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Definitions

Food access

Limited access to supermarkets, supercenters, grocery stores, or other sources of healthy and affordable food retailers may make it harder for some Americans to eat a healthy diet. There are many ways to measure food store access for individuals and for neighborhoods, and many ways to define which areas are food deserts—neighborhoods that lack healthy food sources. Most measures and definitions take into account at least some of the following indicators of access:

- Accessibility to sources of healthy food, as measured by distance to a store or by the number of stores in an area.
- Individual-level resources that may affect accessibility, such as family income or vehicle availability.
- Neighborhood-level indicators of resources, such as the average income of the neighborhood and the availability of public transportation.

In the Food Access Research Atlas, several indicators are available to measure food access along these dimensions. For example, users can choose alternative distance markers to measure low access in a neighborhood, such as the number and share of people more than half a mile to a supermarket or 1 mile to a supermarket. Users can also view other census-tract-level characteristics that provide context on food access in neighborhoods, such as whether the tract has a high percentage of households far from supermarkets and without vehicles, individuals with low income, or people residing in group quarters.

Low-income neighborhoods

The criteria for identifying a census tract as low-income are from the Department of Treasury's New Markets Tax Credit (NMTC) program. This program defines a low-income census tract as any tract where:

- the tract's poverty rate is greater than 20 percent; or
- the tract's median family income is less than or equal to 80 percent of the State-wide median family income; or
- the tract is in a metropolitan area and has a median family income less than or equal to 80 percent of the metropolitan area's median family income.

Low-access census tracts

In the Food Access Research Atlas, *low access* to healthy food is defined as being far from a supermarket, supercenter, or large grocery store ("supermarket" for short). A census tract is considered to have low access if a significant number or share of individuals in the tract is far from a supermarket.

In the original Food Desert Locator, low access was measured as living far from a supermarket, where 1 mile was used in urban areas and 10 miles was used in rural areas to demarcate those who are far from a supermarket. In urban areas, about 70 percent of the population was within 1 mile of a supermarket, while in rural areas over 90 percent of the population was within 10 miles (see *Access to Affordable and Nutritious Food: Updated Estimates of Distance to Supermarkets Using 2010 Data*). Updating the original 1- and 10-mile low-access measure shows that an estimated 18.3 million people in these low-income and low-access census tracts were far from a supermarket in 2010.

Three additional measures of food access based on distance to a supermarket are provided in the Atlas:

- One additional measure applies a 0.5-mile demarcation in urban areas and a 10-mile distance in rural areas. Using this measure, an estimated 52.5 million people, or 17 percent of the U.S. population, have low access to a supermarket;
- A second measure applies a 1.0-mile demarcation in urban areas and a 20-mile distance in rural areas. Under this measure, an estimated 16.5 million people, or 5.3 percent of the U.S. population, have low access to a supermarket; and
- A slightly more complex measure incorporates vehicle access directly into the measure, delineating low-income tracts in which a significant number of households are located far from a supermarket and do not have access to a vehicle. This measure also includes census tracts with populations that are so remote, that, even with a vehicle, driving to a supermarket may be considered a burden due to the great distance. Using this measure, an estimated 2.1 million households, or 1.8 percent of all households, in low-income census tracts are far from a supermarket and do not have a vehicle. An additional 0.3 million people are more than 20 miles from a supermarket.

For each of the first three measures that are based solely on distance, a tract is designated as *low access* if the aggregate number of people in the census tract with low access is at least 500 or the percentage of people in the census tract with low access is at least 33 percent. For the final measure using vehicle availability, a tract is designated as having low vehicle access if at least one of the following is true:

- at least 100 households are more than ½ mile from the nearest supermarket and have no access to a vehicle; or
- at least 500 people or 33 percent of the population live more than 20 miles from the nearest supermarket, regardless of vehicle access.

Methods used to assess distance to the nearest supermarket are the same for each of these measures. First, the entire country is divided into ½-km square grids, and data on the population are aerially allocated to these grids (see *Access to Affordable and Nutritious Food: Updated Estimates of Distance to Supermarkets Using 2010 Data*). Then, distance to the nearest supermarket is measured for each grid cell by calculating the distance between the geographic center of the ½-km square grid that contains estimates of the population (number of people and other subgroup characteristics) and the center of the grid with the nearest supermarket.

Once the distance to the nearest supermarket is calculated for each grid cell, the estimated number of people or housing units that are more than 1 mile from a supermarket in urban tracts, or 10 miles in rural census tracts, is aggregated at the census-tract level (and similarly for the alternative distance markers). A census tract is considered rural if the population-weighted centroid of that tract is located in an area with a population of less than 2,500; all other tracts are considered urban tracts.

Food deserts

The Food Access Research Atlas maps census tracts that are both low income (li) and low access (la), as measured by the different distance demarcations. This tool provides researchers and other users multiple ways to understand the characteristics that can contribute to food deserts, including income level, distance to supermarkets, and vehicle access.

Additional tract-level indicators of access

Vehicle availability

A tract is identified as having low vehicle availability if **more than 100 households** in the tract report having no vehicle available and are more than 0.5 miles from the nearest supermarket. This corresponds closely to the 80th percentile of the distribution of the number of housing units in a census tract without vehicles at least 0.5 miles from a supermarket (the 80th percentile value was 106 housing units). This means that about 20 percent of all census tracts had more than 100 housing units that were 0.5 miles from a supermarket and without a vehicle. This indicator was applied to both urban and rural census tracts.

Overall, 8.8 percent of all housing units in the United States do not have a vehicle, and 4.2 percent of all housing units are at least 0.5 mile from a store and without a vehicle. Vehicle availability is defined in the American Community Survey as the number of passenger cars, vans, or trucks with a capacity of 1-ton or less kept at the home and available for use by household members. The number of available vehicles includes those vehicles leased or rented for at least 1 month, as well as company, police, or government vehicles that are kept at home and available for non-business use.

Whether a vehicle is available to a household for private use is an important additional indicator of access to healthy and affordable food. For households living far from a supermarket or large grocery store, access to a private vehicle may make accessing these retailers easier than relying on public or alternative means of transportation.

Group quarters population

Users may be interested in highlighting tracts with large shares of people living in group quarters. Group quarters are residential arrangements where an entity or organization owns and provides housing (and often services) for individuals residing in these buildings. This includes college dormitories, military quarters, correctional facilities, homeless shelters, residential treatment centers, and assisted living or skilled nursing facilities. These living arrangements frequently provide dining and food retail solely for their residents. While individuals living in these areas may appear to be far from a supermarket or grocery store, they may not truly experience difficulty accessing healthy and affordable food. Tracts in which **67 percent of individuals or more** live in group quarters are highlighted.

Definitions of indicators in mapping tool

This section defines the indicators available to be mapped to each census tract. These indicators can meaningfully be grouped by:

- General tract characteristics,
- Low-access and distance measures,
- Vehicle availability,
- Group quarters,
- Low-income and low-access measures, and
- Low access by population subgroups.

General tract characteristics

Population, tract total

Geographic level: census tract

Year of data: 2010

Definition: Total number of individuals residing in a tract.

Data sources: Data are from the 2012 report, *Access to Affordable and Nutritious Food: Updated Estimates of Distances to Supermarkets Using 2010 Data*. Population data are reported at the block level from the 2010 Census of Population and Housing. These data were aerially allocated down to ½-kilometer-square grids across the United States.

Low-income tract

Geographic level: census tract

Year of data: 2010

Definition: A tract with either a poverty rate of 42 percent or more, or a median family income less than 80 percent of the State-wide median family income; or a tract in a metropolitan area with a median family income less than 80 percent of the surrounding metropolitan area median family income.

Data sources: Data are from the 2012 report, *Access to Affordable and Nutritious Food: Updated Estimates of Distances to Supermarkets Using 2010 Data*. Income data are reported at the block-group level from the 2006-10 American Community Survey.

Urban/rural status

Geographic level: census tract

Year of data: 2010

Definition: This variable indicates whether the population-weighted centroid of a census tract is in an urban or rural area. Urban and rural are defined in the Census Bureau's *urbanized area definitions*, where rural areas are sparsely populated areas with fewer than 2,500 people, and urban areas are areas with more than 2,500 people. A census tract is urban if the geographic centroid of the tract is in an area with more than 2,500 people; all other tracts are rural.

Data sources: Data are from the 2012 report, *Access to Affordable and Nutritious Food: Updated Estimates of Distances to Supermarkets Using 2010 Data*. Population data are reported at the block level from the 2010 Census of Population and Housing. These data were aerially allocated down to ½-kilometer-square grids across the United States.

Housing units, tract total

Geographic level: census tract

Year of data: 2010

Definition: Total number of housing units in the census tract.

Data sources: Data are from the 2012 report, *Access to Affordable and Nutritious Food: Updated Estimates of Distances to Supermarkets Using 2010 Data*. Data on housing units are drawn at the block-group level from the 2006-10 American Community Survey. These data were first allocated to blocks, and then aerially allocated down to ½-kilometer-square grids across the United States.

Low access and distance measures

Low income and low access measured at 1 mile and 10 miles

Geographic level: census tract

Year of data: 2010

Definition: A low-income tract with at least 500 people or 33 percent of the population living more than 1 mile (urban areas) or more than 10 miles (rural areas) from the nearest supermarket, supercenter, or large grocery store.

Data sources: Data are from the 2012 report, *Access to Affordable and Nutritious Food: Updated Estimates of Distances to Supermarkets Using 2010 Data*. In this report, a directory of supermarkets, supercenters, and large grocery stores within the United States, including Alaska and Hawaii, was derived from merging the 2010 STARS directory of stores authorized to accept Supplemental Nutrition Assistance Program (SNAP) benefits and the 2010 Trade Dimensions TDLinx directory of stores. Stores met the definition of a supermarket or large grocery store if they reported at least $2 million in annual sales and contained all the major food departments found in a traditional supermarket, including fresh produce, fresh meat and poultry, dairy, dry and packaged foods, and frozen foods. The combined list of supermarkets and large grocery stores was converted into a GIS-usable format by geocoding the street address into store-point locations. Population data are reported at the block level from the 2010 Census of Population and Housing. Income data are reported at the block-group level from the 2006-10 American Community Survey. These data were aerially allocated down to ½-kilometer-square grids across the United States. For each ½-kilometer-square grid cell, the distance was calculated from its geographic center to the center of the grid cell with the nearest supermarket. Rural or urban status is designated by the Census Bureau's *urban area definition*.

Low income and low access measured at ½ mile and 10 miles

Geographic level: census tract

Year of data: 2010

Definition: A low-income tract with at least 500 people or 33 percent of the population living more than ½ mile (urban areas) or more than 10 miles (rural areas) from the nearest supermarket, supercenter, or large grocery store.

