Decarbonizing Institutional Food: A promising human and planetary health lever

Jessica Nyquist, October 2026

The stars seem to be aligning to catalyze a shift in American diets for both human and planetary health. The Trump Administration's Make America Healthy Again initiative, the accelerating popularity of health and wellness technology, the mainstream-ification of Food is Medicine. Healthier eating focuses on trading processed for whole foods, filling plates with more fruits and vegetables, and reducing meat consumption. Food production accounts for a quarter of global greenhouse gas (GHG) emissions. Food that comes from animals makes up two-thirds of all agricultural GHG emissions.[1] While shifting *individual* eating habits away from meat is famously difficult, Professor Christopher Gardner's Nutrition Science Research Group[2] in the Stanford Medicine Prevention Research Center alongside the Menus of Change University Research Collaborative (MCURC) has focused on *institutions* as a powerful leverage point. Hospitals serve **1–2 billion meals** annually across inpatient and retail, and industry analysts estimate the U.S. healthcare food service market at almost **$25B**.[3] U.S. public schools served **4.8 billion lunches** in 2025, spending almost **$18B**.[4] A university food study found that aligning food procurement with the planetary health diet would result in an estimated average **46.1% reduction in GHG emissions** associated with food from cradle to point of purchase.[5] For each one billion meals served, U.S. institutions making planetary health modifications would reduce emissions by 3.3 million metric tons CO2e, about the annual emissions of 700,000 gas cars.[6] Alongside climate benefits, the study shows concurrent health improvements and cost savings.[7]

My collaborators and I interviewed over 30 participants and experts across two industries — hospitals and K-12 education — to better understand the top considerations in planning food programs and what it would take to motivate large-scale shifts toward more plant-forward menus. Seeking financially sustainable mechanisms to scale efforts quickly, I focused on commercially viable opportunities rather than policy shifts or non-profit efforts. The top opportunities I'm excited about include:

1. **K-12**: using technology, including AI personalization, to increase school access to available public and private grant funding and to improve fund utilization to drive toward sustainable investments.

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[1] World Resources Institute. https://www.wri.org/initiatives/cool-food-pledge
[2] Stanford Medicine. https://med.stanford.edu/nutrition
[3] Polaris Market Research. https://www.polarismarketresearch.com/industry-analysis/us-healthcare-hospital-food-services-market
[4] National School Lunch Program: Participation And Lunches Served. https://fna-bwbufwdzbabpezgc.z01.azurefd.us/sites/default/files/resource-files/slsummar-8.pdf; USDA Child Nutrition Programs - National School Lunch Program https://www.ers.usda.gov/topics/food-nutrition-assistance/child-nutrition-programs/national-school-lunch-program
[5] Bertoldo, J., Fammartino, A., Egan, S., Neff, R. A., Grekin, R., & Wolfson, J. A. (2024). Evaluating Food Procurement against the EAT-*Lancet* Planetary Health Diet in a Sample of U.S. Universities. *International Journal of Environmental Research and Public Health*, *21*(7), 945. https://doi.org/10.3390/ijerph21070945
[6] Calculated from data in Coolfood Pledge: 2024 Collective Member Progress Report (World Resources Institute / Coolfood, 2024). Total annual food-related carbon costs for pre-2024 cohort members (20 MtCO2e) divided by total annual volume (2.8 billion meals served) equals ~7.14 kg CO2e per meal. This per-meal total combines direct agricultural supply chain emissions of 1.68 kg CO2e/meal (4.7 MtCO2e) and annualized land-use carbon opportunity costs of 5.46 kg CO2e/meal (16 MtCO2e). https://coolfood.org/resources/coolfood-pledge-2024-collective-member-progress-report/
[7] Bertoldo, J., Fammartino, A., Egan, S., Neff, R. A., Grekin, R., & Wolfson, J. A. (2024). Evaluating Food Procurement against the EAT-*Lancet* Planetary Health Diet in a Sample of U.S. Universities. *International Journal of Environmental Research and Public Health*, *21*(7), 945. https://doi.org/10.3390/ijerph21070945

2. **Hospitals**: developing market incentives, visibility, and accountability for the quality of hospital food across human health, deliciousness, and planetary health.
3. **Insurance payers**: creating alignment for insurers to reimburse their beneficiaries' Food is Medicine preventive interventions to reduce the cost of plant-forward diets across institutions.

