**Incorporating Food Access Indicators to identify High Food Insecurity in the Delta Region**

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In 2022, a staggering 17 million households in the United States—12.8 percent—faced the harsh reality of food insecurity, a significant increase from 10.2 percent in 2021. The prevalence of very low food security rose from 3.8 percent in 2021 to 5.1 percent in 2022, highlighting the persistent public health crisis of food insecurity. This is a pressing issue that demands our immediate attention, despite the strides made in food production and distribution. From 2018 to 2020, nine states consistently reported food insecurity rates above the national average: Alabama, Louisiana, Mississippi, Kentucky, New Mexico, Oklahoma, Tennessee, Texas, and West Virginia. Notably, three of these states are part of the Delta Region as defined by the USDA[[2]](#footnote-2).

Feeding America's Map the Meal Gap (MMG) reports provide detailed county-level food insecurity rates across the U.S. This index incorporates factors such as unemployment rates, poverty rates, median income, share of Hispanic and African American populations, homeownership rates, and the percentage of households with disabilities. These measures primarily capture household food affordability but overlook the crucial aspect of food accessibility.

The Regional Food Business Centers (RFBCs) play a crucial role in identifying and bridging gaps in the local food economy. By pinpointing food-insecure counties and assessing their accessibility to food stores, RFBCs can effectively address supply chain gaps. In this project, we plot the MMG's county level insecurity index, highlight the counties weighted population and plot the food stores[[3]](#footnote-3)—supermarkets, supercenters and convenience stores over all the four states in the Delta region. Our end results map and visualize the counties in the Delta region with the highest prevalence of food insecurity and limited access to food stores, offering a beacon of hope in the fight against food insecurity.

The heatmap of the Delta region reveals that rural counties along the Mississippi River, depicted in red in the visualization, experience the highest food insecurity. Urban centers, which are more densely populated, show lower levels of food insecurity. In high-risk counties such as Jefferson (M.S.), Issaquena (M.S.), East Carroll Parish (L.A.), Holmes (M.S.), Claiborne (M.S.), Humphreys (M.S.), Greene (A.L.), Perry (A.L.), Phillips (A.R.), and Wilkinson (M.S.), food insecurity exceeds 20 percent (the 75th percentile), and the number of food stores is below the average (30). The accessibility of road networks is also a critical factor in food access; the most food-secure and high food accessible areas are typically located at major highway intersections. Conversely, high-risk counties often lack primary road access, a crucial insight that can guide future interventions.

Urban centers generally exhibit lower food insecurity due to their strategic location at major road intersections and economic hubs. In contrast, rural areas distant from primary roads and dominated by convenience stores face higher food insecurity and less access to healthy affordable food. RFBCs must concentrate on these high-risk counties, addressing supply chain deficiencies by expanding and strengthening local food system networks, forging partnerships, and facilitating the establishment of more superstores and supermarkets to mitigate food insecurity.

1. All the members are PhD Students in the Department of Agricultural Economics and Rural Sociology, Auburn University, AL. [↑](#footnote-ref-1)
2. Feeding America's Map the Meal Gap Reports. Accessed at: <https://map.feedingamerica.org/> [↑](#footnote-ref-2)
3. These are SNAP-accepting food stores and their exact location has been extracted from the Historical SNAP Retailer Locator Data, USDA-FNS. [↑](#footnote-ref-3)