Data sources: Data are from the 2012 report, *Access to Affordable and Nutritious Food: Updated Estimates of Distances to Supermarkets Using 2010 Data*. In this report, a directory of supermarkets, supercenters, and large grocery stores within the United States, including Alaska and Hawaii, was derived from merging the 2010 STARS directory of stores authorized to accept Supplemental Nutrition Assistance Program (SNAP) benefits and the 2010 Trade Dimensions TDLinx directory of stores. Stores met the definition of a supermarket or large grocery store if they reported at least $2 million in annual sales and contained all the major food departments found in a traditional supermarket, including fresh produce, fresh meat and poultry, dairy, dry and packaged foods, and frozen foods. The combined list of supermarkets and large grocery stores was converted into a GIS-usable format by geocoding the street address into store-point locations. Population data are reported at the block level from the 2010 Census of Population and Housing. Income data are reported at the block-group level from the 2006-10 American Community Survey. These data were aerially allocated down to ½-kilometer-square grids across the United States. For each ½-kilometer-square grid cell, the distance was calculated from its geographic center to the center of the grid cell with the nearest supermarket. Rural or urban status is designated by the Census Bureau's *urban area definition*.

Low income and low access measured at 1 and 20 miles

Geographic level: census tract

Year of data: 2010

Definition: A low-income tract with at least 500 people or 33 percent of the population living more than 1 mile (urban areas) or more than 20 miles (rural areas) from the nearest supermarket, supercenter, or large grocery store.

Data sources: Data are from the 2012 report, *Access to Affordable and Nutritious Food: Updated Estimates of Distances to Supermarkets Using 2010 Data*. In this report, a directory of supermarkets, supercenters, and large grocery stores within the United States, including Alaska and Hawaii, was derived from merging the 2010 STARS directory of stores authorized to accept Supplemental Nutrition Assistance Program (SNAP) benefits and the 2010 Trade Dimensions TDLinx directory of stores. Stores met the definition of a supermarket or large grocery store if they reported at least $2 million in annual sales and contained all the major food departments found in a traditional supermarket, including fresh produce, fresh meat and poultry, dairy, dry and packaged foods, and frozen foods. The combined list of supermarkets and large grocery stores was converted into a GIS-usable format by geocoding the street address into store-point locations. Population data are reported at the block level from the 2010 Census of Population and Housing. Income data are reported at the block-group level from the 2006-10 American Community Survey. These data were aerially allocated down to ½-kilometer-square grids across the United States. For each ½-kilometer-square grid cell, the distance was calculated from its geographic center to the center of the grid cell with the nearest supermarket. Rural or urban status is designated by the Census Bureau's *urban area definition*.

Low income and low access using vehicle access

Geographic level: census tract

Year of data: 2010

Definition: A low-income tract in which at least one of the following is true: at least 100 households are located more than ½ mile from the nearest supermarket and have no vehicle access; or at least 500 people or 33 percent of the population live more than 20 miles from the nearest supermarket, regardless of vehicle availability.

Data sources: Data are from the 2012 report, *Access to Affordable and Nutritious Food: Updated Estimates of Distances to Supermarkets Using 2010 Data*. In this report, a directory of supermarkets, supercenters, and large grocery stores within the United States, including Alaska and Hawaii, was derived from merging the 2010 STARS directory of stores authorized to accept Supplemental Nutrition Assistance Program (SNAP) benefits and the 2010 Trade Dimensions TDLinx directory of stores. Stores met the definition of a supermarket or large grocery store if they reported at least $2 million in annual sales and contained all the major food departments found in a traditional supermarket, including fresh produce, fresh meat and poultry, dairy, dry and packaged foods, and frozen foods. The combined list of supermarkets and large grocery

stores was converted into a GIS-usable format by geocoding the street address into store-point locations. Population data are reported at the block level from the 2010 Census of Population and Housing. Income data are reported at the block-group level from the 2006-10 American Community Survey. These data were aerially allocated down to ½-kilometer-square grids across the United States. For each ½-kilometer-square grid cell, the distance was calculated from its geographic center to the center of the grid cell with the nearest supermarket. Rural or urban status is designated by the Census Bureau's *urban area definition*.

Low-access tract at least ½ mile

Geographic level: census tract

Year of data: 2010

Definition: An urban tract with at least 500 people or 33 percent of the population living at least ½ mile from the nearest supermarket, supercenter, or large grocery store.

Data sources: Data are from the 2012 report, *Access to Affordable and Nutritious Food: Updated Estimates of Distances to Supermarkets Using 2010 Data*. In this report, a directory of supermarkets, supercenters, and large grocery stores within the United States, including Alaska and Hawaii, was derived from merging the 2010 STARS directory of stores authorized to accept Supplemental Nutrition Assistance Program (SNAP) benefits and the 2010 Trade Dimensions TDLinx directory of stores. Stores met the definition of a supermarket or large grocery store if they reported at least $2 million in annual sales and contained all the major food departments found in a traditional supermarket, including fresh produce, fresh meat and poultry, dairy, dry and packaged foods, and frozen foods. The combined list of supermarkets and large grocery stores was converted into a GIS-usable format by geocoding the street address into store-point locations. Population data are reported at the block level from the 2010 Census of Population and Housing. These data were aerially allocated down to ½-kilometer-square grids across the United States. For each ½-kilometer-square grid cell, the distance was calculated from its geographic center to the center of the grid cell with the nearest supermarket. Rural or urban status is designated by the Census Bureau's *urban area definition*.

Low access, number of people at least ½ mile

Geographic level: census tract

Year of data: 2010

Definition: Number of individuals in an urban tract living at least ½ mile from the nearest supermarket, supercenter, or large grocery store.

Data sources: Data are from the 2012 report, *Access to Affordable and Nutritious Food: Updated Estimates of Distances to Supermarkets Using 2010 Data*. In this report, a directory of

supermarkets, supercenters, and large grocery stores within the United States, including Alaska and Hawaii, was derived from merging the 2010 STARS directory of stores authorized to accept Supplemental Nutrition Assistance Program (SNAP) benefits and the 2010 Trade Dimensions TDLinx directory of stores. Stores met the definition of a supermarket or large grocery store if they reported at least $2 million in annual sales and contained all the major food departments found in a traditional supermarket, including fresh produce, fresh meat and poultry, dairy, dry and packaged foods, and frozen foods. The combined list of supermarkets and large grocery stores was converted into a GIS-usable format by geocoding the street address into store-point locations. Population data are reported at the block level from the 2010 Census of Population and Housing. These data were aerially allocated down to ½-kilometer-square grids across the United States. For each ½-kilometer-square grid cell, the distance was calculated from its geographic center to the center of the grid cell with the nearest supermarket. Rural or urban status is designated by the Census Bureau's *urban area definition*. Once distance to the nearest supermarket or large grocery store was calculated for each grid cell, the number of individuals living more than ½ mile from a supermarket or large grocery store was aggregated to the tract level.

Low access, share of people at least ½ mile

Geographic level: census tract

Year of data: 2010

Definition: Percentage of individuals in an urban tract living at least ½ mile from the nearest supermarket, supercenter, or large grocery store.

Data sources: Data are from the 2012 report, *Access to Affordable and Nutritious Food: Updated Estimates of Distances to Supermarkets Using 2010 Data*. In this report, a directory of supermarkets, supercenters, and large grocery stores within the United States, including Alaska and Hawaii, was derived from merging the 2010 STARS directory of stores authorized to accept Supplemental Nutrition Assistance Program (SNAP) benefits and the 2010 Trade Dimensions TDLinx directory of stores. Stores met the definition of a supermarket or large grocery store if they reported at least $2 million in annual sales and contained all the major food departments found in a traditional supermarket, including fresh produce, fresh meat and poultry, dairy, dry and packaged foods, and frozen foods. The combined list of supermarkets and large grocery stores was converted into a GIS-usable format by geocoding the street address into store-point locations. Population data are reported at the block level from the 2010 Census of Population and Housing. These data were aerially allocated down to ½-kilometer-square grids across the United States. For each ½-kilometer-square grid cell, the distance was calculated from its geographic center to the center of the grid cell with the nearest supermarket. Rural or urban status is designated by the Census Bureau's *urban area definition*. Once distance to the nearest supermarket or large grocery store was calculated for each grid cell, the number of individuals living more than ½ mile from a supermarket or large grocery store was aggregated to the tract level and then divided by the total number of individuals in the tract to obtain the percent of the total population in the tract that resided more than ½ mile from a supermarket.

Low-access tract at least 1 mile

Geographic level: census tract

Year of data: 2010

Definition: An urban tract with at least 500 people or 33 percent of the population living at least 1 mile from the nearest supermarket, supercenter, or large grocery store.

Data sources: Data are from the 2012 report, *Access to Affordable and Nutritious Food: Updated Estimates of Distances to Supermarkets Using 2010 Data*. In this report, a directory of supermarkets, supercenters, and large grocery stores within the United States, including Alaska and Hawaii, was derived from merging the 2010 STARS directory of stores authorized to accept Supplemental Nutrition Assistance Program (SNAP) benefits and the 2010 Trade Dimensions TDLinx directory of stores. Stores met the definition of a supermarket or large grocery store if they reported at least $2 million in annual sales and contained all the major food departments found in a traditional supermarket, including fresh produce, fresh meat and poultry, dairy, dry and packaged foods, and frozen foods. The combined list of supermarkets and large grocery stores was converted into a GIS-usable format by geocoding the street address into store-point locations. Population data are reported at the block level from the 2010 Census of Population and Housing. These data were aerially allocated down to ½-kilometer-square grids across the United States. For each ½-kilometer-square grid cell, the distance was calculated from its geographic center to the center of the grid cell with the nearest supermarket. Rural or urban status is designated by the Census Bureau's *urban area definition*.

Low access, number of people at least 1 mile

Geographic level: census tract

Year of data: 2010

Definition: Number of individuals in an urban tract living at least 1 mile from the nearest supermarket, supercenter, or large grocery store.

