



Missouri Hunger Atlas 2013



Interdisciplinary Center
for Food Security



Missouri Hunger Atlas 2013

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Acknowledgements

The Missouri Hunger Atlas is an outcome of a cooperative endeavor of faculty and students at the University of Missouri (MU). Our efforts would not have been possible, however, without the support of individuals in public agencies who shared data on agency programs with us. Specifically, in Missouri, we received wonderful assistance in the retrieval of information from Karen Young and Christine Combs (Missouri Department of Social Services), Karen Wooton and Joanie Romero (Missouri Department of Elementary and Secondary Education), Robert Hargis, Teresa Johnson, Stacey Kemper, Lyn C. Konstant, Melanie Madore, Ann McCormack and Takako Tagami (Missouri Department of Health and Senior Services), the directors of the six regional food banks in the state, and John Blodgett (OSED).

Background

This atlas assesses the extent of food insecurity in the state of Missouri. It also begins to gauge how well public programs are doing in meeting the needs of those of our fellow citizens who have difficulty acquiring sufficient amounts and qualities of food. The concept of food security, as the Food Assistance and Nutrition Research Program within the United States Department of Agriculture defines it, refers to “access by all people at all times to enough food for an active, healthy life.” Food insecurity in this country is normally due to insufficient resources for food purchases, and the majority of food insecure households avoid hunger by relying on a more narrow range of foods or acquiring food through private and public assistance programs. In 2011, 50.1 million Americans lived in food insecure households, 16.7 million were children. The USDA reported that 14.7 percent of households in the US experienced “low food security” in 2011. Households experiencing “very low food security” accounted for 5.6% of households, meaning the food intake of some household members was reduced and their normal eating patterns were disrupted because of the lack of money and other resources.¹

¹ Prior to 2005, the USDA described households with “very low food security” as “food insecure with hunger” and those with “low food security” as “food insecure”. The labels changed at the recommendation of the Committee on National Statistics (National Research Council, 2006). The criteria by which the USDA classified households remained unchanged, however, and in this atlas we use the older phrases of “food insecure” and “food insecure with hunger”.

The costs of food insecurity are economic, social, physical and psychological. For example, the economic costs of food insecurity among adults include income loss, work absenteeism, higher demand for public benefits and social services and increased health care expenditures. Food insecurity and poverty are clearly connected—poverty is the best single predictor of food insecurity, and hunger strongly correlates with lower educational achievement, unemployment and impaired work performance. Recent studies of children show food insecurity and hunger are significant predictors of chronic illness, low birth weight, lower school performance and developmental problems.

Food Insecurity Rates Among Missouri Households



Source: USDA ERS

Rising Hunger in Missouri:

- Current estimates of food insecurity and very low food security rates among Missouri households in 2010 were 16% and 6.7% respectively.
- 380,097 households experience food insecurity and roughly 159,165 households experience very low food security in Missouri; with an average household size of 2.45 these figures suggest approximately 1.3 million Missourians experienced some level of food insecurity
- Missouri ranks among the top ten states with the highest percentage of households classified as food insecure or having very low food security
- Missouri has had the single largest increase from 2000 to 2010 in the percent of its population who is food insecure (7.4% increase) or experiences very low food security (4.4% increase)

To help Missourians gain a greater understanding of the extent and depth of food insecurity and hunger in the state, researchers at the University of Missouri's Interdisciplinary Center for Food Security compiled county-level data to provide (1) a snapshot of the extent and depth of food insecurity and hunger (*which we refer to as "need" in this atlas*) and (2) an assessment of participation in programs intended to mediate food insecurity and hunger (*labeled as "performance" in this atlas*). With the cooperation of many public and private sector agencies and organizations, we identified appropriate variables or indicators that we could

use to measure hunger "need" and "performance" for each of Missouri's 114 counties and St. Louis City.

