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Policy Brief: Modernizing SNAP Benefits Would Help Millions Better Afford Healthy Food

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The Supplemental Nutrition Assistance Program (SNAP, formerly food stamps) is the primary source of nutrition assistance for low-income families and individuals, enabling them to spend more on groceries than their limited budgets would otherwise allow. But SNAP's relatively modest benefits are not reliably meeting participating households' nutritional needs. Even before the COVID-19 pandemic, millions of people across the United States — including roughly half of all households participating in SNAP — lacked consistent access to enough food.¹

SNAP benefits are based on the outdated Thrifty Food Plan (TFP), developed by the U.S. Department of Agriculture (USDA). The cost of the TFP is supposed to represent the minimal amount of money needed to purchase a nutritious diet, but it has been fixed since the 1970s and adjusted only for inflation. Because the TFP has not kept up with changes in the most recent dietary recommendations and the economic realities most households face when trying to buy and prepare healthy food, it has resulted in SNAP benefits that are too low for households to afford a nutritious diet throughout the month. Before the pandemic, SNAP benefits averaged less than \$1.40 per person per meal.

The bipartisan 2018 farm bill directed USDA to reevaluate the TFP to better reflect the modern cost of a healthy diet by 2022. President Biden, in one of his first executive actions, asked USDA to expeditiously complete this scientific, evidence-based analysis. The TFP is generated by a data-intensive mathematical technique that uses validated data and scientific evidence on food prices, nutritional requirements, dietary guidelines, and typical food consumption patterns. While the results of USDA's review are not yet available, our assessment of research from roughly the last decade strongly suggests that SNAP benefits fall short of what many participants need and that raising benefit levels would promote food security, child health, and racial equity.

Outdated Thrifty Food Plan Leads to SNAP Benefits That Fall Short for Many

The TFP's cost has been fixed since the 1970s because of administrative decisions to allow its cost to rise only by inflation, even as dietary guidelines, consumption patterns, and the constraints of many time-strapped working families changed (some women of color and low-income working families have always faced such time constraints). As a result, the TFP has grown increasingly unrealistic over the course of nearly 50 years. In revising the TFP since the 1970s the USDA has

been answering the question, “Is it theoretically possible to purchase a nutritious diet on the existing TFP amount?”, not the question, “How much does a modern healthy diet, with foods that most people eat, cost?” To stay within the same cost over the years, the TFP has relied on a narrow range of less expensive foods, has assumed that families can spend a considerable amount of time preparing meals mostly from scratch, and has not accounted for varying family types and dietary needs. As a result, many families run out of SNAP benefits before the end of the month and struggle to put together adequate meals.

- **The restrictive cost constraint and other factors result in TFP market baskets that do not reflect the foods most people consume, including low-income consumers.** Held to a very low cost constraint while still trying to meet nutrient standards and other dietary requirements, the TFP relies on a narrow range of foods that do not reflect the variety of healthy foods that science-based dietary guidelines recommend or what most households would find a reasonable variety of foods to eat each month. As a result, the TFP market baskets deviate, sometimes dramatically, from the consumption patterns that people might reasonably be expected to follow. For example, the TFP market basket representing the weekly food purchases of the SNAP reference family of four includes 40 pounds of lower-fat and skim milk and yogurt (equal to about 4.5 gallons of milk or 20 32-ounce tubs of yogurt — a very large amount for four people to eat in a *week*) and nearly 5 pounds of legumes (beans) but only 0.13 pounds of cheese (amounting to about two to three slices of cheese) and less than a pound of egg and egg mixtures (amounting to about seven large eggs) for the entire family.²
- **The TFP assumes consumers will have far more time to prepare meals than most households spend on food preparation, resulting in a plan that depends heavily on foods that take more time to prepare and not enough on healthy foods that reduce preparation time.** Cost and lack of time were the most common barriers to eating a healthy diet that SNAP participants identified in a recent study.³ Given the increase in women’s labor force participation since the 1970s, and with many parents working multiple jobs, families often have limited time for food preparation. (Also, the extent of work, particularly among women of color, was not sufficiently recognized when the TFP was first established.) Yet the TFP assumes SNAP participants will rely heavily on meals prepared mostly from scratch, with limited use of more convenient and time-saving grocery items, such as peeled and pre-sliced vegetables or ready-to-cook cuts of skinless and boneless meat.⁴

