

# Access to Affordable, Nutritious Food Is Limited in “Food Deserts”

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- A small percentage of U.S. households live in “food deserts,” where access to a supermarket or large grocery store is a problem.
- Low-income households often leave food deserts to shop where food prices are lower.
- Business costs, along with characteristics of potential customers, affect where stores locate.

Some neighborhoods in the United States, particularly those in low-income areas, have been dubbed “food deserts” because residents do not live near supermarkets or other food retailers that carry affordable and nutritious food. Low-income residents of these neighborhoods and those who lack transportation rely more on smaller neighborhood stores that may not carry healthy foods or may offer them only at higher prices.

A lack of healthy options could lead to poor diets and to diet-related conditions such as obesity or diabetes. If low-income households in food deserts can only purchase food at higher prices, they may be more prone to food insecurity—not having enough food for active, healthy living.

**Supermarket Access Is a Problem for Some . . .**

Defining what lack of access to affordable and nutritious food means and estimating how many people are affected by living in food deserts is not straightforward. A number of different measures are possible. ERS began its investigation into access by mapping the availability of affordable and nutritious food across the country. Because it is too costly to survey the types of foods and prices offered in every store, ERS used the availability of supermarkets and large grocery stores (including discount and supercenter stores) as a proxy for the availability of affordable, nutritious food.

A 2006 directory of supermarkets and large grocery stores throughout the continental U.S. was used to examine distance to the nearest supermarket or large grocery store. Researchers focused on populations that may be particularly vulnerable to access problems—those in low-income families and low-income neighborhoods, as well as households without access to a personal vehicle.

According to data from the latest census (2000), about 23.5 million people, or 8.4 percent of the U.S. population, live in low-income neighborhoods that are more than a mile from a supermarket. Low-income neighborhoods are areas where more than 40 percent of the population has income less than or equal to 200 percent of the Federal poverty threshold (\$44,000 per year for a family of four in 2008).

While all the people living in these neighborhoods are affected by their neighborhoods' characteristics, not all of those living in low-income neighborhoods are poor. Better-off residents in low-income areas are likely to have personal vehicles to

About 2.3 million, or 2.2 percent, of households in the continental U.S. live more than a mile from a supermarket and do not have access to a vehicle.

get to supermarkets outside their immediate neighborhoods or sufficient financial resources to use food-delivery services. Just over half of all people in low-income neighborhoods have incomes that are below 200 percent of the Federal poverty level. Thus, 11.5 million people, or 4.1 percent of the U.S. population, have low incomes and live in low-income neighborhoods that are more than a mile from a supermarket.

To visually depict food deserts, ERS mapped the location of supermarkets in low-income neighborhoods in the St. Louis area (see box, "Mapping Food Deserts").

**. . . Especially Those Without Cars**

Perhaps the best measure of whether someone who lives far from a grocery store faces obstacles to accessing affordable and nutritious food is whether or not he or she has a car. Access to a car allows people to leave the food desert and shop at super-