GOALS

- Raise Missourians' awareness of the extent and depth of food insecurity and hunger needs in their own locations and in other regions of the state;
- Increase Missourians' knowledge of the extent of the work of public programs and food banks in their regions and the success of these programs in reaching food insecure populations;
- Reveal geographic patterns, including regional and county-level differences, in hunger need and performance in our state;
- Provide measures of need and performance that can be updated on a periodic basis and compared to assess trends in need and performance variables; and,
- Help public and private decision-makers assess food insecurity need and program performance as a means for improving the delivery of human, technical, and fiscal resources to residents and regions requiring assistance.

This publication is consistently a "work in progress" in two senses. First, it is our plan to update the atlas every two or three years with the latest available information and increasingly validated measures of need and performance.

Second, we welcome comments and suggestions from readers and users of this atlas. Readers might identify different sets of indicators than those described here, for example, or might have creative ideas for more effective presentations of the findings. As our goal is to have this atlas used by diverse groups in Missouri and outside our state, we sincerely hope that dialogue about both our methods and results become part of wider discussions among all citizens, from those professionally involved in hunger programs to concerned residents of our state.

Reading the Atlas

County Tables, and State Maps

This atlas presents information on indicators that measure both food insecurity and hunger need, and program success in meeting citizen needs. We have identified seven indicators related to “need” and sixteen measures of “performance.” Depending on the variable, our measures focus on the 2010 or 2011 calendar year, or the state fiscal year 2012 (July 1, 2011 - June 30, 2012). In the county pages which make up the bulk of this report, readers will find county-level information on (A) demographic, health, and economic indicators, (B) need indicators, and (C) performance indicators.

The next few pages of this atlas provide an overview of these three categories, as well as important information on how to read the county tables. This section also includes information on how to read the state maps included in this atlas.

County Profile Indicators

At the bottom of each county page are three types of indicators: demographic, health, and economic. These give readers a general profile of the county context. We present health variables due to the close correlations between food security, diet, and health status. Within the economic indicators are included three poverty measures as poverty is the best predictor of food insecurity in the United States. Median household income, unemployment rate, percent of female headed households, and food affordability are additional measures of economic well-being included among profile indicators.

Need and Performance Indicators

The purpose of the “Need Indicators” is to provide measures of the extent of food insecurity and hunger in each Missouri County. The “Performance Indicators” provide county-level measures of the extent to which residents are participating in public and private programs intended to help residents cope with food insecurity. Knowing county needs, we can examine the success of programs established to address those needs.

How to read the Need and Performance Indicator Tables

The left side of each table provides information on seven indicators of food insecurity and hunger need. Four columns of information are presented for each variable. To demonstrate how to read this information, here is the first need indicator, percent of households food uncertain, for Adair County (see Page 30):

NEED INDICATORS	COUNTY	TREND	STATE	RANK
Food Uncertainty				
% Households Food Uncertain	15.92	--	13.88	VERY HIGH

- The *first column*, “County,” reports the result for the county on this indicator; in this case, 15.92 percent of Adair County’s total population is food uncertain.
- The *second column*, “Trend,” shows whether the county’s level has increased (↑) decreased (↓) or stayed the same (-). The trend period, usually three or five years, is defined for each variable in the next section. If an increase or decrease is shown, this means a growth or decline of 5 percent or more over the trend period. In our example, the Adair County rate has neither increased nor decreased at least 5 percent over the past three years.

- The *third column*, “State,” shows the average across all counties and St. Louis City for the indicator, in this case 13.88 percent.
- The *fourth column* is labeled “Rank.” This last column indicates the county’s rank in comparison with all other Missouri counties and St. Louis City. Individual county results are normally divided into five quintiles to reveal if a county’s need or performance is in the top 20%, second highest 20%, and so on. The labels under “county rank” indicate the following groups:

- Very High: 80th to 100th percentile
- High: 60th to 79th percentile
- Average: 40th to 59th percentile
- Low: 20th to 39th percentile
- Very Low: 1st-19th percentile

The example on page 30 shows the level in Adair County, in comparison to other counties, is in the highest quintile of percent of households that are food uncertain.

The reader will find the designation “NA” where data is not available or appropriate to report.

State Maps

For some indicators of hunger need and performance we provide maps to visually show patterns among Missouri's 114 counties and St. Louis City. The maps allow the reader to quickly note the rankings of all counties in the state.