Preparing a nutritious diet under TFP constraints would take an estimated 13 to 16 hours per week, or roughly two hours per day.⁵ This is much more than most households in the United States spend preparing meals: an average adult typically spends just over 35 minutes each day on food preparation and cleanup. The figure for SNAP participants is higher (around 50 to 65 minutes), but still falls well short of the actual effort that adhering to the TFP would require.⁶ Ignoring the time that it would take to make meals under the current TFP means that the food plan includes foods that take longer to prepare and doesn’t provide adequate resources to purchase healthy foods that take less time.

- **The TFP does not fully account for varying family types or dietary needs.** While SNAP benefits are scaled by family size, the TFP for a family of four is based on the dietary needs of two adults and two children under age 12 and thus is likely inappropriate for families with teenagers, who have similar nutritional needs as adults.⁷ Furthermore, the TFP does not account for a range of dietary restrictions and is insufficient to cover medically

necessary dietary needs for relatively common conditions such as lactose intolerance or diabetes.⁸ The TFP also fails to meet population-wide nutritional guidelines for vitamin E, potassium, and sodium.⁹ Some simplifications are important to allow the TFP to be useful for setting SNAP benefits. But if the TFP is too low for the reference family, then it falls even further behind for other family types that have higher nutritional needs.

- **Many families struggle once SNAP benefits run out.** About a quarter of all households exhaust virtually all their benefits within a week of receipt, and more than half exhaust virtually all benefits within the first two weeks.¹⁰ Numerous studies have found that late in the benefit cycle (that is, toward the end of the month), SNAP participants consume fewer calories¹¹ (with the probability of going an entire day without eating tripling from the first to the last day of the month¹²), are likelier to experience food insecurity,¹³ visit food pantries more frequently,¹⁴ and may be likelier to visit emergency rooms or to be admitted to a hospital because of low blood sugar.¹⁵ In addition, at the end of the benefit month, children’s test scores are lower and they are more likely to misbehave in school.¹⁶ Geography also plays a role; while benefit inadequacy is widespread, it’s greater in areas where food prices are higher. While the average low-income, food-secure household spends more on food than the per-meal value of the TFP in 99 percent of U.S. continental counties, the gap between the cost of a meal and SNAP maximum benefits per meal is greatest in areas with higher food prices.¹⁷

Raising SNAP Benefits Would Promote Food Security, Child Health, Racial Equity

Increasing SNAP benefits would meaningfully improve food security and could promote children’s health, recent research suggests. Raising SNAP benefits could also help address the disproportionate impacts of benefit inadequacy on people of color.

