



**University of California  
Research Consortium on  
Beverages and Health**

May 8, 2023

School Programs Branch  
Policy and Program Development Division  
Food and Nutrition Service  
1320 Braddock Place, 4th Floor  
Alexandria, Virginia 22314

**Re: Docket No. FNS-2022-0043; Child Nutrition Programs: Revisions to Meal  
Patterns Consistent With the 2020 Dietary Guidelines for Americans**

The University of California Research Consortium on Beverages and Health appreciates this opportunity to comment on the U.S. Department of Agriculture's (USDA) "Child Nutrition Programs: Revisions to Meal Patterns Consistent With the 2020 Dietary Guidelines for Americans" proposed rule (88 FR 8050). We submit comments in Part 1 of this letter supporting the USDA's proposed rule (88 FR 8050), which would strengthen school nutrition standards. In addition, the Consortium is submitting comments in Part 2 of this letter on strengthening the wording of the rule to address potential serious unintended consequences of the proposed rule as currently written.

The University of California Research Consortium on Beverages and Health (UCRC) comprises faculty from every UC campus who seek to decrease consumption of added sugars, particularly sugary drinks, and to increase consumption of water, and specifically tap water, for reasons of public health, the environment, and equity. Members possess expertise in various aspects of sugar science (e.g., metabolism, health impacts, environmental and economic impacts) and of drinking water (including safety, access, and promotion), as well as in policies to make positive change in beverage environments.

The federal nutrition programs are among our nation's best opportunities to improve the health of Americans. This is critical because the general US population is in poor health, much of which could be

prevented or improved through diet;<sup>1</sup> in fact as few as 12% of Americans may be metabolically healthy.<sup>2</sup> The 2015-2020 Dietary Guidelines for Americans Advisory Committee report stated,

Not surprisingly, most Americans have one or more chronic health conditions that are related to dietary intake across the life course, including overweight and obesity, heart disease, stroke, type 2 diabetes, hypertension, liver disease, certain types of cancer, dental caries, and/or metabolic syndrome. In many instances, overweight and obesity may be the earliest manifestation of energy imbalance and poor nutritional status, and many of the chronic conditions that the Committee examined develop as a consequence of overweight and obesity.<sup>3</sup>

Setting strong nutrition standards for school meals will support the nutrition security and health of the more than 30 million school-age children receiving school lunches, and the 15 million children receiving school breakfasts.<sup>4,5</sup> This proposed rule prioritizes children’s nutrition and health, and strives to align school meal requirements with the 2020-2025 Dietary Guidelines for Americans (DGA), as is required by the Healthy, Hunger-Free Kids Act of 2010 which “requires that school meals reflect the latest Dietary Guidelines for Americans.”<sup>6</sup>

## Part 1

The University of California Research Consortium on Beverages and Health **strongly supports the USDA’s proposals to limit added sugars in school meals.** There is extensive research linking consumption of added sugars to myriad diet-related chronic diseases, including obesity,<sup>7</sup> metabolic diseases including type 2 diabetes and fatty liver disease,<sup>8</sup> cardiovascular disease,<sup>9</sup> and dental decay.<sup>10,11</sup> We want further to emphasize that the detrimental effects of added sugars go beyond simply their inherent calories. Added sugars affect energy utilization within the liver, leading to metabolic disorders

---

<sup>1</sup> Dietary Guidelines Advisory Committee. 2020. *Scientific Report of the 2020 Dietary Guidelines Advisory Committee: Advisory Report to the Secretary of Agriculture and the Secretary of Health and Human Services*. U.S. Department of Agriculture, Agricultural Research Service, Washington, DC.

<sup>2</sup> Araújo J, Cai J, Stevens J. Prevalence of Optimal Metabolic Health in American Adults: National Health and Nutrition Examination Survey 2009–2016. *Metabolic Syndrome and Related Disorders*. Feb 2019;46-52. <http://doi.org/10.1089/met.2018.0105>

<sup>3</sup> Dietary Guidelines Advisory Committee. 2020. *Scientific Report of the 2020 Dietary Guidelines Advisory Committee: Advisory Report to the Secretary of Agriculture and the Secretary of Health and Human Services*. U.S. Department of Agriculture, Agricultural Research Service, Washington, DC.

