup> Presenteeism arises when a physical or a mental health condition that is more prevalent among obese individuals adversely affects the obese employee's productivity while in the workplace.<sup>73</sup> Studies have found a strong association between obesity and presenteeism at work.<sup>74</sup> Moreover, employers endure losses as a result of lost productivity and underperformance linked to their obese employees' work limitations.<sup>75</sup> The cost of the lost productive time is substantial, estimated at \$11.7 billion per year.<sup>76</sup>

Aside from lost productivity in the labor market, employers incur significant healthcare costs incidental to obese employees.<sup>77</sup> Employers expend resources in an attempt to reduce obesity related costs by offering employees various health promotion programs, establishing on-site exercise facilities, sponsoring exercise and fitness programs, and providing financial incentives to encourage workers to enroll in wellness programs.<sup>78</sup>

In addition, obesity results in increased transportation costs.<sup>79</sup> For example, the CDC reported that airline passengers' weight in 2000, when compared to that of the

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*Petrochemical Workers*, 18 ANNALS EPIDEMIOLOGY 8, 10 (2008) (finding that in the North American division of Shell Oil Company, obese employees were on average absent from work 3.7 additional days per year compared to their normal-weight counterparts).

<sup>72</sup> Eric A. Finkelstein et al., *The Costs of Obesity in the Workplace*, 52 J. OCCUPATIONAL ENVTL. MED. 971 (2010).

<sup>73</sup> See Hammond & Levine, *supra* note 69, at 289.

<sup>74</sup> See Judith A. Ricci & Elsbeth Chee, *Lost Productive Time Associated with Excess Weight in the US Workforce*, 47 J. OCCUPATIONAL ENVTL. MED. 1227, 1229 (2005) (finding that obese workers were significantly more likely to report health-related loss productive time than either normal-weight or overweight workers).

<sup>75</sup> See Robin P. Hertz et al., *The Impact of Obesity on Work Limitations and Cardiovascular Risk Factors in the U.S. Workforce*, 46 J. OCCUPATIONAL ENVTL. MED. 1196, 1198 (2004) (finding that 7% of obese employees have work limitations due to physical, mental, or emotional problem versus 3% of normal-weight or overweight workers).

<sup>76</sup> See Ricci & Chee, *supra* note 74, at 1231 ("Compared with normal-weight workers, obese workers cost U.S. employers an estimated \$11.70 billion per year in excess health-related [lost productive time].").

<sup>77</sup> See David Thompson et al., *Estimated Economic Costs of Obesity to U.S. Business*, 13 AM. J. HEALTH PROMOTION 120, 124 (1998) (estimating that the annual costs associated with obesity on businesses in the U.S. to be \$12.7 billion); Feifei Wang et al., *Relationship of Body Mass Index and Physical Activity to Health Care Costs Among Employees*, 46 J. OCCUPATIONAL ENVTL. MED. 428, 431 (2004) (finding that the annual healthcare costs of a large manufacturing company were \$488 more for obese employees compared with normal-weight employees).

<sup>78</sup> See Shari L. Barkin et al., *Millennial and the World of Work: The Impact of Obesity on Health and Productivity*, 25 J. BUS. & PSYCH. 239, 242 (2010) (describing various ways employers have been incorporating wellness programs into the work place and citing a report finding that in 2006, 19% of employers with more than 500 employees had wellness programs, up from 7% two years earlier).

<sup>79</sup> See Sheldon H. Jacobson & Douglas M. King, *Measuring the Potential for Automobile Fuel Savings in the US: The Impact of Obesity*, 14 TRANSP. RES. PART D: TRANSPORT AND

previous decade, has led airlines to spend an estimated additional \$275 million to burn an extra 350 million gallons of fuel.<sup>80</sup> Similarly, a study found that the growing obesity rates in the U.S. increase fuel consumption by adding passenger weight to vehicles.<sup>81</sup>

Finally, obesity affects expenditures by local, state, and national governments because publicly funded programs cover some of the medical costs of illnesses associated with obesity.<sup>82</sup> U.S. taxpayers finance nearly half of all direct medical costs associated with the obesity epidemic through Medicare and Medicaid.<sup>83</sup> Studies suggest that medical costs associated with obesity are substantial.<sup>84</sup> Obese individuals tend to utilize medical services at a greater frequency compared to normal weight individuals.<sup>85</sup> For example, compared to normal weight individuals, it is estimated that obese adults with a body mass index between 35 and 39 have 14% and 25%, respectively, more physician visits than normal weight adults.<sup>86</sup> Similarly, obese individuals have a greater use of hospital services. As a result, medical costs incurred by obese individuals are significantly higher than medical costs incurred by normal weight individuals.<sup>87</sup> For example, one study found that obese individuals incurred 36% higher-average-annual healthcare costs than healthy-weight

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ENV'T. 6, 11 (2009) (estimating the additional annual fuel consumption by noncommercial passenger highway travel in the U.S. that is associated with overweight and obesity to be approximately one billion gallons).

<sup>80</sup> See Andrew L. Dannenberg et al., *Economic and Environmental Costs of Obesity: The Impact on Airlines*, 27 AM. J. PREVENTIVE MED. 264, 264 (2004) (calculating that weight gain during the 1990s required approximately 350 million extra gallons of jet fuel in the year 2000 and extra airline fuel costs to be approximately \$275 million in the year 2000 alone).

<sup>81</sup> See Jacobson & King, *supra* note 79, at 7.

<sup>82</sup> See JULIE A. ELSTON ET AL., TAX SOLUTIONS TO THE EXTERNAL COSTS OF OBESITY, OBESITY, BUSINESS & PUBLIC POLICY 171, 173 (Zoltan J. Acs et al., 2007) (“Publicly funded health programs such as Medicare, Medicaid and Veterans benefits disproportionately absorb the additional medical costs [of obesity] since obesity and poverty are correlated.”).

<sup>83</sup> *Id.*; Eric A. Finkelstein et al., *State-Level Estimates of Annual Medical Expenditures Attributable to Obesity*, 12 OBESITY RES. 18, 23-4 (2004) (finding that 49% of medical costs incidental to obesity is incurred by Medicare and Medicaid); Eric A. Finkelstein et al., *Economic Causes and Consequences of Obesity*, 26 ANN. REV. PUB. HEALTH 239, 248 (2005) (estimating that “the government finances roughly half of the total annual medical costs attributable to obesity”).

<sup>84</sup> See Finkelstein et al., *supra* note 63, at 219.

<sup>85</sup> See Charles P. Quesenberry et al., *Obesity, Health Services Use, and Health Care Costs Among Members of a Health Maintenance Organization*, 158 ARCHIVES INTERNAL MED. 466, 467 (1998).

<sup>86</sup> See *id.* at 470, Table 3; see also David Thompson et al., *Body Mass Index and Future Healthcare Costs: A Retrospective Cohort Study*, 9 OBESITY RES. 210, 212 (2001) (finding that obese adults have 49% more inpatient days per year and 1.8 times more pharmacy dispenses, including 6 times the number of dispenses for diabetes medications and 3.4 times the number of dispenses for cardiovascular medications).

<sup>87</sup> See Finkelstein et al., *supra* note 63, at 219.

individuals.<sup>88</sup> In the aggregate, total medical costs incidental to obesity were estimated to be as high as \$147 billion in 2008—almost 10% of all U.S. medical spending.<sup>89</sup>

#### V. JUSTIFICATION FOR GOVERNMENT INTERVENTION:

Despite the adverse health outcomes of obesity, economists generally assert that individuals should be at liberty to choose how to allocate their money and time relating to physical exercise and diet.<sup>90</sup> Hence, individuals should be free to engage in activities including those which subject them to an increased chance of becoming obese.<sup>91</sup> That is, the existence of adverse consequences from obesity does not per se mean that a government intervention to address the obesity problem is necessary.<sup>92</sup> Instead, government intervention may be justified only when necessary to correct market failure,<sup>93</sup> such as in cases where the behavior creates externalities.<sup>94</sup>

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<sup>88</sup> See Anne M. Wolf, *Economic Outcomes of the Obese Patient*, 10 OBESITY RES. 58S (2002) (“Overall, obesity (BMI 30 kg/m<sup>2</sup>) is associated with greater healthcare use and cost, particularly pharmaceutical and laboratory costs.”).

<sup>89</sup> See Eric A. Finkelstein et al., *Annual Medical Spending Attributable to Obesity: Payer- and Service-Specific Estimates*, 28 HEALTH AFF. 822, 828 (2009) (“In aggregate, the annual medical burden of obesity has increased from 6.5 percent to 9.1 percent of annual medical spending and could be as high as \$147 billion per year (in 2008 dollars) based on the NHEA estimate”).

<sup>90</sup> Michael McCarthy, *The Economics of Obesity*, 364 THE LANCET 2169, 2170 (2004).

<sup>91</sup> See Patricia M. Anderson et al., *Economic Perspectives on Childhood Obesity*, 27 ECONOMIC PERSPECTIVE 30, 31 (2003) (“People make a choice and if they choose to eat more and exercise less in the face of the current environment, it must be because that makes them happier than eating less and exercising more.”); ELSTON ET AL., *supra* note 82, at 173 (“As long as the individual making the choice to become obese can do so freely, with full information as to the costs of consequences of their choice and without placing a burden on the rest of society, they ought to be free to do so.”).

<sup>92</sup> See Jonathan Cummings, *Obesity and Unhealthy Consumption: The Public-Policy Case for Placing a Federal Sin Tax on Sugary Beverages*, 34 SEATTLE U. L. REV. 273, 290-98 (2010) (detailing the rationale used by opponents of a tax on sugary beverages).