Where are we now and where could we go?

The Trump Administration has shone a light on institutional food shortfalls and declared nutrition a priority, striving to help Americans build better diets and reduce the toll of diet-related diseases such as diabetes, obesity, heart disease, and certain cancers. The "Make Our Children Healthy Again" initiative driven by HHS Secretary RFK Jr. and USDA Secretary Brooke Rollins aims to systematically replace highly processed items with whole foods in schools. A March 2026 Centers for Medicare & Medicaid Services (CMS) Hospital Food Directive emphasized, "it is an urgent priority for hospitals … [to] provide those patients with high-quality and clinically appropriate dietary options."[8] Announcing a June 2026 policy shift, RFK Jr. explained, "Poor diets are the primary driver of America's chronic disease epidemic, and today's announcement reflects the shifting landscape toward placing nutrition and prevention at the core of patient health."[9] While the updated Dietary Guidelines for Americans diverge from some key nutritional science principles, the attention toward changing diets as part of preventive medicine and the focus on whole foods demonstrate promising momentum.[10]

MCURC, with collaborators from the Culinary Institute of America, nutrition researchers, food service directors, and health professionals, has demonstrated through clinical trials, pilots, and other research methods that plant-forward menus can simultaneously improve individual health outcomes, reduce carbon emissions, and be "unapologetically delicious" rather than compromising on flavor.[11]

With such powerful evidence, potential for impact, and regulatory and cultural tailwinds, I sought to understand what's standing in the way of widespread menu shifts in U.S. institutions. Professor Gardner's Sustainable, Healthy, Institutional Food Transformation project (SHIFT) has made strides in shifting menus, but the team has ambitious carbon reduction goals over the coming years. I spent six months researching how to accelerate scaling these efforts through sustainable enterprises. My original hypothesis was that this was a structural issue: institutions lacked access to produce or plant-forward options; there was a missing link between farms and kitchens. But after digging deeper, different obstacles emerged that centered on mission and available resources.

The two sectors told very different stories, though both types of institutions seemed to view food service as a cost center rather than part of their central mission. K-12 schools demonstrated eagerness and urgency to change menus toward more whole food options, but were stymied by financial constraints. Hospitals, on the other hand, showed little interest in revamping food service, even though change is operationally more feasible than in K-12 schools. I saw an exciting opportunity to speak the language of

[8] Centers for Medicare & Medicaid Services, March 30, 2026 Memo. https://www.cms.gov/files/document/qssam-26-03-hospital-cah-original-release-2026-03-30.pdf
[9] U.S. Department of Health and Human Services. https://www.hhs.gov/press-room/secretary-kennedy-announces-historic-development-nutrition-accreditation-standards-new-medical-school-pledges.html
[10] Stanford Medicine. https://med.stanford.edu/nutrition/news/press/2025_2030_Dietary_Guidelines
[11] MCURC Academic Research Papers accessible here: https://www.moccollaborative.org/mcurc-academic-publications

institutions' missions to reframe dining from a necessity to a critical pillar of the work they do for the people they serve. Here, I capture my research into the key obstacles and opportunities in shifting menus at K-12 schools and hospitals.

K-12 schools: passionate administrators hamstrung by budget

Interviewing administrators and food program operators in K-12 schools, I met determined, passionate, creative leaders desperate to improve their students' nutrition. I also encountered several non-profits working to support schools in making change. Across the board, they recognized the role of school meals to boost focus and academic performance, to reduce absenteeism, and to meet nutritional needs often unmet at home. There is a childhood nutrition crisis in the U.S.: in 2024, 18.4% of U.S. households with children faced food insecurity,[12] and from 2017–2020, 1 in 5 children in the U.S. had obesity.[13] USDA school food nutrition standards[14] have made progress putting nutritious, whole foods on student plates, but menus still fall short in meeting key childhood nutritional needs, like fiber.

There's strong consensus — engaged parents, a vocal federal administration, passionate school administrators — we all want kids to thrive, fueled by nutritious, accessible food. What's holding us back from shifting menus?

Despite a powerful intervention opportunity and strong staff momentum, razor-thin budgets preclude the changes school administrators are striving for.

