



True Cost of Food: School Meals Case Study

Foreword

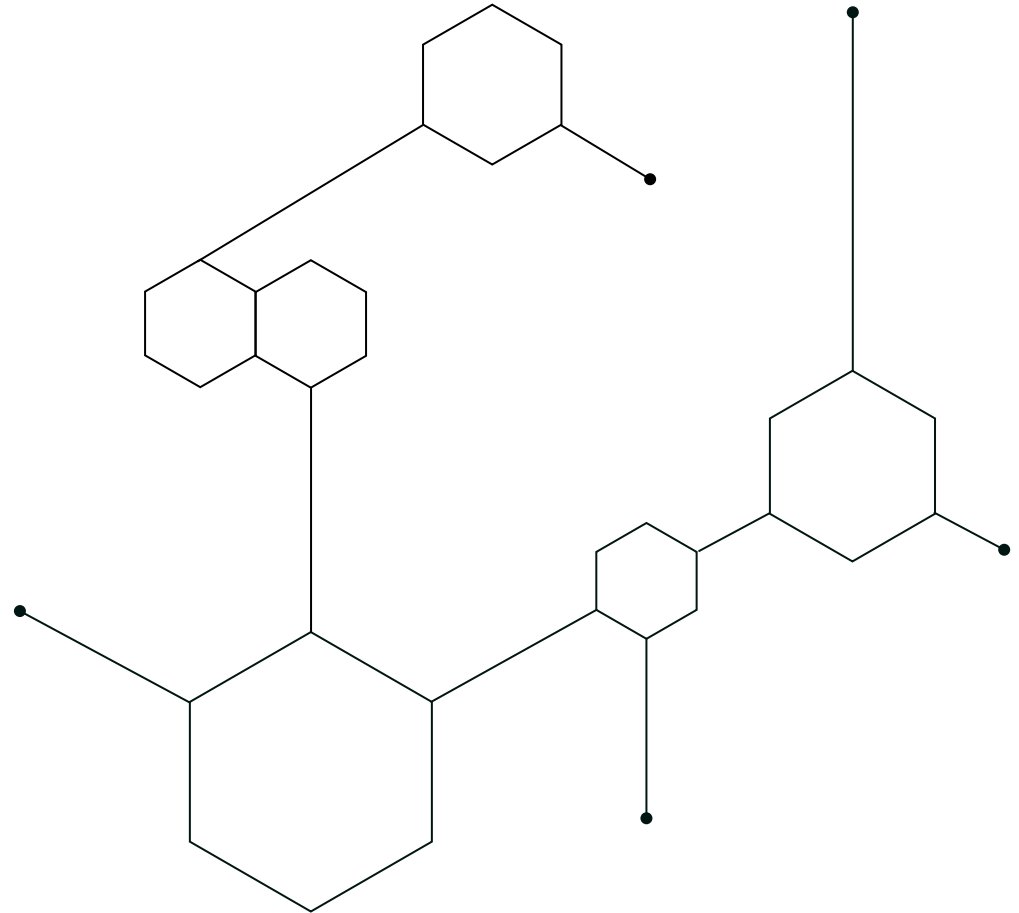
Thirty million children in the United States rely on daily school meals. Long before the pandemic, policymakers, school food professionals, advocates, and community champions were working on a suite of creative policies and innovations to address rising food and economic insecurity by expanding school meal access, strengthening nutritional quality, and prioritizing sustainable and equitable food purchasing. When schools began closing in March 2020 due to Covid-19, school meal programs overhauled their operations and reaffirmed themselves as anchors of community nutrition, health, and equity.

How can we better understand the true value of these important programs? True Cost Accounting, a methodology that takes into account the multiple dimensions of a food product, program, or system, is one approach. Applying a True Cost Accounting lens to food programs can help communities and policymakers understand the broader societal effects of the food we eat. It can also build an evidence base to guide decisions that help transform the food system. The Rockefeller Foundation's July 2021 report on the True Cost of Food showed us the hidden costs of our food system if we measured its impacts on our health, environment, and society. The application of True Cost Accounting to school meals in the U.S. can enhance our understanding of the impact that programs such as school lunch and breakfast have on students, families, and communities.

This case study shows that school meals are essential for the health and economic stability of communities. We learned that while school meal programs cost \$18.7 billion per year to run, they provide nearly \$40 billion in human health and economic benefits, providing at least \$21 billion in net benefit to society even when we measure only their benefits to human health and economic equity. Enhancements to school meal programs can increase their net value even more as they expand their benefits to additional impact areas. We analyze investments to maximize student participation, improve dietary composition, and optimize food purchasing policies, which together would produce an additional \$10 billion worth of net-positive health, equity, environmental, and economic impacts.

We are heartened to see a range of policy innovations for schools, such as the adoption of Healthy School Meals for All policies in California and Maine, and USDA waivers that made school meals more available during the pandemic. This case study also helps make the case for supporting innovations that encourage the purchase and preparation of healthier, more environmentally sound, and more equitably sourced food. As new policies and innovations are considered – such as nutrition education and scratch cooking, healthy food purchasing, and raising nutrition standards – it is important to analyze their impact across multiple areas and to aim for the best value, not just the lowest cost.

We therefore invite partners across the food system to join in exploring the power of school meal programs as reflected in this True Cost case study, as well as other applications of the True Cost Accounting methodology. Working together, we believe that we can forge a path to a better food future – one where all children, regardless of background, have access to healthy food and where communities will be healthier and more prosperous.



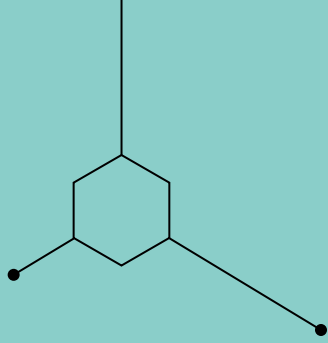
Onward,



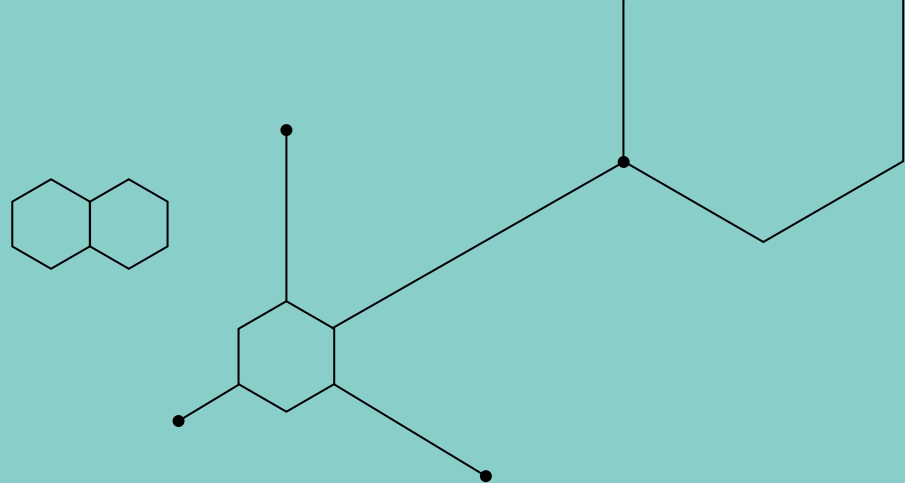
Dr. Roy Steiner,
Senior Vice President, Food Initiative,
The Rockefeller Foundation



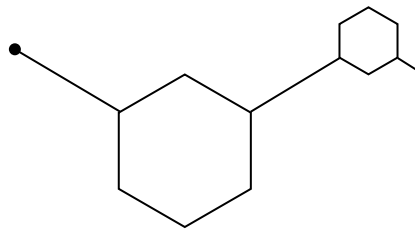
Paula Daniels,
Co-founder, Center for Good
Food Purchasing



Introduction



The U.S. National School Lunch Program (NSLP) is the second-largest nutrition assistance program in the United States.¹ It helps shape the future of our country, in that it provides free, reduced, and paid meals to many of our nation's most economically vulnerable children. First signed into law by President Harry Truman in 1946, today it serves around 30 million childrenⁱ in nearly 100,000 public and non-profit private K-12 schools — amounting to 94% of schools across the U.S.ⁱⁱ



¹ USDA Food and Nutrition Service. *National School Lunch Program (NSLP) Fact Sheet*. National School Lunch Program. U.S. Department of Agriculture. 2019; Available from: <https://www.fns.usda.gov/nslp/nslp-fact-sheet>. The largest is the Supplemental Nutrition Assistance Program, also known as SNAP and once informally known as “food stamps.”

The volume of food procured through NSLP and other school meal programs makes the school system one of the largest public purchasers of food.ⁱⁱⁱ There is also clear evidence that without access to school feeding programs, kids who go hungry have lower attendance, score lower on tests, and are less likely to thrive after their schooling.^{iv}

The Covid-19 pandemic has made the importance of school meals even more clear and, at the same time, shined a light on the endemic challenges in the system. As in-person learning shut down, school food providers demonstrated rapid innovation, reworking their meal service and partnering with community-based organizations to provide continued grab-and-go food for children and their families; and they did all of this despite significant operational and financial strain.^{v vi vii viii ix} We have also learned about the longer-term value of the emergency programs deployed as policy innovations and the temporary rule waivers that made free school meals available to all children, regardless of family income. During the pandemic, USDA issued more than 100 rule waivers to help school districts continue to provide meals for students around the country.^x The agency continues to add resources, including a recent commitment of \$1.5 billion to help school districts meet the ongoing challenges exacerbated by the pandemic, including food and labor shortages.^{xi}