<sup>93</sup> See Robin A. McKinnon, *A Rationale for Policy Intervention in Reducing Obesity*, 12 AM. MED. ASS’N J. ETHICS 309, 310 (2010) (“Policy solutions are considered warranted in the event of ‘market failure.’”); ELSTON ET AL., *supra* note 82, at 171 (“[U]nless a case can be made for some form of market failure, society is best served by avoiding interventions in the markets for goods and services.”).

<sup>94</sup> See JAY BHATTACHARYA & NEERAJ SOOD, HEALTH INSURANCE AND THE OBESITY EXTERNALITY, THE ECONOMICS OF OBESITY, 279, 280 (Kristin Bolin and John Cawley, eds., 2007) (“In accordance with traditional economic practice, we argue that it is the costs of bodyweight decisions not borne by an adult making those decisions (hereafter, external costs) that are most relevant to public policy. If external costs are high, then public welfare can be improved by interventions that change the incentives adults face when making decisions about bodyweight.”); Barry McCormick et al., *Economic Cost of Obesity and the Case for Government Intervention*, 8 OBESITY REV. 161, 162 (2007) (suggesting that externalities arising out of obesity may be a legitimate basis for government intervention in this area). Aside from justifying government intervention based on externalities, another category of justification relates to actions needed to protect individuals who are unable to make rational

An externality arises when the costs or damage arising out of an individual's behavior are not fully internalized by the individual, but are instead borne by one or more individuals who will not engage in the conduct which led to the costs at hand.<sup>95</sup> Specifically, individuals may choose to engage in a sedentary lifestyle and poor diet.<sup>96</sup> As long as the individual, who is informed of the risks associated with his conduct, pays for the costs arising out of these decisions, then government intervention is not justified.<sup>97</sup> If the individual fails to bear the full costs, however, then society must bear the cost of this externality.<sup>98</sup>

Externality in the case of obesity arises when obese individuals do not fully pay for medical care by virtue of risk pooling.<sup>99</sup> Through risk-pooling obese and non-obese individuals, private health insurance companies assess higher rates compared to what would be charged in the absence of the obese group.<sup>100</sup> One study estimated that physically active individuals pay a total subsidy of approximately \$1,900 over a lifetime through cost sharing in collectively-financed, group-insurance programs.<sup>101</sup>

The additional medical care costs related to obesity are borne not only by private insurance companies shifting costs to the non-obese insured, but also by public insurance programs.<sup>102</sup> Publicly funded health insurance programs, such as Medicare and Medicaid, bear significant obesity-related medical costs given the association between obesity and poverty.<sup>103</sup> Researchers estimate that the government funds

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decisions. *Id.* This basis would appear to be pertinent for government intervention in addressing obesity among children and youth. *Id.*

<sup>95</sup> See ELSTON ET AL., *supra* note 82, at 174 (“Economists define an externality as an event that confers an appreciable damage (or benefit) on one or more individuals who were not fully consenting parties in reaching the decisions that led to the negative (or positive) event in question.”); see Jeff Strand, *Conceptualizing the “Fat Tax”: The Role of Food Taxes in Developed Countries*, 78 S. CAL. L. REV. 1221, 1240 (2005).

<sup>96</sup> Strand, *supra* note 95, at 1240.

<sup>97</sup> *Id.* at 1240-41.

<sup>98</sup> *Id.* at 1236 (“‘Moral hazard’ generates this externality: a fully insured individual has no incentive to expend costs to avoid the damage inherent in the insured event. If the expected value of that damage exceeds the avoidance costs, the failure to avoid the damage will be inefficient. One way to address this externality is to use food taxes as ‘implicit premiums’ in an “implicit insurance system.”).

<sup>99</sup> ELSTON ET AL., *supra* note 82, at 173 (“[O]besity related health costs are more likely to be shared by others, including those who expend a great deal of effort to reduce their risk of becoming obese, through the pooling of health insurance risks.”).

<sup>100</sup> *Id.* at 173-74.

<sup>101</sup> Emmett B. Keeler et al., *The External Cost of a Sedentary Life Style*, 79 AM. J. PUB. HEALTH 975, 978 (1989) (estimating that the non-obese individual provided a \$1,900 lifetime subsidy to obese individuals through risk pooling).

<sup>102</sup> ELSTON ET AL., *supra* note 82, at 173 (“The additional health-care costs of obesity fall not only on private insurance who could adjust rates in response to individual risks, but also on public insurers.”).

<sup>103</sup> *Id.* “Publicly funded health programs such as Medicare, Medicaid, and Veterans benefits disproportionately absorb the additional medical costs [of obesity] since obesity and poverty are correlated.” *Id.*

approximately half the total annual medical costs related to obesity.<sup>104</sup> As a result, the average taxpayer pays “approximately \$175 per year to finance obesity related medical expenditures among Medicare and Medicaid recipients.”<sup>105</sup>

However, the net costs externalized by obesity are somewhat unclear.<sup>106</sup> While medical care for obese individuals is higher, it is not clear that the cost of medical care over a lifetime is higher due to the shorter lifespan of obese individuals.<sup>107</sup> Furthermore, the lower life expectancies of obese individuals likely result in a reduction of other public expenditures, such as Social Security and similar public pensions.<sup>108</sup> Thus, it is not entirely clear that obesity imposes an overall cost to society since there may be societal savings from foregone public pension benefits and public health care costs in later years of life.<sup>109</sup>

Aside from the possible externalities related to obesity, government intervention may be justified because of market failure arising out of imperfect rationality.<sup>110</sup> Under imperfect rationality considerations, individuals are not viewed as truly free agents in their decisions relating to diet and physical activity.<sup>111</sup> For example, children are not considered rational actors and are viewed as fairly unable to control their behavior relating to diet and exercise because they do not purchase their own food and, to a large extent, do not decide how to spend their time.<sup>112</sup> Similarly, some

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<sup>104</sup> See Finkelstein et al., *supra* note 72, at 226.

<sup>105</sup> See Finkelstein et al., *supra* note 83, at 248.

<sup>106</sup> Compare TOMAS J. PHILIPSON & RICHARD A. POSNER, THE LONG-RUN GROWTH IN OBESITY AS A FUNCTION OF TECHNOLOGICAL CHANGE 1, 20 (Nat'l Bureau of Econ. Research, Working Paper No. 7423, 1999) (“Overall, one may argue that the case has not been made that obesity generates negative externalities large enough to justify government intervention to reduce its prevalence.”), with McKinnon, *supra* note 93, at 310 (“[D]oes widespread obesity in the U.S. provide a sufficiently strong basis for intervention in the market? Evidence suggests that it does, on three grounds: (1) imperfect rationality (which, though it is not universally accepted as an instance of market failure, undermines fundamental assumptions about the functioning of the market); (2) asymmetric information; and (3) financial externalities.”).

<sup>107</sup> Pieter H. M. van Baal et al., *Lifetime Medical Costs of Obesity: Prevention No Cure for Increasing Health Expenditure*, 5 PUB. LIBR. SCI. e29 (2008) (“Despite the higher annual costs of the obese and smoking cohorts, the healthy-living cohort incurs highest lifetime costs, due to its higher life expectancy.”).

<sup>108</sup> McCormick et al., *supra* note 94, at 163 (arguing that the medical expenses associated with obesity have been exaggerated because of the cost savings resulting from the tendency of obese people to die earlier).

<sup>109</sup> *Id.*

<sup>110</sup> Strand, *supra* note 95, at 1255 (asserting that most consumers suffer for a “lack of perfect foresight”).

<sup>111</sup> See George Loewenstein et al., *Asymmetric Paternalism to Improve Health Behaviors*, 298 JAMA 2415, 2415 (2007) (suggesting that most individuals tend to heavily discount the future so it is easy for them to rationalize that the short-term benefits exceed the costs in terms of over-eating and consuming high-caloric-content food).

<sup>112</sup> John Crawley, *An Economic Framework for Understanding Physical Activity and Eating Behaviors*, 27 AM. J. PREVENTATIVE MED., 117, 122 (2004) (suggesting that children’s obesity may be attributed to children’s imperfect rationality); McKinnon, *supra* note 93, at

adults are not entirely free to engage in an active lifestyle and a healthy diet due to physiological, self-control, or cognitive challenges.<sup>113</sup> For example, lacking perfect foresight, some adults may not appreciate the impact of their currently unhealthy eating and inactive lifestyle on the potential impact on their future health outcomes.<sup>114</sup>

Finally, some contend that market failure in the form of asymmetric information justifies government intervention to address the obesity prevalence.<sup>115</sup> First, some contend that the information disseminated by governments related to healthy eating and physical activity is significantly lacking compared to the amount of information on the subject made available by food producers.<sup>116</sup> Lack of information about the caloric content of food is particularly widespread in the context of food prepared outside the home.<sup>117</sup> Moreover, research suggests that many individuals, with access to this information do not have an accurate understanding of the information's implication to their health.<sup>118</sup> Consumers' limited computational skills and memory capacity may restrict their ability to make sound decisions about their eating patterns, activity level, and health.<sup>119</sup> Furthermore, the costs and burdens associated with interpreting nutritional information of various food options may be too prohibitive to many even when the information is readily accessible.<sup>120</sup>

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310 ("It is well accepted in economic literature that children are not rational actors. In other words, they are not capable of judging their own welfare accurately.").

<sup>113</sup> Anderson et al., *supra* note 91, at 32 (suggesting that not all adults are free choosing relating to their diet given their limited self-control and physiological characteristics); LAURETTE DUBE ET AL., *OBESITY PREVENTION: THE ROLE OF BRAIN AND SOCIETY ON INDIVIDUAL BEHAVIOR* 437 (1st ed. 2010) ("In the context of inter-temporal choice, people exhibit dynamic inconsistency, valuing present consumption much more than future consumption. In other words, people have self-control problems.").