Data sources: Data are from the 2012 report, *Access to Affordable and Nutritious Food: Updated Estimates of Distances to Supermarkets Using 2010 Data*. In this report, a directory of supermarkets, supercenters, and large grocery stores within the United States, including Alaska and Hawaii, was derived from merging the 2010 STARS directory of stores authorized to accept Supplemental Nutrition Assistance Program (SNAP) benefits and the 2010 Trade Dimensions TDLinx directory of stores. Stores met the definition of a supermarket or large grocery store if they reported at least $2 million in annual sales and contained all the major food departments found in a traditional supermarket, including fresh produce, fresh meat and poultry, dairy, dry and packaged foods, and frozen foods. The combined list of supermarkets and large grocery stores was converted into a GIS-usable format by geocoding the street address into store-point locations. Population data are reported at the block level from the 2010 Census of Population and Housing. These data were aerially allocated down to ½-kilometer-square grids across the United States. For each ½-kilometer-square grid cell, the distance was calculated from its geographic center to the center of the grid cell with the nearest supermarket. Rural or urban status is designated by the Census Bureau's *urban area definition*. Once distance to the nearest

supermarket or large grocery store was calculated for each grid cell, the number of individuals living more than 1 mile from a supermarket or large grocery store was aggregated to the tract level.

Low access, share of people at least 1 mile

Geographic level: census tract

Year of data: 2010

Definition: Percentage of individuals in an urban tract living at least 1 mile from the nearest supermarket, supercenter, or large grocery store.

Data sources: Data are from the 2012 report, *Access to Affordable and Nutritious Food: Updated Estimates of Distances to Supermarkets Using 2010 Data*. In this report, a directory of supermarkets, supercenters, and large grocery stores within the United States, including Alaska and Hawaii, was derived from merging the 2010 STARS directory of stores authorized to accept Supplemental Nutrition Assistance Program (SNAP) benefits and the 2010 Trade Dimensions TDLinx directory of stores. Stores met the definition of a supermarket or large grocery store if they reported at least $2 million in annual sales and contained all the major food departments found in a traditional supermarket, including fresh produce, fresh meat and poultry, dairy, dry and packaged foods, and frozen foods. The combined list of supermarkets and large grocery stores was converted into a GIS-usable format by geocoding the street address into store-point locations. Population data are reported at the block level from the 2010 Census of Population and Housing. These data were aerially allocated down to ½-kilometer-square grids across the United States. For each ½-kilometer-square grid cell, the distance was calculated from its geographic center to the center of the grid cell with the nearest supermarket. Rural or urban status is designated by the Census Bureau's *urban area definition*. Once distance to the nearest supermarket or large grocery store was calculated for each grid cell, the number of individuals living more than 1 mile from a supermarket or large grocery store was aggregated to the tract level and then divided by the total number of individuals in the tract to obtain the percent of the total population in the tract that resided more than 1 mile from a supermarket.

Low-access tract at least 10 miles

Geographic level: census tract

Year of data: 2010

Definition: A rural tract with at least 500 people or 33 percent of the population living at least 10 miles from the nearest supermarket, supercenter, or large grocery store.

Data sources: Data are from the 2012 report, *Access to Affordable and Nutritious Food: Updated Estimates of Distances to Supermarkets Using 2010 Data*. In this report, a directory of supermarkets, supercenters, and large grocery stores within the United States, including Alaska and Hawaii, was derived from merging the 2010 STARS directory of stores authorized to accept Supplemental Nutrition Assistance Program (SNAP) benefits and the 2010 Trade Dimensions

TDLinx directory of stores. Stores met the definition of a supermarket or large grocery store if they reported at least $2 million in annual sales and contained all the major food departments found in a traditional supermarket, including fresh produce, fresh meat and poultry, dairy, dry and packaged foods, and frozen foods. The combined list of supermarkets and large grocery stores was converted into a GIS-usable format by geocoding the street address into store-point locations. Population data are reported at the block level from the 2010 Census of Population and Housing. These data were aerially allocated down to ½-kilometer-square grids across the United States. For each ½-kilometer-square grid cell, the distance was calculated from its geographic center to the center of the grid cell with the nearest supermarket. Rural or urban status is designated by the Census Bureau's *urban area definition*.

Low access, number of people at least 10 miles

Geographic level: census tract

Year of data: 2010

Definition: Number of individuals in a rural tract living at least 10 miles from the nearest supermarket, supercenter, or large grocery store.

Data sources: Data are from the 2012 report, *Access to Affordable and Nutritious Food: Updated Estimates of Distances to Supermarkets Using 2010 Data*. In this report, a directory of supermarkets, supercenters, and large grocery stores within the United States, including Alaska and Hawaii, was derived from merging the 2010 STARS directory of stores authorized to accept Supplemental Nutrition Assistance Program (SNAP) benefits and the 2010 Trade Dimensions TDLinx directory of stores. Stores met the definition of a supermarket or large grocery store if they reported at least $2 million in annual sales and contained all the major food departments found in a traditional supermarket, including fresh produce, fresh meat and poultry, dairy, dry and packaged foods, and frozen foods. The combined list of supermarkets and large grocery stores was converted into a GIS-usable format by geocoding the street address into store-point locations. Population data are reported at the block level from the 2010 Census of Population and Housing. These data were aerially allocated down to ½-kilometer-square grids across the United States. For each ½-kilometer-square grid cell, the distance was calculated from its geographic center to the center of the grid cell with the nearest supermarket. Rural or urban status is designated by the Census Bureau's *urban area definition*. Once distance to the nearest supermarket or large grocery store was calculated for each grid cell, the number of individuals living more than 10 miles from a supermarket or large grocery store was aggregated to the tract level.

Low access, share of people at least 10 miles

Geographic level: census tract

Year of data: 2010

Definition: Percentage of individuals in a rural tract living at least 10 miles from the nearest supermarket, supercenter, or large grocery store.

Data sources: Data are from the 2012 report, *Access to Affordable and Nutritious Food: Updated Estimates of Distances to Supermarkets Using 2010 Data*. In this report, a directory of supermarkets, supercenters, and large grocery stores within the United States, including Alaska and Hawaii, was derived from merging the 2010 STARS directory of stores authorized to accept Supplemental Nutrition Assistance Program (SNAP) benefits and the 2010 Trade Dimensions TDLinx directory of stores. Stores met the definition of a supermarket or large grocery store if they reported at least $2 million in annual sales and contained all the major food departments found in a traditional supermarket, including fresh produce, fresh meat and poultry, dairy, dry and packaged foods, and frozen foods. The combined list of supermarkets and large grocery stores was converted into a GIS-usable format by geocoding the street address into store-point locations. Population data are reported at the block level from the 2010 Census of Population and Housing. These data were aerially allocated down to ½-kilometer-square grids across the United States. For each ½-kilometer-square grid cell, the distance was calculated from its geographic center to the center of the grid cell with the nearest supermarket. Rural or urban status is designated by the Census Bureau's *urban area definition*. Once distance to the nearest supermarket or large grocery store was calculated for each grid cell, the number of individuals living more than 10 miles from a supermarket or large grocery store was aggregated to the tract level and then divided by the total number of individuals in the tract to obtain the percent of the total population in the tract that resided more than 10 miles from a supermarket.

Low-access tract at least 20 miles

Geographic level: census tract

Year of data: 2010

Definition: A rural tract with at least 500 people or 33 percent of the population living at least 20 miles from the nearest supermarket, supercenter or large grocery store.

Data sources: Data are from the 2012 report, *Access to Affordable and Nutritious Food: Updated Estimates of Distances to Supermarkets Using 2010 Data*. In this report, a directory of supermarkets, supercenters, and large grocery stores within the United States, including Alaska and Hawaii, was derived from merging the 2010 STARS directory of stores authorized to accept Supplemental Nutrition Assistance Program (SNAP) benefits and the 2010 Trade Dimensions TDLinx directory of stores. Stores met the definition of a supermarket or large grocery store if they reported at least $2 million in annual sales and contained all the major food departments found in a traditional supermarket, including fresh produce, fresh meat and poultry, dairy, dry and packaged foods, and frozen foods. The combined list of supermarkets and large grocery stores was converted into a GIS-usable format by geocoding the street address into store-point locations. Population data are reported at the block level from the 2010 Census of Population and Housing. These data were aerially allocated down to ½-kilometer-square grids across the United States. For each ½-kilometer-square grid cell, the distance was calculated from its geographic center to the center of the grid cell with the nearest supermarket. Rural or urban status is designated by the Census Bureau's *urban area definition*.

Low access, number of people at least 20 miles

Geographic level: census tract

Year of data: 2010

Definition: Number of individuals in a rural tract living at least 20 miles from the nearest supermarket, supercenter, or large grocery store.

Data sources: Data are from the 2012 report, *Access to Affordable and Nutritious Food: Updated Estimates of Distances to Supermarkets Using 2010 Data*. In this report, a directory of supermarkets, supercenters, and large grocery stores within the United States, including Alaska and Hawaii, was derived from merging the 2010 STARS directory of stores authorized to accept Supplemental Nutrition Assistance Program (SNAP) benefits and the 2010 Trade Dimensions TDLinx directory of stores. Stores met the definition of a supermarket or large grocery store if they reported at least $2 million in annual sales and contained all the major food departments found in a traditional supermarket, including fresh produce, fresh meat and poultry, dairy, dry and packaged foods, and frozen foods. The combined list of supermarkets and large grocery stores was converted into a GIS-usable format by geocoding the street address into store-point locations. Population data are reported at the block level from the 2010 Census of Population and Housing. These data were aerially allocated down to ½-kilometer-square grids across the United States. For each ½-kilometer-square grid cell, the distance was calculated from its geographic center to the center of the grid cell with the nearest supermarket. Rural or urban status is designated by the Census Bureau's *urban area definition*. Once distance to the nearest supermarket or large grocery store was calculated for each grid cell, the number of individuals living more than 20 miles from a supermarket or large grocery store was aggregated to the tract level.

Low access, share of people at least 20 miles

Geographic level: census tract

Year of data: 2010

Definition: Percentage of individuals in a rural tract living at least 20 miles from the nearest supermarket, supercenter, or large grocery store.

Data sources: Data are from the 2012 report, *Access to Affordable and Nutritious Food: Updated Estimates of Distances to Supermarkets Using 2010 Data*. In this report, a directory of supermarkets, supercenters, and large grocery stores within the United States, including Alaska and Hawaii, was derived from merging the 2010 STARS directory of stores authorized to accept Supplemental Nutrition Assistance Program (SNAP) benefits and the 2010 Trade Dimensions TDLinx directory of stores. Stores met the definition of a supermarket or large grocery store if they reported at least $2 million in annual sales and contained all the major food departments found in a traditional supermarket, including fresh produce, fresh meat and poultry, dairy, dry and packaged foods, and frozen foods. The combined list of supermarkets and large grocery stores was converted into a GIS-usable format by geocoding the street address into store-point locations. Population data are reported at the block level from the 2010 Census of Population and Housing. These data were aerially allocated down to ½-kilometer-square grids across the United

States. For each ½-kilometer-square grid cell, the distance was calculated from its geographic center to the center of the grid cell with the nearest supermarket. Rural or urban status is designated by the Census Bureau's *urban area definition*. Once distance to the nearest supermarket or large grocery store was calculated for each grid cell, the number of individuals living more than 20 miles from a supermarket or large grocery store was aggregated to the tract level and then divided by the total number of individuals in the tract to obtain the percent of the total population in the tract that resided more than 20 miles from a supermarket.

