

Food Insecurity in Our Backyard

A summary of Food Insecurity in the United States

04-14-2024| Jean Jimenez (written for Data 608 Story 6)

The issue of food security, as highlighted in the United Nations Food and Agriculture Organization's publication "The State of Food Security and Nutrition in the World 2022," is commonly perceived as a problem affecting populations in third-world countries with low GDP and high poverty¹. However, this perception is misleading. In reality, food insecurity is just as common in first world countries as it is in third world countries¹⁴. Food insecurity and malnutrition are just as common in first world countries, especially right here in the United States. The rise of food deserts and the ubiquity of discount stores like Dollar General and Walmart, which often don't provide a full range of nutritious food options, contribute to the problem¹³. Media coverage, such as John Oliver's segment on Last Week Tonight and Peter Santenello's exploration of West Virginia's Appalachia, explore the issue of malnutrition and food insecurity in our own backyard for a popular audience; but how bad is it really¹⁷? In this article, we aim to explore malnutrition and food insecurity in the United States. To do this, we analyze data published by Feeding America.

Feeding America is a large nonprofit organization dedicated to fighting hunger across the United States¹². It gathers data on food insecurity from a variety of sources, including government reports, direct observation, and its extensive network of food banks and community organizations. This data helps them identify who needs help and where the greatest needs are. They make their findings public to raise awareness, drive policy changes, and encourage donations and volunteerism. By sharing information openly, Feeding America aims to promote more collaboration and more effective solutions to hunger nationwide.

For this analysis, I reviewed food insecurity data published by Feeding America from the years 2009-2021²⁻¹¹. I processed and analyzed the data using a combination of excel and python. Census data as well as geospatial shape files were used. Please see supplementary material for more information.

After examining the data for this decade time period, certain patterns become clear. States with traditionally high food insecurity rates continue to struggle, a fact that correlates with variables such as economic stability and availability of resources.

Average Food Insecurity Rate per State 2010- 2021

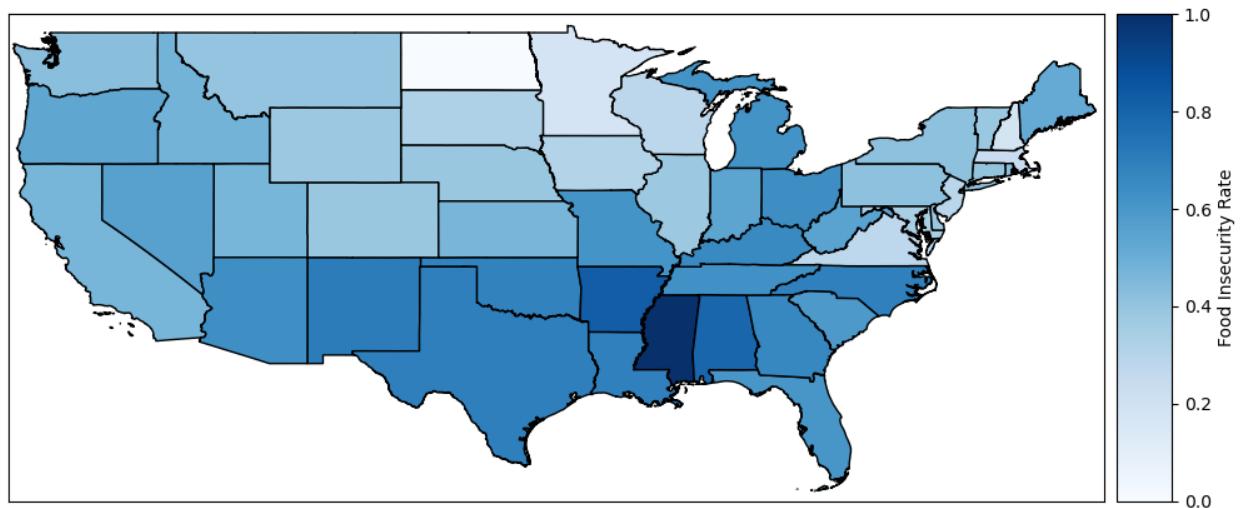


Figure 1: The map visualizes the average food insecurity rate per state in the United States from 2010 to 2021, using various shades of blue to indicate the rate, with darker tones representing higher rates of food insecurity.