<sup>114</sup> See Strand, *supra* note 95, at 1255 (commenting that most consumers lack perfect foresight and hence "may not understand the connection between . . . eating unhealthful food and subsequent health outcomes at the time they initially consume").

<sup>115</sup> McKinnon, *supra* note 93, at 311 (arguing that lack of accurate information in the market place relating to diet prevents individuals from accurately assessing the healthy content of food and beverages).

<sup>116</sup> John Cawley, *An Economic Framework for Understanding Physical Activity and Eating Behaviors*, 27 AM. J. PREVENTATIVE MED. 117, 121 (2004).

<sup>117</sup> Margo G. Wootan & Melissa Osborn, *Availability of Nutrition Information from Chain Restaurants in the United States*, 30 AM. J. PREVENTATIVE MED. 266, 268 (2006) (referring to a study finding that people "consistently and substantially underestimated the calorie content of popular restaurant meals, underestimating by 200 to 600 calories per meal").

<sup>118</sup> *Id.*

<sup>119</sup> Russell L. Rothman et al., *Patient Understanding of Food Labels: The Role of Literacy and Numeracy*, 31 AM. J. PREVENTIVE MED. 1, 5 (2006) (finding that only 20% of individuals can accurately calculate the contribution of a single food item to recommended daily intake); Strand, *supra* note 95, at 1254 (suggesting that in the context of eating behavior, individuals may suffer from bounded rationality because "it may be too costly or difficult to unravel the relationship between various eating patterns and disease").

<sup>120</sup> Strand, *supra* note 95, at 1254.

## VI. THE ADVANTAGES AND DISADVANTAGES OF OBESITY TAX

The externality of costs borne by society arising out of obesity prompted some to call for a tax assessment on unhealthy eating and sedentary lifestyle to reflect the true costs associated to the related behavior.<sup>121</sup> Proponents of such a policy assert that the externalized costs can only be addressed by internalizing the costs of obesity and that a tax assessment is one means of internalizing the cost.<sup>122</sup> Specifically, proponents of a tax strategy on unhealthy foods and beverages contend that a tax assessment would result in higher prices, which would likely cause some individuals to decrease consumption of unhealthy foods and beverages.<sup>123</sup> It may also lead to a decline in medical costs incidental to obesity treatment.<sup>124</sup>

Proponents of tax assessments to influence the obesity problem point to the impact that tax legislations had on the consumption level of alcohol, as well as on the prevalence rate of cigarette smoking in the U.S.<sup>125</sup> A review of the literature on cigarette taxes reveals that taxation is an effective pricing strategy to influence health behavior.<sup>126</sup> Research indicates that taxes on cigarettes lower both sales and consumption of the product.<sup>127</sup> For example, one study examined the effect of state cigarette tax increases on cigarette sales.<sup>128</sup> By reviewing cigarette sales data from 1955 to 1988 in all 50 states, the researchers found that there was a significant

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<sup>121</sup> Mark A. Hall, *The Scope and Limits of Public Health*, 46 PERSP. IN BIOLOGY & MED. S199, S204 (2003) (“[i]ndividuals acting in their own self-interest . . . will not effectively address the problem [of obesity] because they do not internalize some of the major costs or benefits of action or nonaction.”); see Strand, *supra* note 95, at 1240.

<sup>122</sup> See ELSTON ET AL., *supra* note 82, at 178 (explaining the impact of tax assessment on the demand for unhealthy food); see also Strand, *supra* note 95, at 1232 (arguing that adding a tax on unhealthy eating behavior is one way to make the activity’s true costs reflective in the price).

<sup>123</sup> See ELSTON ET AL., *supra* note 82, at 172 (“As a demand-side tool, a tax placed on a particular product leads to an increase in the end price of that product. According to the law of demand, price increases lead to a reduction in quantity consumed.”); Michael F. Jacobson & Kelly D. Brownell, *Small Taxes on Soft Drinks and Snack Foods to Promote Health*, 90 AM. J. PUB. HEALTH 854, 854 (2000) (estimating that a 5% tax on soft drinks would result in a 2% decline in sales).

<sup>124</sup> Jacobson & Brownell, *supra* note 123, at 854.

<sup>125</sup> See e.g., Phillip J. Cook & Michael J. Moore, *The Economics of Alcohol Abuse and Alcohol Control Policies*, 21 HEALTH AFFAIRS, 120, 130 (2002) (reviewing prior literature, the authors concluded that excise taxes on alcohol beverages are effective in reducing alcohol consumption); David T. Levy, Frank Chaloupka, & Joseph Gitchell, *The Effects of Tobacco Control Policies on Smoking Rates: A Tobacco Control Scorecard*, 10 J. PUB. HEALTH MGMT. & PRAC. 338, 339 (2004) (indicating that prior studies have found that a tax increase on cigarettes generally results in a price increase and a reduction in consumption, with a price elasticity of demand in the range of 0.3 and 0.5).

<sup>126</sup> Levy, Chaloupka, & Gitchell, *supra* note 125, at 338.

<sup>127</sup> *Id.* at 340.

<sup>128</sup> Dan E. Peterson et al., *The Effect of State Cigarette Tax Increases on Cigarette Sales, 1955 to 1988*, 82 AM. J. PUB. HEALTH 94, 94 (1992).



inverse relationship between tax increases and cigarette sales.<sup>129</sup> Accounting for changing attitudes on smoking and enactment of clean indoor air policies, the study determined that for each increase in cigarette taxes, sales fell by 0.75 packs per capita.<sup>130</sup> Similarly, researchers controlling for government health warnings on cigarette labels and changing public opinion on smoking found that a \$0.01 increase in state tax per pack of cigarettes is associated with a .631 pack per capita reduction in consumption; whereas, a 0.01 increase in federal tax per pack of cigarettes was associated with a 1.12 packs per capita reduction in consumption.<sup>131</sup> Studies have found that higher cigarette taxes reduce smoking among both youth and adults.<sup>132</sup> Furthermore, studies show that directing revenues generated from such excise taxes toward the implementation of tobacco control and cessation programs results in an additional decline in tobacco use.<sup>133</sup>

The experience with cigarette tax, however, may not be parallel to the context of unhealthy foods. First, since there is no minimum daily requirement of tobacco consumption, there is no problem with assessing a cigarette tax high enough to drive consumption level to zero.<sup>134</sup> In contrast, the goal is not to eliminate all caloric intake, but only excess calories.<sup>135</sup> Second, deterring consumption of specific unhealthy food items may not be as successful as a tax on cigarettes because tobacco lacks a substitute; but certain categories of unhealthy food items or beverages may easily be replaced by other unhealthy food and beverage items.<sup>136</sup> For example, a tax assessment on food items with high fat content may prompt individuals to reduce consumption of those food items, but may cause an increase consumption of food items that are high in carbohydrates. Consumers would reduce consumption of certain unhealthy taxed food items, only to substitute to alternative food items that

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<sup>129</sup> See generally *id.*

<sup>130</sup> See Peterson et al., *supra* note 128, at 95.

<sup>131</sup> See Kenneth J. Meier & Michael J. Licari, *The Effect of Cigarette Taxes on Cigarette Consumption, 1995 through 1994*, 87 AM. J. PUB. HEALTH 1126, 1127 (1997).

<sup>132</sup> See Levy, Chaloupka, & Gitchell, *supra* note 125, at 339-40 (summarizing the results of several studies finding that youth and young adults are more sensitive to price changes in cigarettes than adults); see also David T. Levy et al., *The Effects of Tobacco Control Policies on Smoking Rates: A Tobacco Control Scorecard*, 10 J. PUB. HEALTH MGMT. PRAC. 338 (2004).

<sup>133</sup> See Matthew C. Farrelly et al., *The Impact of Tobacco Control Programs on Adult Smoking*, 98 AM. J. PUB. HEALTH 304, 304 (2008) (describing how cigarette excise tax along with smoking-cessation education campaigns have been effective in a number of states at curbing cigarette consumption among adolescence).

<sup>134</sup> ELSTON ET AL., *supra* note 82, at 176.

<sup>135</sup> See *id.* (“Unlike food, there is no minimum daily requirement of tobacco so problems associated with driving consumption to zero, posed no concern in controlling tobacco use. For food, the objective is not to eliminate all caloric intake, but only the calories that are in excess of daily requirements.”).

<sup>136</sup> See Oliver Mytton et al., *Could Targeted Food Taxes Improve Health?*, 61 J. EPIDEMIOLOGY CMTY. HEALTH 689, 690 (2007) (finding that taxing only the principal sources of dietary saturated fat is unlikely to reduce the incidence of cardiovascular disease because the reduction in saturated fat is offset by a rise in salt consumption).

may be similarly unhealthy, and ultimately failing to improve the overall eating patterns in a way that reduces obesity.<sup>137</sup>

Proponents of the tax approach assert that regardless of whether such tax policies would in fact alter behavior in the context of obesity, such a policy could generate significant fiscal revenues.<sup>138</sup> Those revenues could be used to offset public medical costs associated with obesity, to address the obesity problem through information campaigns, to subsidize the purchase of healthy foods, or to subsidize the costs of an active lifestyle.<sup>139</sup>

#### VII. PUBLIC PERCEPTION AND THE OBESITY TAX

Nonetheless, public discourse on the topic suggests that there is a divergence of opinions on the desirability of a tax assessment unhealthy foods and sedentary activities.<sup>140</sup> National polls suggest that Americans are generally reluctant to support such tax assessments as a policy response to the obesity problem.<sup>141</sup> Opposition to tax assessment on unhealthy foods and beverages is multifaceted. Some oppose such assessment based on a fairness argument, asserting that it disproportionately and adversely affects low-income families.<sup>142</sup> Others contend that such legislation would

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<sup>137</sup> *Id.*

<sup>138</sup> See Jacobson & Brownell, *supra* note 123, at 854 (arguing that legislators prefer to establish tax rates for entire classes of foods, like snack foods, rather than taxing an attribute like saturated fat levels in food).