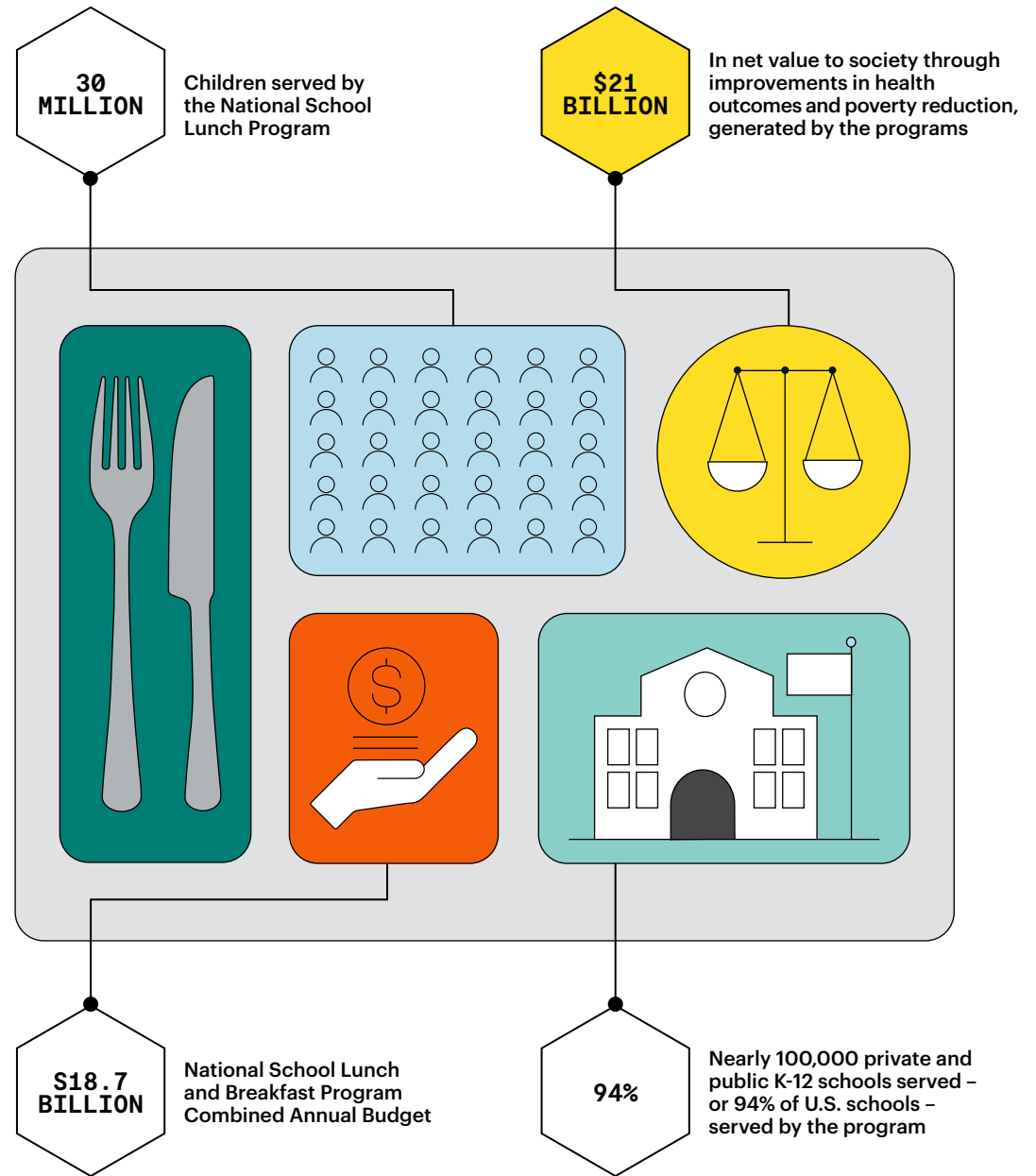
Despite its many successes, the school food system, in general, relies on and reinforces a prevailing U.S. food system that is increasingly characterized as in need of reform.^{xii}

The July 2021 report **True Cost of Food: Measuring What Matters to Transform the U.S. Food System** revealed that the hidden, true cost of the U.S. food system is three times greater than the more visible dimension of the purchase price. Compared with the \$1.1 trillion that American consumers spend on food annually, the true costs are at least \$3.2 trillion when costs to human health, livelihoods, and planetary wellbeing are taken into account.^{xiii}

Informed by the power of this knowledge, what next steps can we take to move the U.S. food system in a direction where its price is more openly aligned with its full value? We start with an analysis of a large, longstanding U.S. food program to better understand where True Value can be found through enhancements to food programs and policies.

This case study embarks on a True Cost evaluation of the National School Lunch Program (NSLP) and the School Breakfast Program (SBP) — jointly referred to in this report as “school meal programs” — analyzing their combined annual budget of \$18.7 billion.^{xiv xv} In these programs, school meals are offered either for free or at a reduced price to eligible children in grades K-12; school food authorities then receive reimbursements from the USDA for those meals (as well as a small amount for meals served to students paying full price).^{xvi}

THE U.S. NATIONAL SCHOOL LUNCH AND BREAKFAST PROGRAMS



While there are many factors that go into the implementation of school meal programs around the country, our analysis found that the programs generate quantifiable benefits, producing \$21 billion in net value to society through improvements in health outcomes and poverty reduction.²

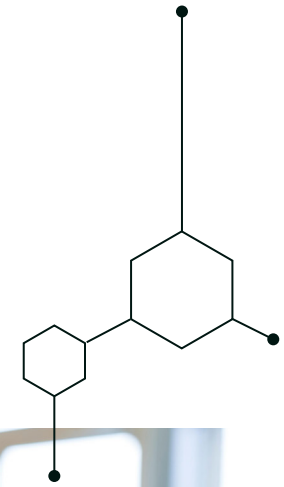
Our analysis also identified **three primary drivers** of change that would grow the reach of the school meal programs and produce a higher return on investment for the programs:

- **Maximizing student participation**
- **Improving dietary composition**
- **Optimizing procurement to support the purchasing of environmentally sustainable and locally sourced food**

Together these actions would result in at least around \$10 billion in additional net value for students, parents, and communities around the country.

Our analysis also identified areas that need further study, primarily in the areas of quantifying impacts on racial and gender equity, job creation and quality, and academic impacts attributable to school meals. But it is clear that school meal programs already produce benefits to society that are not seen when viewing only their program costs. With strategic investments in certain areas, those benefits will continue to grow.

² While the practice of quantifying food systems impacts in monetary terms is worth reflection (see Patel, R. *A Democratic Alternative to True Cost Pricing*. Nature Food. September 20, 2021), we hope this analysis will present the current and potential True Value of school food in a manner that can inform policy and program decisions. A complete overview of our True Cost Accounting (TCA) methodology, including the full set of metrics evaluated, datasets used, monetization techniques employed, detailed calculations, and additional charts and tables, is available in the technical appendix and online at this link



The True Cost Approach: Understanding what types of costs are unaccounted for is an important first step in transforming food systems

The framework used in the True Cost analysis of school meals is drawn from [True Cost of Food: Measuring What Matters to Transform the U.S. Food System](#).^{xvii} The framework identifies and quantifies hidden costs in seven impact areas (summarized in Figure 1) and applies equity as a key component when evaluating each impact area. These dimensions are important to analyze in order to fully understand the systemic impact of a food product or program on society, in the areas called out in the framework. Although our food system provides affordable and diverse food to many, it also comes with hidden costs that are not reflected in the price — costs to our health, our communities, our workers, and our environment.

Our True Cost approach builds on a field of True Cost Accounting work by monetarily quantifying these hidden costs, in order to contribute to a discussion of how these costs or benefits accrue to society. Where our analysis points out a break-even or positive result in the analysis of costs and benefits, we characterize it as showing True Value. Where it is negative (continues to result in greater externalized costs) we characterize it as True Cost negative. A full breakdown of each impact area and the methodology behind it can be found in the [True Cost of Food: Technical Appendix](#).

The framework includes 7 impact areas with selected metrics within.

HUMAN HEALTH

- Overweight/obesity
- Food insecurity
- Non-communicable diseases
- Air pollution

ENVIRONMENT

- Greenhouse gas emission
- Water use
- Soil erosion

ECONOMY

- Subsidies

BIODIVERSITY

- Land use
- Pollution



LIVELIHOODS

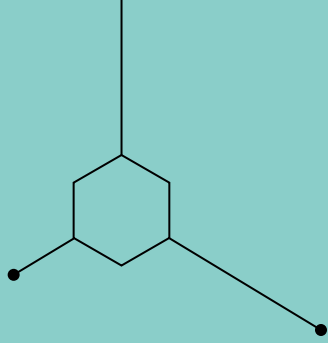
- Child labor
- Underpayment (Wages)
- Lack of benefits
- Occupational health and safety

ANIMAL WELFARE

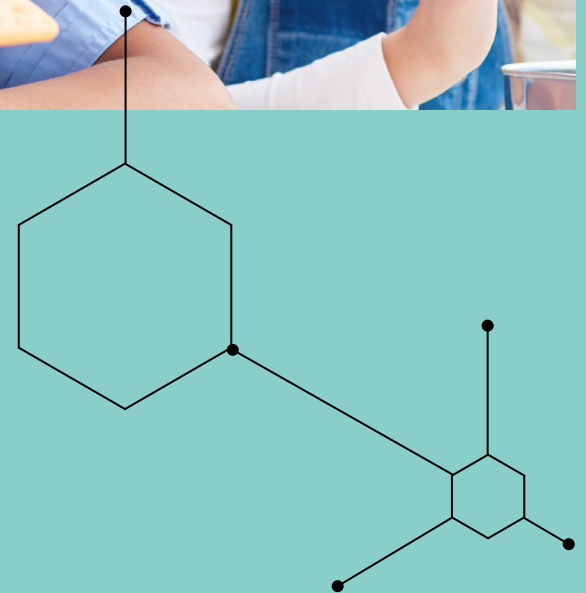
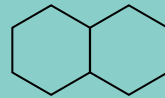
- Assessed qualitatively— see spotlight section

RESILIENCE

- Assessed qualitatively— see spotlight section



School Meal Programs Provide True Value

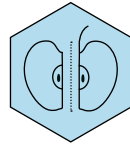


U.S. School Meal Programs Currently Provide a Net \$21 Billion in True Value in Human Health and Economic Equity

Many studies have been conducted to report on the health benefits of our national school meal programs.^{xviii xix} Our quantitative analysis — based on pre-pandemic datasets — confirms that when programs utilize the dietary guidelines referenced by the 2010 Healthy, Hunger-Free Kids Act, the quantified health benefits to children outweigh program costs.³

Based on our analysis of these areas, the current school meal programs create at least \$39.5 billion in benefits each year compared with a budget of \$18.7 billion, with the difference of \$21 billion representing the net benefit of the current programs. In our analysis, these benefits are derived primarily in the areas of economic equity and human health.