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## Mapping Food Deserts

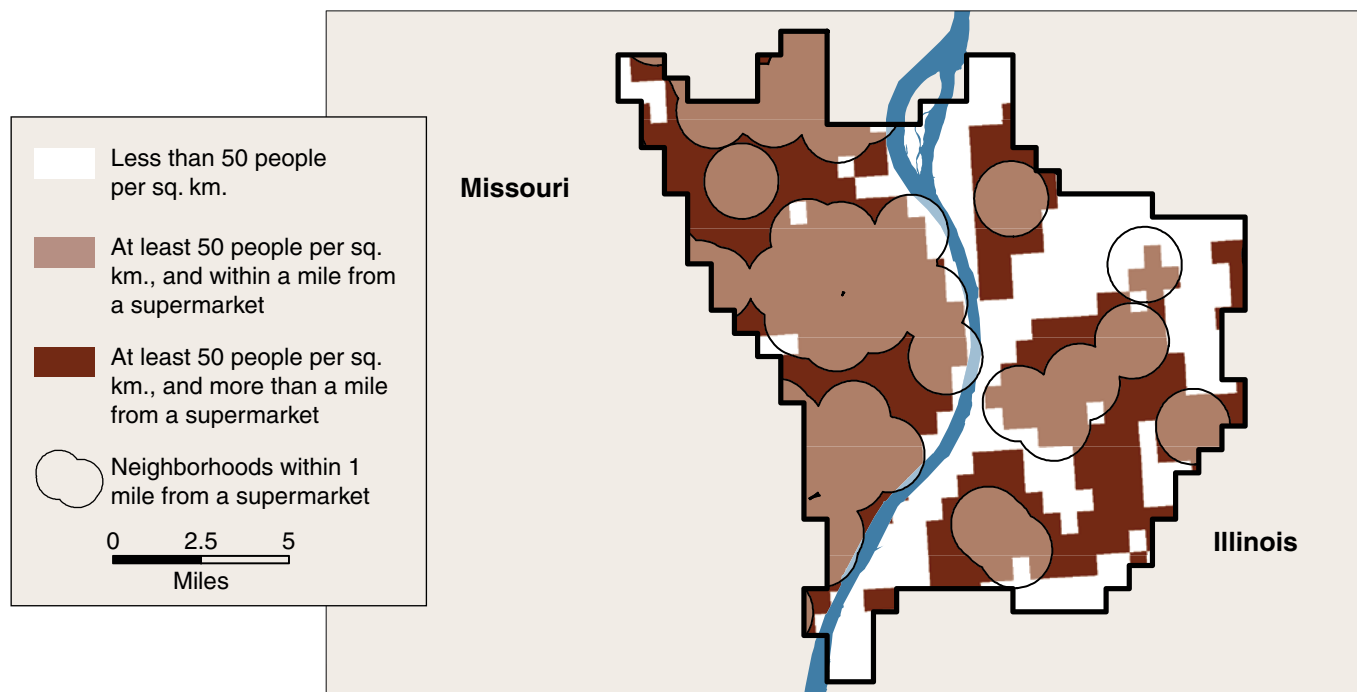
Determining the extent of food deserts involves looking at income levels, population density, and distance from a supermarket. ERS researchers combined data from the Socioeconomic Data and Applications Center, which is based on the 2000 Census of Population, with the addresses of supermarkets and large grocery stores, and used mapping software to identify portions of the St. Louis area where access to affordable and nutritious food may be limited.

Using census data on family income, researchers identified low-income neighborhoods in the St. Louis area (see area within thick black line of map below). An area is designated as “low income” if 40 percent of residents have incomes equal to or below 200 percent of the Federal poverty level. These low-income areas have higher concentrations of people who lack cars or other ways to travel to a grocery store.

Within these low-income neighborhoods, population density comes into play as well. Lack of access to supermarkets in non- or less-populated areas of a city—parks, highway right of ways, commercial districts, and others—is not a pressing concern. It is neighborhoods where people live and eat that need access to affordable and nutritious food.

Low-income St. Louis neighborhoods were divided into two groups: those with a population density at or above 50 people per square kilometer and those with a lower density. Two national-level directories of food retailers were merged and used to locate supermarkets and large grocery stores (stores with at least \$2 million in annual sales and with all major food departments found in a traditional supermarket). Areas within a 1-mile radius from each of these stores were mapped (see areas circled with a thin black line). The dark brown areas of the map indicate food desert neighborhoods—densely populated low-income areas more than 1 mile from a supermarket.

**Some densely populated, low-income St. Louis neighborhoods are more than a mile from a supermarket**



markets and large grocery stores outside of their neighborhoods. But not everyone has regular access to a car. About 2.3 million, or 2.2 percent, of households in the continental U.S. live more than a mile from a supermarket and do not have access to a vehicle. For these households, lack of transportation poses a likely barrier to accessing affordable and nutritious food.

The 2.2 percent of households and 4.1 percent of individuals who face food access barriers are in line with the 2001 Food Security Supplement of the U.S. Census Bureau's Current Population Survey, which asked respondents whether they had enough food and the kinds of foods they wanted. Those who responded that they did not have enough food or the kinds of foods they wanted were asked why and whether access-related factors,

Higher prices at small grocery stores or convenience stores compound the problem of limited access to healthy foods.

such as the availability of desired foods or difficulty in getting to a store, were the causes. Responses to these direct questions show that nearly 6 percent of all U.S. households faced access-related problems in obtaining food.