Vehicle availability

No vehicle, tract with high number of housing units

Geographic level: census tract

Year of data: 2010

Definition: A tract in which at least 100 housing units have no access to a vehicle.

Data sources: Data are from the 2012 report, *Access to Affordable and Nutritious Food: Updated Estimates of Distances to Supermarkets Using 2010 Data*. Vehicle access data were provided at the block-group level from the 2006-10 American Community Survey. These data were aerially allocated down to ½-kilometer-square grids across the United States.

No vehicle, number of housing units

Geographic level: census tract

Year of data: 2010

Definition: Total number of housing units in a tract reporting no access to a vehicle.

Data sources: Data are from the 2012 report, *Access to Affordable and Nutritious Food: Updated Estimates of Distances to Supermarkets Using 2010 Data*. Data on housing units are drawn at the block-group level from the 2006-10 American Community Survey. These data were first allocated to blocks and then aerially allocated down to ½-kilometer-square grids across the United States. For each ½-kilometer-square grid cell, the distance was calculated from its geographic center to the center of the grid cell with the nearest supermarket. Vehicle access was measured from a question in the American Community Survey about whether the household has access to a car, truck, or van of 1-ton capacity or less.

No vehicle, share of housing units

Geographic level: census tract

Year of data: 2010

Definition: Percentage of housing units in a tract reporting no access to a vehicle.

Data sources: Data are from the 2012 report, *Access to Affordable and Nutritious Food: Updated Estimates of Distances to Supermarkets Using 2010 Data*. Data on housing units are drawn at the block-group level from the 2006-10 American Community Survey. These data were first allocated to blocks and then aerially allocated down to ½-kilometer-square grids across the United States. For each ½-kilometer-square grid cell, the distance was calculated from its geographic center to the center of the grid cell with the nearest supermarket. Vehicle access was measured from a question in the American Community Survey about whether the household has access to a car, truck, or van of 1-ton capacity or less.

No vehicle, low access, number of housing units at least ½ mile

Geographic level: census tract

Year of data: 2010

Definition: Number of housing units in an urban tract located at least ½ mile from the nearest supermarket, supercenter, or large grocery store and reporting no access to a vehicle.

Data sources: Data are from the 2012 report, *Access to Affordable and Nutritious Food: Updated Estimates of Distances to Supermarkets Using 2010 Data*. In this report, a directory of supermarkets, supercenters, and large grocery stores within the United States, including Alaska and Hawaii, was derived from merging the 2010 STARS directory of stores authorized to accept Supplemental Nutrition Assistance Program (SNAP) benefits and the 2010 Trade Dimensions TDLinx directory of stores. Stores met the definition of a supermarket or large grocery store if they reported at least $2 million in annual sales and contained all the major food departments found in a traditional supermarket, including fresh produce, fresh meat and poultry, dairy, dry and packaged foods, and frozen foods. The combined list of supermarkets and large grocery stores was converted into a GIS-usable format by geocoding the street address into store-point locations. Population data are reported at the block level from the 2010 Census of Population and Housing. Vehicle access was measured from a question in the American Community Survey about whether the household has access to a car, truck, or van of 1-ton capacity or less. These data were aerially allocated down to ½-kilometer-square grids across the United States. For each ½-kilometer-square grid cell, the distance was calculated from its geographic center to the center of the grid cell with the nearest supermarket. Rural or urban status is designated by the Census Bureau's *urban area definition*. Once distance to the nearest supermarket or large grocery store was calculated for each grid cell, the number of housing units without access to a vehicle and located more than ½ mile from a supermarket or large grocery store was aggregated to the tract level.

No vehicle, low access, share of housing units at least ½ mile

Geographic level: census tract

Year of data: 2010

Definition: Percentage of housing units in an urban tract located at least ½ mile from the nearest supermarket, supercenter, or large grocery store and reporting no access to a vehicle.

Data sources: Data are from the 2012 report, *Access to Affordable and Nutritious Food: Updated Estimates of Distances to Supermarkets Using 2010 Data*. In this report, a directory of supermarkets, supercenters, and large grocery stores within the United States, including Alaska and Hawaii, was derived from merging the 2010 STARS directory of stores authorized to accept Supplemental Nutrition Assistance Program (SNAP) benefits and the 2010 Trade Dimensions TDLinx directory of stores. Stores met the definition of a supermarket or large grocery store if they reported at least $2 million in annual sales and contained all the major food departments found in a traditional supermarket, including fresh produce, fresh meat and poultry, dairy, dry and packaged foods, and frozen foods. The combined list of supermarkets and large grocery stores was converted into a GIS-usable format by geocoding the street address into store-point locations. Population data are reported at the block level from the 2010 Census of Population and Housing. Vehicle access was measured from a question in the American Community Survey about whether the household has access to a car, truck, or van of 1-ton capacity or less. These data were aerially allocated down to ½-kilometer-square grids across the United States. For each ½-kilometer-square grid cell, the distance was calculated from its geographic center to the center of the grid cell with the nearest supermarket. Rural or urban status is designated by the Census Bureau's *urban area definition*. Once distance to the nearest supermarket or large grocery store was calculated for each grid cell, the number of housing units without access to a vehicle and located more than ½ mile from a supermarket or large grocery store was aggregated to the tract level and then divided by the total number of housing units in the tract.

No vehicle, low access, number of housing units at least 1 mile

Geographic level: census tract

Year of data: 2010

Definition: Number of housing units in an urban tract located at least 1 mile from the nearest supermarket, supercenter, or large grocery store and reporting no access to a vehicle.

Data sources: Data are from the 2012 report, *Access to Affordable and Nutritious Food: Updated Estimates of Distances to Supermarkets Using 2010 Data*. In this report, a directory of supermarkets, supercenters, and large grocery stores within the United States, including Alaska and Hawaii, was derived from merging the 2010 STARS directory of stores authorized to accept Supplemental Nutrition Assistance Program (SNAP) benefits and the 2010 Trade Dimensions TDLinx directory of stores. Stores met the definition of a supermarket or large grocery store if they reported at least $2 million in annual sales and contained all the major food departments found in a traditional supermarket, including fresh produce, fresh meat and poultry, dairy, dry and packaged foods, and frozen foods. The combined list of supermarkets and large grocery stores was converted into a GIS-usable format by geocoding the street address into store-point locations. Population data are reported at the block level from the 2010 Census of Population and Housing. Vehicle access was measured from a question in the American Community Survey about whether the household has access to a car, truck, or van of 1-ton capacity or less. These data were aerially allocated down to ½-kilometer-square grids across the United States. For each ½-kilometer-square grid cell, the distance was calculated from its geographic center to the center of the grid cell with the nearest supermarket. Rural or urban status is designated by the Census Bureau's *urban area definition*. Once distance to the nearest supermarket or large grocery store

was calculated for each grid cell, the number of housing units without access to a vehicle and located more than 1 mile from a supermarket or large grocery store was aggregated to the tract level.

No vehicle, low access, share of housing units at least 1 mile

Geographic level: census tract

Year of data: 2010

Definition: Percentage of housing units in an urban tract located at least 1 mile from the nearest supermarket, supercenter, or large grocery store and reporting no access to a vehicle.

Data sources: Data are from the 2012 report, *Access to Affordable and Nutritious Food: Updated Estimates of Distances to Supermarkets Using 2010 Data*. In this report, a directory of supermarkets, supercenters, and large grocery stores within the United States, including Alaska and Hawaii, was derived from merging the 2010 STARS directory of stores authorized to accept Supplemental Nutrition Assistance Program (SNAP) benefits and the 2010 Trade Dimensions TDLinx directory of stores. Stores met the definition of a supermarket or large grocery store if they reported at least $2 million in annual sales and contained all the major food departments found in a traditional supermarket, including fresh produce, fresh meat and poultry, dairy, dry and packaged foods, and frozen foods. The combined list of supermarkets and large grocery stores was converted into a GIS-usable format by geocoding the street address into store-point locations. Population data are reported at the block level from the 2010 Census of Population and Housing. Vehicle access was measured from a question in the American Community Survey about whether the household has access to a car, truck, or van of 1-ton capacity or less. These data were aerially allocated down to ½-kilometer-square grids across the United States. For each ½-kilometer-square grid cell, the distance was calculated from its geographic center to the center of the grid cell with the nearest supermarket. Rural or urban status is designated by the Census Bureau's *urban area definition*. Once distance to the nearest supermarket or large grocery store was calculated for each grid cell, the number of housing units without access to a vehicle and located more than 1 mile from a supermarket or large grocery store was aggregated to the tract level and then divided by the total number of housing units in the tract.

No vehicle, low access, number of housing units at least 10 miles

Geographic level: census tract

Year of data: 2010

Definition: Number of housing units in a rural tract located at least 10 miles from the nearest supermarket, supercenter, or large grocery store and reporting no access to a vehicle.

Data sources: Data are from the 2012 report, *Access to Affordable and Nutritious Food: Updated Estimates of Distances to Supermarkets Using 2010 Data*. In this report, a directory of supermarkets, supercenters, and large grocery stores within the United States, including Alaska and Hawaii, was derived from merging the 2010 STARS directory of stores authorized to accept

Supplemental Nutrition Assistance Program (SNAP) benefits and the 2010 Trade Dimensions TDLinx directory of stores. Stores met the definition of a supermarket or large grocery store if they reported at least $2 million in annual sales and contained all the major food departments found in a traditional supermarket, including fresh produce, fresh meat and poultry, dairy, dry and packaged foods, and frozen foods. The combined list of supermarkets and large grocery stores was converted into a GIS-usable format by geocoding the street address into store-point locations. Population data are reported at the block level from the 2010 Census of Population and Housing. Vehicle access was measured from a question in the American Community Survey about whether the household has access to a car, truck, or van of 1-ton capacity or less. These data were aerially allocated down to ½-kilometer-square grids across the United States. For each ½-kilometer-square grid cell, the distance was calculated from its geographic center to the center of the grid cell with the nearest supermarket. Rural or urban status is designated by the Census Bureau's *urban area definition*. Once distance to the nearest supermarket or large grocery store was calculated for each grid cell, the number of housing units without access to a vehicle and located more than 10 miles from a supermarket or large grocery store was aggregated to the tract level.

No vehicle, low access, share of housing units at least 10 miles

Geographic level: census tract

Year of data: 2010

Definition: Percentage of housing units in a rural tract located at least 10 miles from the nearest supermarket, supercenter, or large grocery store and reporting no access to a vehicle.