<sup>4</sup> U.S. Department of Agriculture. National School Lunch - Participation and Meals Served (Data as of February 10, 2023). Available at: <https://fns-prod.azureedge.us/sites/default/files/resource-files/slsummar-2.pdf>

<sup>5</sup> U.S. Department of Agriculture. School Breakfast - Participation and Meals Served (Data as of February 10, 2023). Available at: <https://fns-prod.azureedge.us/sites/default/files/resource-files/sbsummar-2.pdf>.

<sup>6</sup> USDA FNS Nutrition Standards in NSLP and SBP; Final Rule. *Fed Regis*. 2012 Jan 26; 77(17):4088-167.

<sup>7</sup> Malik VS, Popkin BM, Bray GA, Després J-P, Hu FB Sugar-sweetened beverages, obesity, type 2 diabetes mellitus, and cardiovascular disease risk. *Circulation*. 2010. 121:1356–1364

<sup>8</sup> Neuenschwander M, Ballon A, Weber KS, Norat T, Aune D, Schwingshackl L, Schlesinger S. Role of diet in type 2 diabetes incidence: umbrella review of meta-analyses of prospective observational studies. *BMJ*. 2019. 366:l2368.

<sup>9</sup> Yang Q, Zhang Z, Gregg EW, Flanders WD, Merritt R, Hu FB. Added sugar intake and cardiovascular diseases mortality among US adults. *JAMA Intern Med*. 2014. 174(4):516-24.

<sup>10</sup> Chi DL, Scott JM. Added Sugar and Dental Caries in Children: A Scientific Update and Future Steps. *Dent Clin N Am*. 2019. 63:17-33.

<sup>11</sup> Bleich S, Vercammen K. The negative impact of sugar-sweetened beverages on children’s health: an update of the literature. *BMC Obes* 2018; 5:6.

such as fatty liver, hyperlipidemia and insulin resistance. These metabolic disorders are directly linked to the chronic diseases described above.

The 2015-2020 and 2020-2025 Dietary Guidelines for Americans recommend that Americans aged 2 years and older keep their intake of added sugars to less than 10% of their total daily calories. For example, in a 2,000-calorie diet, no more than 200 calories should come from added sugars (about 12 teaspoons).<sup>12</sup>

The Scientific Report of the 2020 Dietary Guidelines Advisory Committee, in fact, went farther and advised that “the recommendation be decreased from 10 percent to 6 percent of energy from added sugars.” The Report explains that “for adults and children ages 2 years and older, a recommendation of less than 6 percent of energy from added sugars is more consistent with a dietary pattern that is nutritionally adequate while avoiding excess energy intake than is a pattern with less than 10 percent energy from added sugars.”<sup>13</sup>

The American Heart Association (AHA) recommends that children consume no more than 25 grams (100 calories or about 6 teaspoons) of added sugars per day and that children under 2 years of age should avoid added sugars altogether. AHA states, “Although added sugars most likely can be safely consumed in low amounts as part of a healthy diet, few children achieve such levels, making this an important public health target.”<sup>14</sup>

Despite these recommendations, children and adults of all ages exceed this daily limit. Added sugars account on average for almost 270 calories (between 2 to 3 times the AHA recommendation and more than 13% of total calories), per day in the U.S. population.<sup>15</sup> This percentage is more than twice that recommended by the 2020 Dietary Guidelines Advisory Committee. Added sugars come from many sources including from sugarcane or sugar beets (table sugar), from starches such as corn (including high-fructose corn syrup), from syrups and honey, and from concentrated fruit or vegetable juices.<sup>16</sup>

---

<sup>12</sup> US Department of Agriculture and US Department of Health and Human Services. Dietary Guidelines for Americans, 2020-2025. 9<sup>th</sup> Edition . December 2020