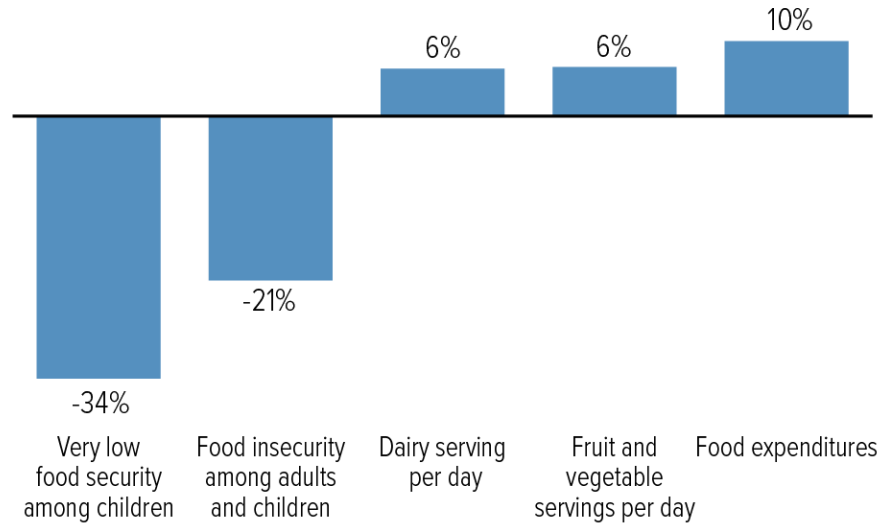
- **Larger SNAP benefits increase food security.** Research has found that low-income households’ food security improved after policymakers temporarily boosted SNAP benefits in response to the Great Recession.¹⁸ These trends then reversed as inflation eroded the benefit increase and policymakers subsequently ended it.¹⁹ Similarly, increasing SNAP benefits in the summer — when children lose access to school meals — has been shown to reduce food insecurity.²⁰ (See Figure 1.) Preliminary evidence also suggests the Pandemic Electronic Benefit Transfer (P-EBT) program created to help families with children whose schools closed due to the COVID-19 pandemic substantially reduced food hardship for millions of children.²¹
- **Raising SNAP benefits helps reduce child poverty,** which can improve children’s physical and mental health and lead, over the longer term, to greater educational attainment and labor market success. No program is more effective than SNAP in lifting children out of deep poverty (income less than half of the poverty line), and SNAP is second only to the combined effects of the Earned Income Tax Credit and the refundable portion of the Child Tax Credit in lifting children above the poverty line.²²
- **Increased SNAP benefits promote children’s health.** The Great Recession-era benefit increase was associated with a number of positive child health outcomes, including somewhat healthier weights among toddlers and adolescents and a greater likelihood of young children being described as “well” in the years following the benefit increase.²³ Greater SNAP purchasing power in areas where SNAP benefits can stretch farther because

food prices are lower has also been associated with improved use of health care (such as a greater likelihood of children getting regular check-ups) and fewer school days missed due to illness.²⁴

FIGURE 1

Additional SNAP Benefits Raise Food Expenditures and Improve Household Food Security

Impact of extra \$60 in SNAP benefits each summer month for each school-aged child in SNAP household



Note: Very low food security = one or more household members must cut the size of meals, skip meals, or go entire days without food due to lack of resources. Food insecurity = household members lack consistent access to enough food to support an active, healthy life.

Source: Collins and Klerman (2017), Summer Electronic Benefit Transfer for Children (SEBTC) Demonstration.

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- Increasing SNAP could address the disproportionate impacts of benefit inadequacy on people of color.** Poverty and food insecurity rates are higher among Black and Latino households due to structural factors that contribute to income, wealth, and other disparities.²⁵ Evidence also suggests that the current SNAP benefit calculation may be especially inaccurate at estimating food needs for people of color. For example, the TFP assumes more than three servings of milk or other dairy products a day, even though at least one-quarter of the U.S. population is lactose intolerant.²⁶ Lactose intolerance is disproportionately prevalent among people of color, affecting virtually all Native Americans, large majorities of Asian American and Pacific Islander and Black people, and most Latino individuals.²⁷

A large and growing body of evidence strongly suggests that current SNAP benefit levels are not sufficient to enable all participants to afford a nutritious diet throughout the month. Making the Thrifty Food Plan more accurately reflect the cost of a healthy diet and raising SNAP benefits would have significant positive impacts for children and other participants.

¹ For more on SNAP benefit adequacy and the Thrifty Food Plan, see Steven Carlson, Joseph Llobrera, and Brynne Keith-Jennings, “More Adequate SNAP Benefits Would Help Millions of Participants Better Afford Food,” CBPP, updated July 15, 2021, <https://www.cbpp.org/research/food-assistance/more-adequate-snap-benefits-would-help-millions-of-participants-better>.

