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Food Deserts Suffer Persistent Socioeconomic Disadvantage

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The diet and health of Americans has recently received more prominent national attention. With the rising incidence of obesity and diet-related disease, more researchers, health officials, and policymakers are looking at what drives individual decisions about what and when we eat. Increasingly, researchers are recognizing the important role played by an individual's "food environment"— the outlets closest to an individual's place of school, work or residence where he or she is likely to obtain food; as well as the types of food these outlets provide, the prices at which they are available, and the marketing by which these options are presented to the consumer. One aspect of the food environment that has garnered particular attention is the availability of affordably-priced healthful foods such as fresh produce, low-fat dairy, lean meats and whole grains.

As part of a national program to provide funds for improving food environments in areas with limited availability of nutritious and affordable foods, the Economic Research Service (ERS) at the U.S. Department of Agriculture worked with members of the Department of Treasury, and of Health and Human Services, to create a definition of "food deserts" on a Census-tract level. Census tracts are geographical areas smaller than counties and contain populations of 1,000 to 8,000 people, with an ideal population of about 4,000. In the 2000 Census, the contiguous United States was divided into approximately 65,000 tracts. The tract-level definition of food deserts was intended to facilitate the allocation of grants and loans provided by Federal agencies to low-income communities in which a substantial portion of the population lacked access to stores in which they could purchase nutritious food at affordable prices. Using data from the 2000 Census, as well as store location data as of 2006, ERS identified over 6,500 Census tracts that met the definition of a food desert. Store locations were provided by TDLinx, a proprietary database of food retailers in the United States, and by a list from USDA's Food and Nutrition Service of stores authorized to accept Supplemental Nutrition Assistance Program (SNAP) benefits—formerly called food stamps. Population and store data were the most recent data available at the time of the analysis.

To qualify as a food desert, a tract has to meet both a low-income standard and a low-access standard. A tract is considered low-income if it has a poverty rate of 20% or higher. Alternatively, a tract may still qualify as low-income if the median family income within the tract is lower than 80% of the median family income for the entire state or surrounding metropolitan area. To be defined as low-access, a tract must have at least 500 people or 33% of the population living beyond a specific distance threshold from the nearest supermarket—farther than one mile in urban areas, or farther than ten miles in rural areas. While many outlets may offer affordable and nutritious food, the tract-level definition of food deserts focuses on supermarkets, supercenters and large grocery stores. By industry definition, these stores all carry a variety of food and often offer this food at lower prices than other outlets such as convenience stores or drug stores. This definition of food deserts does not consider farmers' markets because of a lack of national data and the often seasonal nature and limited hours of these vendors.

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Comparing Populations of Food Deserts to Other Areas

Identifying ways in which food desert areas differ from other parts of the country can help isolate the factors that influence the formation of food deserts, as well as highlight focal points for policymakers to design efficient and effective solutions. In an effort to distinguish how food desert areas differ socioeconomically and demographically from other areas, ERS researchers used data from the 1990 and 2000 Census, as well as from the 2005-2009 American Community Survey (American Community Survey, 2012) to investigate characteristics of the 6,529 tracts that are identified as food deserts based on 2000 Census data. The study provides a comparison of characteristics such as racial composition, median income, poverty rates, education and unemployment in food desert tracts to those in other areas in each of the three time periods to identify ways in which food desert tracts consistently differ from areas with sufficient access to affordable and healthful food. This analysis also used some of these characteristics from year 2000 data to determine which of these are predictive of whether a low-income tract will also suffer from low access.

Research reveals that tracts identified as food deserts based on 2000 Census data and 2006 store locations suffer socioeconomic disadvantage relative to other areas, and that this relative disadvantage is persistent in the years before and after food desert status was designated (Dutko, Ver Ploeg, and Farrigan, 2012). Not surprisingly, given the food desert definition, tracts identified as food deserts tend to have higher rates of poverty. They are also home to residents with lower educational attainment, lower incomes, and higher rates of dependence on public assistance. Lower income levels indicate that individuals have fewer resources with which to purchase healthy foods; and less education can imply lower levels of knowledge about the health effects of poor nutrition. The population of food desert tracts tends to be smaller than in other areas, and unemployment rates tend to be higher. A small market with relatively low purchasing power may not be perceived as profitable for food retailers, providing a disincentive for retailers to locate in these areas. In addition, the proportion of households that do not have access to a vehicle for private use is higher in food deserts than other areas. This is significant, as vehicle availability may play a key role in enabling people who live far from a grocery store or supermarket to purchase healthful food.

High Poverty Rates Are Strongly Linked to Food Desert Status

While a tract must have substantial rates of poverty or low income among its population to qualify as a food desert, the tracts with the highest poverty rates are more likely to suffer from low access than other low-income tracts (Dutko, Ver Ploeg, and Farrigan, 2012). In very dense, low-income urban tracts, a one percentage point increase in the poverty rate implies an 82% increase in the likelihood that the tract will be a food desert. Residents of low-income tracts in the Northeast are less likely to suffer low access than residents of low-income tracts in other regions of the country. This may reflect the more densely-populated nature of many Northeastern cities, which provides sufficient sales volume for larger retail food stores to operate profitably.