<sup>13</sup> Dietary Guidelines Advisory Committee. 2020. *Scientific Report of the 2020 Dietary Guidelines Advisory Committee: Advisory Report to the Secretary of Agriculture and the Secretary of Health and Human Services*. U.S. Department of Agriculture, Agricultural Research Service, Washington, DC. At [https://www.dietaryguidelines.gov/sites/default/files/2020-07/ScientificReport\\_of\\_the\\_2020DietaryGuidelinesAdvisoryCommittee\\_first-print.pdf](https://www.dietaryguidelines.gov/sites/default/files/2020-07/ScientificReport_of_the_2020DietaryGuidelinesAdvisoryCommittee_first-print.pdf)

<sup>14</sup> Vos MB, Kaar JL, Welsh JA, Van Horn LV, Feig DI, et al. American Heart Association Nutrition Committee of the Council on Lifestyle and Cardiometabolic Health; Council on Clinical Cardiology; Council on Cardiovascular Disease in the Young; Council on Cardiovascular and Stroke Nursing; Council on Epidemiology and Prevention; Council on Functional Genomics and Translational Biology; and Council on Hypertension. Added Sugars and Cardiovascular Disease Risk in Children: A Scientific Statement From the American Heart Association. *Circulation*. 2017. **135**(19):e1017-e1034.

<sup>15</sup> Dietary Guidelines Advisory Committee. 2020. *Scientific Report of the 2020 Dietary Guidelines Advisory Committee: Advisory Report to the Secretary of Agriculture and the Secretary of Health and Human Services*. U.S. Department of Agriculture, Agricultural Research Service, Washington, DC. At [https://www.dietaryguidelines.gov/sites/default/files/2020-07/ScientificReport\\_of\\_the\\_2020DietaryGuidelinesAdvisoryCommittee\\_first-print.pdf](https://www.dietaryguidelines.gov/sites/default/files/2020-07/ScientificReport_of_the_2020DietaryGuidelinesAdvisoryCommittee_first-print.pdf)

<sup>16</sup> Dietary Guidelines Advisory Committee. 2020. *Scientific Report of the 2020 Dietary Guidelines Advisory Committee: Advisory Report to the Secretary of Agriculture and the Secretary of Health and Human Services*. U.S. Department of Agriculture, Agricultural Research Service, Washington, DC. At

The building blocks of these sugars are glucose and fructose, and depending upon how the glucose and fructose molecules are combined, they are metabolized (processed) differently in the body.

Nearly 70% of added sugars in the U.S. diet comes from five food categories: sweetened beverages (24%), desserts and sweet snacks (19%), pre-sweetened coffee and tea drinks (11%), candy and sugars (9%), and breakfast cereals and bars (7%).<sup>17</sup> Among younger children ages 2 to 5 years and 6 to 11 years, the leading sources of added sugars are sweetened beverages, sweet bakery products, candy, other desserts, and ready-to-eat cereals.<sup>18</sup> Flavored milk is the sixth leading source of added sugars among both age groups. Because so many children consume flavored milk at school, and because it is offered so frequently, in the aggregate it is the largest source of added sugars in school meal programs.

Two recent studies using data from The School Nutrition and Meal Cost Study (SNMCS), a nationally representative study of the school meal environment, assessed the availability and consumption of added sugars during the school day.<sup>19,20</sup> These studies found that 92% of school breakfasts contained 10% or more of calories from added sugars, as did 69% of lunches. Additionally, both studies found that, in the aggregate, the main source of added sugars in both school breakfasts and school lunches was flavored fat-free milk. Flavored skim milk contributed 29% of the added sugars in school breakfasts and almost half (47%) of the added sugars in school lunches. Fox and colleagues found that, over 24 hours, 63% of children exceeded the DGA recommended limit for added sugars. These findings demonstrate the prevalence of added sugars in the school meal environment and in children's diets and support the need for establishing an added sugar standard for reimbursable school meals in alignment with the most recent DGA recommendations.

