

# Healthy Food Service Guidelines: An Impactful Strategy for Promoting Health in Institutions

## Summary

Various public and private institutions purchase, serve, and sell food to specific populations. Such institutions include schools, universities, healthcare facilities, shelters, correctional facilities, and agencies that provide free meals to people with low-incomes. These entities are a consistent source of food for millions of people in the United States, and some disproportionately serve populations that experience inequitable access to healthy food. They hold significant purchasing power that could be better leveraged to support healthy eating. Implementing healthy food service guidelines is an evidence-based strategy to improve the food environment in these settings. A growing body of research from schools, hospitals, public facilities, and congregate meal sites demonstrates that food service guidelines can lead to positive changes in the food environment, diet quality, and chronic disease risk factors. They also appear to be financially neutral or favorable.

*Institutions provide a consistent source of food for millions of people in the U.S. on a daily or weekly basis. Some disproportionately serve people from socially at-risk communities, and thus are important targets for advancing equitable access to healthy food.*

- Child and Adult Day Care: In 2019, nearly 4.8 million children and adults participated in the federally-funded Child and Adult Care Food Program, which primarily serves under-resourced communities.<sup>1</sup>
- Congregate and Home-Delivered Meals for Older Adults: In 2014, 2.4 million older adults with low income participated in these federally-funded programs.<sup>2</sup>
- Correctional Facilities: 2.1 million adults were incarcerated nationally at the end of 2018<sup>3</sup>. 37,529 youth were in residential justice facilities on a given day in October 2018.<sup>4</sup> Black, Indigenous, and Latinx people and people with low income are disproportionately incarcerated.<sup>5</sup>
- Healthcare Facilities: 7.4% of people in the U.S. have an overnight stay in a hospital each year.<sup>6</sup> 5.2 million people in the U.S. are hospital employees.<sup>7</sup>
- Higher Education: Approximately 20 million students attend college in the U.S. each year.<sup>8</sup>
- Schools: In 2019, nearly 30 million children participated in the federally-funded National School Lunch Program and more than 14.7 million children participated in the School Breakfast Program.<sup>9</sup> Both programs primarily serve free and reduced-price meals to children from households with low-income.

- Shelters and Transitional Housing: There are more than 900,000 total beds in emergency and permanent housing for individuals and families experiencing homelessness.<sup>10</sup>
- Summer Meals: In 2019, nearly 2.7 million children participated in the federally-funded Summer Food Service Program. States administer this program to provide free meals and snacks to children over the summer in under-resourced areas.<sup>11</sup>

### *Institutional food service has significant purchasing power.*

The United States Department of Agriculture (USDA) tracks and categorizes nationwide expenditures on food by type of outlet and whether it's consumed at home or away from home. Of total expenditures on food away from home in the U.S. in 2019:<sup>12</sup>

- \$70.6 billion (7.3%) was on food consumed at schools and colleges.
- \$25 billion (2.6%) was on food consumed in "other" venues that includes food sold on trains, at hospital and nursing home cafeterias, at veterans' canteens, and at office buildings.
- \$47.6 billion (4.9%) was on food "furnished and donated," which includes food provided to people who are incarcerated, inpatients at hospitals and nursing homes, military and civilian employees, and passengers on planes.<sup>13</sup>

### *The food environment in many institutions could be healthier.*

#### *Hospitals*

A study of 14 children's hospital cafeterias in California found that most venues scored in the mid-range on the Nutrition Environment Measures Survey (NEMS)<sup>14</sup> adapted for cafeterias and hospital food venues (mean of 19.1 out of a possible 37).<sup>15</sup>

#### *Colleges and Universities*

- A study used the NEMS adapted for campus dining to score the food environment in 68 venues at 15 U.S. colleges and universities. Out of a possible 100 points,<sup>16</sup> the average scores were 42.31, 24.90, and 22.51 for dining halls, student union food courts, and snack bars/cafes, respectively.<sup>17</sup>
- A comprehensive study of campus dining venues at California Polytechnic State University using the NEMS adapted for campus dining found that the mean score was 26 (range of 4 to 47) out of a possible 97.<sup>18</sup>
- A study of nearly 10,000 South Dakota State University student entrée purchases at campus dining venues found that the proportion of more healthful (8-9%) and less healthful (91-92%) purchases reflected the proportion of available items (15% more healthful, 85% less healthful). Items were categorized as more healthful if they met the American Heart Association's nutrition standards.<sup>19</sup>

### *Correctional Facilities*

- Researchers compared six weeks of menus in South Carolina correctional facilities in 2009 to national dietary guidance.<sup>20</sup> They found that menus provided more grains, cholesterol, sodium, and discretionary calories than recommended, fewer fruit, vegetable, and milk servings than recommended, and less than half the recommended amount of fiber for men.
- In another analysis of a four-week menu in a Georgia county jail, researchers found that saturated fat and sodium content were higher than national recommendations, while fiber was inadequate.<sup>21</sup> Menus also provided fewer servings of whole grains, fruits, vegetables, and dairy than recommended. They also found that the top selling products in the facility's commissary tended to be high in fat and sodium, low in fiber, and poor source of vitamins and minerals.