² Andrea Carlson *et al.*, “Thrifty Food Plan, 2006,” Center for Nutrition Policy and Promotion, USDA, April 2007, https://fns-prod.azureedge.net/sites/default/files/usda_food_plans_cost_of_food/TFP2006Report.pdf.

³ Maeve Gearing, Sujata Dixit-Joshi, and Laurie May, “Barriers That Constrain the Adequacy of Supplemental Nutrition Assistance Program (SNAP) Allotments: Survey Findings,” USDA, Food and Nutrition Service, June 2021, <https://www.fns.usda.gov/snap/barriers-constrain-adequacy-snap-allotments>.

⁴ James P. Ziliak, “Modernizing SNAP Benefits,” Hamilton Project, Brookings Institution, May 2016, http://www.hamiltonproject.org/assets/files/ziliak_modernizing_snap_benefits.pdf.

⁵ These estimates were calculated for the 1999 TFP; estimates for the 2006 TFP have yet to be calculated, in large part because USDA did not develop comparable recipes for the last update. See Diego Rose, “Food Stamps, the Thrifty Food Plan, and Meal Preparation: The Importance of the Time Dimension for US Nutrition Policy,” *Journal of Nutrition Education and Behavior*, 39(4): 226–232, 2007, <https://www.sciencedirect.com/science/article/pii/S1499404607004708>; George Davis and Wen You, “Not enough money or not enough time to satisfy the Thrifty Food Plan? A cost difference approach for estimating a money-time threshold,” *Food Policy*, 36(2):101-107, 2011, <https://www.sciencedirect.com/science/article/pii/S0306919210000941>.

⁶ Karen Hamrick and Ket McClelland, “Americans’ Eating Patterns and Time Spent on Food: The 2014 Eating & Health Module Data,” USDA Economic Research Service, July 2016, <https://www.ers.usda.gov/publications/pub-details/?pubid=80503>; and Christian Raschke, “Food stamps and the time cost of food preparation,” *Review of Economics of the Household*, 10(2): 259-275, 2012, <https://link.springer.com/article/10.1007/s11150-011-9128-3>. SNAP participants, on average, also spend 55 minutes grocery stopping once every seven days. The authors do not discuss reasons why SNAP participants spend more time preparing food. One potential factor may be that a greater share of food purchases among SNAP participants are for foods to be prepared at home, which require more time preparing. For example, a 2017 study found that 74 percent of SNAP households’ food purchasing is for food-at-home spending, compared to 65 percent for eligible non-participant households and 62 percent for all U.S. households. Laura Tiehen, Constance Newman, and John Kirlin, “The Food-Spending Patterns of Households Participating in the Supplemental Nutrition Assistance Program: Findings From USDA’s FoodAPS,” USDA Economic Research Service, August 2017, <https://www.ers.usda.gov/webdocs/publications/84780/eib-176.pdf?v=42962>.

⁷ Ziliak, *op. cit.*

⁸ Angela M. Babb *et al.*, “An examination of medically necessary diets within the framework of the Thrifty Food Plan,” *Ecology of Food and Nutrition*, 58(3): 236-246, 2019, <https://doi.org/10.1080/03670244.2019.1598978>.

⁹ The 2006 TFP market baskets did not meet the recommendations for vitamin E and potassium for some age-gender groups and did not meet the recommendations for sodium for most age-gender groups. See “Thrifty Food Plan, 2006,” Center for Nutrition Policy and Promotion, USDA, April 2007, <https://www.fns.usda.gov/thrifty-food-plan-2006-report>.