Data sources: Data are from the 2012 report, *Access to Affordable and Nutritious Food: Updated Estimates of Distances to Supermarkets Using 2010 Data*. In this report, a directory of supermarkets, supercenters, and large grocery stores within the United States, including Alaska and Hawaii, was derived from merging the 2010 STARS directory of stores authorized to accept Supplemental Nutrition Assistance Program (SNAP) benefits and the 2010 Trade Dimensions TDLinx directory of stores. Stores met the definition of a supermarket or large grocery store if they reported at least $2 million in annual sales and contained all the major food departments found in a traditional supermarket, including fresh produce, fresh meat and poultry, dairy, dry and packaged foods, and frozen foods. The combined list of supermarkets and large grocery stores was converted into a GIS-usable format by geocoding the street address into store-point locations. Population data are reported at the block level from the 2010 Census of Population and Housing. Vehicle access was measured from a question in the American Community Survey about whether the household has access to a car, truck, or van of 1-ton capacity or less. These data were aerially allocated down to ½-kilometer-square grids across the United States. For each ½-kilometer-square grid cell, the distance was calculated from its geographic center to the center of the grid cell with the nearest supermarket. Rural or urban status is designated by the Census Bureau's *urban area definition*. Once distance to the nearest supermarket or large grocery store was calculated for each grid cell, the number of housing units without access to a vehicle and located more than 10 miles from a supermarket or large grocery store was aggregated to the tract level and then divided by the total number of housing units in the tract.

No vehicle, low access, number of housing units at least 20 miles

Geographic level: census tract

Year of data: 2010

Definition: Number of housing units in a rural tract located at least 20 miles from the nearest supermarket, supercenter, or large grocery store and reporting no access to a vehicle.

Data sources: Data are from the 2012 report, *Access to Affordable and Nutritious Food: Updated Estimates of Distances to Supermarkets Using 2010 Data*. In this report, a directory of supermarkets, supercenters, and large grocery stores within the United States, including Alaska and Hawaii, was derived from merging the 2010 STARS directory of stores authorized to accept Supplemental Nutrition Assistance Program (SNAP) benefits and the 2010 Trade Dimensions TDLinx directory of stores. Stores met the definition of a supermarket or large grocery store if they reported at least $2 million in annual sales and contained all the major food departments found in a traditional supermarket, including fresh produce, fresh meat and poultry, dairy, dry and packaged foods, and frozen foods. The combined list of supermarkets and large grocery stores was converted into a GIS-usable format by geocoding the street address into store-point locations. Population data are reported at the block level from the 2010 Census of Population and Housing. Vehicle access was measured from a question in the American Community Survey about whether the household has access to a car, truck, or van of 1-ton capacity or less. These data were aerially allocated down to ½-kilometer-square grids across the United States. For each ½-kilometer-square grid cell, the distance was calculated from its geographic center to the center of the grid cell with the nearest supermarket. Rural or urban status is designated by the Census Bureau's *urban area definition*. Once distance to the nearest supermarket or large grocery store was calculated for each grid cell, the number of housing units without access to a vehicle and located more than 20 miles from a supermarket or large grocery store was aggregated to the tract level.

No vehicle, low access, share of housing units at least 20 miles

Geographic level: census tract

Year of data: 2010

Definition: Percentage of housing units in a rural tract located at least 20 miles from the nearest supermarket, supercenter, or large grocery store and reporting no access to a vehicle.

Data sources: Data are from the 2012 report, *Access to Affordable and Nutritious Food: Updated Estimates of Distances to Supermarkets Using 2010 Data*. In this report, a directory of supermarkets, supercenters, and large grocery stores within the United States, including Alaska and Hawaii, was derived from merging the 2010 STARS directory of stores authorized to accept Supplemental Nutrition Assistance Program (SNAP) benefits and the 2010 Trade Dimensions TDLinx directory of stores. Stores met the definition of a supermarket or large grocery store if they reported at least $2 million in annual sales and contained all the major food departments found in a traditional supermarket, including fresh produce, fresh meat and poultry, dairy, dry

and packaged foods, and frozen foods. The combined list of supermarkets and large grocery stores was converted into a GIS-usable format by geocoding the street address into store-point locations. Population data are reported at the block level from the 2010 Census of Population and Housing. Vehicle access was measured from a question in the American Community Survey about whether the household has access to a car, truck, or van of 1-ton capacity or less. These data were aerially allocated down to ½-kilometer-square grids across the United States. For each ½-kilometer-square grid cell, the distance was calculated from its geographic center to the center of the grid cell with the nearest supermarket. Rural or urban status is designated by the Census Bureau's *urban area definition*. Once distance to the nearest supermarket or large grocery store was calculated for each grid cell, the number of housing units without access to a vehicle and located more than 20 miles from a supermarket or large grocery store was aggregated to the tract level and then divided by the total number of housing units in the tract.

Group quarters

Group quarters, tract with high percentage of population

Geographic level: census tract

Year of data: 2010

Definition: A tract in which at least 67 percent of the population live in group quarters such as dormitories, military bases, assisted living or skilled nursing facilities, and other large institutions.

Data sources: Data are from the 2012 report, *Access to Affordable and Nutritious Food: Updated Estimates of Distances to Supermarkets Using 2010 Data*. Population data are reported at the block level from the 2010 Census of Population and Housing.

Low-income and low-access measures

Low income, low access, number of people at least ½ mile

Geographic level: census tract

Year of data: 2010

Definition: Number of individuals in an urban tract with low income and living more than ½ mile from the nearest supermarket, supercenter, or large grocery store. Low income is defined as annual family income at or below 200 percent of the Federal poverty threshold for family size.

Data sources: Data are from the 2012 report, *Access to Affordable and Nutritious Food: Updated Estimates of Distances to Supermarkets Using 2010 Data*. In this report, a directory of supermarkets, supercenters, and large grocery stores within the United States, including Alaska and Hawaii, was derived from merging the 2010 STARS directory of stores authorized to accept Supplemental Nutrition Assistance Program (SNAP) benefits and the 2010 Trade Dimensions TDLinx directory of stores. Stores met the definition of a supermarket or large grocery store if

they reported at least $2 million in annual sales and contained all the major food departments found in a traditional supermarket, including fresh produce, fresh meat and poultry, dairy, dry and packaged foods, and frozen foods. The combined list of supermarkets and large grocery stores was converted into a GIS-usable format by geocoding the street address into store-point locations. Population data are reported at the block level from the 2010 Census of Population and Housing. Income data are reported at the block-group level from the 2006-10 American Community Survey. These data were aerially allocated down to ½-kilometer-square grids across the United States. For each ½-kilometer-square grid cell, the distance was calculated from its geographic center to the center of the grid cell with the nearest supermarket. Rural or urban status is designated by the Census Bureau's *urban area definition*. Once distance to the nearest supermarket or large grocery store was calculated for each grid cell, the number of individuals living more than ½ mile from a supermarket or large grocery store was aggregated to the tract level.

Low income, low access, share of people at least ½ mile

Geographic level: census tract

Year of data: 2010

Definition: Percentage of individuals in an urban tract with low income and living more than ½ mile from the nearest supermarket, supercenter, or large grocery store. Low income is defined as annual family income at or below 200 percent of the Federal poverty threshold for family size.

Data sources: Data are from the 2012 report, *Access to Affordable and Nutritious Food: Updated Estimates of Distances to Supermarkets Using 2010 Data*. In this report, a directory of supermarkets, supercenters, and large grocery stores within the United States, including Alaska and Hawaii, was derived from merging the 2010 STARS directory of stores authorized to accept Supplemental Nutrition Assistance Program (SNAP) benefits and the 2010 Trade Dimensions TDLinx directory of stores. Stores met the definition of a supermarket or large grocery store if they reported at least $2 million in annual sales and contained all the major food departments found in a traditional supermarket, including fresh produce, fresh meat and poultry, dairy, dry and packaged foods, and frozen foods. The combined list of supermarkets and large grocery stores was converted into a GIS-usable format by geocoding the street address into store-point locations. Population data are reported at the block level from the 2010 Census of Population and Housing. Income data are reported at the block-group level from the 2006-10 American Community Survey. These data were aerially allocated down to ½-kilometer-square grids across the United States. For each ½-kilometer-square grid cell, the distance was calculated from its geographic center to the center of the grid cell with the nearest supermarket. Rural or urban status is designated by the Census Bureau's *urban area definition*. Once distance to the nearest supermarket or large grocery store was calculated for each grid cell, the number of individuals living more than ½ mile from a supermarket or large grocery store was aggregated to the tract level and then divided by the total number of individuals in the tract to obtain the percent of the total population in the tract that resided more than ½ mile from a supermarket.

Low income, low access, number of people at least 1 mile

Geographic level: census tract

Year of data: 2010

Definition: Number of individuals in an urban tract with low income and living more than 1 mile from the nearest supermarket, supercenter, or large grocery store. Low income is defined as annual family income at or below 200 percent of the Federal poverty threshold for family size.

Data sources: Data are from the 2012 report, *Access to Affordable and Nutritious Food: Updated Estimates of Distances to Supermarkets Using 2010 Data*. In this report, a directory of supermarkets, supercenters, and large grocery stores within the United States, including Alaska and Hawaii, was derived from merging the 2010 STARS directory of stores authorized to accept Supplemental Nutrition Assistance Program (SNAP) benefits and the 2010 Trade Dimensions TDLinx directory of stores. Stores met the definition of a supermarket or large grocery store if they reported at least $2 million in annual sales and contained all the major food departments found in a traditional supermarket, including fresh produce, fresh meat and poultry, dairy, dry and packaged foods, and frozen foods. The combined list of supermarkets and large grocery stores was converted into a GIS-usable format by geocoding the street address into store-point locations. Population data are reported at the block level from the 2010 Census of Population and Housing. Income data are reported at the block-group level from the 20-2010 American Community Survey. These data were aerially allocated down to ½-kilometer-square grids across the United States. For each ½-kilometer-square grid cell, the distance was calculated from its geographic center to the center of the grid cell with the nearest supermarket. Rural or urban status is designated by the Census Bureau's *urban area definition*. Once distance to the nearest supermarket or large grocery store was calculated for each grid cell, the number of individuals living more than 1 mile from a supermarket or large grocery store was aggregated to the tract level.

Low income, low access, share of people at least 1 mile

Geographic level: census tract

Year of data: 2010

Definition: Percentage of individuals in an urban tract with low income and living more than 1 mile from the nearest supermarket, supercenter, or large grocery store. Low income is defined as annual family income at or below 200 percent of the Federal poverty threshold for family size.