³ A 2009 study found that the dietary guidelines prior to the Healthy, Hunger-Free Kids Act of 2010 were actually increasing obesity. For more information, please see Schanzenbach, D.W. *Do School Lunches Contribute to Childhood Obesity?* *J. Human Resources*. 44(3): 684-709. July 2009.



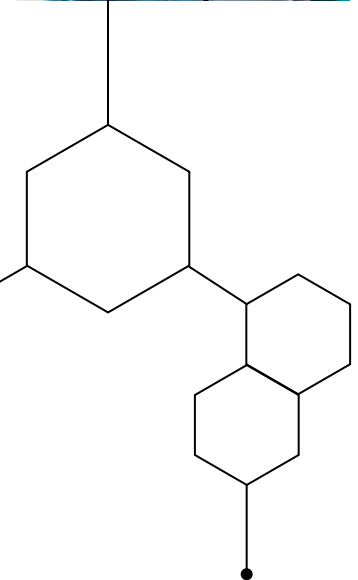
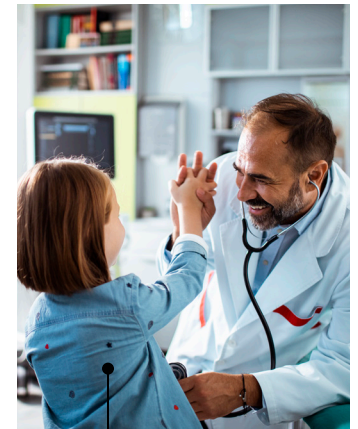
ECONOMIC EQUITY

Current programs serve millions of children per day predominantly from low-income households; 84% of low-income, food-insecure households with school-age children access free or reduced-price lunches through the NSLP.^{xx} Due to the financial benefit of a regular free/reduced-price meal, the NSLP lifts over 722,000 children above the poverty threshold.^{xxi xxii} It also addresses some of the associated factors of childhood poverty, such as food insecurity,^{xxiii} and improves academic performance.^{xxiv xxv}



HUMAN HEALTH

School meals are relatively healthier than the average American diet for most school-age children who participate in the national school meals programs, scoring better than average on the Healthy Eating Index.^{xxvi xxvii} On school days, these children consume as much as half of their daily calories at school.^{xxviii}



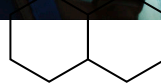
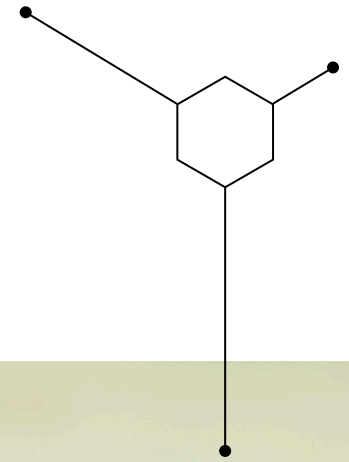
It is worth noting that the school meal programs operate on a reimbursement basis (so that the school is provided funds after they serve food, based on reported participation rates). The typical lunch reimbursement rate is \$3.32 per meal, while the typical cost to produce a reimbursable meal (per national guidelines) is \$3.81.^{xxix} As a result, some school districts utilizing the school meal programs operate at a financial deficit, and may have to compensate, or subsidize, for the balance of the school meal costs.^{xxx} This often limits the ability of school food service departments to maximize their purchases of higher quality or True Value food items.

Further, while the program was developed to provide benefits to students from families with lower-income students, its administrative practices can impose a stigma on its recipients, which in turn contributes to the problems of reduced participation rates.^{xxxi xxxii xxxiii xxxiv}

Over the last several years, a handful of policies have been enacted at the state and local levels to address the issue of stigmatization. For example, in 2017 New Mexico addressed this problem by enacting the Hunger-Free Students' Bill of Rights Act, which requires that all students have access to the same lunch; it also ends administrative practices that could contribute to stigmatization, such as requiring a hand stamp or wristband to show income eligibility for the free/reduced-price meals.^{xxxv}

For other true cost categories, the impacts of school meals are similar to the prevailing U.S. Food System, so

their net impact is roughly neutral when compared with meals children eat outside of school. This includes the true cost categories of the environment, biodiversity, livelihoods, resilience, and animal welfare. (There are several school districts that are exceptions and would likely perform better in these categories on a True Cost analysis; they should be evaluated on their own merit.)

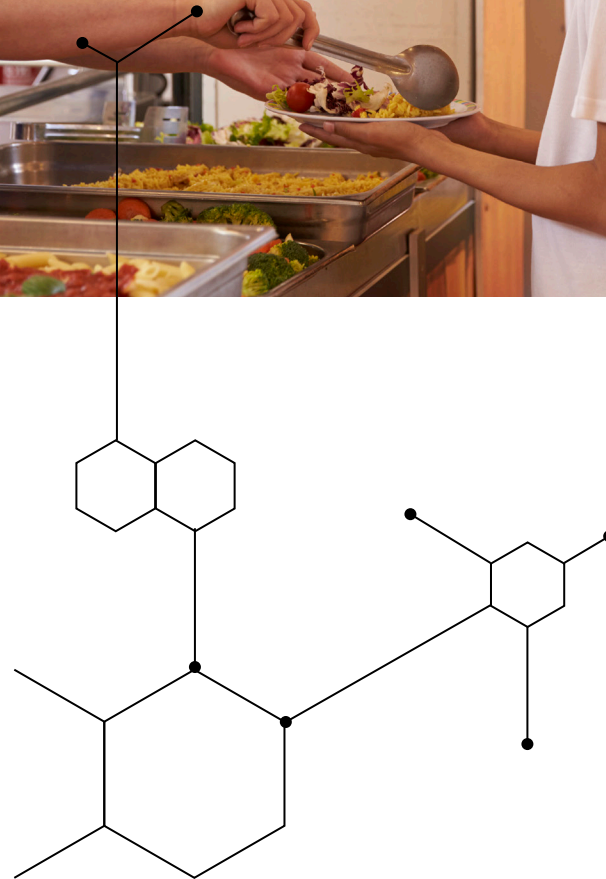


**The Potential
for Greater
True Value
with Additional
Program
Investment**



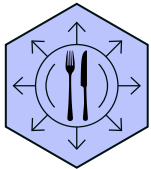
School meal programs provide the health benefits detailed earlier despite the limited food budgets food service directors have to work with each day. Many food service professionals and advocates have argued that, with the right investments, schools can do more to increase participation, provide optimally healthy meals, or use their food purchasing dollars in support of local economies (including small and historically marginalized businesses), worker health and well-being, environmentally sound agriculture, and animal welfare. Instead schools are constrained by the typical per meal reimbursement rate, and by underinvestment in kitchen infrastructure, culinary training, and other program needs.

We learned from the July 2021 report **True Cost of Food: Measuring What Matters to Transform the U.S. Food System** that the U.S. Food System as a whole has negative externalized impacts in the areas of human health, planetary health, and worker well-being. Our analysis of school meal programs examines whether additional investment in the programs could create more True Value and move overall costs and benefits in a net positive direction.



Three key drivers of change under active discussion by school food decision-makers are well-suited for True Cost analysis

There are three potential drivers of change that we analyze in this report, for actionable changes that could be implemented by the school meal programs to provide a greater societal return on program investment:



MAXIMIZING STUDENT PARTICIPATION

Health, food security, and environmental benefits of reducing food waste and maximizing free/reduced-price meal participation by every eligible student



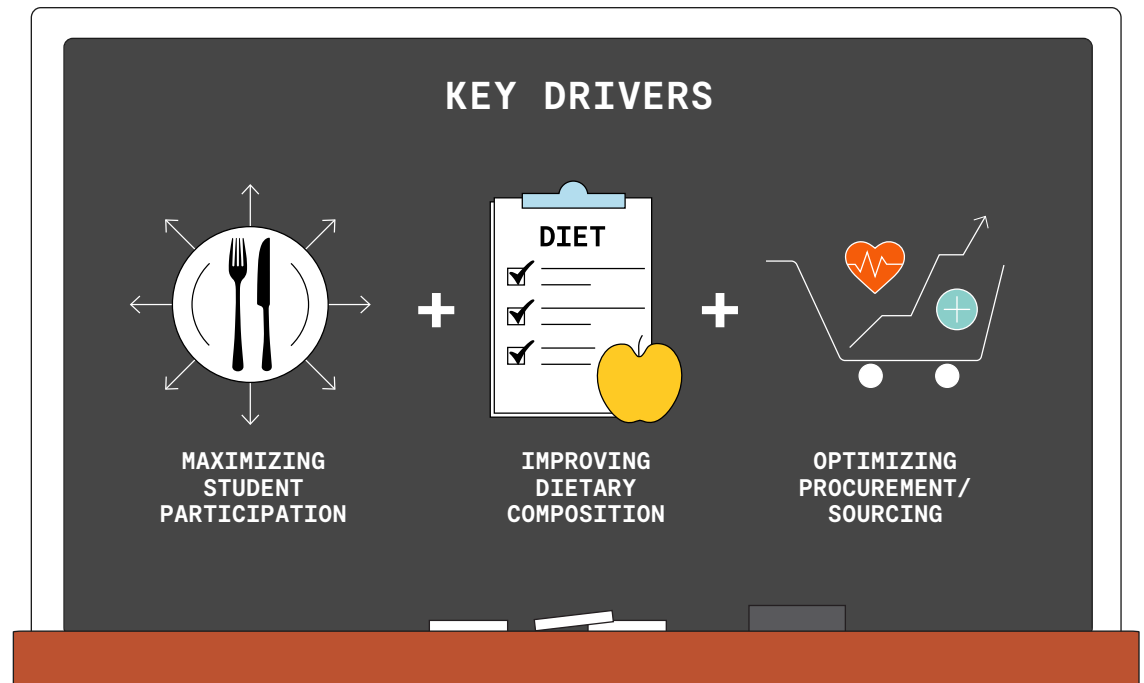
IMPROVING DIETARY COMPOSITION

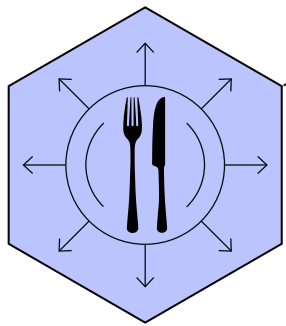
Health and environmental benefits of shifting school meal composition to mirror a 'Healthy Mediterranean-style diet pattern' per the Dietary Guidelines for Americans