¹⁰ According to the most recent USDA data, 28 percent of households redeem at least 90 percent of their benefits within seven days of issuance; 53 percent redeem at least 90 percent within 14 days. See Laura Castner *et al.*, “Benefit Redemption Patterns in the Supplemental Nutrition Assistance Program in Fiscal Year 2017,” Insight Policy Research, September 2020, <https://www.fns.usda.gov/snap/benefit-redemption-patterns-snap-fy-2017#:~:text=On%20average%2C%20SNAP%20households%20had,before%20receiving%20their%20next%20issuance>. The cyclical pattern may vary considerably across SNAP households. One study attributes the benefit cycle to a minority (39 percent) of SNAP households that spend two-thirds of their monthly benefits within the first four days. The larger remaining group of SNAP participants, in contrast, spend only one-sixth early in the month. See Jeffrey Dorfman *et al.*, “Re-examining the SNAP benefit cycle allowing for heterogeneity,” *Applied Economic Perspectives and Policy*, 41(3): 404-433, 2019, <https://onlinelibrary.wiley.com/doi/10.1093/aep/ppy013>. Another study found a cyclical pattern of weekly food spending in a sample of low-income households in Minneapolis-St. Paul shortly after they enrolled in a nutrition assistance program modeled after SNAP but not before. See Sruthi Valluri *et al.*, “Trends in cyclical food expenditures among low-income households receiving monthly nutrition assistance: results from a prospective study,”

Public Health Nutrition, 24(3): 1-8, 2020, <https://www.cambridge.org/core/journals/public-health-nutrition/article/abs/trends-in-cyclical-food-expenditures-among-low-income-households-receiving-monthly-nutrition-assistance-results-from-a-prospective-study/517FA05377A2A86C4612A5BA5A961A96>.

¹¹ In one of the earliest studies on this issue, participants who do their major grocery shopping infrequently (about 40 percent of households receiving food stamps) consumed fewer calories four weeks after receiving benefits than in each of the first three weeks. Another study from the same period estimates that consumption (again measured by calorie intake) fell by roughly 9 to 12 percent over the course of a month. Parke Wilde and Christine Ranney, “The monthly Food Stamp cycle: shopping frequency and food intake decisions in an endogenous switching regression framework,” *American Journal of Agricultural Economics*, 82(1): 200–213, 2000, <https://onlinelibrary.wiley.com/doi/abs/10.1111/0002-9092.00016>. Wilde and Ranney found that 42 percent of households receiving food stamps conducted a major grocery shopping trip once per month or less frequently. These households were more likely than other low-income households to be infrequent shoppers due to transportation difficulties, time constraints, or stigma associated with food stamps. Jesse Shapiro, “Is there a Daily Discount Rate? Evidence from the Food Stamp Nutrition Cycle,” *Journal of Public Economics*, 89(2-3): 303-325, 2005, <http://www.brown.edu/Research/Shapiro/pdfs/highfreq111703.pdf>. More recent studies affirm these results. Adults participating in SNAP consume about 38 percent fewer calories per day in the last two days of the month than in the rest of the month, and about 25 percent less relative to their estimated energy requirement. Jessica Todd, “Revisiting the Supplemental Nutrition Assistance Program cycle of food intake: Investigating heterogeneity, diet quality, and a large boost in benefit amounts,” *Applied Economic Perspectives and Policy*, 37(3): 437-458, 2015, <https://academic.oup.com/aep/article-abstract/37/3/437/8261>.

¹² Karen Hamrick and Margaret Andrews, “SNAP participants’ eating patterns over the benefit month: a time use perspective,” *PloS One*, 11(7): e0158422, 2016, <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0158422>; Todd, *op. cit.*

¹³ One study found that a SNAP household is 11 percentage points likelier to be classified as food insecure near the end of or at the beginning of the benefit month than in the rest of the month. Christian Gregory and Travis Smith, “Salience, food security, and SNAP receipt,” *Journal of Policy Analysis and Management*, 38(1): 124-154, 2019, <https://onlinelibrary.wiley.com/doi/epdf/10.1002/pam.22093>. Gregory and Smith’s finding that SNAP households have a higher propensity to report food hardships at the end of the benefit month is consistent with the existing literature on the benefit cycle, but they also found that the propensity to report food hardships was higher at the beginning of the month as well. They suggest that recent experiences of hardships at the end of the month may still be fresh in recipients’ minds even after they have received benefits, or that SNAP households may feel they need to justify receiving SNAP benefits.