<sup>139</sup> See ELSTON ET AL., *supra* note 82, at 181 (“[A]nother alternative would be to place subsidies on the energy-output side to encourage physical activity.”); *id.* at 178 (“[T]he tax revenues can be used to further reduce the burden of the externality in terms of providing better education on the implications of being obese, providing low-cost exercise facilities for the public, and otherwise providing reimbursement to individual who are making healthy choices and lower the public costs of health care.”); Jacobson & Brownell, *supra* note 123, at 854 (“Even small taxes on widely consumed foods can raise substantial revenues.”); *id.* (estimating that tax on soft drinks, candy, chips, and other snack items raises about \$1 billion per year nationwide).

<sup>140</sup> See Sewell Chan, *A Tax on Many Soft Drinks Sets Off a Spirited Debate*, N.Y. TIMES, Dec. 17, 2008, at A36 (describing public disagreement relating to a proposed tax assessment on sugary sodas and juice drinks in New York); David Lazarus, *Tax Junk Food: Fight Obesity One Penny at a Time*, L.A. TIMES, Feb. 25, 2011, at C-1 (reporting on a controversial proposed tax levy in California on beverages with caloric sweeteners).

<sup>141</sup> NPR, NATIONAL SURVEY OF HEALTHCARE CONSUMERS: ATTITUDES ON TAX FOR SUGARY DRINKS, SNACKS, AND FAST FOOD (2010), available at [http://factsforhealthcare.com/pressroom/NPR\\_report\\_TaxingSnackFoods.pdf](http://factsforhealthcare.com/pressroom/NPR_report_TaxingSnackFoods.pdf) (finding that only 22% of respondents support increasing taxes on carbonated soft drinks and 27% of the respondents support increasing taxes on snack foods such as chocolates, sweets, chips, and cookies); J. Eric Oliver & Taeku Lee, *Public Opinion and the Politics of Obesity in America*, 30 J. HEALTH POL. POL’Y & L. 923, 925 (2005) (referring to their survey from 2001 finding that “most Americans were still not concerned with obesity, were less likely to support most obesity-related policies such as taxing snack foods”).

<sup>142</sup> See Sayward Byrd, *Civil Rights and the “Twinkie” Tax: The 900-Pound Gorilla in the War on Obesity*, 65 LA. L. REV. 303, 332-33 (2004) (contending that when an excise tax is levied on an item of food, the price increase places a disproportionate tax burden on low-income individuals); Edward P. Richards, *Legal Frameworks for Preventing Chronic Disease*,

be unfair because it penalizes non-obese and obese people alike.<sup>143</sup> Moreover, some assert that taxes on unhealthy foods are challenging to administer because it is difficult to identify which foods should be taxed and which should not.<sup>144</sup> Finally, some view a tax assessment on unhealthy foods as an unwarranted restriction on people's freedom to make their own dietary choices.<sup>145</sup>

Recent public concern about the obesity problem, however, appears to have evolved. Through the late 1990s and early 2000s, few viewed obesity as a major public health problem.<sup>146</sup> Beginning in 2002, public opinion polls shifted noticeably with almost one quarter of the public identifying obesity as one of the top three health problems facing America.<sup>147</sup> This shift in perception likely convinced more individuals to support the use of narrowly-targeted tax assessments to address the issue.<sup>148</sup> For example, the public now appears to be more tolerant of a tax on

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33 J.L. MED. & ETHICS 94, 96 (2005) (explaining how “[t]axes to raise the cost of high-calorie foods will further reduce the ability of the poor to purchase food, and food insecurity is a contributing cause to obesity”).

<sup>143</sup> See Epstein, *supra* note 10, at S154 (“The person who counts calories and exercises faithfully is penalized because she chooses to eat a cream pie as part of a sound overall diet.”).

<sup>144</sup> See Anja Hilbert et al., *Primary Prevention of Childhood Obesity: An Interdisciplinary Analysis*, 1 OBESITY FACTS 16, 21 (2008) (“Presumably, the most frequently discussed option is to tax food items with regard to their fat content. However, fats may, first, not be equally harmful and thus, should not be treated equally . . . It can easily be shown that definitional problems are inherent to such tax constructions and also arise when considering other taxation bases, for example, energy density, specific food types, or maximum percentages of certain ingredients.”); Jacobson & Brownell, *supra* note 123, at 856 (suggesting that California repealed its tax on snack foods largely because the opponents contended that the tax was difficult to administer).

<sup>145</sup> Note, *The Elephant in the Room: Evolution, Behaviorialism, and Counteradvertising in the Coming War Against Obesity*, 116 HARV. L. REV. 1161, 1173 (2003) (quoting GERALD DWORKIN, PATERNALISM 19, 22 (Rolf Sartorius ed., 1983)) (arguing that tax assessment on unhealthy food items constitute government paternalism, or “interference with people’s liberty for their own good”).

<sup>146</sup> See Rogan Kersh & James A. Morone, *Obesity, Courts, and the New Politics of Public Health*, 30 J. HEALTH POL. POL’Y & L. 839, 849-56 (2005) (summarizing the view held by some that the government has no role intervening in an area as personal as one’s diet); Oliver & Lee, *supra* note 141, at 936 (referring to polls in 2001 indicating low perceived concern among the public about obesity relative to other public-health problems); Mark Schlesinger, Editor’s Note: *Weighting for Godot*, 30 J. HEALTH POL. POL’Y & L. 785, 785-86 (2005) (referring to the public’s perception in the 90s that obesity is not an important public-health concern).

<sup>147</sup> See Robert J. Blendon et al., *The Continuing Legacy of September 11 for Americans’ Health Priorities*, HEALTH AFFAIRS 269, 273 (2003) (based on the Harvard School of Public Health/Robert Wood Johnson Foundation and International Communications Research polls); see also Lake Snell Perry & Associates, *Obesity as a Public Health Issue: A Look at Solutions*, PROGRAM FOR HEALTH SYSTEMS IMPROVEMENT, 2 (2003), [http://www.phsi.harvard.edu/health\\_reform/poll\\_results.pdf](http://www.phsi.harvard.edu/health_reform/poll_results.pdf) (finding that 79% of Americans consider adult obesity to be a major public-health problem).

<sup>148</sup> See *Kaiser Health Tracking Poll: Public Opinion on Health Care Issues*, KAISER FAMILY FOUNDATION, 4 (2009), <http://www.kff.org/kaiserpolls/upload/7945.pdf> (finding that

unhealthy foods, at least when it is limited in scope, used to fund activities targeting childhood obesity,<sup>149</sup> and dedicated to curbing the rise of unhealthy eating in society.<sup>150</sup> Furthermore, the public appears to be supportive of the use of taxes to offer incentives for individuals to engage in healthy behavior.<sup>151</sup>

### VIII. TAX AS A TOOL IN ADDRESSING THE OBESITY EPIDEMIC

#### A. Introduction

Historically, U.S. tax assessments on unhealthy food and beverages began at the federal level during World War I as an attempt to raise funds for the war efforts and to deter consumption of luxurious goods.<sup>152</sup> Congress considered soft drinks and candy to be extravagance that needed to be curtailed through tax imposition.<sup>153</sup> At the state level, taxation of unhealthy food and beverages began during the Great Depression.<sup>154</sup> In an attempt to counter a severe drop in revenues from property tax, which at that time was the main source of revenue for state governments, more than

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55% of respondents favor increase in taxes on unhealthy snack foods and 53% favor increase in taxes on soda and sugary soft drinks).

<sup>149</sup> See W. Douglas Evans et al., *Public Perceptions of Childhood Obesity*, 28 AM. J. PREV. MED. 26, 29 (2005) (“Respondents strongly supported small (\$25) tax increases to support childhood overweight and obesity interventions (71% favor.”); Lake Snell Perry & Associates, *supra* note 147, at 6 (finding that 76% of Americans support tax increase to fund government programs that address childhood obesity).

<sup>150</sup> See Wendy Sheu, *The Evolution of the Modern Snack Tax Bill: From World War I to the War Against Obesity*, 21 (2006), <http://leda.law.harvard.edu/leda/data/789/Sheu06.pdf> (citing a survey funded by the California Endowment finding that 62% of Californians support a special tax on soft drinks and food advertising to fund anti-obesity efforts); Jacobson & Brownell, *supra* note 123, at 856 (45% of adults in the U.S. that were surveyed in 1999 as part of a nationally representative opinion poll indicated that \$0.01 taxes per pound of soft drinks, chips, and butter, with the revenues directed towards public health campaign that promotes healthy eating was acceptable).

<sup>151</sup> See Oliver & Lee, *supra* note 141, at 936 (finding that a majority of the public is willing to spend additional tax dollars (\$50 per year) on public space for exercise).

<sup>152</sup> See Sheu, *supra* note 150, at 5 (citing War Revenue Act, 40 Stat. 300, §§ 313-15 (beverages), *War Revenue Act of 1917: Hearing on H.R. 4280 Before the Senate Committee on Finance*, 65th Congress, 1st Sess. (1917) (Report No. 75) (“[A]pproves the scheme . . . by which so-called soft drinks . . . are taxed.”)).