In other words, states with less economic stability and available resources experience higher food insecurity rates.

When focusing specifically on children, the data reveals a stark correlation between food insecurity and educational funding, particularly in the southern United States.

Average Food Insecurity Rate Children per State 2010- 2021

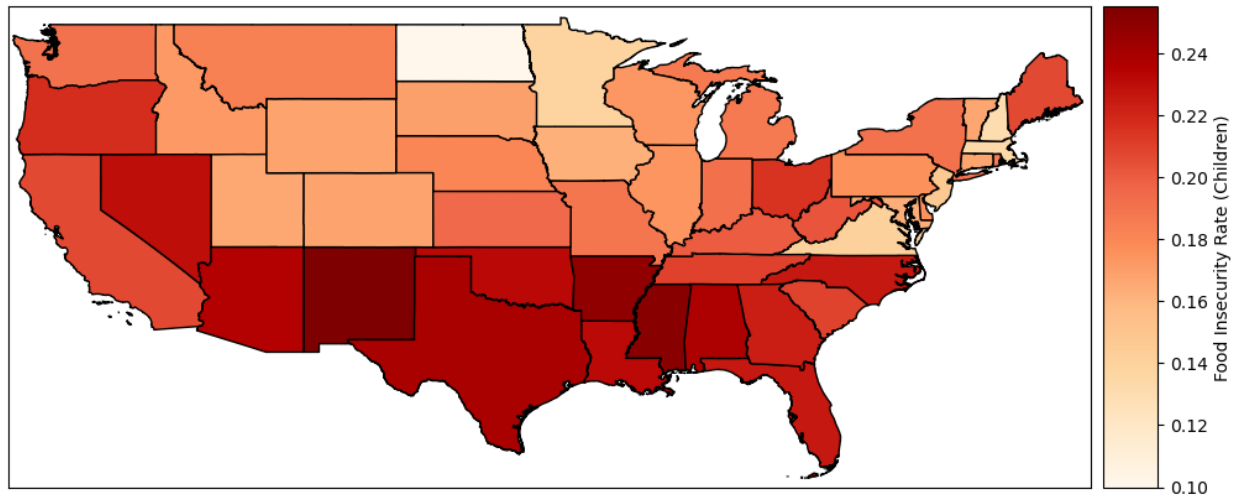


Figure 2: This map illustrates the average food insecurity rate among children for each state in the United States from 2010 to 2021.

The southern region of the United States is infamously known for the financial cuts their republican-led legislatures do on publicly funded education¹⁵. Education is a big source of nutrition and meals for food insecure children in the country¹⁶. Thus, it makes sense that in the states that have less educational funding the childhood food insecurity rate is higher.