### Low-Income Consumers Shop Outside Food Deserts When They Can

Some neighborhoods lacking supermarkets may be served by smaller grocery or convenience stores which may offer some healthy foods, but often at higher prices than supermarkets. Higher prices

at these food retailers compound the problem of limited access to healthy foods. Residents unable to get to larger stores outside of their neighborhood are more likely to be food insecure if they cannot afford to buy all the food they need. In addition, higher prices for groceries in these neighborhoods may make local fast food or carryout foods relatively more affordable (see box, "Food Deserts or Food Swamps?").

To understand better the prices paid by low-income consumers, a 2009 study by an ERS researcher and colleagues used household-level purchase data to analyze differences in prices paid for the same food items by consumers with different levels of income. The data covered the food purchases of approximately 40,000 representative U.S. households.

The analysis shows that many low-income consumers can find lower prices, but consumers with very low incomes may not be able to get to stores that offer these low prices. Consumers with annual incomes between \$8,000 and \$30,000 paid the least of all income groups for the same food items. More worrisome, however, is the finding that households with annual incomes less than \$8,000 paid slightly more—between 0.5 to 1.3 percent—for the same foods than those with incomes between \$8,000 and \$30,000. Households with incomes over \$100,000 per year paid the most for the same food items—between 2 to 3 percent more than poorer households.



Mary Hinderhofer



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### Food Deserts or Food Swamps?

Food desert studies have focused on the lack of access to healthy foods, such as fruit and vegetables or whole grains. The flip side of the problem is an abundance of less healthy foods available from convenience stores and fast food restaurants. Easy access to less healthy, energy-dense foods, particularly if they are convenient and cheap, may swamp out healthier choices. Some researchers have used the term “food swamps” for neighborhoods that have relatively easy access to less healthy foods compared with access to healthy foods.

This twist on the metaphor of a food desert is particularly important for understanding high rates of obesity. The problem may not be that healthy food is not accessible or that families do not have strategies to get to stores that offer healthy options. Rather, the problem may be that, in some areas, less healthy food is much easier to access. It is often cheap. And, it usually requires less planning and time to prepare. Some recent studies have found an association between the proximity of small stores or fast food restaurants and body mass index. Recognizing that limited access to some foods and overly abundant access to others may both contribute to the problem of obesity is important for future research and policy considerations.

ERS also analyzed the prices consumers paid at four different store formats (grocery, convenience, discount/supercenters, and “other”) for three frequently purchased foods—milk, ready-to-eat cereal, and bread. Characteristics of the foods, such as fat content of milk or product size, were controlled. The results show that convenience store prices were higher than prices at grocery stores—milk prices were 5 percent higher; cereal, 25 percent; and bread, 10 percent.

However, food purchases at convenience stores make up just 2 to 3 percent of total food expenditures for low-income consumers. Low- and middle-income consumers are more likely than higher income households to purchase food at supercenters, where prices are lower.

Research sponsored by USDA’s Food and Nutrition Service (FNS) in

the mid-1990s on the food-shopping behavior of participants in the Food Stamp Program (now known as the Supplemental Nutrition Assistance Program, or SNAP) corroborates these findings. Close to 90 percent of all food stamp benefits were redeemed at supermarkets or large grocery stores—a percentage that, according to more recent FNS data, has not changed much. Further, while food stamp participants, on average, lived 1.8 miles from the nearest supermarket, they traveled an average of 4.9 miles to get to the store they most often used to buy groceries.

New York City has implemented the Healthy Bodegas and Health Bucks programs to address disparities in access to some specific healthy foods.

### Some Neighborhoods Are More Attractive for Supermarkets

A food-desert neighborhood may lack a supermarket or large grocery store because of the costs food retailers face when building and/or operating a store in those locations. The price of land or rent may be higher in food-desert neighborhoods. Zoning rules, such as the amount of parking required for new businesses, could make it more costly to develop a new store. Small grocery stores or convenience stores may face lower rent and parking costs, but they may have a harder time accommodat-



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ing equipment or space needed for fresh produce or perishable products. Some food deserts may be far from convenient delivery routes, while others may have crime and security concerns that increase a store's operating costs.