Data sources: Data are from the 2012 report, *Access to Affordable and Nutritious Food: Updated Estimates of Distances to Supermarkets Using 2010 Data*. In this report, a directory of supermarkets, supercenters, and large grocery stores within the United States, including Alaska and Hawaii, was derived from merging the 2010 STARS directory of stores authorized to accept Supplemental Nutrition Assistance Program (SNAP) benefits and the 2010 Trade Dimensions TDLinx directory of stores. Stores met the definition of a supermarket or large grocery store if they reported at least $2 million in annual sales and contained all the major food departments found in a traditional supermarket, including fresh produce, fresh meat and poultry, dairy, dry and packaged foods, and frozen foods. The combined list of supermarkets and large grocery

stores was converted into a GIS-usable format by geocoding the street address into store-point locations. Population data are reported at the block level from the 2010 Census of Population and Housing. Income data are reported at the block-group level from the 2006-10 American Community Survey. These data were aerially allocated down to ½-kilometer-square grids across the United States. For each ½-kilometer-square grid cell, the distance was calculated from its geographic center to the center of the grid cell with the nearest supermarket. Rural or urban status is designated by the Census Bureau's *urban area definition*. Once distance to the nearest supermarket or large grocery store was calculated for each grid cell, the number of individuals living more than 1 mile from a supermarket or large grocery store was aggregated to the tract level and then divided by the total number of individuals in the tract to obtain the percent of the total population in the tract that resided more than 1 mile from a supermarket.

Low income, low access, number of people at least 10 miles

Geographic level: census tract

Year of data: 2010

Definition: Number of individuals in a rural tract with low income and living more than 10 miles from the nearest supermarket, supercenter, or large grocery store. Low income is defined as annual family income at or below 200 percent of the Federal poverty threshold for family size.

Data sources: Data are from the 2012 report, *Access to Affordable and Nutritious Food: Updated Estimates of Distances to Supermarkets Using 2010 Data*. In this report, a directory of supermarkets, supercenters, and large grocery stores within the United States, including Alaska and Hawaii, was derived from merging the 2010 STARS directory of stores authorized to accept Supplemental Nutrition Assistance Program (SNAP) benefits and the 2010 Trade Dimensions TDLinx directory of stores. Stores met the definition of a supermarket or large grocery store if they reported at least $2 million in annual sales and contained all the major food departments found in a traditional supermarket, including fresh produce, fresh meat and poultry, dairy, dry and packaged foods, and frozen foods. The combined list of supermarkets and large grocery stores was converted into a GIS-usable format by geocoding the street address into store-point locations. Population data are reported at the block level from the 2010 Census of Population and Housing. Income data are reported at the block-group level from the 2006-10 American Community Survey. These data were aerially allocated down to ½-kilometer-square grids across the United States. For each ½-kilometer-square grid cell, the distance was calculated from its geographic center to the center of the grid cell with the nearest supermarket. Rural or urban status is designated by the Census Bureau's *urban area definition*. Once distance to the nearest supermarket or large grocery store was calculated for each grid cell, the number of individuals living more than 10 miles from a supermarket or large grocery store was aggregated to the tract level.

Low income, low access, share of people at least 10 miles

Geographic level: census tract

Year of data: 2010

Definition: Percentage of individuals in a rural tract with low income and living more than 10 miles from the nearest supermarket, supercenter, or large grocery store. Low income is defined as annual family income at or below 200 percent of the Federal poverty threshold for family size.

Data sources: Data are from the 2012 report, *Access to Affordable and Nutritious Food: Updated Estimates of Distances to Supermarkets Using 2010 Data*. In this report, a directory of supermarkets, supercenters, and large grocery stores within the United States, including Alaska and Hawaii, was derived from merging the 2010 STARS directory of stores authorized to accept Supplemental Nutrition Assistance Program (SNAP) benefits and the 2010 Trade Dimensions TDLinx directory of stores. Stores met the definition of a supermarket or large grocery store if they reported at least $2 million in annual sales and contained all the major food departments found in a traditional supermarket, including fresh produce, fresh meat and poultry, dairy, dry and packaged foods, and frozen foods. The combined list of supermarkets and large grocery stores was converted into a GIS-usable format by geocoding the street address into store-point locations. Population data are reported at the block level from the 2010 Census of Population and Housing. Income data are reported at the block-group level from the 2006-10 American Community Survey. These data were aerially allocated down to ½-kilometer-square grids across the United States. For each ½-kilometer-square grid cell, the distance was calculated from its geographic center to the center of the grid cell with the nearest supermarket. Rural or urban status is designated by the Census Bureau's *urban area definition*. Once distance to the nearest supermarket or large grocery store was calculated for each grid cell, the number of individuals living more than 10 miles from a supermarket or large grocery store was aggregated to the tract level and then divided by the total number of individuals in the tract to obtain the percent of the total population in the tract that resided more than 10 miles from a supermarket.

Low income, low access, number of people at least 20 miles

Geographic level: census tract

Year of data: 2010

Definition: Number of individuals in a rural tract with low income and living more than 20 miles from the nearest supermarket, supercenter, or large grocery store. Low income is defined as annual family income at or below 200 percent of the Federal poverty threshold for family size.

Data sources: Data are from the 2012 report, *Access to Affordable and Nutritious Food: Updated Estimates of Distances to Supermarkets Using 2010 Data*. In this report, a directory of supermarkets, supercenters, and large grocery stores within the United States, including Alaska and Hawaii, was derived from merging the 2010 STARS directory of stores authorized to accept Supplemental Nutrition Assistance Program (SNAP) benefits and the 2010 Trade Dimensions TDLinx directory of stores. Stores met the definition of a supermarket or large grocery store if they reported at least $2 million in annual sales and contained all the major food departments found in a traditional supermarket, including fresh produce, fresh meat and poultry, dairy, dry and packaged foods, and frozen foods. The combined list of supermarkets and large grocery stores was converted into a GIS-usable format by geocoding the street address into store-point locations. Population data are reported at the block level from the 2010 Census of Population and Housing. Income data are reported at the block-group level from the 2006-10 American

Community Survey. These data were aerially allocated down to ½-kilometer-square grids across the United States. For each ½-kilometer-square grid cell, the distance was calculated from its geographic center to the center of the grid cell with the nearest supermarket. Rural or urban status is designated by the Census Bureau's *urban area definition*. Once distance to the nearest supermarket or large grocery store was calculated for each grid cell, the number of individuals living more than 20 miles from a supermarket or large grocery store was aggregated to the tract level.

Low income, low access, share of people at least 20 miles

Geographic level: census tract

Year of data: 2010

Definition: Percentage of individuals in a rural tract with low income and living more than 20 miles from the nearest supermarket, supercenter, or large grocery store. Low income is defined as annual family income at or below 200 percent of the Federal poverty threshold for family size.

Data sources: Data are from the 2012 report, *Access to Affordable and Nutritious Food: Updated Estimates of Distances to Supermarkets Using 2010 Data*. In this report, a directory of supermarkets, supercenters, and large grocery stores within the United States, including Alaska and Hawaii, was derived from merging the 2010 STARS directory of stores authorized to accept Supplemental Nutrition Assistance Program (SNAP) benefits and the 2010 Trade Dimensions TDLinx directory of stores. Stores met the definition of a supermarket or large grocery store if they reported at least $2 million in annual sales and contained all the major food departments found in a traditional supermarket, including fresh produce, fresh meat and poultry, dairy, dry and packaged foods, and frozen foods. The combined list of supermarkets and large grocery stores was converted into a GIS-usable format by geocoding the street address into store-point locations. Population data are reported at the block level from the 2010 Census of Population and Housing. Income data are reported at the block-group level from the 2006-10 American Community Survey. These data were aerially allocated down to ½-kilometer-square grids across the United States. For each ½-kilometer-square grid cell, the distance was calculated from its geographic center to the center of the grid cell with the nearest supermarket. Rural or urban status is designated by the Census Bureau's *urban area definition*. Once distance to the nearest supermarket or large grocery store was calculated for each grid cell, the number of individuals living more than 20 miles from a supermarket or large grocery store was aggregated to the tract level and then divided by the total number of individuals in the tract to obtain the percent of the total population in the county that resided more than 20 miles from a supermarket.

Low access and population subgroups

Children, low access, number at least ½ mile

Geographic level: census tract

Year of data: 2010

Definition: Number of individuals age 0-17 in an urban tract living more than ½ mile from the nearest supermarket, supercenter, or large grocery store.

Data sources: Data are from the 2012 report, *Access to Affordable and Nutritious Food: Updated Estimates of Distances to Supermarkets Using 2010 Data*. In this report, a directory of supermarkets, supercenters, and large grocery stores within the United States, including Alaska and Hawaii, was derived from merging the 2010 STARS directory of stores authorized to accept Supplemental Nutrition Assistance Program (SNAP) benefits and the 2010 Trade Dimensions TDLinx directory of stores. Stores met the definition of a supermarket or large grocery store if they reported at least $2 million in annual sales and contained all the major food departments found in a traditional supermarket, including fresh produce, fresh meat and poultry, dairy, dry and packaged foods, and frozen foods. The combined list of supermarkets and large grocery stores was converted into a GIS-usable format by geocoding the street address into store-point locations. Population data are reported at the block level from the 2010 Census of Population and Housing. These data were aerially allocated down to ½-kilometer-square grids across the United States. For each ½-kilometer-square grid cell, the distance was calculated from its geographic center to the center of the grid cell with the nearest supermarket. Rural or urban status is designated by the Census Bureau's *urban area definition*. Once distance to the nearest supermarket or large grocery store was calculated for each grid cell, the number of individuals age 0-17 living more than ½ mile from a supermarket or large grocery store was aggregated to the tract level.

Children, low access, share at least ½ mile

Geographic level: census tract

Year of data: 2010

Definition: Percentage of individuals age 0-17 in an urban tract living more than ½ mile from the nearest supermarket, supercenter, or large grocery store.