School food programs are expected to be self-sustaining, isolated from most school district budgets and covering costs of food and labor through federal reimbursement and sales. However, federal reimbursement for a free lunch program provides only $4–5/meal. For less than the price of a latte, schools must procure, prepare, and serve complete and nutritious meals. The School Nutrition Association's 2025-2026 survey found nearly all responding school meal directors cited the cost of food, labor, and equipment as major challenges.[15] Seventy percent of respondents reported that the federal reimbursement rate is insufficient to cover the cost of producing a school lunch.

Why are kids still eating chicken nuggets? Top challenges facing K-12 food systems:

1. **Cost constraints and cheap meat**

In order to meet the tight $4–5/meal budget, schools rely on the heavily processed and subsidized meat options designed exactly to meet USDA school food standards. This cost dynamic makes it difficult for plant-forward recipes to compete with artificially cheap meat. In addition, developing new plant-forward menus that meet standards presents a significant administrative burden both on the chef/food service side and on the qualification paperwork.

2. **A system designed for processed food**

Many school kitchens are equipped only for heat-and-serve, meaning infrastructure is designed around processed foods. This was an intentional decision: in the 1980s, there was a push to simplify school

[12] USDA. https://www.ers.usda.gov/data-products/ag-and-food-statistics-charting-the-essentials/food-security-and-nutrition-assistance
[13] Centers for Disease Control and Prevention. https://www.cdc.gov/obesity/childhood-obesity-facts/childhood-obesity-facts.html
[14] USDA National School Lunch Program Meal Pattern. https://www.fns.usda.gov/school-meals/nutrition-standards/nslp-meal-pattern
[15] School Nutrition Association, School Nutrition Trends Report School Year 2025-2026. https://schoolnutrition.org/wp-content/uploads/2026/01/SY-25-26-School-Nutrition-Trends-Report.pdf

kitchens to serve as many meals to students as cheaply as possible to address food insecurity. The impact is evident today as many school food programs lack the equipment and staff to scratch cook, leaving only pre-packaged food options. Alongside a costly equipment gap, labor and training costs for scratch cooking delicious plant-forward meals present another major obstacle.

3. **Fear of picky eaters: student preferences and participation**

Student adoption is critical not only to cover costs but also to accomplish the program's main goal: keeping students well-fed. We heard that K-12 students are actually more willing to try new dishes than adults, and that they are often seeking more culturally relevant dishes that look like what they eat at home (a place plant-forward menus could shine). Los Angeles Unified School District (LAUSD) is a leader in shifting food service toward more plant-rich, scratch-prepared menus, and its strategy relies on robust student and vendor engagement in menu development, like taste-testing panels that require a certain approval threshold before adding items to the menu. Alongside students, parents are a loud and influential voice when it comes to cafeteria food, and they can be the most skeptical of non-traditional or plant-based offerings.

How do we make change? Channel funds and help schools use them.

After observing the glaring pain point of lack of funds alongside untapped grant opportunities, my research team explored developing a school food program operations platform to connect schools to grant funding to enable kitchen upgrades and other developments. While a policy solution would focus on increasing funds available, a technology solution would boost access, utilization, and effectiveness. This was inspired by lessons learned from menu shift leaders like LAUSD and Palo Alto USD, who have leveraged grants for major kitchen updates and nutrition education facilities like hydroponic gardens. Such a platform would ease the administrative burden related to applying for and participating in grant programs, widening access to these funding buckets. By accumulating data about successful grant applications and uses, the platform would increase in efficacy and usefulness over time. In addition, a platform could help participants share ideas and detailed plans for projects to ease the shift. We learned through interviews that schools currently operate in silos, repeating trial and error without sharing notes.

Interventions to make school meals more plant-rich have shown compelling GHG emission results. NYC Public Schools' Plant-Powered Fridays, launched in 2022, has reduced emissions 42% per student, with food purchases 16,000 tons CO2e lower in total.[16] Oakland Unified cut its food service carbon footprint by 14% and water use by 6% over two years from a roughly 30% drop in animal-product purchases that also saved over $40,000.[17] A 2025 study modeled the carbon footprint of elementary school lunch menus in six large urban U.S. districts using life-cycle data and found cutting beef to one day a month reduced emissions by 34%, and serving one fully plant-based day a week reduced emissions by 32%.[18] However, for many under-resourced K-12 schools, accessing grant funding is key to unlocking this shift.[19]

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[16] Humane World for Animals (formerly the Humane Society of the United States). https://humaneworld.org/en/news/new-report-confirms-nyc-public-schools-reduced-overall-emissions-over-40-through-plant-powered
New York City Public Schools. https://www.schools.nyc.gov/about-us/news/announcements/contentdetails/2025/04/22/chancellor-aviles-ramos-celebrates-sustainability-efforts-in-recognition-of-earth-day

[17] Physicians Committee for Responsible Medicine. https://pcrm.org/news/health-nutrition/plant-based-meals-reduce-school-districts-costs-and-carbon-footprint.