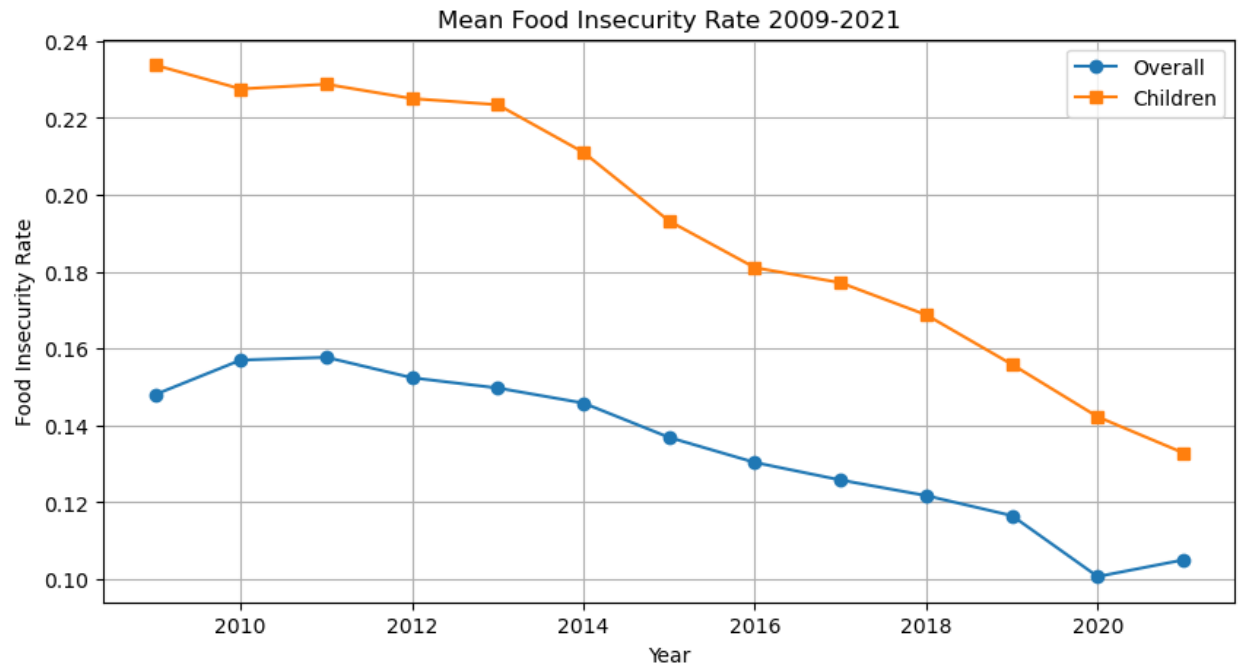


Figure 3: The line graph compares the mean food insecurity rate for all individuals versus children from 2009 to 2021, showing a downward trend in both categories over the period.

Over time, data shows a general decrease in food insecurity rates for both adults and children, which could be seen as a positive trend.