The Scientific Report of the 2020 Dietary Guidelines Advisory Committee explains that when added sugars comprise more than about 10% of daily dietary intake, it typically signifies consumption of unhealthy sweetened foods in place of more nutritious items and/or an excess of calories.<sup>21</sup>

---

[https://www.dietaryguidelines.gov/sites/default/files/2020-07/ScientificReport\\_of\\_the\\_2020DietaryGuidelinesAdvisoryCommittee\\_first-print.pdf](https://www.dietaryguidelines.gov/sites/default/files/2020-07/ScientificReport_of_the_2020DietaryGuidelinesAdvisoryCommittee_first-print.pdf)

<sup>17</sup> Dietary Guidelines Advisory Committee. 2020. Scientific Report of the 2020 Dietary Guidelines Advisory Committee: Advisory Report to the Secretary of Agriculture and the Secretary of Health and Human Services. U.S. Department of Agriculture, Agricultural Research Service, Washington, DC. At [https://www.dietaryguidelines.gov/sites/default/files/2020-07/ScientificReport\\_of\\_the\\_2020DietaryGuidelinesAdvisoryCommittee\\_first-print.pdf](https://www.dietaryguidelines.gov/sites/default/files/2020-07/ScientificReport_of_the_2020DietaryGuidelinesAdvisoryCommittee_first-print.pdf)

<sup>18</sup> Added Sugars in American Children's Diet: What We Eat in America, NHANES 2015-2016. Food Surveys Research Group Dietary Data Brief No. 26. December 2019. [https://www.ars.usda.gov/ARSUserFiles/80400530/pdf/DBrief/26\\_Sources%20of%20Added%20Sugars%20in%20Children%27s%20Diet\\_1516.pdf](https://www.ars.usda.gov/ARSUserFiles/80400530/pdf/DBrief/26_Sources%20of%20Added%20Sugars%20in%20Children%27s%20Diet_1516.pdf).

<sup>19</sup> Added Sugars in School Meals and Competitive Foods: A Report to Congress. U.S. Department of Agriculture, Food and Nutrition Service. Alexandria, VA; 2022.

<sup>20</sup> Fox MK, Gearan EC, Schwartz C. Added Sugars in School Meals and the Diets of School-Age Children. *Nutrients*. 2021;13(2). Epub 20210130. doi: 10.3390/nu13020471.

<sup>21</sup> Dietary Guidelines Advisory Committee. 2020. *Scientific Report of the 2020 Dietary Guidelines Advisory Committee: Advisory Report to the Secretary of Agriculture and the Secretary of Health and Human Services*. U.S. Department of Agriculture, Agricultural Research Service, Washington, DC. At [https://www.dietaryguidelines.gov/sites/default/files/2020-07/ScientificReport\\_of\\_the\\_2020DietaryGuidelinesAdvisoryCommittee\\_first-print.pdf](https://www.dietaryguidelines.gov/sites/default/files/2020-07/ScientificReport_of_the_2020DietaryGuidelinesAdvisoryCommittee_first-print.pdf)

The scientific literature contains arguments both for<sup>22</sup> and against the presumption that added sugars are a health risk simply because a diet high in added sugars tends to lead to excessive energy (caloric) intake.<sup>23</sup> However, evidence indicates that, independent of calories, added sugars have detrimental metabolic effects that are not due to weight gain and occur even in the absence of weight gain.<sup>24,25</sup> Added sugars contain both fructose and glucose. Of significance, the unique metabolism of fructose allows it to overload the liver, which stimulates production of both fatty acids and uric acid, while inhibiting fat burning. At the same time the glucose causes glucose and insulin spikes in the blood. These direct effects of added sugar consumption have detrimental downstream consequences – fatty liver, hyperlipidemia, and insulin resistance – that increase risk for metabolic syndrome, cardiovascular disease and type 2 diabetes. The main risk factor for cardiovascular disease (LDL-cholesterol) is increased more potently when a combination of fructose and glucose is consumed (i.e., high fructose corn syrup) than when an equal amount of either pure fructose or pure glucose is consumed.<sup>26</sup>