OPTIMIZING PROCUREMENT

Benefits of changing food procurement to support local economies, producer and worker livelihoods, and environmental and ecosystem health





Driver One

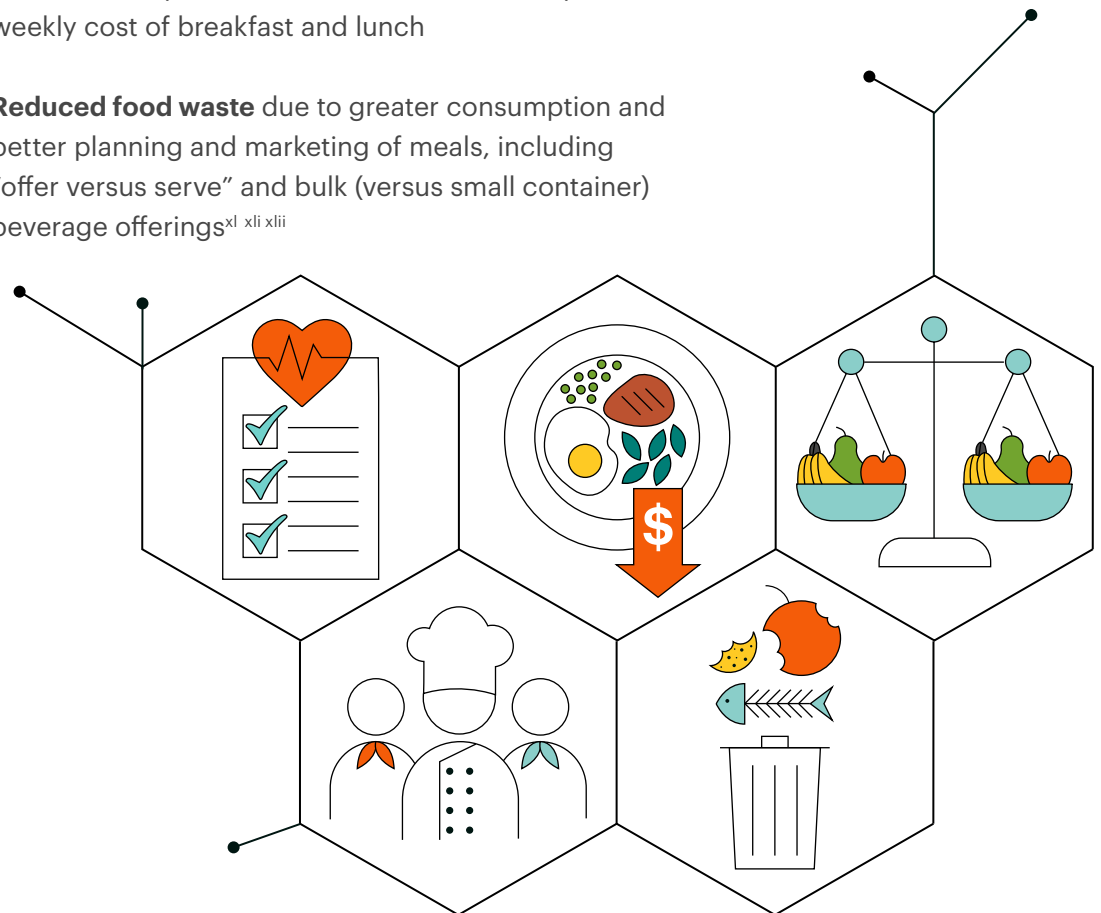
Maximizing Participation (Net Benefit: \$7.49 billion)

The school meal programs serve nearly 45 million meals per day.^{xxxvi xxxvii} Despite these numbers, the programs are underutilized; many students who are eligible for free/reduced-price meals do not eat breakfast and lunch at school.^{xxxviii xxxix} If every student who was eligible participated, meals served to eligible students would increase by 40%. (Again, these numbers are based on pre-pandemic datasets and eligibility criteria)

Doing so, and therefore maximizing free/reduced-price meal participation, could have a True Value of \$7.49 billion per year, the difference between a cost of \$13.09 billion per year and the benefits of \$20.58 billion per year.

The quantified benefits of this driver come from the following areas:

- **Improvement in diet-related disease conditions** because school meals are healthier than the average American diet
- **Reduction in food insecurity** when all students who are eligible consume free/reduced-price meals
- **Reduction in poverty for many students** who access free/reduced-price, nutritious meals, which replaces the weekly cost of breakfast and lunch
- **Reduced food waste** due to greater consumption and better planning and marketing of meals, including “offer versus serve” and bulk (versus small container) beverage offerings^{xi xii xiii}





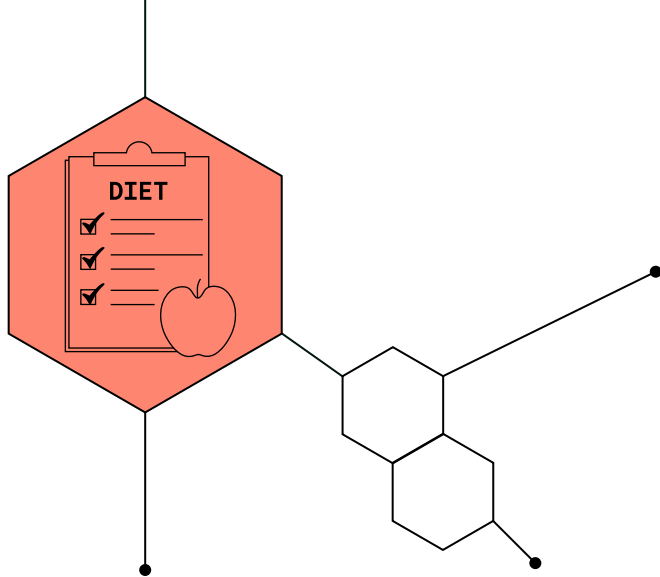
HEALTHY SCHOOL MEALS FOR ALL

Expanding school meal participation for the benefit of all students, families, and communities, is the topic of a considerable body of academic literature. There are significant efforts underway to expand free school meals to all students, regardless of family income — a goal that we do not quantify in monetary terms here, but recommend for additional study.

Research and practice suggest that providing this benefit without the burden of income eligibility to all students would: enable students that may hover at or slightly above the income threshold to receive the financial and health benefits of free, healthy meals; mitigate problems of stigmatization; eliminate the administrative burdens of meal applications and lunch debt on students, families, and administrators; and translate into better academic performance and lasting improved health outcomes. Additionally, an increase in economies of scale for school meals may allow many schools to provide better food at the reimbursement rate, and have an even greater beneficial impact on local economies and the environment.

California and Maine recently enacted legislation creating free school meals for all students in public schools.^{xlii xliv} Further study of the costs and benefits of those programs, along with the current effects of the pandemic emergency rule waivers from the USDA, would be valuable. This additional study should also include the potential for job creation from best practices in maximizing participation, and the economic, environmental, as well as overall health and equity benefits from universally available school meals.





Driver Two

Improving dietary composition (Net Benefit: \$1.52 billion)

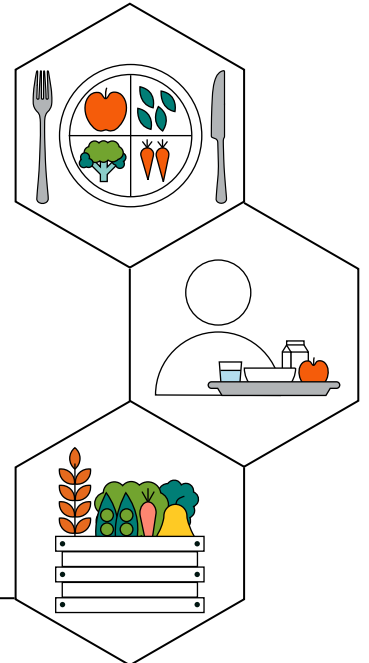
Food served in the NSLP and SBP more closely adheres to the Dietary Guidelines for Americans than the average American diet;^{xlv} however there are opportunities to make school meals even healthier. Building on current efforts to strengthen school nutrition standards related to added sugar, sodium, and whole-grain-rich content — which will have significant health benefits — we analyze a broader set of interventions in a shift to the Healthy Mediterranean-Style Dietary Pattern within the Dietary Guidelines for Americans^{xlvi} (informally known as the Mediterranean Diet⁴). The diet, when compared to current

school meal nutrition standards, is higher in components like whole grains, seafood, roots, and tubers, and lower in components like processed meat, dairy, and added sugars.^{xlvii} (This transition is often enabled by a shift from processed school meals to scratch cooking.)

In this scenario, the true value could be a benefit of at least \$1.52 billion per year when compared to the current guidelines. This includes an estimated implementation cost of \$3.52 billion and benefits of \$5.04 billion.