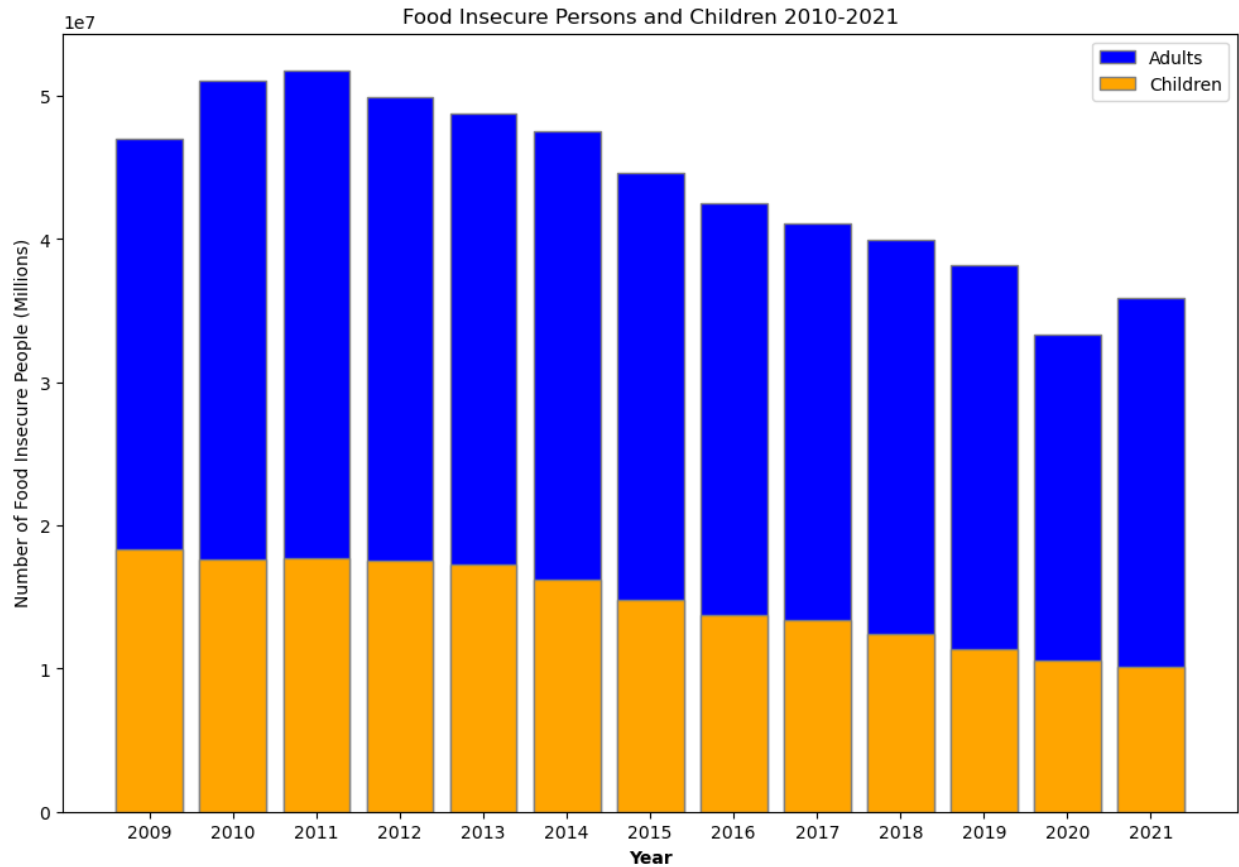


Figure 4: This stacked bar chart displays the number of food-insecure adults and children from 2009 to 2021

However, this decline was interrupted by a slight uptick in 2021, suggesting that recent global events such as the pandemic may have reversed some of the progress made. This indicates the need for continued monitoring to understand the full impact of these events on food insecurity.