<sup>153</sup> See Sheu, *supra* note 150, at 5 (citing STAFF OF COMMITTEE ON WAYS AND MEANS, 65TH CONG., REPORT ON H.R. 8245, REP. NO. 350 (1921)) (suggesting that the goals of the War Revenue Acts are to “encourage thrift and economy and to prevent extravagance well as to provide revenue”). However, several years later, Congress repealed the soft-drink and candy taxes in the 1994 Revenue Act as part of a campaign to reduce federal taxes. See Carl Shoup et al., *Historical Document: Facing the Tax Problem: Book One: Background* 30, TAX ANALYST (Feb. 15, 1996), <http://www.taxhistory.org/thp/readings.nsf/ArtWeb/ED0E10B36C53638485256F1F005C4EB7?OpenDocument>.

<sup>154</sup> See ROBERT MURRAY HAIG & CARL SHOUP, *THE SALES TAX IN THE AMERICAN STATES* 7 (1934) (observing that between 1929 and 1933, eighteen states enacted sales tax to address the impact of the Great Depression); Kirk J. Stark, *The Uneasy Case of Extending the Sales Tax on Services*, 30 FLA. ST. U. L. REV. 435, 440 (2003) (attributing the emergency nature of the Great Depression as the triggering event for states to widely adopt sales tax).

twenty states adopted general sales tax on all non-exempt food items.<sup>155</sup> Since soft drinks and candy were viewed as luxuries at that time, they were not classified as exempt food items.<sup>156</sup> By the 1960s, a general sales tax levy, which excluded soft drinks and candy from the exemption of food items, was widely adopted by a majority of the states.<sup>157</sup> In addition to the enactment of generally applicable sales tax on soft drinks and candy, starting during the 1950s, a number of states have also begun imposing a special excise tax on soft drinks and candy.<sup>158</sup>

Starting in the 1990s, however, the country witnessed a movement toward the repeal of many tax assessments on unhealthy foods and beverages.<sup>159</sup> With strong support from the food and soft-drink industry lobby, a number of states repealed their snack tax by the late 1990s.<sup>160</sup> Despite the industry push back, it appears that a growing number of legislative bodies considered tax bills on unhealthy food and beverages during the past decade.<sup>161</sup> This trend appears to coincide with some

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<sup>155</sup> See *id.*

<sup>156</sup> See HAIG & SHOUP, *supra* note 154, at 118 (describing efforts by state legislators to enact sales tax on luxury goods, including soft drinks and ice creams).

<sup>157</sup> See Jacobson & Brownell, *supra* note 123, at 855 (providing a list of states, in Table 1.1, that adopted their first statewide sales tax by excluding soft drinks and candy from exemption of food items).

<sup>158</sup> See Cal. State Bd. of Equalization, *Staff Legislative Bill Analysis: S.B. 1520, Soda Tax*, 3 (2002), <http://www.boe.ca.gov/legdiv/sptleg/pdf/sb1520-1cwfinal.pdf> (listing West Virginia as the first state to impose an excise tax on soda in 1951).

<sup>159</sup> See Jacobson & Brownell, *supra* note 123, at 855 (“Twelve cities, counties, or states have reduced or repealed their snack taxes in recent years.”).

<sup>160</sup> See *id.* at 856, Table 2; see also MARION NESTLE, *FOOD POLITICS* 99-101 (2002) (describing the growth of the food-lobbying industry); Peter T. Kilborn, *Soft Drink Industry Is Fighting Back Over New Taxes*, N.Y. TIMES, Mar. 24, 1993, at A12; Health Policy Tracking Service, *Trends in State Public Health Legislation Status of 2006 Legislative Activity 2006 Year-End Report*, THOMPSON WEST, 35 (2007), <http://www.healthystates.csg.org/NR/rdonlyres/AECD80BD-EFA1-4A75-B47F-097DE6B3BF4D/0/FINAL2006YearEndReport.pdf> (“Opponents, including the Grocery Manufacturers of America and the Snack Food Association, have helped defeat [legislations taxing sodas and snacks]. They argued that taxing sodas and snack foods leads to consumer and retailer confusion, establishes government imposed preferences and creates competitive disadvantages for retailers whose businesses operate near state borders.”).

<sup>161</sup> See Sheu, *supra* note 150, at 17 (citing H.B. 3283, 79th Leg., Reg. Sess. (Tx. 2005); L.B. 628, 99th Leg., 1st Sess. (Neb. 2005); L.D. 505, 121st Leg., Reg. Sess. (Me. 2005); S.B. 114, 2004 Leg. Sess. (W. Va. 2004); H.B. 1215, 79th Leg. Ass., Reg. Sess. (S.D. 2004); H.B. 2116, 49th Leg., 2nd Sess. (Okla. 2004); S.B. 374, 46th Leg., 2nd Sess. (N.M. 2004); H.B. 1164, 113th Leg., 2nd Sess. (Ind. 2004); S.B. 897, 92nd Leg., Reg. Sess. (Mich. 2003); H.B. 481, 2003 Leg. Sess. (Ga. 2003); A.B. 9145, 226th Leg. Sess. (N.Y. 2003); S.B. 5928, 58th Leg., Reg. Sess. (Wash. 2003), S.B. 1520, 2002 Leg. Sess. (Cal. 2002)); see also Jacobson & Brownell, *supra* note 123, at 855 (providing a list of 19 states and cities that have adopted tax polices on nutrition-deficient food items over the past ten years).

scholars call for the need of a policy to tax unhealthy foods and beverages as part of a comprehensive strategy to address the obesity crisis.<sup>162</sup>

*B. Current Use of Tax Legislations to Reduce Consumption of Unhealthy Food*

Given the increased public concern, federal and state governments consider utilizing the tax system as a way of countering the growing obesity problem.<sup>163</sup> Federal and state governments explored the use of the tax system to address the obesity problem using a two prong approach: (1) tax assessments to penalize individuals' unhealthy eating behavior; and (2) tax incentives to reward individuals' healthy eating behavior.<sup>164</sup> The goal of such price manipulations is to encourage individuals to engage in healthier food-consumption behavior.<sup>165</sup>

States have been particularly vigorous in adopting tax legislations that assess a tax on unhealthy food and beverages.<sup>166</sup> For example, thirty-four states currently assess taxes on soda sold at grocery stores and thirty-nine states assess taxes on such beverages sold through vending machines.<sup>167</sup> Similarly, thirty states impose sales tax on candy; twenty-nine states apply taxes on chewing gum; and nineteen states assess taxes on ice cream.<sup>168</sup> In states where a sales tax is used, the tax appears to be higher for soda and lower for candy or snack items, and the sales tax appears to be higher for soda and snack food items sold from a vending machine compared to similar goods purchased from a grocery store.<sup>169</sup> Finally, more than half of the states adopted

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<sup>162</sup> See generally Kelly D. Brownell, *The Chronicling of Obesity: Growing Awareness of Its Social, Economic, and Political Contexts*, 30 J. HEALTH POL. & L. 955, 957 (2005); Schlesinger, *supra* note 146, at 785-86.

<sup>163</sup> See Jacobson and Brownell, *supra* note 123, at 854 (describing efforts by state and local governments to tax sugar-sweetened beverages as a way of generating revenues and reducing the consumption of such items).

<sup>164</sup> See notes 158-195 and accompanying text.

<sup>165</sup> See Leonard H. Epstein et al., *The Influence of Taxes and Subsidies on Energy Purchased in an Experimental Purchasing Study*, 21 PSYCHOL. SCI. 406, 406 (2010) ("Research in the natural environment and laboratory has revealed increases in purchases of healthier foods when the prices of such foods are reduced and reductions in purchases of less healthy foods as their prices are increases. In addition, we have shown in laboratory studies that purchases of healthy foods may increase when prices of less healthy foods are increased."); Anne Marie Thow et al., *The Effect of Fiscal Policy on Diet, Obesity, and Chronic Disease: A Systematic Review*, 88 BULL. WORLD HEALTH ORG. 609, 609 (2010) ("Taxing less health foods could create a financial incentive for consumers to avoid them. Studies on the effect of manipulating food prices show that both individual consumers and population groups do respond as predicted.").

<sup>166</sup> See generally Jamie F. Chriqui et al., *State Sales Tax Rates for Soft Drinks and Snacks Sold Through Grocery Stores and Vending Machines, 2007*, 29 J. PUB. HEALTH POL. 226 (2008).

<sup>167</sup> *Id.* at 239-40 (finding that 34 states assess sales taxes on soft drinks at grocery stores).

<sup>168</sup> *Id.* at 239 (listing states with sales-tax legislations on soft drinks, chewing gum, ice cream, candy, chips, and pretzels).

<sup>169</sup> *Id.* at 239-40 (finding that the median tax rate on soft drinks purchased at a retail store in states that have a sales tax is 4.5%, while it is only 3.0% for candy and 2.75% for chewing

a more punitive tax regime toward soft drinks and/or snack food items by imposing a higher tax rate on the purchase of such items compared with the general food tax rate in that state.<sup>170</sup>

Assessing sales taxes on unhealthy food and beverages is also a commonly used practice in various other countries. Some European Union countries impose value-added taxes on soft drinks, snack foods, and sweets; whereas other countries impose general sales tax on similar items.<sup>171</sup>

While pervasive in nature, these U.S. tax laws were not adopted with the primary objective of altering healthy behavior.<sup>172</sup> Instead, these provisions were adopted as a broad based sales tax with the goal of raising revenues for general use.<sup>173</sup> Indeed, despite numerous attempts by a number of states to assess an excise tax on unhealthy food and beverages,<sup>174</sup> no state currently has such a targeted tax assessment at the consumer level.<sup>175</sup> However, at least seven states have adopted narrowly-targeted tax

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gum, while the median tax rates for similar products sold at a vending machine is 5.0%, 4.5%, and 4.5%, respectively).

<sup>170</sup> *Id.* at 238 (“Interestingly, 28 states tax soft drinks and/or snack products at a higher rate than the food tax rate in the state, indicative of the ‘disfavored’ status attributed to these products.”).

