

## Should the Definition of Food Deserts Incorporate a Seasonal Component?

Amelia F. Darrouzet-Nardi<sup>1</sup>, Rebecca Boehm<sup>2</sup>, Sophia E. Stabley<sup>1</sup>

**BACKGROUND:** Households may experience geographic, transportation, and other spatial barriers to healthy eating when there is a dearth of fresh foods nearby to where they live. Communities with a low supply of healthy foods nearby are typically referred to as food deserts, and are formally defined as areas with at least 33 percent of the population residing more than one mile away from a supermarket or grocery store. This definition emphasizes the spatial aspects of the food access challenge without addressing potential seasonal aspects, and there are many potential seasonal factors which influence food access, especially for low-resource households. During winter, it may be especially difficult to access healthy foods because days are shorter, it gets dark earlier, sidewalks may not be clear of snow for walking, public transit service may be more intermittent, inclement weather might make it harder to walk places, certain fruits and vegetables are highly seasonal, delivery trucks may be delayed more frequently, and farmers markets aren't operating as intensively. Understanding the seasonal barriers to healthy eating is important for informing nutrition policies and programs, especially initiatives focused on eliminating food deserts.

**OBJECTIVE:** The objective of this study was to investigate whether incorporating a seasonal component into the definition of a food desert would be beneficial for gaining a better understanding of food consumption decisions and needs, by assessing whether households in low-resource communities experience seasonal fluctuations in food expenditure patterns throughout the year.

**METHODS:** Multiple linear regression analysis of the *National Household Food Acquisition and Purchase Survey* (FoodAPS), a nationally representative (N=4,826 households) cross-sectional dataset of household food expenditure over a 7-day period, was performed. Regression models incorporated geographic fixed-effects and adjusted for various determinants of food expenditures such as household income, participation in nutrition assistance programs, health status, non-food expenditures, and nutrition knowledge.

**RESULTS:** Results indicated that households in low resource communities had different food expenditure patterns depending on the month of the year. Fruits and vegetables were purchased less frequently and in smaller amounts during winter months; this pattern was especially pronounced in northern states where weather may impede grocery shopping. Food away from home (FAFH) purchases accounted for a higher percentage of total food purchases during the winter months compared with summer months, but only in northern states. Food purchases during the winter months in northern states had systematically worse micronutrient profiles than food purchases during the summer months.

**CONCLUSION:** A purely spatial definition of food deserts may not fully capture the challenges of ensuring access to healthy foods throughout the year for households in lower resource communities of northern states. Incorporating a seasonal component to the definition of a food desert may improve institutional and programmatic capacity to address varying food desert severity throughout the year.

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1. Allegheny College, Department of Global Health Studies
2. University of Connecticut, Rudd Center for Food Policy and Obesity