U.S. Senate Committee on Health, Education, Labor, and Pensions Committee Hearing: What is Fueling the Diabetes Epidemic in America?

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Full Testimony

Chairman Sanders, Ranking Member Cassidy, and Members of the Committee:

My name is Lindsey Smith Taillie, and I am an associate professor of nutrition and nutrition epidemiologist. I appreciate the opportunity to speak with you today about my research on how the food industry and food environments influence nutrition, obesity, and type 2 diabetes, as well as policy actions that other countries are using to address these issues.

For the last decade, I have worked in the United States and many countries in Latin America, Africa, and Asia to research the design and test the effectiveness of food policies. Our goal has been to create a toolkit for what works to prevent the continued increase in diet-related chronic diseases. Our premise, backed by scientific evidence, is that consumers want to make healthier choices, but that the current food environment makes it nearly impossible for them to do so.

First, obesity and diabetes are pressing public health concerns. Twenty percent of our children have obesity, as do 42% of American adults (Hu & Staiano 2022; Li 2022). Obesity is linked to a plethora of adverse health effects, including sleep apnea, joint pain, cardiovascular disease, cancer, and type 2 diabetes (Wang 2019; Raud 2020; Larsson 2019; Pati 2023; Klein 2022). Even more concerning, the incidence of type 2 diabetes among children has nearly doubled over the last twenty years (Wagenknecht 2023). These problems do not impact all Americans equally — Black and Hispanic children have been disproportionately affected, with steeper increases in both obesity and diabetes (Katz, Rodriguez & Knowles 2021). These health consequences are also very costly: Over $300 billion dollars is spent annually in the US to treat diabetes, with an additional $100 billion spent on indirect costs like lower work productivity, unemployment due to chronic disability, and premature death (Parker 2023). About 67% of diabetes costs are paid by Medicare and Medicaid (US Department of Health and Human Services 2021).

Poor diets are the culprit of the obesity and type 2 diabetes epidemics. Americans are the world's leading consumers of sugary drinks and ultraprocessed foods. Put simply, ultraprocessed foods are what you might know as "junk food:" food that is industrially produced and often contains high levels of added sugar, sodium, and saturated fat, as well as additives, colorants, and preservatives. Currently, approximately half of American children and adults consume sugary drinks on a given day (Marriott 2019). Drinking sugary beverages promotes excess calorie intake, which leads to weight gain (Nguyen 2023). Over time, the accumulation of fat can turn into non-alcoholic fatty liver disease, increase risk of diabetes, and raise the risk of heart disease (Qin 2020; Chen 2019; Yang 2022). Relevant to this hearing, obesity contributes to the development of type 2 diabetes by promoting insulin resistance, inflammation, and dysfunction of insulin-producing cells (Kahn 2016; Luca & Olefsky 2008). In other words, excess fat disrupts our bodies' ability to produce and use insulin. Research also suggests that unhealthy diets can increase cardiometabolic risk through other mechanisms like altering the gut microbiome, disrupting hormonal signaling pathways, and affecting the brain's reward responses (Stanhope 2018).

Ultraprocessed foods also pose a major threat to our health. A century ago, ultraprocessed foods did not exist. Now, 57% of calories consumed by US adults and 67% of calories consumed by kids come from ultraprocessed foods (Juul 2022; Wang 2021), with consumption rising most rapidly among Black and Mexican youths (Wang 2021). High consumption of ultraprocessed foods substantially increases risk of obesity (Moradi 2023; Lane 2020), metabolic syndrome (Lane 2020), and cardiovascular disease (Suksatan 2022). The most compelling evidence to date comes from a rigorous randomized crossover trial conducted by Kevin Hall at the NIH (Hall 2021). In the study, participants were allowed to eat freely from nutrient-matched ultraprocessed vs. minimally processed menus for two weeks. The study found that during the ultraprocessed weeks, participants consumed roughly 500 more calories/day and gained 2.2 lbs (of mostly fat mass).

