

Definition of a Food Desert

While there are many ways to define a food desert, the Healthy Food Financing Initiative (HFFI) Working Group considers a food desert as a *low-income census tract* where a substantial number or share of residents has *low access* to a supermarket or large grocery store. To qualify as low-income, census tracts must meet the Treasury Department's New Markets Tax Credit (NMTC) program eligibility criteria. Furthermore, to qualify as a food desert tract, at least 33 percent of the tract's population or a minimum of 500 people in the tract must have low access to a supermarket or large grocery store.

The NMTC program defines a *low-income census tract* as: any census tract where (1) the poverty rate for that tract is at least 20 percent, or (2) for tracts not located within a metropolitan area, the median family income for the tract does not exceed 80 percent of statewide median family income; or for tracts located within a metropolitan area, the median family income for the tract does not exceed 80 percent of the greater of statewide median family income or the metropolitan area median family income.

Low access to a healthy food retail outlet is defined as more than 1 mile from a supermarket or large grocery store in urban areas and as more than 10 miles from a supermarket or large grocery store in rural areas. The distance to supermarkets and large grocery stores is measured by the distance between the geographic center of the 1-km square grid that contains estimates of the population (number of people and other subgroup characteristics) and the nearest supermarket or large grocery store. Once the distance to the nearest supermarket or large grocery store is calculated for each grid cell, the estimated number of people or housing units more than one mile from a supermarket or large grocery store in urban tracts (or 10 miles for rural census tracts) is aggregated to the census tract level. (A census tract is considered rural if the centroid of that tract is located in an area with a population of less than 2,500, and all other tracts are considered urban tracts.) 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, then the census tract is considered a food desert.

Application of these criteria results in 6,529 food-desert census tracts in the continental U.S. (food deserts are not yet defined for Alaska and Hawaii). Roughly 75 percent of these food-desert tracts are urban, while the remaining 25 percent are rural. An estimated total of 13.6 million people in these census tracts have low access to a supermarket or large grocery store—that is, they live more than 1 or 10 miles from a supermarket or large grocery store. Of these 13.6 million people, 82.2 percent are in urban areas.

Note: Some census tracts that contain supermarkets or large grocery stores may meet the criteria of a food desert if a substantial number or share of people within that census tract is more than 1 mile (urban areas) or 10 miles (rural areas) from the nearest supermarket. Furthermore, some residents of food desert census tracts may live within 1 or 10 miles of a supermarket; these residents are *not* counted as low access and thus not counted in the 13.6 million total.

Many low-income census tracts in dense urban areas are smaller than 1 square kilometer. For these tracts, grid-level population data are not available. The level of access in these tracts was

assessed by determining whether each tract centroid fell within a 1-mile radius of a supermarket or large grocery store. Census tracts in which centroids fell within the 1-mile radius were assumed to have adequate access. Tracts in which centroids fell outside of the 1-mile radius were assumed to be low access tracts and everyone in the tract was considered as having low access to a supermarket or large grocery store. 140 densely-populated urban census tracts were assumed to be low-access tracts because the centroid of the tract fell outside of the 1-mile radius of a supermarket.

The way that a small set of urban census tracts--those smaller than 1-kilometer square--were designated as "low-income" was corrected on December 16, 2011. The low-income designation used in the 2009 ERS report to Congress (based on poverty status alone) had been applied to these small census tracts instead of the low-income designation used by the NMTC program (based on poverty and median income criteria). An additional 29 urban tracts that meet the NMTC definition of low-income and the low-access criterion have been added to the Food Desert Locator. This results in an additional 102,300 people in food desert census tracts that have low access to a supermarket or large grocery store, bringing the total to 13,563,920, in all 6529 tracts.

Data Sources

Data on population and income come from the 2000 Census of Population and Housing. The 1-km square grid data come from the [Socioeconomic Data and Applications Center](#). Census population data, which are released at the block group level, are first allocated to blocks and then allocated aerially down to the grid level.

Information on supermarket and large grocery store locations comes from a directory of supermarkets and large grocery stores (food stores with at least \$2 million in sales that contain all the major food departments found in a traditional supermarket). The directory was developed from a list of stores authorized to receive Supplemental Nutrition Assistance Program (SNAP) benefits, augmented by data from Trade Dimensions TDLinX (a Nielsen company), a proprietary source of individual supermarket store listings, both for the year 2006. Details on these data sources can be found in the 2009 ERS report, [*Access to Affordable and Nutritious Food: Measuring and Understanding Food Deserts and Their Consequences*](#).

Definitions of Indicators Mapped to Food Deserts

The Food Desert Locator includes characteristics only for census tracts that qualify as food deserts. All store data come from the 2006 directory of stores, and all population and household data come from the 2000 Census of Population and Housing. For the 140 urban census tracts for which grid-level data are not available, all people in the tract are assumed to have low-access to a supermarket or large grocery store.

Urban tract status

Definition: This variable indicates whether a census tract is an urban or rural tract. Urban and rural are defined in the Census 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.

Number of people with low access to a supermarket or large grocery store

Definition: Estimated number of people in the census tract that lives more than one mile from a supermarket or large grocery store (urban tracts) or more than 10 miles from a supermarket or large grocery store (rural tracts). The total number of people in each grid cell that is either 1 or 10 miles from a supermarket or large grocery store was aggregated at the tract level to produce the census tract total.