### *Public Meal Programs*

Multiple federal programs offer financial assistance and administrative support to state and local institutions that provide meals and snacks to specific populations, including children and older adults in low-income households. Existing nutrition guidelines across these programs vary in strength.

- Researchers recently evaluated the federal congregate and home-delivered meal programs for older adults to analyze how well meals aligned with the 2010 *Dietary Guidelines for Americans*. They found that, on average, meals aligned with some aspects of the *Guidelines*, but fell short by providing too much sodium, refined grains, and empty calories, and too few seafood and plant proteins, healthy fats, and whole grains.<sup>22</sup>
- In 2012, federal nutrition standards for school meals were updated to reflect the 2010 *Dietary Guidelines for Americans* and are considered models for providing healthy meals to children. The federal Summer Food Service Program, which provides free meals to children during the summer months, has different standards that have not been updated since 2000. Researchers analyzed one week's breakfast and lunch menu for more than 340 feeding sites in Columbus, Ohio in the summer of 2015.<sup>23</sup> Compared to the 2012 school meal standards, the summer lunch meals provided too much saturated fat and sodium. Both breakfast and lunch provided too much protein and carbohydrates and too little fiber. The one-week menu provided only two servings of vegetables.

***Evidence demonstrates that adopting healthy food service guidelines can change the food environment in institutions and improve some measures of diet quality and health for the target population.***

Implementing food service guidelines aligns food served with evidence-based, authoritative nutrition recommendations, typically the most recent *Dietary Guidelines for Americans*. This strategy has support from public health authorities including the [Centers for Disease Control and Prevention](#) (CDC) and the American Heart Association.

### *Evidence from Schools, Worksites, and Community Settings*

- A 2014 systematic review of healthy food service policies in schools, worksites, and other settings with limited choice of food venues found that such policies were nearly always effective in increasing availability of healthier food and decreasing that of less healthy food, contributing to increased selection of healthier foods and lower selection of food high in fat, sodium, and sugar.<sup>24</sup>
- A synthesis of several reviews showed that healthy food service policies, primarily in schools, can positively impact sales, intake, and availability of healthier food, though findings related to their impact on body mass index (BMI) varied.<sup>25</sup>
- The Healthy, Hunger-Free Kids Act of 2010 updated nutrition standards for the National School Lunch and School Breakfast Programs to better align with the *Dietary Guidelines for Americans*.<sup>26</sup> USDA's School Nutrition and Meal Cost Study compared the nutritional quality of meals at 1,200 schools nationwide before and after implementation of the new standards using the Healthy Eating Index (HEI), a tool that measures alignment with the *Dietary Guidelines*.<sup>27</sup> After the updated standards took effect, the mean HEI score for lunches offered increased from 57.9 to 81.5 out of a possible 100 (41% increase). The score for breakfasts increased from 49.6 to 71.3 (44% increase).
- The CDC's Sodium Reduction in Communities Program supports state and local organizations to employ food service guidelines in congregate sites (e.g. senior meals, early child care, prisons), hospitals, worksites, and independent restaurants. Awardees were evaluated from 2013-2016 based on sodium reduction measures that they selected.<sup>28</sup> For example, the average sodium content of foods targeted for sodium reduction decreased from 946 to 685 mg in 12 food service settings.
- Implementing healthy eating standards in YMCA after-school programs increased weekly servings of fruits and vegetables and decreased weekly servings of desserts, foods with added sugars, and foods with trans fats.<sup>29</sup> All offered water and none offered sugary beverages after implementing the standards.
- In terms of effects on consumption, there were significantly greater increases in the nutritional quality of lunches consumed by low-income, low-middle income, and middle-high income National School Lunch Program participants compared with non-participants after implementation of the Healthy, Hunger-Free Kids Act.<sup>30</sup> Additional studies have linked these improvements in school nutrition standards to healthier meal selections by students.<sup>31,32</sup>
- A 2020 study estimated that risk of obesity among children in poverty would have been 47% higher in 2018 without implementation of the nutrition standards in the Healthy, Hunger-Free Kids Act, although the study reported no significant association between the legislation and childhood obesity trends overall.<sup>33</sup>
- A community sodium reduction intervention employing food service guidelines in northwest Arkansas public school cafeterias and community meal programs for people

with low incomes was followed by reductions in average sodium content of meals served per diner from 1103 mg to 980 mg (11.2%) in 29 schools and from 1509 mg to 1258 mg (16.6%) in 5 community meal programs.<sup>34</sup>