<sup>171</sup> See Martin Caraher & Gill Cowburn, *Taxing Food: Implications for Public Health Nutrition*, 8 PUB. HEALTH NUTRITION 1242, 1244 (2005) (describing the food-tax legislations in European countries and Australia); Phil Cain, *Hungary for a “Fat Tax”*, GLOBAL POST, June 21, 2011, available at <http://www.globalpost.com/print/5652451> (describing the recently enacted tax on junk food in Hungary).

<sup>172</sup> See Chriqui et al., *supra* note 166, at 242; Caraher & Cowburn, *supra* note 171, at 1245 (suggesting that tax legislations on food items has been primarily motivated to raise funds, not to alter behavior).

<sup>173</sup> *Id.*

<sup>174</sup> See Chriqui et al., *supra* note 166, at 242 (describing efforts by the grocery lobby to forestall the adoption of an excise tax on unhealthy food and beverages); Daniel Kim & Ichiro Kawachi, *Food Taxation & Pricing Strategies to “Thin Out” the Obesity Epidemic*, 30 AM. J. PREVENTATIVE MED. 430, 431 (2006) (referring to the failed attempt by Maryland legislature in 2004 to reinstate snack food tax); Assemb. 669, 2011-12 Reg. Sess. (Cal. 2011), available at [http://www.leginfo.ca.gov/pub/11-12/bill/asm/ab\\_0651-0700/ab\\_669\\_bill\\_20110407\\_amended\\_asm\\_v98.html](http://www.leginfo.ca.gov/pub/11-12/bill/asm/ab_0651-0700/ab_669_bill_20110407_amended_asm_v98.html) (the assembly bill would have imposed a tax on sodas and other sugary beverages to fund obesity prevention programs); S. 567, 2010 Leg. (Kan. 2010), available at <http://www.kansasvotes.org/Legislation.aspx?ID=115452> (stating that the Senate bill would have imposed a tax on the manufacture and sale at retail of sweetened beverages); H. 1170, 114 Gen. Assemb., 2nd Reg. Sess. (Ind. 2007) (proposing to impose an 11.5% tax, in addition to other applicable taxes, on the retail sale of minimally nutritious foods or beverages); H. 39A, 2007 424th Sess. Gen. Assemb., 1st Spec. Sess. (Md. 2007) (proposing to provide that a certain exemption under the sales and use tax for certain sales of food would not apply to certain snack food); S. 228, 47th Leg., 2nd Reg. Sess. (N.M. 2006) (proposing to assess soft drink tax on any wholesaler who sells soft drinks); Assemb. 237, 98 Leg. Sess., 2007-08 Reg. Sess., (Wis. 2007) (proposing to assess a tax on the sale of soft drinks in the amount of \$0.21 for each gallon of bottled soft drinks sold); Bao Ong, *New York’s Soda Tax Plan Dies After Industry Ad Campaign*, N.Y. TIMES, July 26, 2010, available at <http://dinersjournal.blog.nytimes.com/2010/07/02/new-yorks-soda-tax-plan-dies-after-industry-ad-campaign/>.

<sup>175</sup> See Chriqui et al., *supra* note 166, at 242 (“There are no current examples of a specific ‘junk food’ or ‘fat tax’ being applied to snack products and soft drinks or other unhealthy food

assessments on unhealthy food items and beverages that are imposed on sellers of such items, such as manufacturers, distributors, and wholesalers.<sup>176</sup>

Some legislators raised concerns about assessing an excise tax on unhealthy foods and beverages due to its regressive impact, which disproportionately affects those with lower incomes.<sup>177</sup> Hence, some states considered offering low income taxpayers with food tax credit to offset the costs of food consumed at home.<sup>178</sup>

Despite recent calls by some to assess a federal tax on junk foods and soda,<sup>179</sup> the federal government does not currently tax the sale of unhealthy food and beverages.<sup>180</sup> Instead, the federal tax code offers incentives to certain taxpayers to participate in weight loss activities by allowing them to deduct the costs of various expenses, under Internal Revenue Code § 213(d), related to a weight loss program, such as bariatric surgery, FDA approved weight loss drugs, physician and hospital-based programs, behavioral counseling, the services of dietitians and exercise specialists.<sup>181</sup> Nonetheless, the incentives offered by the federal tax provisions are limited to the treatment of individuals suffering from an existing disease, including obesity, rather than offered for individuals to take preventative measures to avoid the disease.<sup>182</sup>

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products in the United States. . . .”); Kim & Kawachi, *supra* note 174, at 431 (“[N]o U.S. states currently levy taxes on snack foods.”).

<sup>176</sup> See Chiriqui et al., *supra* note 166, at 229-30 (summarizing the tax assessments on manufacturers, wholesalers, and distributors in 7 states on soft drinks, soda syrups, and ice cream).

<sup>177</sup> See Caraher & Cowburn, *supra* note 171, at 1246.

<sup>178</sup> See S. 1822, 24th State Leg. (Haw. 2007) (proposing to establish a \$100 food tax credit to residents earning less than \$30,000 per year); H. 588, 59th Leg., 2nd reg. Sess. (Idaho 2008) (enacting income tax credit to offset the sales-tax taxpayers pay on food consumed at home).

<sup>179</sup> See Kelly D. Brownell et al., *The Public Health and Economic Benefits of Taxing Sugar-Sweetened Beverages*, 361 NEW ENG. J. MED. 1599 (2009) (recommending the implementation of a federal-sin tax on sugary beverages).

<sup>180</sup> See WHITEHOUSE TASKFORCE ON CHILDHOOD OBESITY REPORT TO THE PRESIDENT, SOLVING THE PROBLEM OF CHILDHOOD OBESITY WITHIN A GENERATION, 56 (May 2010), available at <http://www.letsmove.gov/white-house-task-force-childhood-obesity-report-president> (“The potential influence of food prices on consumption necessitates consideration of the extent to which changes in farm, tax, and subsidy policies might affect consumption patterns.”).

<sup>181</sup> See Rev. Rul. 2002-19, 2002-1 C.B. 778 (ruling that “uncompensated amounts paid by individuals for participation in a weight-loss program as treatment for a specific disease or diseases (including obesity) diagnosed by a physician are expenses for medical care that are deductible under §213, subject to the limitations of that section.”); see generally Karen Fitzner et al., *Recent Tax Changes May Assist Treatment of Obesity*, 16 MANAGED CARE INTERFACE 47 (2003) (summarizing the impact of the new IRS interpretation of the deductibility of certain medical expenses related to the treatment of obesity).

<sup>182</sup> See Fitzner et al., *supra* note 181, at 48 (“This ruling concluded that when a physician diagnoses a taxpayer as being obese, the fees to join a prescribed weight-loss program and attend periodic weight-loss meetings qualify as deductible medical care under Internal Revenue Code §213(d).”).



*C. Current Use of Tax Legislations to Increase Physical Activity*

To address the obesity epidemic, the federal government and a number of state governments explored ways to utilize the tax system to encourage active lifestyles. At the federal level, the expense of an employer-provided wellness program for employees is deductible by the employer as a business expense under Internal Revenue Code § 162.<sup>183</sup> Most recently, bills have been introduced both in the House of Representatives and the Senate to encourage Americans to engage in more physical activity.<sup>184</sup> Under one proposed bill, revisions to the tax code would make physical activity more affordable by allowing taxpayers to use pretax dollars contributed to their existing health investment accounts to pay for participation in fitness activities and exercise equipment.<sup>185</sup> Similarly, under another proposed bill, employer-paid gym memberships would be excluded from the employee's taxable income, while the employer would get a tax deduction for the same amount.<sup>186</sup>

Next, to further incentivize employers to take an active role in encouraging and facilitating opportunities for its employees to remain active, the House of Representatives considered a bill that would amend the tax code to provide employers with a 50% tax credit for the costs of providing employees with a qualified prevention and wellness program.<sup>187</sup> Another bill proposed during the same session would amend the Internal Revenue Code to encourage use of transit and bicycle commuting by equalizing and increasing to \$230 the tax exclusion for both transportation and parking fringe benefits.<sup>188</sup> Yet under another proposal, the House of Representatives would allow a medical-care deduction for certain exercise equipment and physical fitness programs.<sup>189</sup> Finally, the Senate considered a bill that would amend the tax code to allow a tax deduction of up to \$500 in fees for the participation of a taxpayer's dependent child in any organization that promotes or provides physical activity.<sup>190</sup>

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<sup>183</sup> See IRC § 162.

<sup>184</sup> PHIT Act of 2011, H.R. 2649, 112th Cong. (2011).

<sup>185</sup> See Personal Health Investment Today Act of 2011, H.R. 2649, 112th Cong. (2011) (proposing an amendment to the Internal Revenue Code to allow for expenditures for physical fitness programs and exercise equipment to be payable out of pre-tax health investment accounts such as flexible spending accounts, medical savings accounts and/or medical reimbursement arrangements).

<sup>186</sup> See The Workforce Health Improvement Program Act of 2009, H.R. 2106, 111th Cong. (2009) (allowing employers to reimburse employees for fees, dues, or membership expenses paid to an athletic or fitness facility (limit of \$900/year/employee) without taxing the employee). Employees provided with use of an on premises employer owned fitness facility would not have been taxed on the value of such. *Id.* Also, it would have allowed employers a tax deduction for fees, dues, or membership expenses paid to an athletic or fitness facility (limit of \$900/year/employee). *Id.*

<sup>187</sup> See Promoting Health and Preventing Chronic Disease through Prevention and Wellness Programs for Employees, Communities, and Individuals Act of 2009, H.R. 3468, 111th Cong. (2009).

<sup>188</sup> See Green Routes to Work Act of 2009, H.R. 3271, 111th Cong. (2009).