¹⁴ Anne Byrne and David Just, “The other half: an examination of monthly food pantry cycles in the context of SNAP benefits,” *Applied Economic Perspectives and Policy*, January 2021, <https://onlinelibrary.wiley.com/doi/abs/10.1002/aep.13150>; and Linlin Fan *et al.*, “The use of charitable food assistance among low-income households in the United States,” *Journal of the Academy of Nutrition and Dietetics*, 121(1): 27–35, 2020, [https://jandonline.org/article/S2212-2672\(20\)30995-3/fulltext](https://jandonline.org/article/S2212-2672(20)30995-3/fulltext).

¹⁵ Hilary Seligman *et al.*, “Exhaustion of food budgets at month’s end and hospital admissions for hypoglycemia,” *Health Affairs*, 33(1): 116-123, 2014, <https://www.healthaffairs.org/doi/full/10.1377/hlthaff.2013.0096>; and Sanjay Basu, Seth Berkowitz, and Hilary Seligman, “The monthly cycle of hypoglycemia: an observational claims-based study of emergency room visits, hospital admissions, and costs in a commercially insured population,” *Medical Care*, 55(7): 639-645, 2017, https://journals.lww.com/lww-medicalcare/fulltext/2017/07000/The_Monthly_Cycle_of_Hypoglycemia_An.1.aspx. Neither study accounts for differences between the calendar month and the SNAP issuance cycle (most states stagger issuance of SNAP benefits over several days of each month), so it is difficult to attribute the results solely to the timing of SNAP benefits; other factors — such as receipt of monthly paychecks — may also be at work.

¹⁶ Anna Gassman-Pines and Laura Bellows, “Food instability and academic achievement: a quasi-experiment using SNAP benefit timing,” *American Educational Research Journal*, 55(5): 897-927, 2018, <http://journals.sagepub.com/doi/10.3102/0002831218761337>; Chad Cotti, John Gordanier, and Orgill Ozturk, “When does it count? The timing of food stamp receipt and educational performance,” *Economics of Education Review*, 66: 40-50, 2018, <https://www.sciencedirect.com/science/article/abs/pii/S0272775718303649>; Lisa Gennetian *et al.*, “Supplemental Nutrition Assistance Program (SNAP) benefit cycles and student disciplinary infractions,” *Social Service Review*, 90(3): 403-33, 2016, <https://www.journals.uchicago.edu/doi/abs/10.1086/688074>; and Timothy Bond *et al.*,

“Hungry for Success? SNAP Timing, High-Stakes Exam Performance, and College Attendance,” National Bureau of Economic Research, January 2021, <https://www.nber.org/papers/w28386>.

¹⁷ Elaine Waxman, Craig Gundersen, and Megan Thompson, “How Far Do SNAP Benefits Fall Short of Covering the Cost of a Meal?” Urban Institute, February 2018, https://www.urban.org/sites/default/files/publication/96661/how_far_do_snap_benefits_fall_short_of_covering_the_cost_of_a_meal_2.pdf.

¹⁸ Mark Nord and Mark Prell, “Food Security Improved Following the 2009 ARRA Increase in SNAP Benefits,” USDA Economic Research Service, April 2011, https://www.ers.usda.gov/webdocs/publications/44837/7469_err116.pdf?v=7982.4.

¹⁹ Mark Nord, “Effects of the decline in the real value of SNAP benefits from 2009 to 2011,” USDA Economic Research Service, August 2013, <https://www.ers.usda.gov/publications/pub-details/?pubid=45102>; Bhagyashree Katare and Jiyoung Kim, “Effects of the 2013 SNAP benefit cut on food security,” *Applied Economic Perspectives and Policy*, 39(4): 662–681, 2017, <https://onlinelibrary.wiley.com/doi/10.1093/aep/px025>.