Sugary drinks and ultraprocessed foods are designed for overconsumption, leading people to take in more calories than they want or realize. It is very easy to overconsume ultraprocessed foods because they are "hyperpalatable," meaning they combine salty, sweet, and fat flavors in irresistible combinations not found in nature. They do not require much time or effort to prepare and are often eaten on the go or in front of a computer or TV, making it easy to eat or drink more than we realize. On a chemical level, ultraprocessed food ingredients are degraded to the point that they no longer give us feelings of fullness during digestion and send sugar and fat into our bloodstream more quickly.

Improving diets could prevent and delay the onset of type 2 diabetes in a way that is more effective and cheaper than medication (Lee 2019; CHOICES). The Diabetes Prevention Program clinical trial found better diets and physical activity reduced incidence of diabetes by 58% compared with a placebo, while metformin reduced incidence by 31% (Diab Prev Program Research Group 2002).

Consumers want to make healthy choices. However, it is very difficult to eat healthy diets in the current American food environment for the following reasons:

- **Food supply:** The US food supply is rife with unhealthy foods: 50% of US packaged foods in 2020 were ultraprocessed, while 43% were high in sugar, sodium, or saturated fat (under review). The US has more sugar and non-caloric sweeteners in its packaged food supply compared to other high-income, English-speaking countries (Dunford 2018), and we consume on average 73 pounds of sugar, corn syrup, and other sweeteners per year (USDA 2023). Product-for-product, our food supply is sweeter: for example, the sugar content in children's breakfast cereals is 10-20% higher than in comparable countries (Chepulis 2019). The US food supply is also full of industrial food additives (e.g., colors, flavors, flavor enhancers, emulsifiers, thickeners, and artificial sweeteners)— ingredients which are added to make the products more palatable and increase consumption. As of 2019, nearly 60% of US consumer food purchases — and alarmingly, 73% of baby food purchases — contained additives (Dunford 2023).

- **Food marketing:** Sugary drinks and ultraprocessed foods are aggressively marketed to children. Food companies spend roughly $14 billion per year on food advertising in the US, of which 80% is for unhealthy foods (Rudd Center Food Marketing 2023). Companies target children with marketing for unhealthy foods everywhere they live, learn, and play, including on TV, social media, in product placement, at school, and on their toys and clothing, and by using tactics like licensed characters, celebrities, games, spokespeople, contests, and kids' clubs to attract their attention. Targeted marketing to children is very common: every day, US children see an estimated 10 ads for unhealthy foods on TV alone (Fleming-Milici 2017). Advertising to youth is shifting from television to digital and mobile platforms, including ads on social media, branded games and ordering apps, and paid promotions from bloggers, influencers, and brand ambassadors — marketing that is often disguised as entertainment. For example, teenagers see food marketing 189 times per week on social media apps — most for unhealthy foods (Potvin Kent 2019). Children are uniquely vulnerable to the impact of food marketing because of their inability to recognize its persuasive intent (Harris 2009). This exposure to unhealthy food and beverage advertisements increases youth's preference, selection, and consumption of unhealthy foods (Tsochantaridou 2023; Norman 2016).

  It is also very concerning that food companies target unhealthy food marketing specifically to youth of color, who are most at risk for diabetes. For example, fast food and sugary drink ads appear at a higher rate on Spanish-language TV than English language TV; schools with >60% Hispanic populations have more outdoor food and beverage ads within a half a mile of the school (CSPI 2023). Food companies target children of color by designing specific products for them, adapting pricing, advertising on specific channels or in places in the community, using their own language and cultural references, and personalizing digital advertisements. Companies do this because children of color represent a rapidly growing market with significant economic impact, have high levels of media use, and are trend-setters for the general public. For example, marketing campaigns targeting youth of color use cause-related marketing like donations or collaborations with non-profits. Coca Cola and Pepsi are responsible for the majority of these marketing campaigns and they almost exclusively promote unhealthy foods (Rudd Center Targeted Marketing).

- **Food prices:** Cost drives food purchasing decisions, and unhealthy foods tend to be cheaper than healthy foods. For example, in New York City, the price per liter of sugary drinks is higher than low-calorie drinks (Bragg 2022). In many parts of the world, sugary drinks are cheaper than water (Blecher 2017); ultraprocessed foods also have lower per-calorie cost and have faced slower price increases in recent years (Gupta 2019). Low-income people are more affected and report having to purchase ultraprocessed foods and snacks vs. fruits and vegetables due to price (Ravikumar 2022).