In summary, extensive science shows that excess consumption of added sugars is a risk factor for many diet-related chronic diseases, including but not limited to:

- Obesity<sup>27</sup>
  - Modelling shows that if current trends continue, the prevalence of obesity will rise to over 70% of US population of adults.<sup>28</sup>
- Metabolic diseases including type 2 diabetes and fatty liver disease<sup>29</sup>
  - Non-alcoholic fatty liver disease is rising among children.<sup>30</sup>

---

<sup>22</sup> Macdonald IA. A review of recent evidence relating to sugars, insulin resistance and diabetes. *Eur J Nutr.* 2016. **55**(Suppl 2):17-23.

<sup>23</sup> Stanhope KL Goran MI, Bosy-Westphal A, King JC, Schmidt LA, et al. Pathways and mechanisms linking dietary components to cardiometabolic disease: thinking beyond calories. *Obes Rev.* 2018. **19**(9):1205-1235.

<sup>24</sup> Investigation has unraveled a history of industry-sponsored research that may bias scientific considerations (Stanhope, KL. Sugar consumption, metabolic disease and obesity: The state of the controversy. *Crit Rev Clin Lab Sci*, 2016. **53**(1): p. 52-67; Kearns CE, Schmidt LA, Glantz SA. Sugar Industry and Coronary Heart Disease Research: A Historical Analysis of Internal Industry Documents [published correction appears in *JAMA Intern Med.* 2016 Nov 1;176(11):1729]. *JAMA Intern Med.* 2016;176(11):1680-1685) and that has promoted the hazards of consumption of fats over the hazards of consumption of added sugars. (Kearns CE, et al. Sugar Industry and Coronary Heart Disease Research: A Historical Analysis of Internal Industry Documents. *JAMA Intern Med.* 2016;176(11):1680-1685. O'Connor AO. *How the Sugar Industry Shifted Blame to Fat.* At <https://www.nytimes.com/2016/09/13/well/eat/how-the-sugar-industry-shifted-blame-to-fat.html>)

<sup>25</sup> Stanhope KL Goran MI, Bosy-Westphal A, King JC, Schmidt LA, et al. Pathways and mechanisms linking dietary components to cardiometabolic disease: thinking beyond calories. *Obes Rev.* 2018. **19**(9):1205-1235.

<sup>26</sup> Lustig R, Schmidt LA & Brindis C. "The Toxic Truth About Sugar." *Nature*, 2012. **482**: 27-9.

<sup>27</sup> Hieronimus B, et al., Synergistic effects of fructose and glucose on lipoprotein risk factors for cardiovascular disease in young adults. *Metabolism*, 2020. **112**: p. 154356.

<sup>28</sup> Malik VS, Popkin BM, Bray GA, Després J-P, Hu FB Sugar-sweetened beverages, obesity, type 2 diabetes mellitus, and cardiovascular disease risk. *Circulation.* 2010. **121**:1356–1364

<sup>29</sup> Ward ZJ, et al. Projected U.S. State-Level Prevalence of Adult Obesity and Severe Obesity. *N Engl J Med* 2019. **381**:2440-50.

<sup>30</sup> Neuenschwander M, Ballon A, Weber KS, Norat T, Aune D, Schwingshackl L, Schlesinger S. Role of diet in type 2 diabetes incidence: umbrella review of meta-analyses of prospective observational studies. *BMJ.* 2019. **366**:l2368.

<sup>31</sup> Uppal V, Mansoor S, Furuya KN. Pediatric Non-alcoholic Fatty Liver Disease. *Curr Gastroenterol Rep.* 2016. **18**(5):24.