Data sources: Data are from the 2012 report, *Access to Affordable and Nutritious Food: Updated Estimates of Distances to Supermarkets Using 2010 Data*. In this report, a directory of supermarkets, supercenters, and large grocery stores within the United States, including Alaska and Hawaii, was derived from merging the 2010 STARS directory of stores authorized to accept Supplemental Nutrition Assistance Program (SNAP) benefits and the 2010 Trade Dimensions TDLinx directory of stores. Stores met the definition of a supermarket or large grocery store if they reported at least $2 million in annual sales and contained all the major food departments found in a traditional supermarket, including fresh produce, fresh meat and poultry, dairy, dry and packaged foods, and frozen foods. The combined list of supermarkets and large grocery stores was converted into a GIS-usable format by geocoding the street address into store-point locations. Population data are reported at the block level from the 2010 Census of Population and Housing. These data were aerially allocated down to ½-kilometer-square grids across the United States. For each ½-kilometer-square grid cell, the distance was calculated from its geographic center to the center of the grid cell with the nearest supermarket. Rural or urban status is designated by the Census Bureau's *urban area definition*. Once distance to the nearest supermarket or large grocery store was calculated for each grid cell, the number of individuals

age 0-17 living more than ½ mile from a supermarket or large grocery store was aggregated to the tract level and then divided by the total number of individuals age 0-17 in the tract to obtain the percent of the total population age 0-17 in the tract that resided more than ½ mile from a supermarket.

Seniors, low access, number at least ½ mile

Geographic level: census tract

Year of data: 2010

Definition: Number of individuals age 65+ in an urban tract living more than ½ mile from the nearest supermarket, supercenter, or large grocery store.

Data sources: Data are from the 2012 report, *Access to Affordable and Nutritious Food: Updated Estimates of Distances to Supermarkets Using 2010 Data*. In this report, a directory of supermarkets, supercenters, and large grocery stores within the United States, including Alaska and Hawaii, was derived from merging the 2010 STARS directory of stores authorized to accept Supplemental Nutrition Assistance Program (SNAP) benefits and the 2010 Trade Dimensions TDLinx directory of stores. Stores met the definition of a supermarket or large grocery store if they reported at least $2 million in annual sales and contained all the major food departments found in a traditional supermarket, including fresh produce, fresh meat and poultry, dairy, dry and packaged foods, and frozen foods. The combined list of supermarkets and large grocery stores was converted into a GIS-usable format by geocoding the street address into store-point locations. Population data are reported at the block level from the 2010 Census of Population and Housing. These data were aerially allocated down to ½-kilometer-square grids across the United States. For each ½-kilometer-square grid cell, the distance was calculated from its geographic center to the center of the grid cell with the nearest supermarket. Rural or urban status is designated by the Census Bureau's *urban area definition*. Once distance to the nearest supermarket or large grocery store was calculated for each grid cell, the number of individuals age 65+ living more than ½ mile from a supermarket or large grocery store was aggregated to the tract level.

Seniors, low access, share at least ½ mile

Geographic level: census tract

Year of data: 2010

Definition: Percentage of individuals age 65+ in an urban tract living more than ½ mile from the nearest supermarket, supercenter, or large grocery store.

Data sources: Data are from the 2012 report, *Access to Affordable and Nutritious Food: Updated Estimates of Distances to Supermarkets Using 2010 Data*. In this report, a directory of supermarkets, supercenters, and large grocery stores within the United States, including Alaska and Hawaii, was derived from merging the 2010 STARS directory of stores authorized to accept Supplemental Nutrition Assistance Program (SNAP) benefits and the 2010 Trade Dimensions

TDLinx directory of stores. Stores met the definition of a supermarket or large grocery store if they reported at least $2 million in annual sales and contained all the major food departments found in a traditional supermarket, including fresh produce, fresh meat and poultry, dairy, dry and packaged foods, and frozen foods. The combined list of supermarkets and large grocery stores was converted into a GIS-usable format by geocoding the street address into store-point locations. Population data are reported at the block level from the 2010 Census of Population and Housing. These data were aerially allocated down to ½-kilometer-square grids across the United States. For each ½-kilometer-square grid cell, the distance was calculated from its geographic center to the center of the grid cell with the nearest supermarket. Rural or urban status is designated by the Census Bureau's *urban area definition*. Once distance to the nearest supermarket or large grocery store was calculated for each grid cell, the number of individuals age 65+ living more than ½ mile from a supermarket or large grocery store was aggregated to the tract level and then divided by the total number of individuals age 65+ in the tract to obtain the percent of the total population age 65+ in the tract that resided more than ½ mile from a supermarket.

Children, low access, number at least 1 mile

Geographic level: census tract

Year of data: 2010

Definition: Number of individuals age 0-17 in an urban tract living at least 1 mile from the nearest supermarket, supercenter, or large grocery store.

Data sources: Data are from the 2012 report, *Access to Affordable and Nutritious Food: Updated Estimates of Distances to Supermarkets Using 2010 Data*. In this report, a directory of supermarkets, supercenters, and large grocery stores within the United States, including Alaska and Hawaii, was derived from merging the 2010 STARS directory of stores authorized to accept Supplemental Nutrition Assistance Program (SNAP) benefits and the 2010 Trade Dimensions TDLinx directory of stores. Stores met the definition of a supermarket or large grocery store if they reported at least $2 million in annual sales and contained all the major food departments found in a traditional supermarket, including fresh produce, fresh meat and poultry, dairy, dry and packaged foods, and frozen foods. The combined list of supermarkets and large grocery stores was converted into a GIS-usable format by geocoding the street address into store-point locations. Population data are reported at the block level from the 2010 Census of Population and Housing. These data were aerially allocated down to ½-kilometer-square grids across the United States. For each ½-kilometer-square grid cell, the distance was calculated from its geographic center to the center of the grid cell with the nearest supermarket. Rural or urban status is designated by the Census Bureau's *urban area definition*. Once distance to the nearest supermarket or large grocery store was calculated for each grid cell, the number of individuals age 0-17 living more than 1 mile from a supermarket or large grocery store was aggregated to the tract level.

Children, low access, share at least 1 mile

Geographic level: census tract

Year of data: 2010

Definition: Percentage of individuals age 0-17 in an urban tract living at least 1 mile from the nearest supermarket, supercenter, or large grocery store.

Data sources: Data are from the 2012 report, *Access to Affordable and Nutritious Food: Updated Estimates of Distances to Supermarkets Using 2010 Data*. In this report, a directory of supermarkets, supercenters, and large grocery stores within the United States, including Alaska and Hawaii, was derived from merging the 2010 STARS directory of stores authorized to accept Supplemental Nutrition Assistance Program (SNAP) benefits and the 2010 Trade Dimensions TDLinx directory of stores. Stores met the definition of a supermarket or large grocery store if they reported at least $2 million in annual sales and contained all the major food departments found in a traditional supermarket, including fresh produce, fresh meat and poultry, dairy, dry and packaged foods, and frozen foods. The combined list of supermarkets and large grocery stores was converted into a GIS-usable format by geocoding the street address into store-point locations. Population data are reported at the block level from the 2010 Census of Population and Housing. These data were aerially allocated down to ½-kilometer-square grids across the United States. For each ½-kilometer-square grid cell, the distance was calculated from its geographic center to the center of the grid cell with the nearest supermarket. Rural or urban status is designated by the Census Bureau's *urban area definition*. Once distance to the nearest supermarket or large grocery store was calculated for each grid cell, the number of individuals age 0-17 living more than 1 mile from a supermarket or large grocery store was aggregated to the tract level and then divided by the total number of individuals age 0-17 in the tract to obtain the percent of the total population age 0-17 in the tract that resided more than 1 mile from a supermarket.

Seniors, low access, number at least 1 mile

Geographic level: census tract

Year of data: 2010

Definition: Number of individuals age 65+ in an urban tract living at least 1 mile from the nearest supermarket, supercenter, or large grocery store.

Data sources: Data are from the 2012 report, *Access to Affordable and Nutritious Food: Updated Estimates of Distances to Supermarkets Using 2010 Data*. In this report, a directory of supermarkets, supercenters, and large grocery stores within the United States, including Alaska and Hawaii, was derived from merging the 2010 STARS directory of stores authorized to accept Supplemental Nutrition Assistance Program (SNAP) benefits and the 2010 Trade Dimensions TDLinx directory of stores. Stores met the definition of a supermarket or large grocery store if they reported at least $2 million in annual sales and contained all the major food departments found in a traditional supermarket, including fresh produce, fresh meat and poultry, dairy, dry and packaged foods, and frozen foods. The combined list of supermarkets and large grocery stores was converted into a GIS-usable format by geocoding the street address into store-point locations. Population data are reported at the block level from the 2010 Census of Population and Housing. These data were aerially allocated down to ½-kilometer-square grids across the United

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Seniors, low access, share at least 1 mile

Geographic level: census tract

Year of data: 2010

Definition: Percentage of individuals age 65+ in an urban tract living at least 1 mile from the nearest supermarket, supercenter, or large grocery store.

Data sources: Data are from the 2012 report, *Access to Affordable and Nutritious Food: Updated Estimates of Distances to Supermarkets Using 2010 Data*. In this report, a directory of supermarkets, supercenters, and large grocery stores within the United States, including Alaska and Hawaii, was derived from merging the 2010 STARS directory of stores authorized to accept Supplemental Nutrition Assistance Program (SNAP) benefits and the 2010 Trade Dimensions TDLinx directory of stores. Stores met the definition of a supermarket or large grocery store if they reported at least $2 million in annual sales and contained all the major food departments found in a traditional supermarket, including fresh produce, fresh meat and poultry, dairy, dry and packaged foods, and frozen foods. The combined list of supermarkets and large grocery stores was converted into a GIS-usable format by geocoding the street address into store-point locations. Population data are reported at the block level from the 2010 Census of Population and Housing. These data were aerially allocated down to ½-kilometer-square grids across the United States. For each ½-kilometer-square grid cell, the distance was calculated from its geographic center to the center of the grid cell with the nearest supermarket. Rural or urban status is designated by the Census Bureau's *urban area definition*. Once distance to the nearest supermarket or large grocery store was calculated for each grid cell, the number of individuals age 65+ living more than 1 mile from a supermarket or large grocery store was aggregated to the tract level and then divided by the total number of individuals age 65+ in the tract to obtain the percent of the total population age 65+ in the tract that resided more than 1 mile from a supermarket.

Children, low access, number at least 10 miles

Geographic level: census tract

Year of data: 2010

Definition: Number of individuals age 0-17 in a rural tract living at least 10 miles from the nearest supermarket, supercenter, or large grocery store.

Data sources: Data are from the 2012 report, *Access to Affordable and Nutritious Food: Updated Estimates of Distances to Supermarkets Using 2010 Data*. In this report, a directory of supermarkets, supercenters, and large grocery stores within the United States, including Alaska and Hawaii, was derived from merging the 2010 STARS directory of stores authorized to accept Supplemental Nutrition Assistance Program (SNAP) benefits and the 2010 Trade Dimensions TDLinx directory of stores. Stores met the definition of a supermarket or large grocery store if they reported at least $2 million in annual sales and contained all the major food departments found in a traditional supermarket, including fresh produce, fresh meat and poultry, dairy, dry and packaged foods, and frozen foods. The combined list of supermarkets and large grocery stores was converted into a GIS-usable format by geocoding the street address into store-point locations. Population data are reported at the block level from the 2010 Census of Population and Housing. These data were aerially allocated down to ½-kilometer-square grids across the United States. For each ½-kilometer-square grid cell, the distance was calculated from its geographic center to the center of the grid cell with the nearest supermarket. Rural or urban status is designated by the Census Bureau's *urban area definition*. Once distance to the nearest supermarket or large grocery store was calculated for each grid cell, the number of individuals age 0-17 living more than 10 miles from a supermarket or large grocery store was aggregated to the tract level.