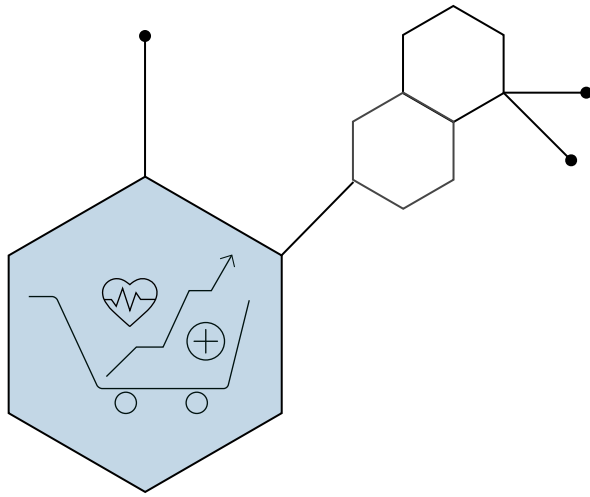
The quantified benefits of this driver come from the following areas:

- **Improvements in diet-related conditions** (e.g., dietary diseases) through shifting meals to healthier foods, including those lower in sodium and added sugar and higher in whole grains and produce
- **Increased participation in school meal programs** associated with healthier meals,^{xlviii} and the food security and poverty reduction benefits associated with that increase
- **Potential reduction in greenhouse gas emissions, water use/depletion, land use, and eutrophication** from shifting to an improved nutritional diet in which there are less processed foods and meat, and more whole grains, fruits, vegetables, and legumes.⁵



⁴ This term is used for ease of reference, with full acknowledgement that the dietary components of a Mediterranean style diet can be - and often are - reflected in the culinary traditions of various cultures.

⁵ The scientific analysis in this area is inconclusive as to overall environmental benefits of the Healthy Mediterranean diet as compared to the prevailing U.S. diet, from a categorical standpoint. There is general agreement that shifting to less meat, and toward more produce and whole grains will produce those benefits. We offer an approach to quantifying these shifts, as presented in the Technical Appendix. For more information, please see Reinhardt S.L., et al., *Systematic Review of Dietary Patterns and Sustainability in the United States*. *Adv Nutr.* 11(4):1016-1031. July 2020. DOI: 10.1093/advances/nmaa026. PMID: 32167128; PMCID: PMC7360461. See also: Sáez-Almendros, S., et al., *Environmental footprints of Mediterranean versus Western dietary patterns: beyond the health benefits of the Mediterranean diet*. *Environ Health.* 12(118). 2013. DOI: 10.1186/1476-069X-12-118; and Blackstone, N.T., et al., *Linking sustainability to the healthy eating patterns of the Dietary Guidelines for Americans: a modelling study*. *Lancet Planet Health.* 2(8): 344-352. August 2017. DOI: 10.1016/S2542-5196(18)30167-0.

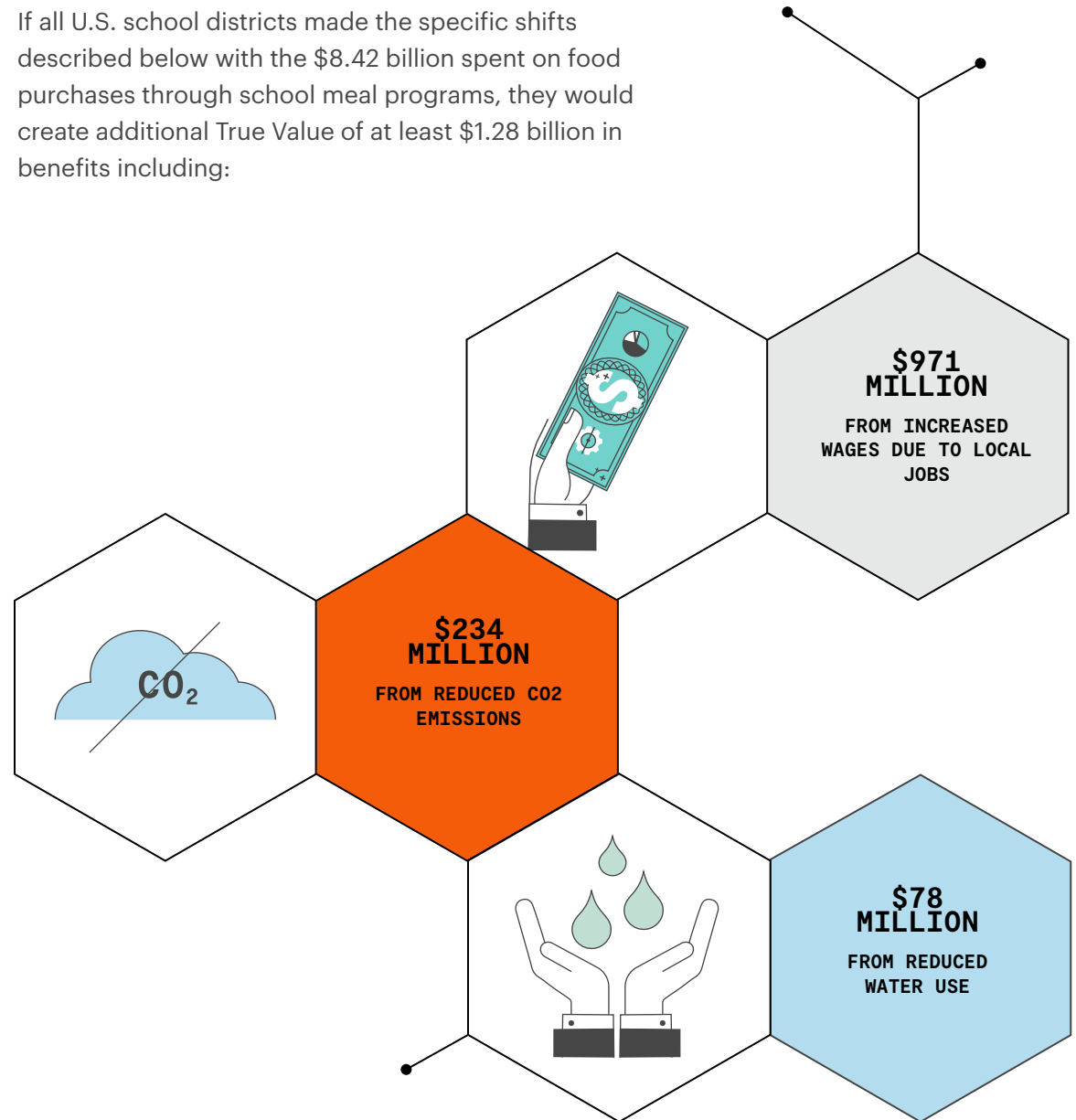


If all U.S. school districts made the specific shifts described below with the \$8.42 billion spent on food purchases through school meal programs, they would create additional True Value of at least \$1.28 billion in benefits including:

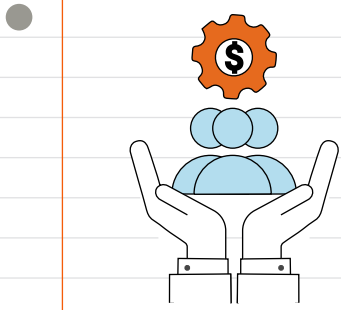
Driver Three

Optimizing Procurement (Net Benefit: \$1.28 billion)

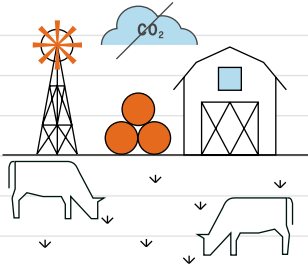
Food purchased in the school food system reflects the food available in the prevailing U.S. food system in most dimensions; therefore, the food purchased through school food programs generally has the same negative true costs that characterize the broader food system. Shifts in procurement policies and practices can increase value in the areas of economies/wage, environment/biodiversity, livelihoods, and animal welfare.



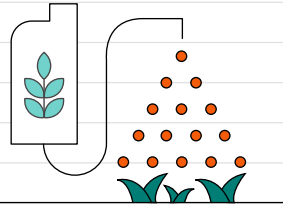
These shifts include:



Increasing procurement from local and regional producers and suppliers to 30% of all food purchases. This would create 19,552 new local jobs, equivalent to annual local wages of \$971 million. Job creation in the localized food system can include jobs such as farm to school coordinators, culinary staff for scratch cooking food service staff training and professional development, and local food hub operations (specialized distribution centers).^{xlix | li 6}

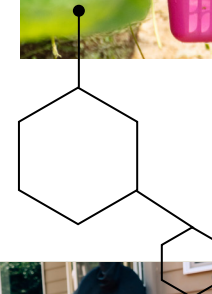


Reducing conventionally raised grain-fed beef⁷ by 30% (such as through a Meatless Mondays program). This would result in reduced CO₂ emissions of 2.98 billion lbs (equivalent to taking 292,000 passenger vehicles off the road annually) and reduced water use by 14.1 billion gallons (equivalent to the annual indoor water needs of 280,000 households).



Replacing conventional with certified USDA organic for the 20 most commonly purchased produce items. This would decrease pesticide use by 567,000 lbs., and decrease pesticide use on 47,600 acres of farmland (equivalent to 36,100 football fields).

The 30% local target included above is consistent with various state goals for localized food procurement, from New York to Hawai'i. For example, Hawai'i recently passed a law requiring the Department of Education to source 30% locally by 2030.^{lii} In New York, the state provides an additional 25 cents per meal for any school district reaching a target of at least 30% locally sourced.^{liii}



⁶ This analysis applies only to the number of increased jobs and associated wages in a local economy, and not job quality. The latter is worthy of further study. For example, please see Gaddis, J.E. *The Labor of Lunch: Why We Need Real Food and Real Jobs in American Public Schools*. University of California Press. 2019.

⁷ This is directed to the category of beef raised in confined animal feeding operations, or CAFO's, which have been modeled in the scientific literature for these environmental impacts. It is important to note that production practices are the significant factors in the environmental impacts of any food product, and this is particularly true of beef. See, for example, this study on the carbon sequestration benefits of grass fed and finished beef: Stanley, P.L., et al., *Impacts of soil carbon sequestration on life cycle greenhouse gas emissions in Midwestern USA beef finishing systems*. *Agricultural Systems*. 162: 249-258. 2018. DOI: <https://doi.org/10.1016/j.agsy.2018.02.003>.