- Cardiovascular diseases<sup>31</sup>
  - Even children can develop dyslipidemia and hypertension.<sup>32</sup>
- Dental decay<sup>33,34</sup>
  - Tooth decay is one of the most common chronic diseases of children and adolescents<sup>35</sup>

The mechanisms underlying the synergy between fructose and glucose, as well as their individual effects, in inducing negative health effects in humans are not fully understood. However, the consensus among some of the most prominent researchers in the world is that fructose and added sugar consumption is a modifiable risk factor<sup>36,37,38,39</sup> for the chronic diseases that are burdening our healthcare system.

Recent research suggests that the proposed rule is acceptable to parents. In 2022, researchers surveyed 1,110 parents and guardians of California’s K-12 public school students, in a sample selected to reflect the race and ethnicity, and free and reduced-price meal eligibility (FRMP) of the state’s K-12 public school student population. The study found that over one-third of respondents were concerned about the amount of added sugars in school meals.<sup>40</sup> Similarly, in a community-based participatory research study performed during the pandemic with Latino parents in California’s San Joaquin Valley, a key finding was parents’ concern about excessive amounts of added sugars with parents stating, for example:

*“Children cannot sustain themselves on treats that give pure sugar. They [schools] give for the morning, bars and cereal that are full of sugar.”*

*“The cereal [in the school breakfast] is too sweet.”<sup>41</sup>*

---

<sup>31</sup> Yang Q, Zhang Z, Gregg EW, Flanders WD, Merritt R, Hu FB. Added sugar intake and cardiovascular diseases mortality among US adults. *JAMA Intern Med.* 2014. **174**(4):516-24.

<sup>32</sup> Vos MB, Kaar JL, Welsh JA et al. Added sugars and cardiovascular disease risk in children: A scientific statement from the American Heart Association. *Circulation.* 2017. **135**: e1017-e1034.

<sup>33</sup> Chi DL, Scott JM. Added Sugar and Dental Caries in Children: A Scientific Update and Future Steps. *Dent Clin N Am.* 2019. **63**:17-33.

<sup>34</sup> Bleich S, Vercammen K. The negative impact of sugar-sweetened beverages on children’s health: an update of the literature. *BMC Obes* 2018; 5:6.

<sup>35</sup> National Institutes of Health. *Oral Health in America: Advances and Challenges*. Bethesda, MD: US Department of Health and Human Services, National Institutes of Health, National Institute of Dental and Craniofacial Research, 2021. At, <https://www.nidcr.nih.gov/sites/default/files/2021-12/Oral-Health-in-America-Advances-and-Challenges.pdf>

<sup>36</sup> Stanhope KL, et al., Pathways and mechanisms linking dietary components to cardiometabolic disease: thinking beyond calories. *Obes Rev.* 2018. **19**(9): p. 1205-1235.

<sup>37</sup> Softic S, et al., Fructose and hepatic insulin resistance. *Crit Rev Clin Lab Sci*, 2020: p. 1-15.

<sup>38</sup> Malik VS and Hu FB. Sugar-Sweetened Beverages and Cardiometabolic Health: An Update of the Evidence. *Nutrients*, 2019. **11**(8).

<sup>39</sup> Taskinen MR, Packard CJ, and Boren J. Dietary Fructose and the Metabolic Syndrome. *Nutrients*, 2019. **11**(9).

<sup>40</sup> Zuercher MD, Cohen FWJ, Ohri-Vachaspati P, Hecht CA, Hecht K, et al. What do parents and other caregivers think about school meals with Universal School Meal policies? Comparisons by race and ethnicity. In review.

<sup>41</sup> Sohlberg TM, Higuchi EC, Ordonez VM, Escobar GV, De La Rosa A, Islas G, Castro C, Hecht K, Hecht CE, Bruce JS, Patel AI. Parent Perception of School Meals in the San Joaquin Valley during COVID-19: A Photovoice Project. *Nutrients.* 2023; 15(5):1087. <https://doi.org/10.3390/nu15051087>

Notably, California SB 348, recently offered by California Senator Nancy Skinner, would direct the State Department of Education, in partnership with the California School Nutrition Association and cafeteria workers, to develop guidelines and recommendations to reduce added sugars in school meals to no more than 25 grams (about 6 teaspoons) per day.