- **Labeling:** The current food labeling environment is very confusing to consumers. Nutrition-related claims on food packages are very common (Taillie 2018; USDA 2023); yet their presence does not reliably indicate that a product is actually healthy. For example, 97% of fruit drinks, the top-consumed sugary drink among kids, carry some type of claim like "100% Vitamin C" or "Natural" (Duffy 2021). These claims lead to the "health halo" effect, in which claims give unhealthy products an aura of healthfulness, leading parents to make less healthy choices (Hall 2023; Hall 2020). The Nutrition Facts Panel got important updates in 2020, including the requirement to disclose added sugar content. However, few consumers consistently use these back-of-the package labels, with low-income and low-educated populations less likely to use them (Storz 2023). Moreover, people spend only seconds selecting a food item, making it difficult to understand complex, numeric information and make educated decisions.

- **School foods:** Kids consume about a third of their daily calories at school; foods served and sold to children in schools also affect lifetime food preferences. The Healthy, Hunger Free Kids Act improved the nutritional quality of school foods and helped prevent obesity among children in poverty, with no difference in school meal participation (Johnson 2016; Kenney 2020). However, our team's analyses of National Health and Nutrition Survey data found that in 2015-2018, the majority of calories kids consume at school comes from ultraprocessed foods (Vatavuk, unpublished). Moreover, unhealthy food marketing is highly prevalent in schools, with companies providing school

sports sponsorships, student incentives (e.g., Pizza Hut's Book It program), branded fundraising and reward programs (e.g., General Mill's Box Tops for Education; fast food proceed donations), digital and physical advertisements, and the sales of branded fast-food products (Harris 2014). In addition, "Smart Snacks," or packaged snacks that have been reformulated to meet USDA school foods standards, are virtually indistinguishable from the less healthy versions sold outside of schools (Harris 2016). Thus, even these "healthier" snacks serve as another form of marketing to get kids hooked on specific brands, increasing their preferences and purchases.

- **Food retail environment:** Sugary drinks and ultraprocessed foods are ubiquitous in all retail settings and are often at checkouts, at endcaps of stores and are often placed in locations and heights that children are more likely to see and pester their parents to get. For example, a national study found 91% of supermarkets carry candy at checkout and 85% carry sugary drinks (Barker 2015).
- **Corporate interference:** To circumvent regulation, the food industry has followed the tobacco industry playbook: blaming personal responsibility, casting doubt on unfavorable research, funding favorable research, coopting professional organizations, lobbying, and arguing for self-regulation (Stuckler & Nestle 2012). For example, the sugar and sugary drinks industry has sought to shift the blame from sugar to fat (Kearns 2016); created a shadow group to create allies in academia and governments for pro-sugar policies, funded physical activity research to change the narrative about what causes obesity (Serodio 2018), and funded major nutrition and health societies in exchange for influence over proceedings (e.g., the American Academy of Nutrition and Dietetics) (Gunnarsson 2022).

  The packaged food industry has proposed voluntary labeling and marketing self-regulations in an attempt to circumvent regulation. However, these initiatives have failed: they are slow, ineffective, and contain many loopholes while allowing companies to claim to be part of the solution (Boyland 2022). Federal regulation is needed to create healthier food environments. Many countries, particularly in Latin America, have already begun taking action. Below, I outline evidence-based policy recommendations to promote healthier diets and prevent diet-related diseases.

Key recommendations:

1. Require front-of-package labels on unhealthy foods.

Since 2016, 10 countries have mandated front-of-package nutrition labels on foods high in sugar, sodium, and saturated fat, which includes all sugary drinks and most ultraprocessed foods. Compared to other labeling systems, "high-in" labels that signal when a product is high in unhealthy nutrients more effectively empower consumers to avoid nutrients of concern (Croker 2020). A simple black-and-white design grabs consumers' attention and is easily understood, even by children and those with limited English proficiency (Correa 2019; Hall 2021). Chile was the first country to implement high-in labels, leading to a 24% drop in sugary drink purchases and a 24% drop in purchases of foods carrying the labels (Taillie 2020, 2021). Chile's policy also incentivized the food industry to cut sugar and sodium in the food supply (Reyes 2020), with no adverse impacts on wages and employment (Paraje 2023). Many countries have followed Chile's lead and implemented similar warning label regulations — covering much of South America as well as Mexico and Canada. The FDA is currently researching front-of-package labeling options for the US and plans to issue a proposed regulation requiring new labels in June 2024. FDA should consider that single-nutrient octagonal labels maximize consumers' ability to quickly and accurately identify unhealthy products, more so than labels with numerical information requiring numeracy skills (Grummon 2019). Ample experimental research in the US already shows that warning labels help consumers quickly identify unhealthy foods and make healthier, informed choices (Musicus 2023; Taillie 2022). Using evidence-supported visuals like icons or symbols further increases comprehension (Hall 2021; Bopape 2021). Most importantly, the FDA must ensure that progress towards clear, informative labeling is led by governments and public health experts, not commercial interests.

1a. FOP labels should include visuals to increase comprehension, use single-nutrient octagonal labels to maximize consumers' ability to quickly and accurately identify products high in nutrients of concern (including sugar), and avoid including information about the percent of the daily value (% DV).

1b. Restaurants should require similar labels. In November 2023, New York City passed the "Sweet Truth Act" that will require chains with 15 or more restaurants to use an added sugar icon on their menus and menu boards to indicate a food or drink item contains more than 50g of added sugar.

2. Restrict food marketing to children

Policies to reduce children's exposure to harmful food marketing should protect children of all ages (up to age 18 years); use a strong, government-led nutrient profiling to classify foods for restriction; be comprehensive enough to minimize the risk of migration of marketing to other media or to other age groups; and restrict the persuasive power of food marketing (World Health Organization, 2023). Chile provides the most compelling example of the impacts a strong marketing policy. In 2016, Chile restricted the use of child-directed appeals on products exceeding set nutrient thresholds, restricted placement of ads in media with high child viewership, and prohibited the sales and promotion of

these products in school. In 2018, they extended this regulation by banning television advertisements on unhealthy food advertisement between 6am–10pm. Together, these regulations have worked in a relatively short amount of time to dramatically reduce children's exposure to unhealthy food marketing and lessen its persuasive appeal and power:

- In the first (and most lenient) year of the law, the percentage of TV ads for foods and drinks high in energy, saturated fats, sugars, or sodium dropped from 42% to 15% (Correa 2020).
- By 2019, Chile's marketing restrictions led to a total drop of 73% in children's daily exposure to TV ads for products high in calories, sugar, salt or saturated fat on all TV and a 90% drop during children's programming (Dillman Carpentier 2023). What's more, 67% fewer unhealthy food ads on TV used child-directed creative content such as cartoons, characters, toys, or contests, which are also prohibited under the country's laws.
- The percentage of regulated cereals (typically high in calories and/or sugar) with child-directed strategies featured on their packages dropped from 43% to 15% in the first year of regulation (Mediano Stolze et al. 2019).

3. Amend the tax code to remove the deductibility of expenses associated with advertising and marketing foods and beverages of poor nutritional quality to children.

Food companies can deduct expenditures related to advertising and marketing from their taxes. Through this process, the US government provides a subsidy for marketing unhealthy food and drinks to children (Center for Science in the Public Interest [CSPI] 2023). Removing the deductibility of advertising expenses on sugary drinks and ultraprocessed foods would incentivize companies to decrease unhealthy food marketing to children and could raise $80 million in federal revenue annually (CSPI 2023).