SPOTLIGHT: FARM TO SCHOOL

Momentum has increased toward the benefits of Farm to School, or local sourcing by school districts. Farm to School programs are now in all 50 states and the District of Columbia.^{liv} Its attendant economic value offers up to \$2.16 return for every dollar sourced locally by the school, and up to 2.35 new jobs created in the local region for every job created by a school district in order to focus on local food sourcing (such as a farm to school coordinator).^{lv}

Michigan developed a state funded program which provides 10 cents per meal for schools and early childhood education centers serving Michigan-grown fruits, vegetables, and legumes. Since 2016 it has provided \$575,000 in meal reimbursements and grants for pilot projects, benefitting student health through increased consumption of local produce items, as well as through educational programs in nutrition and local economies.^{lvi} The program reported a double return of economic value to the state on the investment, showing an economic benefit of \$487,396 to \$1,216,714 per region, depending on the amount of the grant awards invested.^{lvii}

Other places that incentivize school districts to procure locally and support their local economies by providing additional reimbursements per meal include the District of Columbia and Oregon.^{lviii lix}

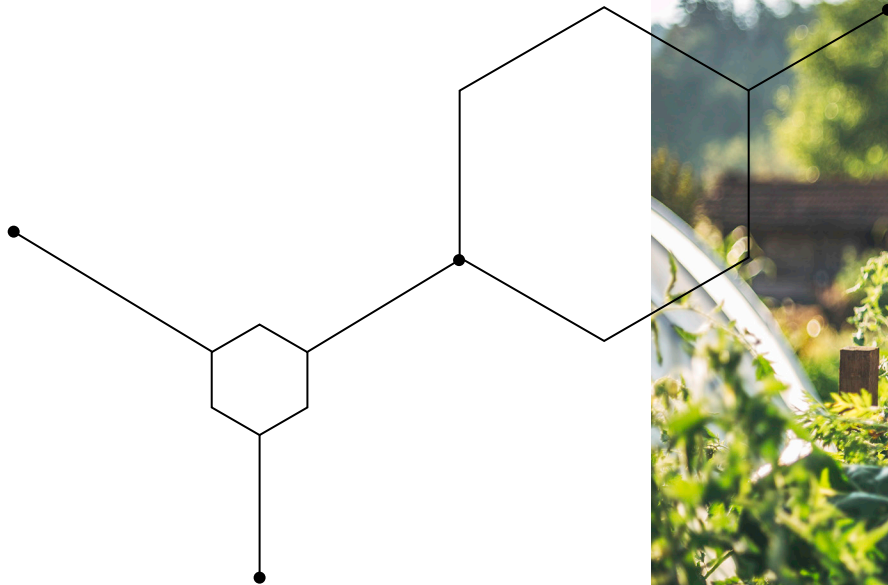


For many large institutions, these shifts can be made within the constraints of their budgets, by implementing strategic changes to their operations and procurement.^{ix} For others, budgets can be a limiting factor in making these procurement shifts. An important next step is expanding the Michigan local purchasing incentive model to other valued attributes of an equitable, environmentally sustainable, and healthy food system, which an additional 10% increase in program reimbursement rates could provide. Further, increased attention is warranted in local sourcing programs to bring businesses owned by people of color and other historically marginalized producers and suppliers into robust and durable relationships with the school food supply chain.



JUST 25 CENTS MORE PER MEAL GENERATES MORE TRUE VALUE

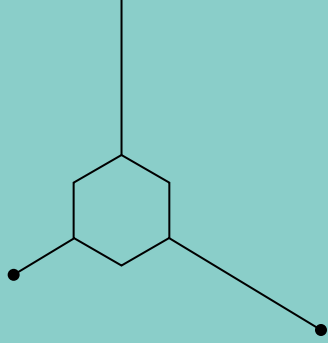
In school year 2018-2019, Austin Independent School District (AISD) spent \$13,500,000 on food and served 11.7 million meals. AISD projected that with an additional 25 cents per meal directed towards values-based purchasing, they could source a total of 10% of their food locally with at least 5% of their overall food budget spent on supporting small, historically disadvantaged producers, 5% from organic producers, 10% from fair producers, 10% from humane producers, and 45% of food budget qualifying as whole and minimally processed.



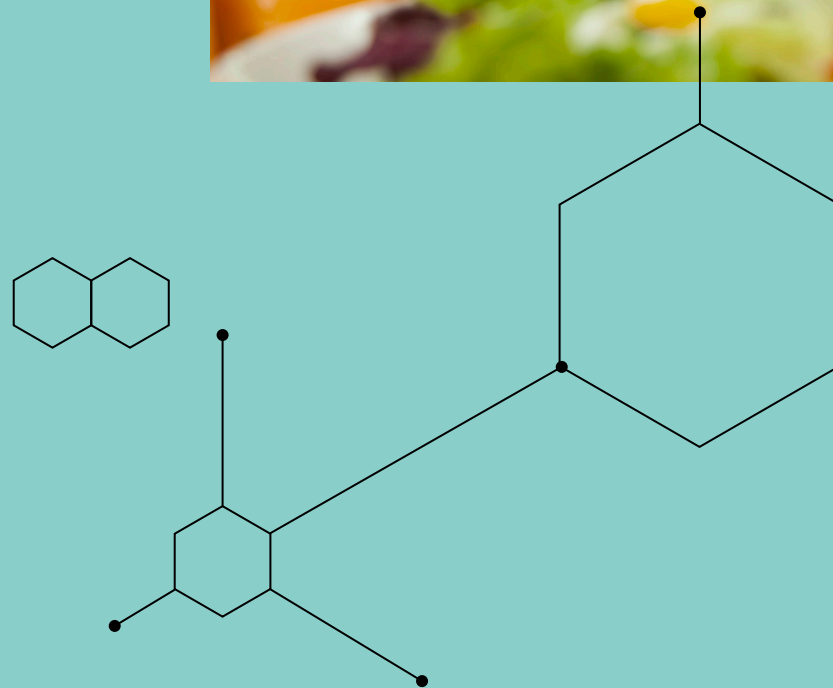
Based on information from the programs described above, as well as quantitative and qualitative data collected by the Center for Good Food Purchasing, an additional 10 to 25 cents per meal in the school meal programs would provide the ability to make these shifts and bring the school program in alignment with a True Value approach. Increasing the reimbursement rate for school meals by an additional 25 cents per meal, for the purpose of optimizing procurement, would amount to a total cost of \$1.8 billion annually, only 10% of the current total expenditure of the school meal programs, and provide benefits in excess of this amount in the areas of economy/wages, livelihoods, environment/biodiversity, equity, animal welfare and health.

With a 10% increase in meal reimbursements to achieve a modest 5-10% increase in sourcing for True Cost values, the school meal programs would be a step closer to closing the gap between the cost of food in the school meal programs (as well as the U.S. food system) and its externalized impacts.





Looking Forward: Areas for Further Study



Based on the existing benefits we quantify from the current school meal programs, it is evident that the programs more than pay for themselves by reducing health care costs and alleviating poverty — and they can do so much more with full participation in the programs, enhanced dietary composition, and optimizing product sourcing. Many of these shifts would require new investment and policy support, with the monetized benefits of these investments considerably outweighing the costs.

We hope this case study opens the door for discussion, and for the development of further information and study to deepen the True Cost analysis for all seven impact areas of the True Cost framework we have used.

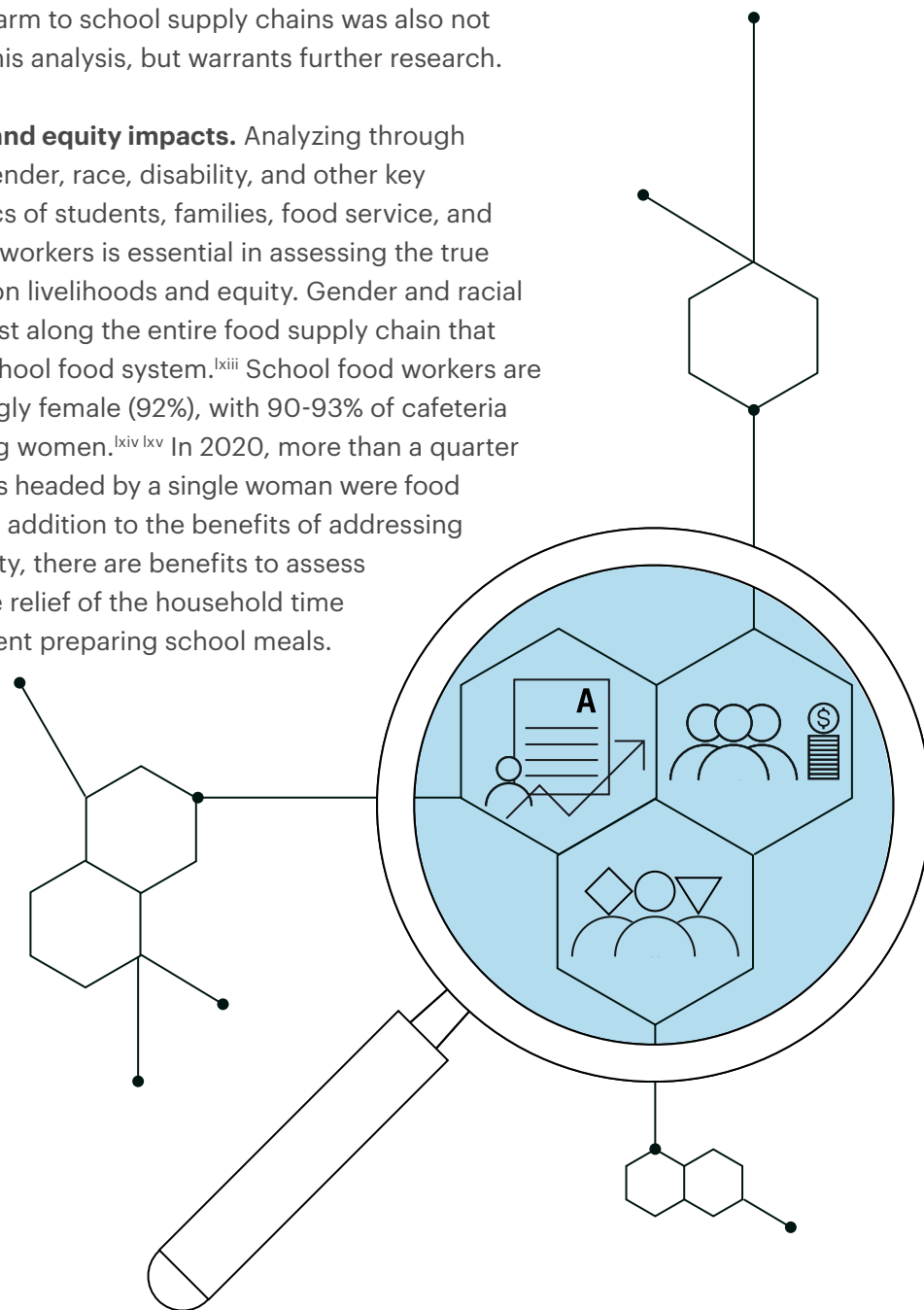
Future study on the quantifiable value of the following areas, in order to further develop a True Cost analysis for the school meal programs, should include:

Changes in academic performance attributable to more nutritious meals. Current literature makes clear the impact of healthy school meals on students’ academic performance, especially for students in low socioeconomic status households.^{lxi lxi} Further research would be valuable to monetarily quantify the earnings, health, and equity benefits of this outcome.