Consumers' demographic and economic characteristics, buying habits, and tastes also may explain why stores do not locate in some areas or carry particular foods. More densely populated neighborhoods and those with increasing populations are often able to support more stores. As a result, some less densely populated rural areas, or urban areas with diminishing populations, may have fewer supermarkets. Food expenditures increase as income rises, which may explain why higher income neighborhoods have more supermarkets than some lower income neighborhoods.

One trend in supermarket development has been increasingly larger stores, such as supercenters. This store model relies on substantial parcels of land for the store and adequate parking, as well as roadways to accommodate large delivery trucks and customer access. Supercenters and other very large stores may not be as feasible in dense urban environments or in small rural towns that lack sufficient transportation infrastructure.

Some supermarket chains have developed smaller store formats that fit into denser urban environments, such as the Fresh and Easy Neighborhood Markets, a subsidiary of Tesco. These stores have opened in California and parts of the Southwest. Other supermarket chains have developed store formats designed specifically to serve low-income and bargain shoppers. These "hard discount" grocery

stores, such as ALDI or Food4Less, are often smaller than the average supermarket and carry fewer products—sometimes selling only store brands or offering a limited range of product sizes.

### Improving Access and Encouraging Healthy Choices

Policies to encourage the supply of affordable and nutritious food in underserved areas, such as zoning modifications and grants or loans for new store development, will not affect residents' health if they do not change their food-purchasing behavior or do not have the time or knowledge to prepare healthier foods. At the same time, efforts to provide nutritional guidance or to change dietary habits will be ineffective if it is too difficult or expensive for people to get to stores that carry healthier foods.

Some public policy interventions to increase access to affordable and nutritious food simultaneously promote healthier choices among residents and a better supply of those choices. For example, New York City has implemented the Healthy Bodegas and Health Bucks programs to address disparities in access to some specific healthy foods. The Healthy Bodega Initiative recruits bodegas or small corner stores in nutritionally vulnerable areas to increase their offerings of low-fat milk, fruit, and vegetables. The city provides promotional and educational materials to entice people to purchase the new offerings and to encourage bodegas to participate.

The Health Bucks program, which began in 2005, offers \$2 coupons to people in vulnerable areas for the purchase of fresh fruit and vegetables at participating farmers' markets, generating business for farmers and reducing food access barriers for residents. The program also gives

SNAP participants an additional \$2 in Health Bucks for every \$5 in SNAP benefits they spend at participating farmers' markets.  $\mathbb{W}$

This article is drawn from . . .

*Access to Affordable and Nutritious Food: Measuring and Understanding Food Deserts and Their Consequences*, USDA Report to Congress, Administrative Publication No. (AP-036), June 2009, available at: [www.ers.usda.gov/publications/ap/ap036/](http://www.ers.usda.gov/publications/ap/ap036/)

You may also be interested in . . .

"Can Low-Income Americans Afford a Healthy Diet?" by Elise Golan, Hayden Stewart, Fred Kuchler, and Diansheng Dong, in *Amber Waves*, Vol. 6, Issue 5, USDA, Economic Research Service, November 2008, available at: [www.ers.usda.gov/amberwaves/november08/features/affordhealthydiet.htm](http://www.ers.usda.gov/amberwaves/november08/features/affordhealthydiet.htm)

"Where You Shop Matters—Store Formats Drive Variation in Retail Prices," by Ephraim Leibtag, in *Amber Waves*, Vol. 3, Issue 5, USDA, Economic Research Service, November 2005, available at: [www.ers.usda.gov/amberwaves/november05/features/whereshop.htm](http://www.ers.usda.gov/amberwaves/november05/features/whereshop.htm)

"Rising Food Prices and Economic Uncertainty Take Toll on Traditional Grocers," by Annette Clauson and Phil Kaufman, in *Amber Waves*, Vol. 7, Issue 2, USDA, Economic Research Service, June 2009, available at: [www.ers.usda.gov/amberwaves/june09/findings/risingfoodprices.htm](http://www.ers.usda.gov/amberwaves/june09/findings/risingfoodprices.htm)