- The University of California at San Francisco implemented a campus-wide ban on selling sugary beverages. Researchers studied a sample of university employees with a self-reported intake of at least 12 fluid ounces of sugary drinks daily for the three months preceding the ban.<sup>35</sup> Six months later participants reported significant reductions in their sugary beverage intake from an average of 35 fluid ounces per day to 18 fluid ounces per day (-48.6% decrease). There was a greater reduction among those with a high BMI (19.6 fluid ounces) compared to a lean BMI (6.2 fluid ounces). The reductions remained stable at 12 months. While there was no weight change on average, more than two-thirds of participants lost weight around their waists, with a significant average decrease in waist circumference of 2.1 cm. The changes in sugary beverage intake were associated with significant improvements in two measures of insulin resistance, and these were more pronounced in the high BMI group.

#### *Evidence from Federal Facilities*

- Six months after the U.S. Department of Health and Human Services Hubert Humphrey Building cafeteria vendor implemented the Food Service Guidelines for Federal Facilities, 67% of meals offered and 50% of meals purchased met guidelines.
- Military dining facilities that changed food service to be more consistent with the *Dietary Guidelines for Americans* led customers to choose items with less calories, saturated fat, and refined grains than control facilities, with better customer satisfaction on some measures.<sup>36</sup> There were no effects on whole grain, fruit, or vegetable consumption.

#### *Evidence from City Policies*

- A 2008 New York City Executive Order adopted comprehensive nutrition standards for food purchased and served by city agencies. As a result, city agencies have decreased their use of added sugars and solid fats, sodium content of foods has decreased, and trans fat was virtually eliminated from foods purchased and served.<sup>37</sup> In 2019, agencies complied with 91% of the standards on average.<sup>38</sup>
- While the Executive Order adopted mandatory standards for patient meals and vending machines in New York City's 16 public hospitals, the city's Healthy Hospital Food Initiative (HHFI) recruited 24 of the city's private hospitals to voluntarily commit to implementing nutrition standards.<sup>39</sup> After four years of the initiative, evaluators found that 17 implemented the patient meal standards, 14 implemented the beverage vending machine standards, 12 implemented the food vending machine standards, and 16 implemented the cafeteria standards. The HHFI led to two public hospitals voluntarily adopting standards for cafeterias. Among eight of the private hospitals implementing the patient meal standards, all hospitals significantly changed the amounts of key

nutrients assessed (energy, total fat, saturated fat, sodium, and fiber) in the desired direction and met or exceeded the HHFI standards.<sup>40</sup> They also increased fruit and vegetable servings and decreased servings of dessert.

- Two years after Boston's 2011 Healthy Beverage Executive Order went into effect, the availability of healthier beverages increased significantly in vending machines, cafeterias, and cafes on city properties, while the proportion of available beverages that were high in sugar decreased by 28%.<sup>41</sup> Venues were significantly more likely to offer no high-sugar beverages compared to baseline. With respect to effects on consumption, average calories per beverage sold decreased from 88.1 to 39.5, and average sugar content per beverage sold decreased from 22.8 grams to 9.7 grams.

*Research has shown that eliminating sugary beverages or implementing food service guidelines can be financially neutral or favorable.*

- Hospitals and federal worksites that implemented healthy food service guidelines reported additional training and labor costs, equipment costs, and price increases introduced to offset higher food costs, but also increased customer volume, revenue, and sales.<sup>42</sup>
- As part of the University of British Columbia's Healthy Beverage Initiative, the university piloted removal and replacement of sugary beverages from one residential dining hall and evaluated sales before and after, compensatory effects, and patron perceptions. They found that the removal was not associated with a significant change in beverage revenue relative to comparison dining halls, that it did not appear to lead to increased purchases of sugary beverages at nearby convenience stores, and that most patrons were unaware of the removal even months after implementation.<sup>43</sup>
- Nationwide Children's Hospital in Ohio removed sugary beverages from all hospital-owned and contracted food service venues in 2011 as an extension of its existing Wellness Initiative that had support from the institution's food vendor. They also executed an extensive communications campaign to get buy-in from employees, patients, and families. Total beverage sales increased 2.7% in 2011 compared to 2010, with patrons buying more of allowed beverages such as milk, 100% fruit juice, coffee, and water.<sup>44</sup>
- The U.S. Department of Agriculture compared school meal costs before and after enacting stronger nutrition standards in the National School Lunch Program.<sup>45</sup> The reported cost of producing school lunches increased significantly over the period of study, but the nutritional quality of lunches was not associated with the cost to produce them. In other words, school lunches of higher nutritional quality did not cost more to produce than those of the lowest nutritional quality.
- Researchers estimated the health impact of strategies solely to reduce the sodium content of food served by public agencies in the County of Los Angeles.<sup>46</sup> They predicted

that adults would consume, on average, 233 fewer mg. of sodium each day, leading to 388 fewer cases of uncontrolled hypertension in the study population, and an annual decrease of \$629,724 in direct health care costs.