4. Implement taxes on sugary drinks and ultraprocessed foods and subsidies on healthier foods.

Tax policies would require legislative action and there have been several bills introduced to the US Congress in recent years. We strongly recommend that a federal tax on sugary drinks as proposed in the 2021 "SWEET Act" Bill, which sets a 2-cents/ounce tax on ready-to-drink lower-sugar SSBs and a 3-cents/ounce tax on ready-to-drink high-sugar SSBs. Importantly, it also proposes directing the resultant revenue towards public health and health promotion objectives. Uses of the revenue could include: improving school feeding programs and/or funding expansion of healthy incentive programs to support low-income families afford healthy foods as proposed in 2023 "GusNIP Expansion Act" and the "Opt for Health with SNAP (OH SNAP) Close the Fruit and Vegetable Gap Act" that were concurrently introduced into the US House of Representatives and Senate, respectively. Dedicating the tax revenues towards lower-income communities and families would enhance the equity potential, with multiplier effects for the local economies of these families, and address concerns around the income regressivity of the tax. In a new modeling study, our team found that a tax on sugary drinks following the SWEET Act would lower calories purchased, while targeted subsidies would increase fruit, vegetable, and healthier drink purchases without substantially increasing calories (Pourya under review). A broader tax that also includes ultra-processed foods along with targeted subsidies for minimally processed foods could promote healthier food choices among low-income households and could be budget neutral for the federal government.

US and global data show that sugary drink taxes reduce consumption (Andreyeva 2022; Teng 2019; Powell 2021), reduce sugar content in the food supply (Dickson 2023), and result in health benefits, including reduced pediatric hospital admissions from dental caries (Rogers 2023), and decreased prevalence of overweight and obesity, particularly where price increases are steeper (Gracner 2022). Modeling studies have predicted that in Mexico, where the first sugary drinks tax was implemented, the tax will lead to a 2.5% reduction in obesity prevalence and prevent 86 to 134 thousand cases of diabetes a decade after the tax (Barrientos 2017). Fewer data are available on foods taxes, but our research in Mexico found that a modest 8% junk food tax reduced taxed food purchases by ~5% (Batis 2016).

5. Incorporate guidance on ultraprocessed foods into dietary guidelines.

Increasingly, other countries (most recently, Mexico) include specific dietary guidance around the consumption of ultraprocessed foods. The 2025 US Dietary Guidelines Advisory Committee is currently reviewing evidence on ultraprocessed foods for the 2025 Dietary Guidelines. Inclusion of guidance on ultraprocessed foods could help guide consumers and underpin other policies, including school foods.

6. Create healthier school environments.

Schools should be a place where children can eat healthy foods and learn good nutrition, free from the influence of corporate marketing. Creating this environment will promote healthier diets that track into adulthood.

6a. Ideally, schools should not sell any foods that are high in added sugar or any nutrient of concern (as identified by the FOP warning labels in Recommendation 1). At a minimum, school lunch standards should follow the Dietary Guidelines and ensure that added sugars are limited to 10% of calories per week. Schools should have product-based limits for high-sugar foods, including grain-based desserts, breakfast cereals, yogurts, and flavored milks, as well as other products like condiments, toppings, and dressings. Schools should not offer flavored sweetened

milk, particularly among young children (under grade 9). We applaud many of the USDA's proposed updates to school nutrition standards which would address several of these concerns. The USDA could go even further by considering a policy like Brazil's, which requires that 75% of school food procurement expenditures be used on fresh or minimally processed foods, with only 20% allowed for purchasing processed and ultraprocessed foods.

6b. School food environments should be free from advertising, promotions, and marketing of products high in nutrients of concern. Again, Chile serves as an example: after banning the sales and promotion of unhealthy foods in schools, availability of unhealthy foods dropped from 97% of foods and 76% of beverages to only 14%, with concurrent reductions in calories, saturated fats, sodium, and sugar available to purchase (Massri 2019). After the policies, Chilean children consumed significantly less total sugar at school (Fretes 2021).

7. **Increase nutrition funding.**

   A major barrier to progress in using nutrition to prevent diabetes is lack of scientific funding, which has remained flat over decades (Fleischhacker 2020). The National Institutes of Health only spends ~5% of its annual budget on nutrition, with only 1.3% dedicated to understanding the role of diet in preventing or treating disease. Increased funding for nutrition science is critical for preventing obesity, diabetes, and other diet-related chronic diseases.

Ideally, multiple of these policies would be implemented together as a policy package. Our experiences with food policies implemented in many countries suggest an interactive and reinforcing effect. For example, front-of-package nutrition labels can be used to guide what is permissible to market and sell in schools, where children can further learn how to use the labels to tell what is healthy vs. not healthy. Together, these policies can create healthier food environments for children, promoting healthier dietary behaviors that track into adulthood and help prevent obesity, type 2 diabetes, and other diet-related chronic diseases across the lifecycle.