<sup>189</sup> See Healthy Savings Act of 2009, H.R. 3508, 111th Cong. (2009).

<sup>190</sup> See S. 2842, 111th Cong. (2009).

Similar efforts to increase physical activity during the tax law were undertaken at the state and local level. Indiana allows employers with 2 to 100 employees to receive a tax credit for 50% of the costs incurred in a given year for providing qualified wellness programs to their employees, including employees' enrollment in physical activity programs, and hosting physical activity programs.<sup>191</sup> In 2004, New Jersey enacted a tax provision that provides a \$0.10 deduction per bicycling mile commuted to and from work.<sup>192</sup>

Other states explored different approaches, using state tax codes to offer incentives to taxpayers to become more active, but none of these efforts have yet been enacted into law. For example, Pennsylvania and New York both proposed a tax credit of up to \$1,000 for health-related purchases, such as exercise equipment and gym membership.<sup>193</sup> Likewise, in 2011, to promote fitness among its residents, Connecticut introduced a bill that exempted from sales tax any services offered by personal trainers and health clubs.<sup>194</sup> In 2009, the Illinois General Assembly considered a bill providing for a \$500 tax credit to cover costs of enrolling children in qualified physical activity program.<sup>195</sup>

Instead of offering individuals tax incentives to engage in more physical activity, some states focused on offering tax incentives to employers to make the work environment more conducive for employees to engage in physical activity during the work day.<sup>196</sup> For example, in 2010, Connecticut legislators considered a bill allowing corporations a tax deduction of up to one million dollars for costs related to providing wellness and preventive care programs to employees.<sup>197</sup> Similarly, District of Columbia legislators considered an amendment to the tax code that enables employers to obtain a tax credit for costs related to their employees' wellness activities, including gym membership.<sup>198</sup> Likewise, Maine legislators considered providing small businesses with a tax credit to offset the costs of institutionalizing a

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<sup>191</sup> See Ind. Pub. Law 218 (2007), available at <http://www.in.gov/legislative/bills/2007/PDF/HE/HE1678.1.pdf>; see also *Qualified Wellness Program*, IND. DEP'T OF PUB. HEALTH, <http://www.in.gov/isdh/25041.htm>.

<sup>192</sup> See N.J. Assemb. B. 3442 (2004) ("A taxpayer shall be allowed a deduction against gross income for the miles traveled by the taxpayer during the taxable year commuting by means of bicycling between the taxpayer's place of residence and place of employment or terminal near those places. The amount of which deduction shall be equal to \$0.10 per mile traveled.").

<sup>193</sup> See N.Y. State Assemb. B. 1495 (2011), available at <http://assembly.state.ny.us/leg/?bn=A01495&term=2011>; Pa. Gen. Assemb. H.B. 939 (2009).

<sup>194</sup> See Conn. Gen. Assemb. Sess. B. 156 (2011), available at <http://www.cga.ct.gov/2011/TOB/S/2011SB-00156-R00-SB.htm>.

<sup>195</sup> See Ill. H. B. 893 (2009) (proposing an income tax credit for employers who pay costs in connection with a qualified wellness program in the amount of 50% of those costs per year up to \$200 per employee for the first 200 employees and \$100 per employee for the remaining employees).

<sup>196</sup> See Conn. Gen. Assemb. Prop. B. 78 (2010).

<sup>197</sup> *Id.*

<sup>198</sup> See D.C. Good Corporate Citizenship Business Friendly Incentive Act of 2010, available at <http://dccouncil.us/images/00001/20100617160622.pdf>.

wellness program in the workplace, including furnishing equipping, maintaining an exercise facility, and providing incentive awards to employees who exercise regularly.<sup>199</sup> Other states recently considered similar bills, including New Mexico, Texas, and Wisconsin.<sup>200</sup>

Internationally, Canada is at the forefront of tax incentives aimed at increasing physical activity. In 2007, the Canadian federal government enacted the Children's Fitness Tax Credit, which provides an annual non-refundable tax credit for up to \$75 per child to parents for the costs of their child's organized physical-activity program.<sup>201</sup> Approximately 6% of Canadian taxpayers claimed the credit in 2008.<sup>202</sup> Recently, the government announced plans to extend similar benefits to Canadian adults.<sup>203</sup>

#### IX. A REVIEW OF THE IMPACT OF TAX LEGISLATIONS ON HEALTHY EATING AND PHYSICAL ACTIVITY

There is currently limited research on the potential impact of tax subsidies or tax assessments on physical-activity level.<sup>204</sup> While inconclusive, one recent study found

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<sup>199</sup> See An Act To Establish a Wellness Tax Credit, HP1443, 123d Leg. (Me. 2009), available at [http://www.mainelegislature.org/legis/bills/bills\\_123rd/billpdfs/HP144301.pdf](http://www.mainelegislature.org/legis/bills/bills_123rd/billpdfs/HP144301.pdf). The bill provides that:

. . . a tax credit to employers of 20 or fewer employees for the expense of developing, instituting, and maintaining wellness programs for their employees in the amount of \$100 per employee, up to a maximum of \$2,000. A wellness program includes programs for behavior modification, such as smoking cessation programs, equipping, and maintaining an exercise facility and providing incentive awards to employees who exercise regularly.

*Id.*

<sup>200</sup> See S.B. 148, 50th Leg., 2d Sess. (N.M. 2008) (providing an income-tax credit for employers for a portion of the costs of providing wellness programs for employees, including the encouragement of physical activity); S.B. 556, 81st Leg. (Tex. 2007) (charging the state Obesity Council with considering the feasibility of a tax incentive to employers who promote activities designed to reduce obesity in the workforce); Assemb. B. 91 (Wis. 2009) and S.B. 56, 2011-12 Leg. (Wis. 2009) (proposing an income-tax credit for a workplace wellness program defined as health or fitness program in the amount equal to 30% of the cost of the program).

<sup>201</sup> See Barbara von Tigrstrom et al., *Using the Tax System to Promote Physical Activity: Critical Analysis of Canadian Initiatives*, 101 AM. J. PUBLIC HEALTH e10, e11 (2011) ("The maximum claim [of the Children's Fitness Credit] is \$500, resulting in a tax credit of up to \$75 per child (i.e., 15%) at current rates.").

<sup>202</sup> See *id.*

<sup>203</sup> See *Stephen Harper Announces an Adult Fitness Tax Credit*, MARKET WIRE (2011), available at <http://www.marketwire.com/press-release/stephen-harper-announces-an-adult-fitness-tax-credit-1421840.htm>.

<sup>204</sup> See Odette Madore, *The Impact of Economic Instruments That Promote Healthy Eating, Encourage Physical Activity, and Combat Obesity: Literature Review*, LIBRARY OF PARLIAMENT, PARLIAMENTARY INFORMATION, AND RESEARCH SERVICE (Jan. 8, 2007), <http://www.parl.gc.ca/content/LOP/ResearchPublications/prb0634-e.htm> ("[A] literature search produced no analytical papers assessing the potential impact of economic instruments promoting physical activity.").

that a tax on sedentary activity may lead to an increase in moderate-intensity physical activity, a decrease in time spent sitting and an overall increase in physical activity.<sup>205</sup>

More research exists on the impact of tax subsidies and tax levies on eating patterns, weight, and various health indicators. Some studies estimated that the demand for snack foods would only reduce by a small amount with a small increase in tax rates.<sup>206</sup> Similarly, studies found a weak link between relatively modest taxes on unhealthy beverages and adolescent and adult weight level.<sup>207</sup> But numerous studies demonstrate that large changes in the prices of foods and beverages lead to changes in how much people consume those items.<sup>208</sup> For example, several studies

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<sup>205</sup> See Patrick Bergman et al., *Congestion Road Tax and Physical Activity*, 38 AM. J. PREVENTATIVE MED. 171, 176 (2010) (reporting that while their findings are inconclusive, researchers suggest that a congestion road tax might increase physical activity among individuals with motorized vehicles).

<sup>206</sup> See Fred Kuchler, Ababayehu Tegene & J. Michael Harris, *Taxing Snack Foods: Manipulating Diet Quality or Financing Information Programs*, 27 REV. AGRIC. ECON. 4, 17 (2005) (predicting that a 20% tax on salty snack foods would reduce consumption by only 5.5 pounds per person per year, or 830 calories); Fred Kuchler, Ababayehu Tegene & J. Michael Harris, *Taxing Snack Foods: What to Expect for Diet and Tax Revenues*, 747 CURRENT ISSUES IN ECON. OF FOOD MARKETS 1, 10 (2004) (finding that relatively low tax rates of \$0.01 per pound would not appreciably alter consumption and would have little effect on diet quality or health outcome).

<sup>207</sup> See Daniel Kim & Ichiro Dawachi, *Food Taxation and Pricing Strategies to "Thin Out" the Obesity Epidemic*, 30 AM. J. PREVENTATIVE MED. 430, 434 (2006) (arguing that the price elasticity of snack foods in the average household would result in minimal impact on consumption); Lisa M. Powell et al., *Associations Between State-Level Soda Taxes and Adolescent Body Mass Index*, 45 J. ADOLESCENT HEALTH S57, S61(2009) ("Based on differences in state-level soda tax rates over the past decade, the results did not reveal any statistically significant associations between the tax measures and adolescent weight . . .").