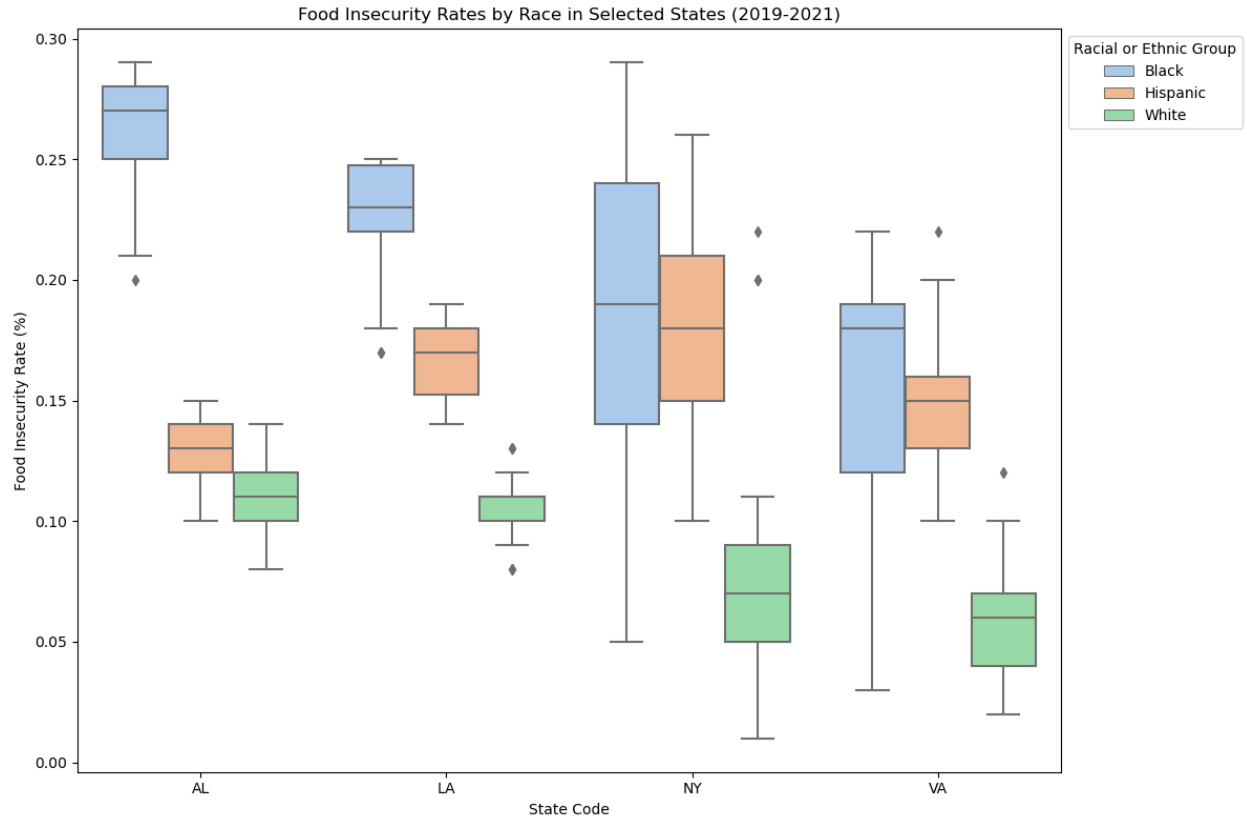


Figure 5: The boxplot compares food insecurity rates by racial or ethnic groups (Black, Hispanic, White) in selected states (AL, LA, NY, VA) from 2019 to 2021.

A closer look at the demographic breakdowns of food insecurity reveals significant disparities. For instance, in Alabama, Black populations face considerably higher rates of food insecurity compared to other groups. Similar patterns are observed in New York, where Black and Hispanic communities are disproportionately affected. These disparities underline the complex interplay of race, economic status, and food access in the United States.

The financial aspect of food insecurity cannot be overlooked. As the cost of meals continues to rise, those living below the poverty line find it increasingly difficult to afford basic nutrition.