## Part 2

The University of California Research Consortium on Beverages and Health strongly recommends that USDA include language in the rule that would prevent serious negative unintended consequences of the proposed rule.

The intent of the U.S. Department of Agriculture’s (USDA) “Child Nutrition Programs: Revisions to Meal Patterns Consistent With the 2020 Dietary Guidelines for Americans” proposed rule (88 FR 8050), is to strengthen school nutrition standards. A key means to improve school nutrition is by reducing all added sugars in children’s meals. **The University of California Research Consortium on Beverages and Health strongly recommends that the USDA include language in the rule that restricts substitute sweeteners (i.e., artificial sweeteners, non-nutritive sweeteners, low and non-caloric sweeteners) in school meals, and explicitly not allow product reformulations that use substitute sweeteners in place of added sugars until such time as studies are conducted to assure our nation’s children of their long-term safety.** While we recognize that the Food and Drug Administration (FDA) has oversight of the use of artificial sweeteners, the University of California Research Consortium on Beverages and Health strongly recommends that USDA can and should include such language in the rule to prevent potential serious negative unintended consequences of reducing added caloric sugars in school meals.

The number of varieties of non-caloric sweeteners is growing rapidly, each with differing names and formulations and with different chemistries and biologic impacts. Health experts signing this letter are concerned about the lack of longitudinal studies throughout childhood on the daily consumption of these substitute sweeteners. Although some substitute sweeteners may prove to be safe for children (as they most likely are for adults) there are numerous studies linking substitute sweeteners to a variety of health risks.<sup>42,43,44,45,46</sup>

Further, neutral, independent dietary intervention studies on children’s health effects of the many non-caloric sweeteners must be conducted with government funding rather than that of industry.<sup>47</sup>

---

<sup>42</sup> Ruiz-Ojeda FJ, Plaza-Díaz J, Sáez-Lara MJ, Gil A. Effects of Sweeteners on the Gut Microbiota: A Review of Experimental Studies and Clinical Trials. *Adv Nutr.* 2019 Jan 1;10(suppl\_1):S31-S48. 7

<sup>43</sup> Debras C, Chazelas E, Sellem L, Porcher R, Druésne-Pecollo N, Esseddik Y et al. Artificial sweeteners and risk of cardiovascular diseases: results from the prospective NutriNet-Santé cohort *BMJ* 2022; 378 :e071204.

<sup>44</sup> Debras C, Chazelas E, Srouf B, Druésne-Pecollo N, Esseddik Y, Szabo de Edelenyi F, et al. 2022. Artificial sweeteners and cancer risk: Results from the NutriNet-Santé population-based cohort study. *PLoS Med* 19(3): e1003950.

<sup>45</sup> Shum B and Georgia S. 2021. The Effects of Non-Nutritive Sweetener Consumption in the Pediatric Populations: What We Know, What We Don’t, and What We Need to Learn. *Front. Endocrinol.* 12:625415. doi: 10.3389/fendo.2021.625415

<sup>46</sup> Witkowski, M., Nemet, I., Alamri, H. et al. The artificial sweetener erythritol and cardiovascular event risk. *Nat Med* (2023). <https://doi.org/10.1038/s41591-023-02223-9>

<sup>47</sup> Espinosa A, Mendoza K, Laviada-Molina H, Rangel-Méndez JA, Molina-Segui F, Sun Q, Tobias DK, Willett WC, Mattei J. Effects of non-nutritive sweeteners on the BMI of children and adolescents: a systematic review and

In summary, The University of California Research Consortium on Beverages and Health applauds and strongly supports the USDA's proposed added sugar limits which will reduce the amount of added sugar made available in the school lunch and breakfast programs with the caveat that the proposed change is accompanied by wording restricting the use of non-caloric sweeteners that include both artificial and non-nutritive sugars in the school meal program. Without this caveat, the new ruling could be accompanied by a serious negative unintended consequence, such that the efforts by USDA to improve the school meal program would be permanently undermined by a plethora of new products of questionable long-term safety to our nation's children.