Each map divides the state into five equal fifths, or quintiles, according to the complete results for the measure. A quintile includes one-fifth, or 23, of the counties in the state.

The quintiles on each need and performance indicator map are arranged from very low (the 23 counties with lowest need or performance on that measure) to very high (the 23 counties with highest need or performance). For example the percent of households food uncertain in the county ranges from a state low of 8.19 percent (Ralls County) to a high of 23.83 percent (Pemiscot County). To make the state map of Food Uncertainty for the total population for example, the 23 counties with the lowest levels of food uncertainty (8.19 – 11.56 percent) are in the first, or lowest need, quintile. The second quintile includes the 23 counties next lowest in levels of food uncertainty, with rates from 11.58 to 12.75 percent. This pattern continues to the fifth quintile or highest need group, which includes 23 counties with food uncertainty rates from 15.5 to 23.83 percent.

Final Notes

This atlas emphasizes percentages rather than absolute numbers. In other words, most of our indicators reveal the percentage of a county's population that is, for example, food uncertain, or eligible for a particular program. With this

approach, we are able to compare need and performance measures between counties with different population numbers. However, we should remind readers that emphasizing percentages and comparatively assessing need and performance percentages between counties could cloak important differences in the absolute numbers of people affected by any single variables. The large proportion of people in Missouri's highest populated counties, for example St. Louis City, St. Louis County and Jackson County, means that the number, rather than level, of people who are food insecure, eligible for a program or participating in a program are almost always highest in these regions. St. Louis City, for example, appears to be doing well in participation rates for specific programs and has a higher participation rate than many other counties with lower numbers of eligible participants. However, a participation rate of 80% in a highly-populated county may mean that more people remain nonparticipants than in a county with a lower population and 70% participation rate. Similarly, a rate of eligibility for a program may be lower in a highly populated county than a less populated area, but there may well be more individuals eligible in the former county due to the high number of residents.

The next three sections of the report present the indicators readers will find on the county pages. These are the county profile, need, and performance indicators. We present the name of each indicator, how it is measured, and the source of our data. We also provide state maps of selected indicators as well as information on some of the key programs in Missouri to address food insecurity and hunger.

County Profile Indicators

Demographic

Total Population

Number of people of all ages living in the county in 2011.

Source: U.S. Census Bureau

Population Under 18 Years

Percent of population in county under 18 years of age in

2011. Source: U.S. Census Bureau

Population Over 64 Years

Percent of population in county 65 years of age and older in

2011. Source: U.S. Census Bureau

Health

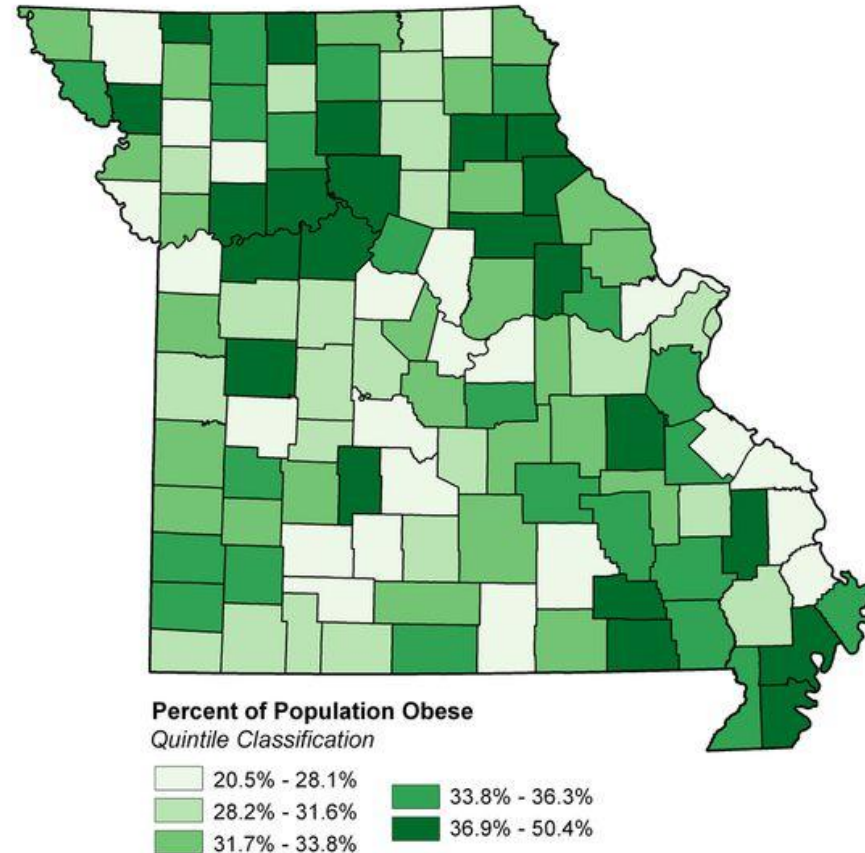
Obesity (MAP)