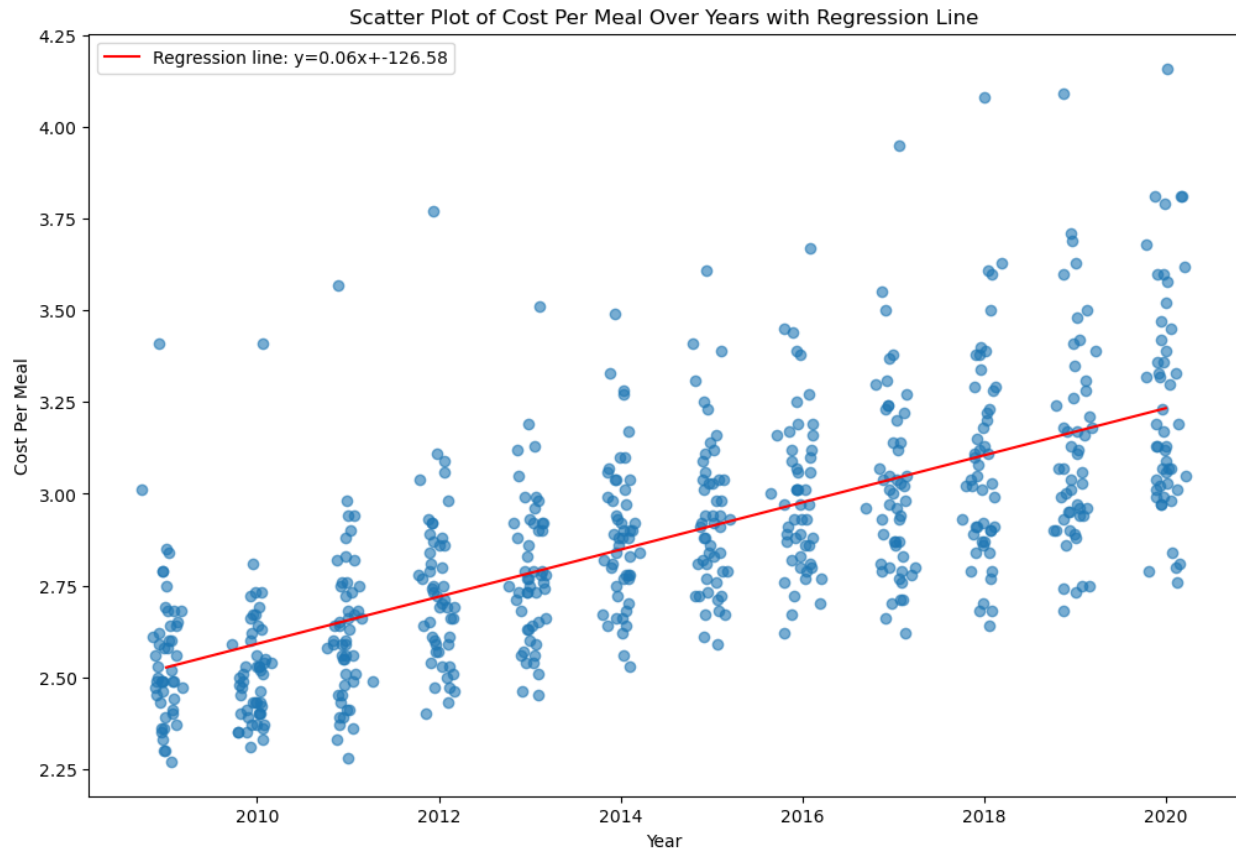


Figure 6: The scatter plot presents the cost per meal over the years with jittered year values to improve visibility, showing a general increase as indicated by the upward-sloping regression line, which quantifies the trend of rising meal costs from 2010 to 2020.

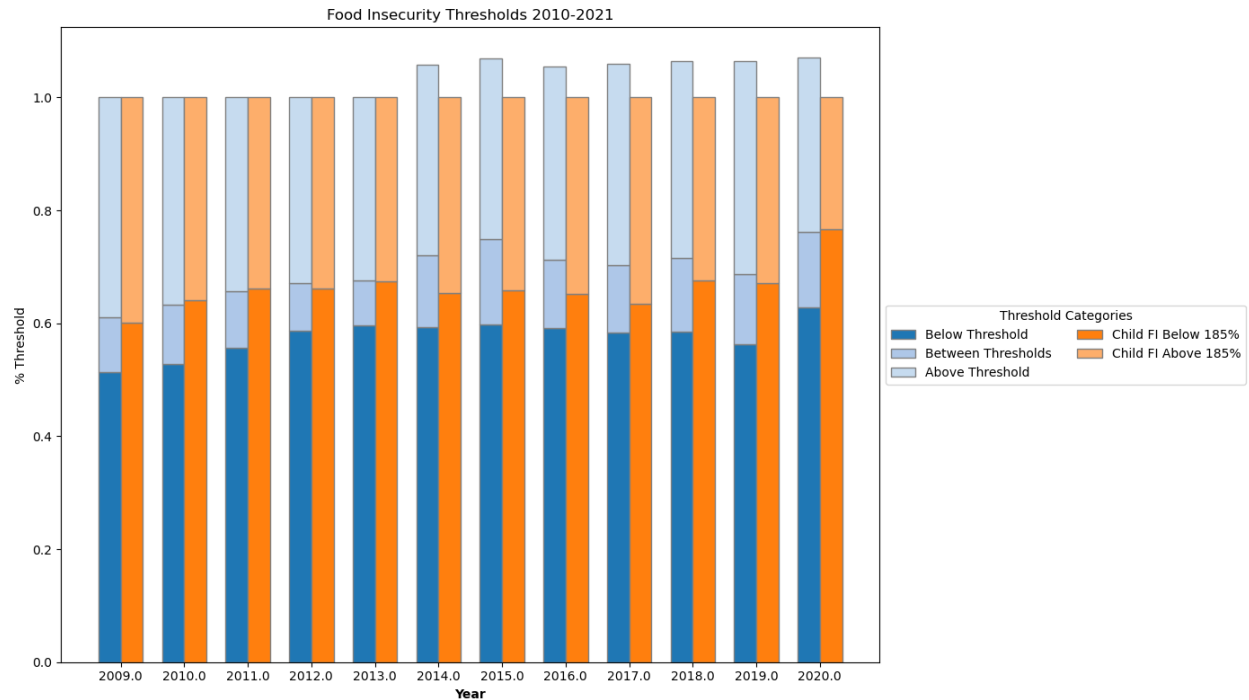


Figure 7: This stacked bar chart illustrates the percentages of the general population and children at different food insecurity thresholds each year from 2010 to 2020. The chart shows layers for general thresholds: below, between, and above a specified threshold, as well as for child-specific thresholds: below and above 185% of the poverty line.