While we observe persistent socioeconomic disadvantage in food desert tracts, we do not know whether this reflects the plight of a persistently poor population, or whether it reflects the status of these areas as temporary harbors for households who move into food deserts during difficult times and then leave when their welfare improves. If individuals tend to live in food deserts for an extended period of time, the length of exposure to a poor food environment may mean greater negative health consequences. Over the 20-year period investigated in this study, urban food desert areas experienced a population loss of about 10%, while rural food desert areas saw a growth in population of slightly less than 1% (Dutko, Ver Ploeg, and Farrigan, 2012). Changes in population in nonfood-desert areas were smaller in scale but of a similar direction: other urban areas experienced a population loss of 4.8%, while other rural areas saw a 6.8% growth in population. From such patterns, we may infer that the population in food desert tracts is less dynamic than in other areas, in that population loss or gain is smaller in these tracts and people do not move into or out of food desert areas as frequently. Growth in population may imply that residents of food desert tracts are exposed to poor food environments for longer periods of time, and more people are exposed to these environments over time; while population loss suggests that individuals are escaping environments of limited access to healthy foods. Further information regarding population mobility into and out of food desert tracts could provide crucial insights to policymakers as to the best means for addressing food access problems.

Transportation Also Plays a Role in Food Access

The ways in which residents of food deserts travel to and from the supermarket also play a large role in determining food access. The Census and American Community Survey provide data on how the working population travels to and from work, as well as the approximate length, in minutes, of this commute. Because many individuals may do their food shopping on their way home from work, ERS researchers used this measure as a proxy for the commute to

places of business in general, including supermarkets.

Transportation patterns tend to differ between food deserts and other areas, and relative transportation patterns are different in urban and rural areas. For example, this study finds that across time, residents of food deserts in rural areas tend to have longer commutes to work than their counterparts in other rural areas (Dutko, Ver Ploeg, and Farrigan, 2012). This characteristic is measured by the proportion of residents in a tract traveling greater than 45 minutes to his or her place of work. A difference in commute times between rural food desert residents and other rural shoppers may be reflective of the fact that reliance on public transportation is higher in rural food deserts than in other rural areas.

In contrast, people living in urban food deserts have shorter commutes to work than residents in other urban areas, as measured by the proportion of workers traveling less than 25 minutes to their workplace (Dutko, Ver Ploeg, and Farrigan, 2012). Urban food desert residents use private vehicles in slightly greater proportion than workers in other urban areas, despite lower rates of vehicle access in food deserts. Alternative means of transportation, such as biking or walking, are also more prevalent for workers in urban food deserts than other urban workers.

Differences in means of transportation between food desert residents and other individuals may reveal additional information about food access. The ability to obtain healthful foods for individuals living in food desert areas may not be as limited as socioeconomic factors such as income and distance to the nearest store indicate. Improvement in vehicle availability across both food deserts and other areas over the past 20 years suggests that while residents of food desert tracts appear to be disadvantaged both economically and in terms of food access, growing access to vehicles can allow them to overcome some of these barriers.

Overall, the disadvantages faced by individuals living in areas identified as food deserts appear to be numerous and persistent. While determining a causal relationship between these socioeconomic or demographic characteristics and food desert status is more difficult, this study finds that high poverty rates are predictive of which low-income areas are more likely to be food deserts. These results suggest that limited food access may result from a variety of factors, and various solutions for underserved areas are likely needed.

Addressing the Problem of Food Deserts

Some initiatives focus on attracting new supermarkets or supercenters to food desert areas by providing loans, grants, or tax incentives. The proposed Healthy Food Financing Initiative (2012) and California Fresh Works Fund (2012) are both examples of programs that provide incentives to locate affordable food retailers in underserved communities. In some cases, smaller, less dense populations in food deserts may mean that improving the selection at small grocery stores and convenience stores, or even providing produce stands are viable alternatives to building large stores that require a minimum volume of sales to remain profitable. Local efforts in some cities are already experimenting with this. New York City's Healthy Bodegas Initiative (2010), as well as Pennsylvania's Fresh Food Financing Initiative (2004) provides expertise and grants or loans to help smaller stores carry more fresh, healthy foods.

Alternatively, providing better and cheaper alternatives for transportation to and from the grocery store may be a viable solution in some low-access areas. If growing vehicle availability is not sufficient to ease access problems, improving public transportation in rural areas or ensuring safe walking and biking environments in urban areas may be part of the solution. Efforts to improve the food retail environment in New Orleans include a proposal for a store that would provide free shuttle service to anyone purchasing at least $50 worth of groceries; other cities have considered reducing bus fares for SNAP recipients to lower the cost of travel.

In addition, providing consumers with information about diet and health may result in more nutritious food choices, especially in food desert areas in which low levels of education are prevalent. State-level efforts such as SNAP Education (*SNAP-Ed Connection*, 2012), or Share Our Strength's Shopping Matters and Cooking Matters programs (*Bringing Innovative Solutions to Childhood Hunger,* 2012) can educate shoppers about the importance of eating a healthy diet, as well as offer guidance on attaining healthier diets on a limited budget.

An updated identification of tracts that qualify as food deserts using more recent population and store location data may provide further insight into the dynamics of food access problems. A second and more recent measurement of a tract's food desert status will allow researchers to identify those characteristics that are associated with persistent status as a food desert, as well as to gauge the effectiveness of measures to improve access.

For More Information

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