Children, low access, share at least 10 miles

Geographic level: census tract

Year of data: 2010

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the percent of the total population age 0-17 in the tract that resided more than 10 miles from a supermarket.

Seniors, low access, number at least 10 miles

Geographic level: census tract

Year of data: 2010

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Children, low access, number at least 20 miles

Geographic level: census tract

Year of data: 2010

Definition: Number of individuals age 0-17 in a rural tract living at least 20 miles from the nearest supermarket, supercenter, or large grocery store.

Data sources: Data are from the 2012 report, *Access to Affordable and Nutritious Food: Updated Estimates of Distances to Supermarkets Using 2010 Data*. In this report, a directory of supermarkets, supercenters, and large grocery stores within the United States, including Alaska and Hawaii, was derived from merging the 2010 STARS directory of stores authorized to accept Supplemental Nutrition Assistance Program (SNAP) benefits and the 2010 Trade Dimensions TDLinx directory of stores. Stores met the definition of a supermarket or large grocery store if they reported at least $2 million in annual sales and contained all the major food departments found in a traditional supermarket, including fresh produce, fresh meat and poultry, dairy, dry and packaged foods, and frozen foods. The combined list of supermarkets and large grocery stores was converted into a GIS-usable format by geocoding the street address into store-point locations. Population data are reported at the block level from the 2010 Census of Population and Housing. These data were aerially allocated down to ½-kilometer-square grids across the United States. For each ½-kilometer-square grid cell, the distance was calculated from its geographic center to the center of the grid cell with the nearest supermarket. Rural or urban status is designated by the Census Bureau's *urban area definition*. Once distance to the nearest supermarket or large grocery store was calculated for each grid cell, the number of individuals age 0-17 living more than 20 miles from a supermarket or large grocery store was aggregated to the tract level.

Children, low access, share at least 20 miles

Geographic level: census tract

Year of data: 2010

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Geographic level: census tract

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Geographic level: census tract

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Data sources

Population data, including age and residence in group quarters, are from the 2010 Census of the Population and downloaded at the census-block level before being allocated to ½-kilometer-square grid cells. Urban or rural designation was also provided by the 2010 Census at the block level. Data on income and vehicle availability are from the 2006-10 American Community Survey and were downloaded at the block-group level for assignment to ½-kilometer-square grid cells.

Two 2010 lists of supermarkets, supercenters, and large grocery stores (food stores selling all major categories of food and having annual sales of at least $2 million) were combined to produce a comprehensive list of stores that represent sources of affordable and nutritious food. One store list contains stores authorized to receive Supplemental Nutrition Assistance Program (SNAP) benefits. The second list is from Trade Dimensions TDLinx (a Nielsen company), a proprietary source of individual supermarket store listings. Details on these data sources can be found in the report *Access to Affordable and Nutritious Food: Updated Estimates of Distance to Supermarkets Using 2010 Data*.

Changes in methods between 2006 and 2010

Methods used to estimate low-income and low-access census tracts in 2010 are largely the same as methods used in previous estimates. There are however, two notable differences.

First, the 2010 analysis uses ½-kilometer-square grids to estimate distances from supermarkets, whereas the previous analysis used 1-kilometer-square grids. The ½ kilometer-square grids are likely to give better estimates of distance to supermarkets; however, this could mean that the estimated distance to stores for some grids changes, even though no change occurred in the location of the nearest store or in the income or location of the population. It is expected that the greater precision of the ½-kilometer-square grids will have a small net impact on estimates of distance to the nearest store.

Second, a new method for designating whether a census tract is urban or rural is used. In the previous analysis, census tracts were designated as urban if the geographic centroid of the tract was in an urban area or urban cluster according to Census Bureau definitions. All other tracts were considered rural. The 1-mile demarcation was used to indicate low-access for tracts with a centroid in an urban area, and the 10-mile demarcation was used for tracts with a centroid in rural areas. This meant that, for parts of some tracts containing both urban and rural sections, a 1-mile marker was used to assess low food store access if the geographic centroid of the tract was urban even though part of the tract was rural (and vice versa—if the centroid was in the rural part of the tract, the 10-mile marker was used).

For the 2010 analysis, the population-weighted centroid was used to designate a census tract as urban or rural. This should improve estimates of low-access tracts in areas with rural and urban overlap because it more accurately applies the urban 1-mile marker to urban areas and the 10-mile marker to rural areas. However, this change likely results in changes in the food desert status of some census tracts.

Comparisons of 2006 and 2010 food-desert census tract estimates

Comparisons of the number of food-desert census tracts in 2010 to previous estimates from 2006 data are tenuous. First, the updated analysis uses 2010 census-tract geography, while 2006 estimates used 2000 census-tract geography. There were a total of 64,909 census tracts in the continental United States in 2000 and 72,365 tracts in 2010, reflecting the overall growth in the U.S. population between 2000 and 2010. Thus, more tracts are eligible to be food-desert tracts in 2010 than in the previous analysis.

Second, to be considered a food desert, a tract must be a low-income census tract. Previously, data from the 2000 Decennial Census were used to estimate low-income census tracts. Since 2000, incomes have been stagnant or falling (see *Income, poverty, and health insurance coverage in the United States: 2011*), which means that more people are poor, and consequently, more census tracts are likely to be low-income. Finally, some of the changes in the food desert status of a census tract may also result from changes in the methods used to estimate distance from supermarkets for the population and in the methods used to decide whether a census tract is rural or urban.

To see how the number of food deserts has changed, ERS used 2000 Census data and 2006 store data to estimate the number of low-access, low-income food-desert tracts based on 2010 census-tract boundaries and the definition of food deserts used in the original Food Desert Locator. By using the same geography and the same definitions, this analysis estimates the differences between 2006 and 2010 in the effect of income and store access on the number and percentage of food-desert census tracts.

Using a tract relationship file from the Census Bureau, ERS was able to match tracts based on 2000-defined boundaries to tracts based on 2010-defined boundaries. The relationship file also allowed ERS to estimate the portion of the 2010 tract population that would be attributed to the 2000 tracts if the old boundaries were still in use. Tracts based on 2000 boundaries may correspond with tracts based on 2010 boundaries in four different ways:

1. a 2010 tract may share the exact same boundaries as the 2000 tract;
2. a 2000 tract may split into two or more tracts, with part of the 2000 tract becoming all or a portion of one 2010 tract, while other part(s) of the same 2000 tract become all or a portion of other 2010 tracts;
3. a 2000 tract may merge with another 2000 tract to create a single 2010 tract; or
4. a 2000 tract may be revised so that the 2010 tract consists of the entire 2000 tract, as well as a small portion(s) of another 2000 tract(s).

For more information, see *Understanding the 2010 Census Tract Relationship Files*.

To estimate a tract's low-income status based on the 2000 Census population data but using the 2010 tract boundaries required ERS to make certain assumptions. For 2010 tracts that retained their 2000 boundaries, the income status of the tract using 2000 Census data and 2010 geographic boundaries was assumed to be the same as it was using 2000 Census data and 2000 boundaries.

In the case of a single 2010 tract comprised of multiple 2000 tracts, in part or in whole, the 2010 geographic unit was assigned low-income status based on the portion of the population in the resulting 2010 tract that came from a 2000 low-income tract. For example, if one 2010 tract consisted of all or part of three 2000 tracts, none of which was low-income, the 2010 tract was also assigned as not low-income. On the other hand, if all 2000 tracts were low-income, then the 2010 tract was also assigned as low-income.

In a more complicated case where a 2010 tract consisted of all or part of three 2000 tracts, and at least one but not all three 2000 tracts was low-income, the 2010 tract was assigned as low-income only if more than 50 percent of the population in the 2010 tract boundaries was derived from 2000 low-income tracts. In this manner, low-income tracts were identified based on 2000 Census data but using 2010 geographical boundaries.

ERS then estimated the number of 2010 census tracts that were food deserts based on 2000 population and income data and 2006 store location data. The methods used in the 2010 updated estimates of food-desert census tracts were applied (essentially, the population-weighted centroid was used to determine a tract's rural or urban status instead of the geometric centroid). This was done only for the measure of food deserts based on 1- and 10-mile demarcations. Furthermore, since the 2006 estimates did not include Alaska and Hawaii, ERS compared the number of food deserts using 2006 data but 2010 definitions with the estimates of food deserts for the continental United States separately from those estimates that included Alaska and Hawaii.

Decomposition results

The rows in the table show the components of the food desert definition and different combinations of those components:

1) the number of low-access census tracts;

2) the number of low-income census tracts;

3) the number of low-access tracts that are not low income;

4) the number of low-income tracts that are not low access; and

5) the number of census tracts that are both low income and low access (food deserts).

Column 1 shows estimates of these five elements using data from 2000 and 2006, while Column 2 shows estimates using data from 2010.

Overall, the number of food-desert census tracts increased from 2006 to 2010. However, most of this increase is due to the increase in the number of low-income census tracts from 26,099 to 29,134. The number of low-access tracts grew also from 27,776 to 28,328, but this was not as big of an increase as the number of low-income tracts.

Changes in food desert status between 2006 and 2010 by data year, census geography, and methodology.

Food desert status	2006 data, using 2010 tracts and 2010	2010 data, using 2010 tracts and 2010 methodology	2010 data, using 2010 tracts and 2010 methodology

	methodology	(excludes Alaska and Hawaii)	(includes Alaska and Hawaii)
number of low-access tracts	27,776	28,328	28,541
number of low-income tracts	26,099	29,134	29,285
number of low-access and NOT low-income tracts	20,012	19,434	19,582
number of low-income and NOT low-access tracts	18,335	20,240	20,326
number of food deserts	7,764	8,894	8,959
total tracts	72,365	72,365	72,864

Notes: Low-access tracts are those tracts where at least 500 people have low access OR the percentage of people in the tract with low access is at least 33 percent.

Low-income tracts meet the New Markets Tax Credit low-income definition.

Source: Calculated by the Economic Research Service, USDA, using data from a 2010 list of supermarkets, the 2010 Decennial Census, and the 2006-10 American Community Survey.