²⁰ Ann Collins and Jacob Klerman, “Improving nutrition by increasing Supplemental Nutrition Assistance Program benefits,” *American Journal of Preventive Medicine*, 52(2S2): S179-S185, 2017, <https://www.sciencedirect.com/science/article/pii/S0749379716303890>.

²¹ Lauren Bauer *et al.*, “The Effect of Pandemic EBT on Measures of Food Hardship,” Hamilton Project, July 2020, https://www.hamiltonproject.org/assets/files/P-EBT_LO_7.30.pdf. The American Rescue Plan of 2021 ensures that states can provide P-EBT benefits for the full duration of the public health emergency, including during the summer.

²² National Academies of Sciences, Engineering, and Medicine, “A Roadmap to Reducing Child Poverty,” Washington, D.C.: The National Academies Press, February 2019, <https://www.nap.edu/catalog/25246/a-roadmap-to-reducing-child-poverty>.

²³ Taryn Morrissey and Daniel Miller, “Supplemental Nutrition Assistance Program participation improves children’s health care use: an analysis of the American Recovery and Reinvestment Act’s natural experiment,” *Academic Pediatrics*, 20(6): 863-870, 2020, <https://www.sciencedirect.com/science/article/abs/pii/S1876285919304619>; and Katelin Hudak and Elizabeth Racine, “Do additional SNAP benefits matter for child weight? Evidence from the 2009 benefit increase,” *Economics & Human Biology*, 41: 100966, 2020, <https://www.sciencedirect.com/science/article/pii/S1570677X20302367>.

²⁴ This study uses data that predate the Affordable Care Act’s Medicaid expansion for adults. The health-related findings are also not driven by children lacking health insurance, as children in households participating in SNAP are likely eligible for Medicaid or the Children’s Health Insurance Program, and the authors found no relationship between SNAP purchasing power and the likelihood a child has no insurance. The authors hypothesize that parental stress and bandwidth may explain the relationship between SNAP and child check-ups, but cannot directly test this in the study. Erin Bronchetti, Garret Christensen, and Hilary Hoynes, “Local food prices, SNAP purchasing power, and child health,” *Journal of Health Economics*, 68: 102231, 2019, <https://www.sciencedirect.com/science/article/abs/pii/S0167629619304151>.

²⁵ For example, poverty rates were twice as high for Black (18.8 percent) and Hispanic people (15.7 percent) as non-Hispanic white people (7.3 percent) in 2019; the poverty rate among Asian Americans and Pacific Islanders (10.2 percent) was 40 percent higher. Jessica Semega *et al.*, “Income and Poverty in the United States: 2019,” U.S. Census Bureau, September 2020, <https://www.census.gov/library/publications/2020/demo/p60-270.html>. Non-Hispanic Black households were more than twice as likely — and Hispanic households twice as likely — to be food insecure in 2019 (19.1 percent and 15.6 percent, respectively) as non-Hispanic white households (7.9 percent). Very low food security among children, while rare, is five times more likely among non-Hispanic Black households than among non-Hispanic white households (1.7 vs 0.3 percent). Alisha Coleman-Jensen *et al.*, “Household Food Security in the United States in 2019,” USDA Economic Research Service, September 2020, <https://www.ers.usda.gov/publications/pub-details/?pubid=99281>.

²⁶ Hayden Stewart, Diansheng Dong, and Andrea Carlson, “Why Are Americans Consuming Less Fluid Milk? A Look at Generational Differences in Intake Frequency,” USDA Economic Research Service, May 2013, <https://ageconsearch.umn.edu/record/262223/>; and Carlson *et al.*, *op. cit.*

²⁷ Andrea Wiley, *Re-imagining Milk: Cultural and Biological Perspectives*, London and New York: Routledge, 2015 as cited in Angela Babb, “America’s ‘Thrifty Food Plan’: hunger, mathematics, and the valuation of nutrition assistance,” *Annals of the American Association of Geographers*, 110(4): 983-1004, 2020, <https://www.tandfonline.com/doi/abs/10.1080/24694452.2019.1664889>.