

## **Future Research Needs**

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Progress has been made in characterizing the problem of food deserts and in describing their consequences for affected populations. Many aspects of food deserts, however, are not well defined or understood. This chapter outlines future research needs for each of these aspects of food deserts. It first focuses on conceptual and measurement issues of food access. These were discussed in greater detail in Chapters 1 and 2. Next, it considers the research issues for determining the causes of limited access, which were discussed in Chapter 6. Finally, it highlights future research considerations for understanding the economic and health consequences of limited access.

### **Conceptualizing and Measuring Food Access and the Food Environment**

A variety of concepts and methods have been used to measure access to affordable and nutritious food. But because of the breadth of sources of both nutritious and less nutritious foods and the complexity with which consumers make choices about where to shop, what to eat, and how much time to devote to these and other food-related activities, it is very difficult to fully measure and characterize food access for consumers.

Existing studies almost exclusively consider access to stores from consumers' homes and ignore the potential access to food that consumers have because they travel to school, work, or other activities. Future research should consider how people fit grocery and food shopping into their daily activities and travel patterns. It will also be important to consider how these activities and patterns expose people to food environments outside of their neighborhoods and how this may affect their shopping and diet.

Most of the research that has been conducted focuses on an area-based concept of access. Area-based concepts are important because cross-sectional evidence suggests that the food and neighborhood environment has a strong correlation to food intake and to some diet-related health outcomes and because individual factors alone cannot explain all the differences in diet and health. The findings from the national-level assessment of access to supermarkets and the discussion in Chapter 1 suggest that an individual-based concept of access may be as important. That is, some low-income people do not live in areas with concentrated poverty, but still may lack the resources or transportation to access affordable food. Further clarification of both individual measures of access and area measures of access is needed. Studies that offer both types of measures could be useful. For example, it would be useful to understand the degree to which individuals who report access limitations (such as those in the Current Population Survey-Food Security Supplement CPS-FSS) live in areas that may be considered low-access areas.

It is clear from the research that some areas and individuals have relatively less access to some food retailers than other areas and individuals. This is useful information which highlights issues of equity and areas where policy

interventions or private store development may be targeted. But it is not clear whether these relative deprivations in access to food constitute an absolute inadequacy of access to food. That is, just knowing that an area has less access to food than another area may not be enough to say that access is inadequate and thus, whether policy-interventions may be necessary. This is not to say that there are no areas where access is inadequate. Rather, such a designation has not yet been systematically considered to make such judgments. Further conceptual clarification of the adequacy of food access is needed in order to do so.

Actually measuring food access, even when the key conceptual constructs are well-defined, will require a great deal more data. National-level assessments, such as those conducted in Chapter 2, are important for monitoring broad characteristics of the food environment in the U.S. The use of supermarkets and large grocery stores as proxy measures of the availability of affordable and nutritious food is a feasible way to operationalize a measure of access on a broad national scale. Such stores typically offer competitive prices and have greater variety of foods. But examining only large supermarkets and grocery stores inevitably understates the sources of food available to consumers, since food is available from many other retailers and from restaurants and because consumers do not limit their food shopping to stores near their homes. Thus, national-level assessments can only go so far.

It may be more feasible to collect indepth information on food availability, prices, and consumer shopping and travel behavior systematically across a few local areas so that concepts and measures of access can be further defined and studied. Tools like the Nutrition Environment Measures Survey and indepth studies that have included complete enumeration of stores in an area and even collected information on the contents of shelves of stores within an area (for example, Rose et al., 2009; Sharkey and Horel, 2009) could be used. Surveys of individual consumers' food shopping, preparation, and consumption patterns could be a part of such studies. Such surveys may also include questions of access limitations like those collected in the CPS-FSS or the National Food Stamp Participant Survey.

It would also help to know the prices of goods because while some goods may be available, their prices may be so high that they are not reasonably affordable. Data collected by the Bureau of Labor Statistics to compute the Consumer Price Index, or data from Nielsen's Homescan panel could be linked to food availability data (Bitler and Haider, 2009).

On a national level, it may be more feasible to use direct questions about food access and the food environment to understand the extent of the problem. Questions on whether households had enough to eat and if not, why, that were once a part of the Current Population Survey's Food Security Supplement could again be included on the annual survey. These questions may need to be modified to elicit more information about access limitations. But they could be useful in monitoring changes and trends in the number of Americans affected by limited access to food sources on a national level. The NFSPS is another model for collection of individual level measures of access to food. This survey collected much more extensive data on consumer shopping behavior and data on modes of travel to stores, travel times and distances, types of foods purchased, and consumer opinions

about food shopping options. Other surveys of individuals and households could consider asking more questions about food shopping and consumption behavior, including questions on the kinds of stores at which major shopping is conducted, the distance to the stores and the time and costs required to reach them, and the modes of transportation used to get the stores. National-level surveys such as the National Health and Nutrition Examination Survey (NHANES) or the Consumer Expenditures Survey could be used for this purpose. NHANES also collects food intake data and information on BMI and other diet-related health outcomes for individuals and could be used to better understand the economic and health consequences of food access (a point discussed later in this chapter). Individual questions of mobility limitations (e.g., for the elderly or disabled) could also be considered.