This economic strain is exacerbated by stagnant poverty thresholds that do not keep pace with the rising cost of living, pointing to a systemic issue that requires immediate attention.

The persistence of food insecurity calls for a robust response that addresses both its symptoms and underlying causes. There is a crucial need for further research into the impact of educational and school funding on children's nutrition. By improving the quality of school-based nutritional programs and ensuring consistent funding, we can make a significant impact on reducing food insecurity among the most vulnerable populations. This issue is not just a statistic; it affects real people every day, and it is imperative that we act to mitigate its effects.

Works Cited

1. FAO, IFAD, UNICEF, WFP, and WHO. 2022. The State of Food Security and Nutrition in the World 2022: Repurposing Food and Agricultural Policies to Make Healthy Diets More Affordable. Rome: FAO.
2. Feeding America. "Map the Meal Gap 2011: Food Insecurity Estimates at the County Level." 2011.
3. Feeding America. "Map the Meal Gap 2012: A Report on County and Congressional District Food Insecurity and County Food Cost in the United States in 2010." 2012.
4. Feeding America. "Map the Meal Gap 2013: Food Insecurity Estimates at the County Level." 2013.
5. Feeding America. "Map the Meal Gap 2014: Food Insecurity and Child Food Insecurity Estimates at the County Level." 2014.
6. Feeding America. "Map the Meal Gap 2015: Food Insecurity and Child Food Insecurity Estimates at the County Level." 2015.
7. Feeding America. "Map the Meal Gap 2016: A Report on County and Congressional District Food Insecurity and County Food Cost in the United States in 2014." 2016.
8. Feeding America. "Map the Meal Gap 2017: A Report on County and Congressional District Food Insecurity and County Food Cost in the United States in 2015." 2017.
9. Feeding America. "Map the Meal Gap 2018: A Report on County and Congressional District Food Insecurity and County Food Cost in the United States in 2016." 2018.
10. Feeding America. "Map the Meal Gap 2020: A Report on County and Congressional District Food Insecurity and County Food Cost in the United States in 2018." 2020.

11. Feeding America. "Map the Meal Gap 2023: A Report on County and Congressional District Food Insecurity and County Food Cost in the United States in 2019-2021." 2023.
12. Feeding America. "About Us." Accessed 04-10-2024.
<https://www.feedingamerica.org/about-us>
13. Karpyn, A. E., Riser, D., Tracy, T., Wang, R., & Shen, Y. E. (2019). "The Changing Landscape of Food Deserts." *UNSCN Nutrition*, 44, pp. 46–53.
14. Pollard, C. M., & Booth, S. (2019). "Food Insecurity and Hunger in Rich Countries—It Is Time for Action against Inequality." *International Journal of Environmental Research and Public Health*, 16(10): 1804. <https://doi.org/10.3390/ijerph16101804>
15. "Educational Funding Inequality in Southern US High Schools." Ballard Brief, BYU. Accessed 04-10-2024. <https://ballardbrief.byu.edu/issue-briefs/educational-funding-inequality-in-southern-us-high-schools>
16. "USDA School Meals Support Food Security and Good Nutrition." *Amber Waves*. USDA. May 2021. <https://www.ers.usda.gov/amber-waves/2021/may/usda-school-meals-support-food-security-and-good-nutrition/>
17. "Dollar Stores and Food Deserts." *Eater*. Accessed 04-10-2024.
<https://www.eater.com/23026173/dollar-store-general-food-deserts>