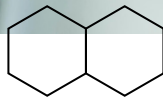
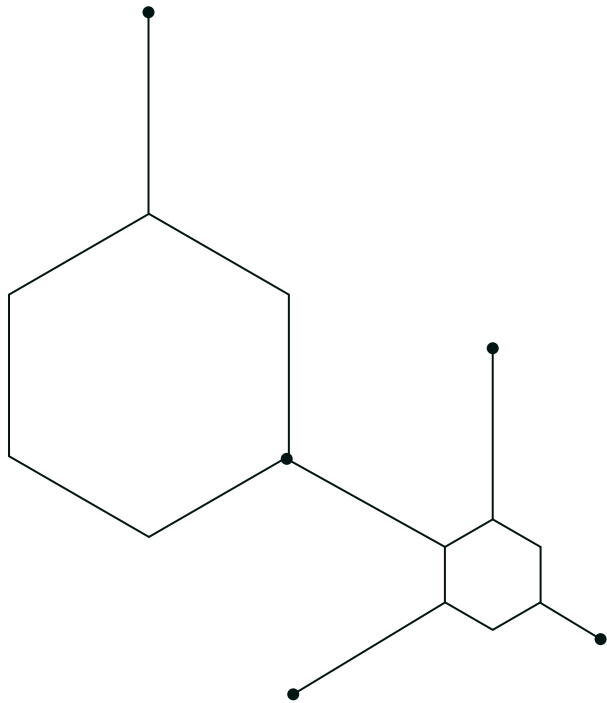
Economy and wages impacts. While we estimated jobs and wages related to optimizing local procurement, a detailed study on the types of jobs and earnings for workers and businesses throughout the supply chain as well as at the schools would be useful, as well as the potential increased future economic benefits for upskilling for training. The overall economic development potential from the

infrastructure development for increased scratch cooking and shorter farm to school supply chains was also not included in this analysis, but warrants further research.

Livelihoods and equity impacts. Analyzing through the lens of gender, race, disability, and other key characteristics of students, families, food service, and supply chain workers is essential in assessing the true cost impact on livelihoods and equity. Gender and racial inequities exist along the entire food supply chain that serves the school food system.^{lxiii} School food workers are overwhelmingly female (92%), with 90-93% of cafeteria workers being women.^{lxiv lxxv} In 2020, more than a quarter of households headed by a single woman were food insecure.^{lxvi} In addition to the benefits of addressing food insecurity, there are benefits to assess regarding the relief of the household time and effort spent preparing school meals.



Ultimately, policies that result in the provision of healthy meals to all K-12 students regardless of income, with program parameters aligned with all seven impact areas of the True Cost framework, will benefit all dimensions of society impacted by the school meal programs throughout their operations, from sourcing to serving. While each of these impact areas has policy levers that could result in benefits to their respective area, their synergistic impact would be truly transformative and provide optimal benefit to people and the planet, for an overdue true cost leveling from deficit to benefit of our U.S. food system.



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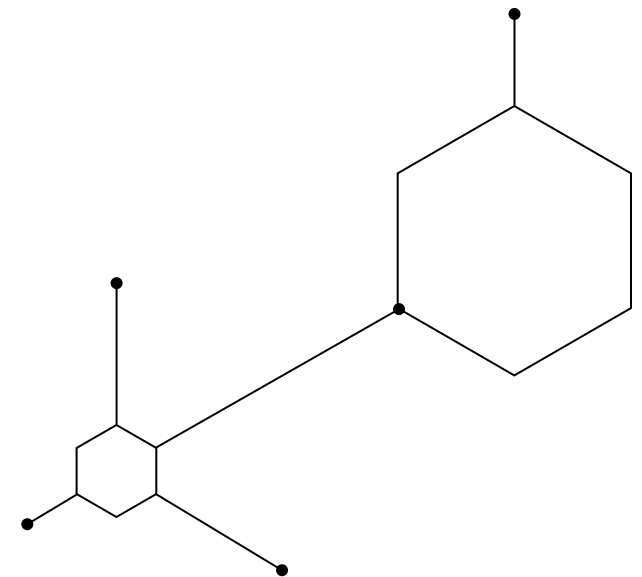
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Endnotes

- i) USDA Food and Nutrition Service. *National School Lunch Program (NSLP) Fact Sheet*. National School Lunch Program. U.S. Department of Agriculture. 2019; Available from: <https://www.fns.usda.gov/nslp/nslp-fact-sheet>.
- ii) USDA Food and Nutrition Service. *National School Lunch Program (NSLP) Fact Sheet*.
- iii) USDA Economic Research Service. *National School Lunch Program*. Child Nutrition Programs. U.S. Department of Agriculture. 2021; Available from: <https://www.ers.usda.gov/topics/food-nutrition-assistance/child-nutrition-programs/national-school-lunch-program>.
- iv) Cohen, J.F.W., et al., *Universal School Meals and Associations with Student Participation, Attendance, Academic Performance, Diet Quality, Food Security, and Body Mass Index: A Systematic Review*. *Nutrients*. 13(3): 911. March 2021. DOI:10.3390/nu13030911.
- v) Center for Good Food Purchasing. *Good Food Purchasing Program: A Roadmap for the Post-Pandemic Food System We Need*. 2021; Available from: <https://my.visme.co/view/x4jn7dqd-the-good-food-purchasing-program-a-roadmap-for-the-post-pandemic-food-system-we-need>.
- vi) USDA Food and Nutrition Service. *Information Report (Keydata)*. U.S. Department of Agriculture. 2021; Available from: <https://fns-prod.azureedge.net/sites/default/files/data-files/keydata-february-2021.pdf>.
- vii) School Nutrition Association. *School Nutrition Meals Served and Reimbursements During the Covid-19 Pandemic*. 2021; Available from: https://schoolnutrition.org/uploadedFiles/6_News_Publications_and_Research/8_SNA_Research/School-Nutrition-Meals-Served-and-Reimbursements-During-the-Pandemic-February-2021-Data.pdf.
- viii) FoodCorps. *School Meals During Covid-19: From the Voices of Superintendents, School Nutrition Directors, and Other School District Leaders*. 2021; Available from: <https://foodcorps.org/cms/assets/uploads/2021/03/School-Meals-During-COVID-19-Midyear-Report.pdf>.
- ix) FoodCorps. *Nourishing Learners: A Report on School Meals and Education During Covid-19*. 2021; Available from: <https://foodcorps.org/cms/assets/uploads/2021/09/Nourishing-Learners-FINAL.pdf>.
- x) No Kid Hungry. *Summary Of Current COVID-19 Child Nutrition Program Response Nationwide Waivers*. Available from: <https://bestpractices.nokidhungry.org/resource/summary-current-covid-19-child-nutrition-program-response-nationwide-waivers#SSOforSY2122>.

- xi) USDA Food and Nutrition Service. *FACT SHEET: USDA Provides Broad Support to Ensure School Meal Program Succeed*. U.S. Department of Agriculture. 2021; Available from: <https://www.fns.usda.gov/fact-sheet/fns-0006.21>.
- xii) De Schutter, O. *Final report: The transformative potential of the right to food. Report of the Special Rapporteur on the right to food*. United Nations General Assembly. January 2014; Available from: http://www.srfood.org/images/stories/pdf/officialreports/20140310_finalreport_en.pdf.
- xiii) The Rockefeller Foundation. *True Cost of Food: Measuring What Matters to Transform the U.S. Food System*. 2021; Available from: <https://www.rockefellerfoundation.org/report/true-cost-of-food-measuring-what-matters-to-transform-the-u-s-food-system/>.
- xiv) USDA Food and Nutrition Service. *National School Lunch Program (NSLP) Fact Sheet*. U.S. Department of Agriculture. 2017; Available from: <https://fns-prod.azureedge.net/sites/default/files/resource-files/NSLPFactSheet.pdf>.
- xv) USDA Economic Research Service. *School Breakfast Program. Child Nutrition Programs*. U.S. Department of Agriculture. 2021; Available from: <https://www.ers.usda.gov/topics/food-nutrition-assistance/child-nutrition-programs/school-breakfast-program/>.
- xvi) Fox, M.K., Gearan, E. *School Nutrition and Meal Cost Study: Summary of Findings*. Mathematica Policy Research, U.S. Department of Agriculture Food Nutrition Service. 2019; Available from: https://fns-prod.azureedge.net/sites/default/files/resource-files/SNMCS_Summary-Findings.pdf.
- xvii) The Rockefeller Foundation. *True Cost of Food: Measuring What Matters to Transform the U.S. Food System*.
- xviii) Food Research & Action Center. *Research Shows that the School Nutrition Standards Improve the School Nutrition Environment and Student Outcomes*. 2016; Available from: <https://frac.org/wp-content/uploads/school-nutrition-brief.pdf>.
- xix) Liu, J., et al., *Trends in Food Sources and Diet Quality Among US Children and Adults, 2003-2018*. JAMA Network Open. 4(4): e215262. 2021. DOI:10.1001/jamanetworkopen.2021.5262.
- xx) Coleman-Jensen, A., Ralston, K., *USDA's National School Lunch Program Reduces Food Insecurity*. U.S. Department of Agriculture Economic Research Service. 2017; Available from: <https://www.ers.usda.gov/amber-waves/2017/august/usda-s-national-school-lunch-program-reduces-food-insecurity>.
- xxi) Fox, L. *The Supplemental Poverty Measure: 2017*. United States Census Bureau. 2018; Available from: <https://www.census.gov/library/publications/2018/demo/p60-265.html>.