Percentage of people with low access to a supermarket or large grocery store

Definition: Percentage of the total population in the census tract that lives more than one mile from a supermarket or large grocery store (urban tracts) or more than 10 miles from a supermarket or large grocery store (rural tracts). The total number of people in each grid cell that is either 1 or 10 miles from a supermarket or large grocery store was aggregated at the tract level to produce the census tract total. The census tract total was then divided by the total 2000 Census population count for that tract to produce the percentage of people with low access.

Number of housing units without a vehicle with low access to a supermarket or large grocery store

Definition: Estimated number of occupied housing units in the census tract that does not own a vehicle and is more than one mile from a supermarket or large grocery store (urban tracts) or more than 10 miles from a supermarket or large grocery store (rural tracts). The number of occupied housing units that reports not owning a vehicle within grid cells that are either 1 or 10 miles from a supermarket or large grocery store was aggregated to the census tract level. Vehicle access was based on a question from the 2000 Census long-form that asked respondents whether the housing unit had access to an automobile, van, or truck of 1-ton-load capacity or less.

Percentage of housing units without a vehicle with low access to a supermarket or large grocery store

Definition: Percentage of occupied housing units in the census tract that does not own a vehicle and is more than one mile from a supermarket or large grocery store (urban tracts) or more than 10 miles from a supermarket or large grocery store (rural tracts). The number of occupied housing units that reports not owning a vehicle within grid cells that are either 1 or 10 miles from a supermarket or large grocery store was aggregated to the census tract level. This total was divided by the total number of occupied housing units in the tract to produce the percentage of housing units without a vehicle with low access. Vehicle access was based on a question from the 2000 Census long-form that asked respondents whether the housing unit had access to an automobile, van, or truck of 1-ton-load capacity or less. The total number of occupied housing units used to calculate this variable come from 2000 Census long-form data.

The Census long-form data on total occupied housing units are used because questions on vehicle ownership are part of the long-form questionnaire, not the short-form questionnaire. Housing unit totals from the short and long forms are not identical but are very close.

Number of low-income people with low access to a supermarket or large grocery store

Definition: Estimated number of low-income people in the census tract that is more than 1 mile from a supermarket or large grocery store (urban tracts) or more than 10 miles from a supermarket or large grocery store (rural tracts). Low-income is defined as annual household income less than or equal to 200 percent of Federal poverty thresholds for family size. The number of low-income people in each grid cell that is either 1 mile (urban tracts) or 10 miles (rural tracts) from a supermarket or large grocery store is aggregated to the census tract level.

Percentage of total population that is low-income and has low access to a supermarket or large grocery store

Definition: Percentage of the total population in the census tract that has low income and is more than 1 mile from a supermarket or large grocery store (urban tracts) or more than 10 miles from a supermarket or large grocery store (rural tracts). Low-income is defined as annual household income less than or equal to 200 percent of Federal poverty thresholds for family size. The number of low-income people in each grid cell that is either 1 mile (urban tracts) or 10 miles (rural tracts) from a supermarket or large grocery store is aggregated to the census tract level. This total is divided by the total number of people in the census tract to obtain the percentage of low-income, low-access people in the census tract. The total population estimate for this calculation comes from Census long-form data.

The Census long-form data on total population are used because questions on income are part of the long-form questionnaire, not the short-form questionnaire. Population totals from the short and long forms are not identical but are very close.

Number of people age 0-17 with low access to a supermarket or large grocery store

Definition: Estimated number of children age 0 through 17 in the census tract that lives more than 1 mile from a supermarket or large grocery store (urban tracts) or more than 10 miles from a supermarket or large grocery store (rural tracts). The total number of children in each grid cell that is either 1 mile (urban tracts) or 10 miles (rural tracts) from a supermarket or large grocery store was aggregated at the tract level to produce a census tract total.

Percentage of the total population that is age 0-17 and has low access to a supermarket or large grocery store

Definition: Percentage of children age 0 through 17 in the census tract that lives more than 1 mile from a supermarket or large grocery store (urban tracts) or more than 10 miles from a supermarket or large grocery store (rural tracts). The total number of children in each grid cell that is either 1 mile (urban tracts) or 10 miles (rural tracts) from a supermarket or large grocery store was aggregated at the tract level to produce a census tract total. This total was then divided

by the total number of people within the census tract.

Number of people age 65+ with low access to a supermarket or large grocery store

Definition: Estimated number of people age 65 or older in the census tract that lives more than 1 mile from a supermarket or large grocery store (urban tracts) or more than 10 miles from a supermarket or large grocery store (rural tracts). The total number of older people in each grid cell that is either 1 mile (urban tracts) or 10 miles (rural tracts) from a supermarket or large grocery store was aggregated at the tract level to produce a census tract total.

Percentage of the total population that is age 65+ and has low access to a supermarket or large grocery store

Definition: Percentage of people age 65 or older in the census tract that lives more than 1 mile from a supermarket or large grocery store (urban tracts) or more than 10 miles from a supermarket or large grocery store (rural tracts). The total number of older people in each grid cell that is either 1 mile (urban tracts) or 10 miles (rural tracts) from a supermarket or large grocery store was aggregated at the tract level to produce a census tract total. This total was then divided by the total number of people within the census tract.