**For guidance about adopting and implementing effective, equitable food service guideline policies, refer to *A Roadmap for Comprehensive Food Service Guidelines* [here](#).**

*For more information, please contact the Center for Science in the Public Interest at [policy@cspinet.org](mailto:policy@cspinet.org).*

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<sup>1</sup> US Department of Agriculture Food and Nutrition Service. *Child Nutrition Tables*. July 10, 2020. <https://www.fns.usda.gov/pd/child-nutrition-tables>.

<sup>2</sup> Mabli J, et al. *Evaluation of the Effect of the Older Americans Act Title III-C Nutrition Services Program on Participants' Food Security, Socialization, and Diet Quality*. Mathematica Policy Research, April 21, 2017. [https://acl.gov/sites/default/files/programs/2017-07/AoA\\_outcomesevaluation\\_final.pdf](https://acl.gov/sites/default/files/programs/2017-07/AoA_outcomesevaluation_final.pdf).

<sup>3</sup> Maruschak LM, Minton TD. *Correctional Populations in the United States, 2017-2018*. Bureau of Justice Statistics, Office of Justice Programs, U.S. Department of Justice. August 2020. <https://www.bjs.gov/content/pub/pdf/cpus1718.pdf>.

<sup>4</sup> Office of Juvenile Justice and Delinquency Prevention. *Juveniles in Corrections. OJJDP Statistical Briefing Book*. May 15, 2020. <https://www.ojjdp.gov/ojstatbb/corrections/qa08201.asp?qaDate=2018>.

<sup>5</sup> Prison Policy Initiative. *Visualizing the Racial Disparities in Mass Incarceration*. July 2020. <https://www.prisonpolicy.org/blog/2020/07/27/disparities/>.

<sup>6</sup> National Center for Health Statistics. *Hospital Utilization (In Non-Federal Short-Stay Hospitals)*. Centers for Disease Control and Prevention, 2017. <https://www.cdc.gov/nchs/fastats/hospital.htm>.

<sup>7</sup> Bureau of Labor Statistics. *Hospitals: NAICS 622*. June 14, 2019. <https://www.bls.gov/iag/tgs/iag622.htm>. Accessed May 13, 2019.

<sup>8</sup> National Center for Education Statistics. *Enrollment. Fast Facts*. 2020. <https://nces.ed.gov/fastfacts/display.asp?id=98>.

<sup>9</sup> US Department of Agriculture Food and Nutrition Service, 2020.

<sup>10</sup> U.S. Department of Housing and Urban Development. *HUD 2019 Continuum of Care Homeless Assistance Programs Housing Inventory County Report*. October 9, 2019. [https://files.hudexchange.info/reports/published/CoC\\_HIC\\_NatlTerrDC\\_2019.pdf](https://files.hudexchange.info/reports/published/CoC_HIC_NatlTerrDC_2019.pdf).

<sup>11</sup> US Department of Agriculture Food and Nutrition Service, 2020.

<sup>12</sup> Calculated by USDA, Economic Research Service from various sources. These figures may not capture all food purchased for consumption in institutions or public programs, and therefore may underestimate the total purchasing power. <https://www.ers.usda.gov/data-products/food-expenditure-series/interactive-charts-food-expenditures/>. Also see the Technical Bulletin by Abigail M. Okrent, Howard Elitzak, Tim Park and Sarah Rehkamp. *Measuring the Value of the U.S. Food System: Revisions to the Food Expenditure Series*, August 2018. <https://www.ers.usda.gov/publications/pub-details/?pubid=90154>. Definitions of categories on page 7.

<sup>13</sup> The latter two totals also include expenditures on food in commercial settings, so these are overestimates of institutional food spending.

<sup>14</sup> The Nutrition Environment Measures Survey is a trusted tool used to evaluate the healthfulness of food environments, and has been adapted for different venues. <https://nems-upenn.org/>

<sup>15</sup> Lesser LI, et al. *Assessment of Food Offerings and Marketing Strategies in the Food-Service Venues at California Children's Hospitals. Academic Pediatrics*. 2012;12(1):62-67.

<sup>16</sup> The Campus Dining adaptation of NEMS uses a different scale than the original version referenced above.

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<sup>19</sup> Leischner K, et al. *The Healthfulness of Entrees and Students' Purchases in a University Campus Dining Environment. Healthcare*. 2018;6(28).

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<sup>21</sup> Cook EA, et al. *The Diet of Inmates: An Analysis of a 28-Day Cycle Menu Used in a Large County Jail in the State of Georgia. J Correct Health Care*. 2015;21(4):390-399.

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