Thank you for the opportunity to provide comment on the proposed rule. The University of California Research Consortium on Beverages and Health sincerely appreciates and applauds USDA's commitment to improving school nutrition programs. Please contact us if you would like more information.

The University of California Research Consortium on Beverages and Health:

**Paul Brown, PhD**

Professor of Health Economics and Public Health  
University of California, Merced

**James Doucet-Battle, PhD**

Associate Professor, Department of Sociology  
University of California, Santa Cruz

**David A. Cleveland, PhD, MS**

Research Professor  
Environmental Studies Program, and Department of Geography  
University of California, Santa Barbara

**Pat Crawford, DrPH, RD**

Adjunct Professor  
School of Public Health  
University of California, Berkeley

**Jennifer Falbe, ScD, MPH**

Associate Professor of Nutrition and Human Development  
Department of Human Ecology  
University of California, Davis

**Christina Hecht, PhD**

Senior Policy Advisor  
Nutrition Policy Institute  
University of California, Division of Agriculture and Natural Resources

**Kenneth Hecht, LLB**

Director of Policy

---

meta-analysis of randomised controlled trials and prospective cohort studies. Lancet Glob Health. 2023 Mar;11 Suppl 1:S8. doi: 10.1016/S2214-109X(23)00093-1. PMID: 36866485.



Nutrition Policy Institute  
University of California, Division of Agriculture and Natural Resources

**Jeannie Huang, MD MPH**

Director, Continuing Medical Education  
Rady Children's Hospital San Diego  
Professor of Pediatrics  
University of California, San Diego

**Cristin Kearns, DDS, MBA**

Department of Preventive and Restorative Dental Sciences and Philip R. Lee Institute for Health Policy Studies  
Assistant Professor, Division of Oral Epidemiology & Dental Public Health and Philip R. Lee Institute for Health Policy Studies  
School of Dentistry  
University of California, San Francisco

**Robert Lustig, MD, MSL**

Emeritus Professor, Department of Pediatrics  
University of California, San Francisco

**Kristine Madsen, MD, MPH**

Professor, Joint Medical Program & Public Health Nutrition  
School of Public Health  
University of California, Berkeley

**Isaac Martin, PhD**

Professor, Urban Studies and Planning  
University of California, San Diego

**Mehdi Nemati, PhD**

Assistant Professor of CE in Water Resource Economics and Policy  
School of Public Policy  
University of California, Riverside

**Francisco Ramos-Gomez, DDS, MS, MPH**

Professor, Section of Pediatric Dentistry  
School of Dentistry  
University of California, Los Angeles

**Laura A. Schmidt, PhD, MSW, MPH**

Professor, Philip R. Lee Institute for Health Policy Studies and Department of Anthropology, History and Social Medicine  
School of Medicine  
University of California, San Francisco

**Karen Sokal-Gutierrez, MD, MPH**

Clinical Professor  
UC Berkeley-UC San Francisco Joint Medical Program

UC Berkeley Interdisciplinary MPH Program  
School of Public Health  
University of California, Berkeley

**Wendelin Slusser, MD, MS, FAAP**

Associate Vice Provost  
Semel Healthy Campus Initiative Center  
University of California, Los Angeles  
Clinical Professor  
Schools of Medicine and Public Health  
University of California, Los Angeles

**Kimber L. Stanhope, PhD, MS, RD**

Research Nutritional Biologist  
Department of Molecular Biosciences  
School of Veterinary Medicine  
University of California, Davis

**Petra Wilder-Smith, DDS, DMD, PhD**

Professor and Director of Dentistry  
Beckman Laser Institute  
Senior Fellow, Chao Family Comprehensive Cancer Center  
University of California, Irvine

**Cherie Wink, BS, RDHMP**

Assistant Research Specialist  
Beckman Laser Institute  
University of California, Irvine