- xxii) Danielson, C., Bohn, S. *Improving California Children's Participation in Nutrition Programs*. Public Policy Institute of California. 2016; Available from: <https://www.ppic.org/publication/improving-california-childrens-participation-in-nutrition-programs/>.
- xxiii) Coleman-Jensen, A., Ralston, K., *USDA's National School Lunch Program Reduces Food Insecurity*.
- xxiv) Anderson, M.L., et al., *School Lunch Quality and Academic Performance*. National Bureau of Economic Research. March 2017. DOI: 10.3386/w23218.
- xxv) Schwartz, A.E., Rothbart, M.W., *Let Them Eat Lunch: The Impact of Universal Free Meals on Student Performance*. Center for Policy Research. July 2019; Available from: https://www.maxwell.syr.edu/uploadedFiles/cpr/publications/working_papers2/wp203.pdf.
- xxvi) Liu, J., et al., *Trends in Food Sources and Diet Quality Among US Children and Adults, 2003-2018*.
- xxvii) Fox, M.K., Gearan, E. *School Nutrition and Meal Cost Study: Summary of Findings*.
- xxviii) CDC Healthy Schools. *School Nutrition*. Centers for Disease Control and Prevention. 2021; Available from: <https://www.cdc.gov/healthyschools/nutrition/schoolnutrition.htm>.
- xxix) Fox, M.K., Gearan, E. *School Nutrition and Meal Cost Study: Summary of Findings*.
- xxx) Fox, M.K., Gearan, E. *School Nutrition and Meal Cost Study: Summary of Findings*.
- xxxii) Bhatia, R., et al., *Competitive Foods, Discrimination, and Participation in the National School Lunch Program*. *Am J Public Health*. 101(8): 1380-1386. August 2011. DOI: 10.2105/AJPH.2011.300134.
- xxxiii) Poppendieck, J. *Free for All: Fixing School Food in America*. 1st ed., University of California Press. pp. 190-221. 2010; Available from: <http://www.jstor.org/stable/10.1525/j.ctt1pn8qf>.
- xxxiiii) Siegel, B.E. *Kids with School Lunch Debt Still Face Lunch-Shaming, Despite Outrage*. *Civil Eats*. November 2017; Available from: <https://civileats.com/2017/11/07/kids-with-school-lunch-debt-still-face-lunch-shaming-despite-outrage/>.
- xxxv) Nittle, N. *Can We Stop Kids from Being Shamed Over School Lunch Debt?* *Civil Eats*. May 2019; Available from: <https://civileats.com/2019/05/21/can-we-stop-kids-from-being-shamed-over-school-lunch-debt/>.
- xxxvi) New Mexico Legislative Assembly. SB-3074. Regular Session. 2017. <https://www.nmlegis.gov/Sessions/17%20Regular/final/SB0374.pdf>.
- xxxvii) USDA Economic Research Service. *National School Lunch Program*. Child Nutrition Programs.
- xxxviii) USDA Economic Research Service. *School Breakfast Program*. Child Nutrition Programs.

- xxxviii) Danielson, C. *Low-Income Students and School Meal Programs in California*. Public Policy Institute of California. 2015; Available from: <https://www.ppic.org/publication/low-income-students-and-school-meal-programs-in-california/>.
- xxxix) Forrestal, S., et al., *School Nutrition and Meal Cost Study Final Report: Volume 1: School Meal Program Operations and School Nutrition Environments*. Mathematica. 2019; Available from: <https://www.mathematica.org/publications/school-nutrition-and-meal-cost-study-final-report-volume-1-school-meal-program-operations-and-school>.
- xl) Shafir, W. *Food Tips for K-12 Schools: Get Kids to Eat More and Waste Less*. EPA Sustainable Management of Food. July 2017; Available from: https://www.epa.gov/sites/default/files/2017-08/documents/food_tips_for_k-12_schools_bold_links_508c.pdf.
- xli) Leib, E.M.B., et al., *Leveraging Child Nutrition Reauthorization to Reduce Food Waste*. Food Law and Policy Clinic of Harvard Law School, ReFED, National Resources Defense Council. May 2021; Available from: <https://www.chlpi.org/wp-content/uploads/2013/12/FLPC-CNR-REPORT-FINAL-5.3.21.pdf>.
- xlii) Fox, M.K., Gearan, E. *School Nutrition and Meal Cost Study: Summary of Findings*.
- xliii) School Nutrition Association. *California and Maine Become First States to Officially Provide Universal School Meals at No Charge*. 2017; Available from: <https://schoolnutrition.org/news-publications/news/2021/california-and-maine-become-first-states-to-officially-provide-universal-school-meals-at-no-charge/>.
- xliv) California Department of Education. *AB 130, Universal Meals*. 2021; Available from: <https://www.cde.ca.gov/ls/nu/ab130universalmeals.asp>.
- xlv) Liu, J., et al., *Trends in Food Sources and Diet Quality Among US Children and Adults, 2003-2018*.
- xlvi) U.S. Department of Agriculture, U.S. Department of Health and Human Services. *Dietary Guidelines for Americans, 2020-2025*. 2020; Available from: https://www.dietaryguidelines.gov/sites/default/files/2021-03/Dietary_Guidelines_for_Americans-2020-2025.pdf.
- xlvii) U.S. Department of Agriculture, U.S. Department of Health and Human Services. *Dietary Guidelines for Americans, 2020-2025*.
- xlviii) Fox, M.K., et al., *School Nutrition and Meal Cost Study: Volume 4: Student Participation, Satisfaction, and Dietary Intakes*. Mathematica. April 2019; Available from: <https://www.mathematica.org/publications/summary-school-nutrition-and-meal-cost-study-volume-4-student-participation-satisfaction>.
- xliv) O'Hara, J.K. *Market Forces: Creating Jobs Through Public Investment in Local and Regional Food Systems*. Union of Concerned Scientists. August 2011;

- Available from: <http://sustainableagriculture.net/wp-content/uploads/2011/08/market-forces-report.pdf>.
- l) Hilchey, D., et al., *Trends in the Food System Development Profession in the U.S. and Canada: A Comparison of 2012 and 2019 Survey Results*. North American Food Systems Network. July 2021; Available from: <https://www.foodsystemsnetwork.org/images/Trends-Report-Food-Systems-Development-Profession-2012-2019.pdf>.
 - li) The World Bank. *Food system jobs*. Available from: <https://www.worldbank.org/en/topic/food-system-jobs>.
 - lii) Hawai'i Legislative Assembly. HB 767. Enacted July 7, 2021.
 - liii) Department of Agriculture and Markets. *Farm-to-School*. New York State. Available from: <https://agriculture.ny.gov/farming/farm-school>.
 - liv) Christensten, L.O., et al., *Economic Impacts of Farm to School: Case Studies and Assessment Tools*. National Farm to School Network. 2017; Available from: <https://foodsystems.colostate.edu/wp-content/uploads/2019/03/EconomicImpactReport.pdf>.
 - lv) National Farm to School Network. *The Benefits of Farm to School*. 2020; Available from: <https://assets.website-files.com/5c469df2395cd53c3d913b2d/611027419232d281ad2f51ff-BenefitsFactSheet.pdf>.
 - lvi) *State Pilot Project Report: 2018/2019 Legislative Report*. 10 Cents a Meal for Michigan's Kids & Farms. Available from: https://d3n8a8pro7vhmx.cloudfront.net/tencentsmichigan/pages/26/attachments/original/1553192603/10_Cents_a_Meal_2018-2019_Legislative_Report.pdf?1553192603.
 - lvii) *State Pilot Project Report: 2018/2019 Legislative Report*. 10 Cents a Meal for Michigan's Kids & Farms.
 - lviii) Sobell, S., *The Impact of Seven Cents*. Ecotrust. 2011; Available from: <https://ecotrust.org/publication/the-impact-of-seven-cents/>.
 - lix) *Local5*. Office of the State Superintendent of Education. Available from: <https://osse.dc.gov/node/1134777>.
 - lx) Union of Concerned Scientists. *Purchasing Power -- A "Good Food" Procurement Toolkit*. 2017; Available from: <https://www.ucsusa.org/sites/default/files/attach/2017/11/purchasing-power-toolkit-ucs-2017.pdf>.
 - lxi) Anderson, M.L., et al., *School Lunch Quality and Academic Performance*.
 - lxii) Schwartz, A.E., Rothbart, M.W. *Let Them Eat Lunch: The Impact of Universal Free Meals on Student Performance*.

- lxiii) Kahlon, M. Patel, R. *To Bring Food into Health, We Must Bring Health To The Food System*. HealthAffairs. September 2021; Available from: <https://www.healthaffairs.org/doi/10.1377/hblog20210921.715421/full/>.
- lxiv) Gender Equity Policy Institute analysis of American Community Survey (2019), Steven Ruggles, Sarah Flood, Sophia Foster, Ronald Goeken, Jose Pacas, Megan Schouweiler and Matthew Sobek. IPUMS USA: Version 11.0 [dataset]. Minneapolis, MN: IPUMS, 2021. <https://doi.org/10.18128/D010.V11.0>.
- lxv) Gaddis, J.E. *The Labor of Lunch: Why We Need Real Food and Real Jobs in American Public Schools*. University of California Press. 2019.
- lxvi) USDA Economic Research Service. *Key Statistics & Graphics. Food Security in the U.S. U.S.* Department of Agriculture. 2021; Available from: <https://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-us/key-statistics-graphics.aspx#foodsecure>.

