

Time-Based Measures of Food Access: How Do They Compare to Location-Based Measures?

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Much of the efforts to tackle the problem of food insecurity and nutrition disparity rely on approaches that identify the places under-retailed for fresh produce and other healthy foods, popularly termed "food deserts." Contrary to common belief, however, literature noted the disappointing performance of the location-based food access measures in predicting food insecurity or poor diet quality. This study explores an alternative definition of food access based on the temporal distance to foods. Specifically, the study 1) uses individual time diaries to assess household-level time distance of food access; and 2) evaluates the measure's performance as a predictor of household food insecurity compared to the existing food access measures defined by the physical proximity to grocery outlets. This study follows an innovative use of time-diary data to approximate the required travel time for food acquisition, initially proposed by Hamrick and Hopkins (2012). The time-distance measure avoids the errors-in-variable bias inherent in the existing food access indicators and is hypothesized to be a more consistent predictor of household food insecurity.

This study uses the 2016-2022 American Time Use Survey (ATUS) matched with the 2015-2021 Current Population Survey's (CPS) December Basic Monthly survey on food security. The place-based food access indicators come from the USDA's Food Access Research Atlas (FARA) data. The time distance was constructed as a household-level variable following Hamrick & Hopkins (2012), which equals the minimum of all one-way travel times between either home or work and the places where grocery shopping occurs. Missing values due to the lack of grocery shopping events during the diary date are imputed using the indicators of weekend diary date and primary food shopper as instruments.

Preliminary findings revealed that the average one-way time distance for food access is 14 minutes, consistent with Hamrick and Hopkins (2012), who originally formulated the method. Individualized time distance demonstrated a more distinct racial and income disparity of food access than spatially aggregated location-based measures. Further, time distance was a more robust and statistically significant predictor of food insecurity than the spatially aggregated location-based measures. This study suggests that time distance reflects the disparity across households in the temporal cost of food access. It underlines the importance of extending policy measures beyond improving market-level supply adequacy.

References

Hamrick, K. S., & Hopkins, D. (2012). The time cost of access to food – Distance to the grocery store as measured in minutes. *International Journal of Time Use Research*, 9, 28-58.

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