Percent of the population 18 years of age and older in 2011 that is obese (Body Mass Index equal to or greater than 30).

Source: Behavioral Risk Factor Surveillance Survey, Missouri Department of Health and Senior Services.

Prevalence of Obesity

Data Source: Missouri Department of Health and Senior Services, 2011



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Diabetes (MAP)

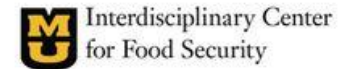
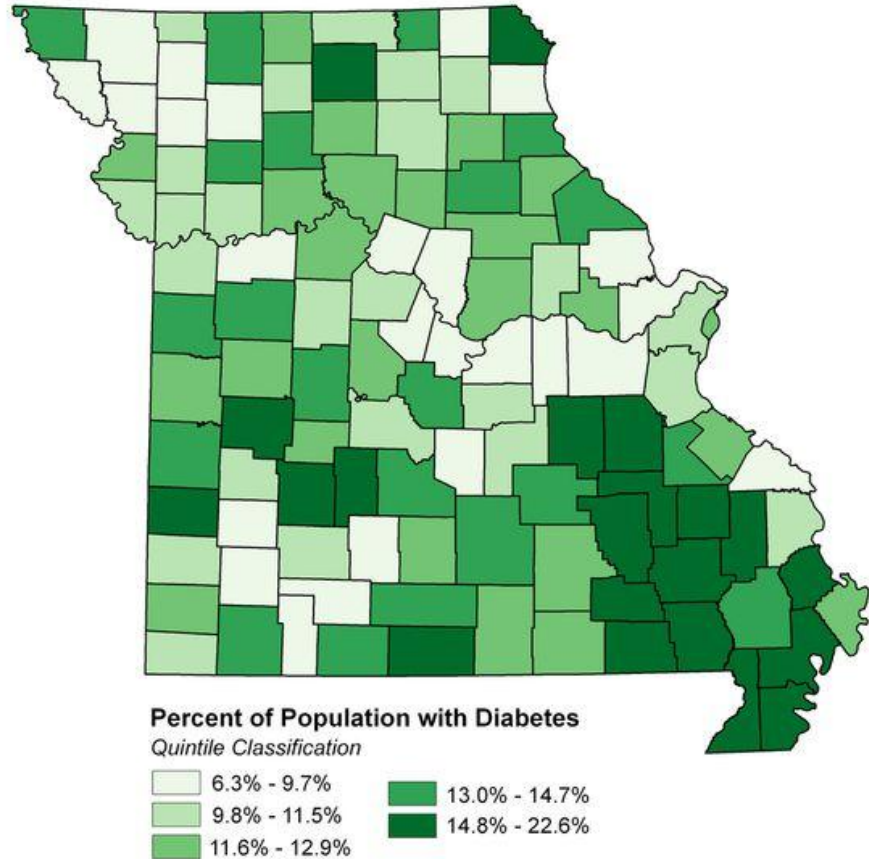
Percent of the population 18 years of age and older in 2011 that has had their blood glucose levels checked by a health professional and been told that they have diabetes. *Source: Behavioral Risk Factor Surveillance Survey, Missouri Department of Health and Senior Services.*