## **Understanding the Causes of Limited Access**

It is possible that supply-side factors, such as the costs firms face to open new stores, or demand-side factors, such as a lack of information about the health benefits of some foods, or both could lead to variation in access across areas and in the types of retailers or types of foods sold in areas. Future studies should consider how supply or demand factors differ across areas in ways that could lead to differences in access to food retailers and restaurants. There is some research on the cost factors affecting food retailers (King et al., 2004). The operating costs of supermarkets that serve relatively larger portions of low-income consumers are not greater than those that serve fewer low-income consumers, but it is not clear if there may be differences in fixed costs of developing supermarkets or stocking healthier food alternatives. In a similar way, further exploration into demand-side factors—why consumers choose the foods they buy and the stores and restaurants from which they buy could also help determine the causes of variation in food access across areas. Such studies would require going beyond the usual factors that economic studies consider in demand analysis, such as income, education, and price. Although data could be difficult to collect, more information is needed on consumer knowledge of nutrition, food preparation, tastes, and variations of such across different subpopulations. Understanding the time, price, and nutritional tradeoffs of cooking at home versus eating at restaurants or eating prepared meals would also be beneficial for understanding how some areas may be saturated with some types of food outlets but lacking in others.

Another potential approach to understanding product availability and market prices is to apply spatial demand models to food access. These models (Capozza and Van Order, 1978) consider not only the costs for suppliers but also the transportation costs for consumers to get to different stores as determinants of spatial distribution of stores and prices. Applying these models would require better data on transportation costs to stores (Bitler and Haider, 2009).

## **Understanding the Economic, Diet, and Health Consequences of Limited Access**

The causal pathways linking food access to shopping and consumption behavior and the effects of these behaviors on diet-related conditions like body weight, diabetes, or cardiovascular disease are not well understood.

Methodological and data improvements could make it possible to go beyond cross-sectional relationships to isolate the effects of access, or changes in access, on shopping and consumption behavior separately from the effects of individual preferences for foods or other goods and services, which also may affect shopping and food intake decisions.

Natural experiments and quasi-experiments, such as the UK studies in Glasgow and Leeds, could be conducted in the United States where new stores or improved stores become available. Instrumental variable approaches that try to consider the effects of access separately from decisions about choices of where to live could also be used to better understand the effects of access on shopping, diet, and diet-related health outcomes (see, for example, Chen et al., 2009). Studies that use cross-sectional variation in prices of foods, individual characteristics, and neighborhood characteristics could help sort out how these factors interact to affect food shopping and food intake. Finally, there is little consideration of the effects of time costs on decisions of where to shop for food, what to eat, and where to eat it. More consideration of the time tradeoffs of different consumption and shopping choices is needed.

Cross-sectional data sets like NHANES and the American Time Use Survey could be further exploited to uncover the causal links. Doing so may require linking geographical data to the individuals or households in these surveys so that aspects of food access and the food environment can be linked to food intake or time-use data.<sup>50</sup> Localized data on food prices from Nielsen is being linked with the NHANES survey by National Center for Health Statistics staff and used by ERS staff to better understand how price variation affects food consumption decisions. The 1996 National Food Stamp Participant Survey collected a wealth of information on food access, food shopping behavior, travel costs and time costs of food shopping, and food use (see Chapters 2 and 5). This survey is over 10 years old. An updated version of the survey could be considered to help improve understanding of food access issues. In addition to providing more recent data, additional information on food access, food shopping, and food use could be collected in an updated round, including complete information for both SNAP participants and eligible nonparticipants. It may also be feasible to oversample individuals who live in areas that have low access to supermarkets to provide greater sample size to study those who live in areas with low access.

Longitudinal data on both consumer shopping and food intake and on the food environment could help tease out the causal pathways between access and consumption by linking changes in the food environment to changes in shopping or food intake. Currently, none of the national-level surveys collect detailed longitudinal data on consumer shopping or food intake. Given the lack of national longitudinal data on food shopping and food intake, it may be more feasible to add questions on intake of a few important foods (e.g., the frequency of eating fruits and vegetables or whole grains) to existing longitudinal surveys such as the Panel Study of Income Dynamics, the National Longitudinal Survey of Adolescent Health, or the Early Childhood Longitudinal Surveys. These longitudinal surveys or others, such as the Survey of Income and Program Participation, could also ask basic questions

<sup>50</sup>The estimates of time spent traveling to grocery stores across distances from supermarkets in tables 2.8 and 2.9 used such linked data.

of whether households have enough food and if not, why, such as those questions that were at one time part of the CPS-FSS.

In addition to understanding where stores choose to locate, it is also important to know why people choose to live where they live. Economic studies have considered the values consumers place on different amenities of neighborhoods, such as availability of parks or the quality of public schools. Not much is known about how consumers value such amenities as supermarkets or restaurants. Low-income individuals are more constrained in these choices than high-income individuals. Even less is known about how lower income and other subpopulations value different amenities and about how social networks may affect location decisions. Further research on residential choice could help further the understanding of how differences in income, preferences, and price affect the way consumers sort into areas with different levels of access (see Bayer et al., 2004).

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