[18] Columbia Climate School, Food for Climate League summary of Boronowsky et al. (2025), *Sustainability*. https://food.climate.columbia.edu/news/carbon-footprint-school-lunch-moving-toward-healthy-and-sustainable-future-next-generation

[19] Palo Alto Online. https://www.paloaltoonline.com/blogs/the-food-party/2022/09/15/scratch-cooking-returning-to-palo-alto-schools/

Hospitals: from cost center to mission enabler

My most surprising discovery from venturing into the world of hospital food was hearing, "It's just not a priority." Food service was seen as just a number on the balance sheet, not as a part of patients' and visitors' health journey. Though limiting operating costs is a clear mandate, hospitals don't face the same stringent meal reimbursement constraints as schools. Retail visitors pay per meal, and inpatient meals are covered as part of the insurer's complete stay reimbursement.

From an outsider's perspective, food seems inseparable from a hospital's "do no harm" mission, so why is it widely seen as just a cost center?

Hospitals leading the way in the menu transition seem motivated by this very realization. Northwell Health transformed its food program based on the idea that wholesome meals were central to the mission of improving health and quality of life. "How was it … that a health system could offer the most advanced treatments while ignoring the quality of the meals patients were eating throughout their stay?"[20]

NYC Health + Hospitals, the city's public health system, has made headlines as a leader in hospital menu shifts, implementing a nutrition program making plant-based meals the primary lunch and dinner options for patients at its 11 hospitals.[21] Then-NYC Mayor Eric Adams' personal health journey and political backing were major catalysts for the shift. Adams says he reversed his Type 2 diabetes through a plant-based diet, and he made improving food systems central to his policy agenda.[22] The NYC Health + Hospitals experiment affirmed the plant-forward menu default was a sound business decision: patient satisfaction rose to more than 90%, plant-based trays cost on average $0.59 less, and the program reduced GHG emissions by 36%.[23]

When hospital staff are confronted with the inconsistency between the organization's mission and the food it serves, like seeing a loved one served unhealthy foods after a major surgery, champions emerge who drive forward changes. However, relying on personally motivated "champions" or political pressure to overcome institutional inertia is not a sustainable strategy to motivate widespread shifts in hospital menus.

How do we incentivize hospitals to overcome inertia and put in the work to make a shift?

1. **Design clear brand benefits**

Hospital executives must see significant upside potential to take on a new program. Currently, food quality can be considered a piece of the patient satisfaction score, but is not typically a leading metric hospitals are evaluated against. Would you pick a hospital based on the food served? Industry recognition, and eventually norms, must be developed to ensure hospitals reap the brand value benefits of taking on a plant-forward menu shift. A nationwide certification scheme could provide this credibility and recognizable brand value to motivate first movers and to pressure followers to keep up.

[20] Northwell. https://www.northwell.edu/news/insights/hospital-food-that-heals
[21] American Journal of Lifestyle Medicine. https://pmc.ncbi.nlm.nih.gov/articles/PMC11556658/
[22] NYC Health + Hospitals. https://www.nychealthandhospitals.org/pressrelease/nyc-health-hospitals-now-serving-plant-based-meals-as-primary-dinner-option-for-inpatients-at-all-of-its-11-public-hospitals/
[23] American Journal of Lifestyle Medicine. https://pmc.ncbi.nlm.nih.gov/articles/PMC11556658/

2. **Reduce the risk**

Leaders will require a high degree of certainty that a food program shift will be neutral at worst toward the bottom line. The NYC Health + Hospitals example, as well as other pilots and studies, illustrate that plant-forward menus can cost less if operationally executed effectively. Another key concern will be patient adoption and satisfaction with less familiar meals. Developing and popularizing plant-forward drop-in menu solutions, like seasoned bean and legume products, can make the transition easier by reducing overhead for training and menu development. In addition, incremental changes can make menus more approachable, like shrinking the proportion of animal protein relative to whole food items on the plate (MCURC's "Protein Flip"[24]) or shifting default options rather than whole menus.