<sup>208</sup> See Tatiana Andreyeva et al., *The Impact of Food Prices on Consumption: A Systematic Review of Research on Price Elasticity of Demand for Food*, 100 AM. J. PUB. HEALTH 216, 220 (2009) (estimating that a 10% tax on soft drinks would result in a maximum of 10% reduction in demand for those items); Roy Bahl, Richard Bird & Mary B. Walker, *The Uneasy Case Against Discriminatory Excise Taxation: Soft Drink Taxes in Ireland*, 31 PUB. FIN. REV. 510, 523 (2003) (finding that a 20% reduction in a soft-drink tax resulted in a 6.8% increase in average soft-drink consumption); Kiyah J. Duffey et al., *Food Price and Diet and Health Outcomes*, 170 ARCHIVES INTERNAL MED. 420, 424-25 (2010) (estimating that an 18% tax on soda and pizza would be associated with a "reduction of roughly 5 lb. (2.25kg) per person per year and significant reductions in the risks of most obesity-related chronic diseases"); Eric A. Finkelstein et al., *Impact of Targeted Beverage Taxes on Higher- and Lower-Income Households*, 170 ARCHIVES INTERNAL MED. 2028, 2033 (2010) ("these results show that large taxes on SSBs [sugar-sweetened beverages] are likely to be effective at positively influencing weight outcomes . . ."); Simone A. French et al., *Pricing and Promotion Effects on Low-Fat Vending Snack Purchases: The Chips Study*, 91 AM. J. PUB. HEALTH 112, 114 (2001) (finding that a price reduction of 10%, 25%, and 50% on low-fat snacks and healthy food items in a vending machine were associated with significant increase in low-fat snack sales); Simone A. French et al., *Pricing Strategy to Promote Fruit and Vegetable Purchase in High School Cafeterias*, 97 J. AM. DIETETIC ASS'N. 1008, 1009 (1997) (prices of fruits and vegetables were reduced by 50% at a high school cafeteria leading to a fruit sales increase by four fold and vegetable sales increase by two fold); Thow et al., *supra* note 165, 612 ("This review indicates that food taxes and subsidies can influence consumption

estimated that a 10% increase in the price of sugar-sweetened beverages could reduce its consumption by 8 to 11%.<sup>209</sup> It appears that a tax increase on unhealthy foods, rather than a tax subsidy for healthy foods, is likely to be more effective in increasing healthy eating patterns.<sup>210</sup>

Furthermore, research suggests that higher prices of unhealthy foods and beverages are associated with reductions in body mass index (BMI) and the prevalence of overweight and obesity.<sup>211</sup> For example, several studies found that an increase in the price of fast food resulted in a significant decline in the prevalence of overweight or obesity.<sup>212</sup> Conversely, research linked a price subsidy in the price of unhealthy food items to an increased consumption of such food items and an

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in high-income countries and that imposing substantial taxes on fattening foods may improve health outcomes such as body weight and chronic disease risk.”); Steven T. Yen et al., *Demand for Non-Alcoholic Beverages: The Case of Low-Income Households*, 20 AGRIBUSINESS 309, 315 (2004) (“In sum, demand for all beverages is responsive to changes in own prices and total beverage expenditures.”).

<sup>209</sup> See Andreyeva et al., *supra* note 208, at 220 (estimating that a 10% tax on soft drinks would result in up to 10% reduction in demand for those items).

<sup>210</sup> See Epstein et al., *supra* note 165, at 412 (“The results provide stronger support for taxes than for subsidies as a means of reducing consumption of less healthy foods and increasing consumption of healthier alternatives”).

<sup>211</sup> See M. Christopher Auld & Lisa M. Powell, *Economics of Food Energy Density and Adolescent Body Weight*, 76 ECONOMICA 719, 738 (2009) (finding that among adolescence, “a decrease in the relative price of energy-dense foods tends to increase BMI if the price of a calorie of energy-dense food is lower than the price of a calorie of less energy-dense foods”); Kim & Kawachi, *supra* note 174, at 432 (suggesting that a state-level relationship exists between implementation of soft-drink and snack taxes and changes in obesity prevalence); Dragan Miljkovic et al., *Economic Factors Affecting the Increase in Obesity in the United States: Differential Response to Price*, 33 FOOD POL’Y 48, 58 (2008) (finding that increasing the current price of sugar-based foods by 1% decreases the probability of a normal person from becoming overweight or obese by 2.32% and 3.07%, respectively); Lisa M. Powell & Frank J. Chaloupka, *Food Prices and Obesity: Evidence and Policy Implications for Taxes and Subsidies*, 87 THE MILBANK QUARTERLY 229, 249 (2009) (“[W]e estimated that small taxes or subsidies were not likely to produce significant changes in BMI or obesity prevalence, but that nontrivial pricing interventions might have a measurable effect on Americans’ weight outcomes, particularly those of children and adolescents, low-SES populations, and those most at risk for overweight.”); Ronald Sturm & Ashlesha Datar, *Food Prices and Weight Gain During Elementary School: 5-year Update*, 122 PUB. HEALTH 1140, 1141 (2008) (finding that children that live in areas with higher real fruit and vegetable prices experience greater increases in BMI); Ronald Sturm & Ashlesha Datar, *Body Mass Index in Elementary School Children, Metropolitan Area Food Prices, and Food Outlet Density*, 119 PUB. HEALTH 1059, 1065 (2005) (“We found that relative food prices are associated with changes in the BMI and obesity rates, and the relationship is significant and robust for fruit and vegetable prices: higher fruit and vegetable prices predict greater BMI increase.”).

<sup>212</sup> See Auld & Powell, *supra* note 211, at 730 (finding that the price of fast food is negatively associated with BMI); Chou et al., *supra* note 29, at 584 (finding “that downward trends in food prices account for part of the upward trend in weight outcomes”); Lisa M. Powell et al., *Access to Fast Food and Food Prices: Relationship with Fruit and Vegetable Consumption and Overweight Among Adolescents*, 17 ADVANCES IN HEALTH ECON. & HEALTH SERVS. RES. 23, 39 (2006) (finding that “a dollar increase in the price of a fast food meal reduces the prevalence of overweight by 2.2% points”).

increase in obesity.<sup>213</sup> Aside from influencing the level of consumption and weight, some studies also linked imposition of food tax on cardiovascular disease and mortality rate.<sup>214</sup>

#### X. CONCLUSION

Research suggests that modest tax assessments on unhealthy food and beverages do not result in significant changes to consumption patterns.<sup>215</sup> But similar to the dramatic decline in tobacco use following a relatively large tax increase,<sup>216</sup> a large excise tax on unhealthy food and beverages may have a significant impact on consumption patterns and on the prevalence of overweight, particularly among groups that are at a high risk for obesity, including those with low income, as well as children and adolescents.<sup>217</sup> Furthermore, dedicating the funds of such excise tax on unhealthy food and beverages towards comprehensive obesity prevention programs may lead to further reduction in obesity levels among adults and children.<sup>218</sup>

Researchers extensively explored the relationship between a tax on unhealthy foods and/or beverages, consumption patterns, and overweight.<sup>219</sup> Likewise, researchers have also examined the use of tax subsidies to promote healthier eating patterns.<sup>220</sup> Little research has been conducted, however, on the potential impact of either a tax targeting sedentary behavior or a tax subsidy targeting active lifestyle. In particular, policy makers would benefit from quasi-experimental research studies that examine the direct impact of a tax assessment or a tax subsidy on an individual's physical activity level.

Indeed, perhaps the most impactful tax strategy to increase healthy eating practices and non-sedentary lifestyle may be the product of a multilevel approach. In such approach, a tax is assessed on unhealthy food or on sedentary activities, while a subsidy is offered for the purchase of healthy foods or for being physically active.<sup>221</sup>

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<sup>213</sup> See Abay Asfaw, *Do Government Food Price Policies Affect the Prevalence of Obesity? Empirical Evidence from Egypt*, 35 *WORLD DEV.* 687, 698 (2007) ("The results of this study show that there is an inverse and statistically significant relationship between the mothers' BMI or obesity and the price of *baladi* bread and fully and partially subsidized sugar.").

<sup>214</sup> See Tom Marshall, *Exploring a Fiscal Food Policy: The Case of Diet and Ischaemic Heart Disease*, 320 *BRITISH MED. J.* 301, 303 (2000) (estimating that by extending value to the added tax in the U.K. to the main sources of dietary saturated fat, between 900 and 1,000 premature deaths per year may be prevented).

<sup>215</sup> See *supra* text accompanying notes 206 and 207.

<sup>216</sup> See *supra* text accompanying notes 127, 129-130.

<sup>217</sup> See *supra* text accompanying notes 208, 211-212.

<sup>218</sup> See ELSTON ET AL., *supra* note 82, at 178 ("The tax revenues can be used to further reduce the burden of the externality in terms of providing better education on the implications of being obese.").

<sup>219</sup> See *supra* text accompanying notes 208-213.

<sup>220</sup> See *supra* text accompanying notes 206-210.

<sup>221</sup> See Caraher & Cowburn, *supra* note 171, at 1249 ("We conclude that the focus on a 'food tax' may be misplaced and instead recommend looking at pricing policies that have the

A team of researchers recently examined such a strategy and estimated that taxing less healthy foods and subsidizing fruits and vegetables by 17.5% could prevent almost 3,000 cardiovascular disease and cancer deaths per year in the United Kingdom.<sup>222</sup> Combining taxes on unhealthy food and beverages along with subsidies could prove to be a powerful strategy to address the obesity problem, and it may also help to alleviate potential regressive nature of the excise tax by enabling consumers to switch to more healthy products without incurring additional costs.

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dual impact of discouraging key behaviors and encouraging others—in other words, a mix of ‘taxes’ and subsidies.”).

<sup>222</sup> See Kelechi E. Nnoaham et al., *Modeling Income Group Differences in the Health and Economic Impacts of Targeted Food Taxes and Subsidies*, 38 INT’L J. EPIDEMIOLOGY 1324, 1324 (2009) (“Taxing ‘less healthy’ foods and subsidizing fruits and vegetables by 17.5% could avert up to 2,900 cardiovascular disease and cancer deaths yearly.”).