3. **Demonstrate value alignment**

Food should be inseparable from patient care. However, we heard in interviews that physicians can be the main critics of menu shifts given their individual beliefs about what is "healthy." For example, the current protein hype overvalues the nutritional importance of protein while ignoring fiber, which most Americans don't get enough of. This disagreement within a medical team can hinder the momentum and efficacy of a menu transition. Strong, credible nutrition leaders, like the Stanford Prevention Research Center, should be involved in menu creation and provide scientific backing to leave no doubt as to the "do no harm" value alignment. Nurses and staff must also be engaged throughout the shift, as their voices often carry the most weight with patients.

This is not to say shifting menus toward more plant-forward meals is simple; hospitals are large, complex organizations with existing contracts and patient satisfaction requirements. However, what surprised me was that institutional inertia may be the largest obstacle. Rather than removing a barrier, how can we create a pull toward action?

A note on insurance payers: opportunity to align incentives?

Across both spaces, my team of fellow students was excited about the potential to connect insurance payers to fund food as a preventive health or treatment intervention. Reimbursements could lower the cost of plant-forward meals to diners or to schools serving meals, especially for students on Medicaid. The solution seemed obvious: diet is a key part of preventive medicine, and insurers should have a vested interest in supporting the health of their population. In some cases, like hospitals, employees who eat in the cafeteria are also covered by the health system's own plan, so there is even further alignment.

We found compelling precedent for insurance payers funding preventive health interventions. Kaiser Permanente, an integrated health plan and care system, regularly provides community grant funds to support social determinants of health improvements.[25] Aetna Better Health LA supported healthy food

[24] MCURC Protein Flip. https://static1.squarespace.com/static/5e73dab948933135a78e16ae/t/67b75a15d3387f23e42e4619/1740069398736/MCURC-Protein-Flip-Strategy.pdf

[25] Kaiser Permanente. https://about.kaiserpermanente.org/expertise-and-impact/healthy-communities/communities-we-serve/colorado-community/grantfunding

purchasing cards for members at risk of diet-related diseases.[26] UnitedHealthcare has programs offering cash rewards and HSA funds for meeting step goals through smartwatches.[27]

However, we heard from experts in the space that reimbursements covering Food is Medicine interventions are a more difficult sell. First, nutrition benefits are more pronounced over long periods of time, and customers often switch insurers, which means the insurer funding prevention may not be the one to benefit. Second, optimal financial flows for reimbursements are tricky: in a school setting, coverage is fragmented, requiring multiple payers to participate and allocate costs by tracking individual lunch purchases. More broadly, some insurers require a more robust base of evidence proving the health benefits of dietary change to demonstrate the return on their investment.[28]

I'm excited to see innovators develop creative ways to connect the dots here.

The institutional shift opportunity

Food service across all institutional segments is a huge industry, over $200B in 2025 in North America,[29] and is ripe for change to adapt to current consumer trends and sociopolitical mandates. Promising innovations in the space will align menu shifts with the core mission or purpose of their customers, reframing the taste vs. nutrition, macros vs. plant-based, and cost vs. satisfaction trade-off myths to align incentives. Planetary health improvements through emission reductions can come hand in hand with human health-targeted shifts. The Stanford Nutrition Science Research Group and MCURC partners are well positioned to bring innovation given their strong academic brand, credibility in a noisy and convoluted "health and wellness" space, and a robust industry network of experts and potential customers.

Food is Medicine is becoming mainstream, and there is an emerging opportunity to decarbonize food systems by riding the coattails of the health and wellness movement for a win-win shift.

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[26] No Kid Hungry. https://www.nokidhungry.org/sites/default/files/2022-04/HFPRx%20Provider%20site%20packet%20-%20CARD.pdf
[27] UnitedHealthcare. https://www.uhc.com/news-articles/benefits-and-coverage/uhc-app
[28] American Heart Association. https://www.ahajournals.org/doi/10.1161/CIR.0000000000001182
[29] North America estimated at 35% of the global $606B market in 2025.
https://www.fortunebusinessinsights.com/institutional-food-service-market-113738