Hypertension

Percent of the population 18 years of age and older in 2011 that has been told by a doctor, nurse, or other health professional that they have high blood pressure. *Source: Behavioral Risk Factor Surveillance Survey, Missouri Department of Health and Senior Services.*

Prevalence of Diabetes

Data Source: Missouri Department of Health and Senior Services, 2011



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Economic Indicators

Population Below Poverty (MAP)

Percent of the county's total population living at or below 100 percent of the poverty rate in 2010. *Source: U.S. Census Bureau Small Area Income and Poverty Estimates*

Under 18 years below poverty

Percent of the county's population under 18 years of age living at or below 100 percent of the poverty rate in 2010. *Source: U.S. Census Bureau Small Area Income and Poverty Estimates*

Over 64 years below poverty

Percent of the county's population 65 years of age or older living at or below 100 percent of the poverty rate in 2010. *Source: U.S. Census Bureau Small Area Income and Poverty Estimates*

Median Household Income

Average household income in county in 2010. *Source: U.S. Census Bureau Small Area Income and Poverty Estimates*

Unemployment Rate

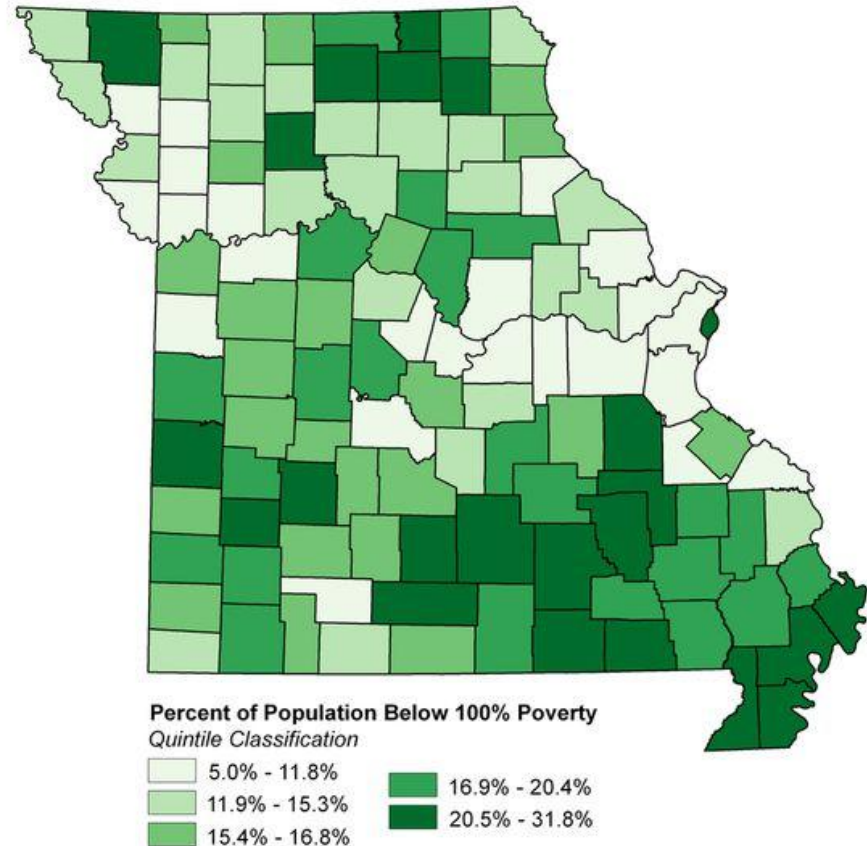
A county's average unemployment rate over 2010. *Source: U.S. Bureau of Labor Statistics*

Female Headed Households

The percent of households in a county headed by a female not currently married or living with her spouse in 2010. *Source: American Community Survey data modeled by Office of Social and Economic Data Analysis (MU)*

Population Below Poverty

Data Source: US Census Bureau Small Area Income and Poverty Estimates, 2010



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Food Affordability (NEW) (MAP)

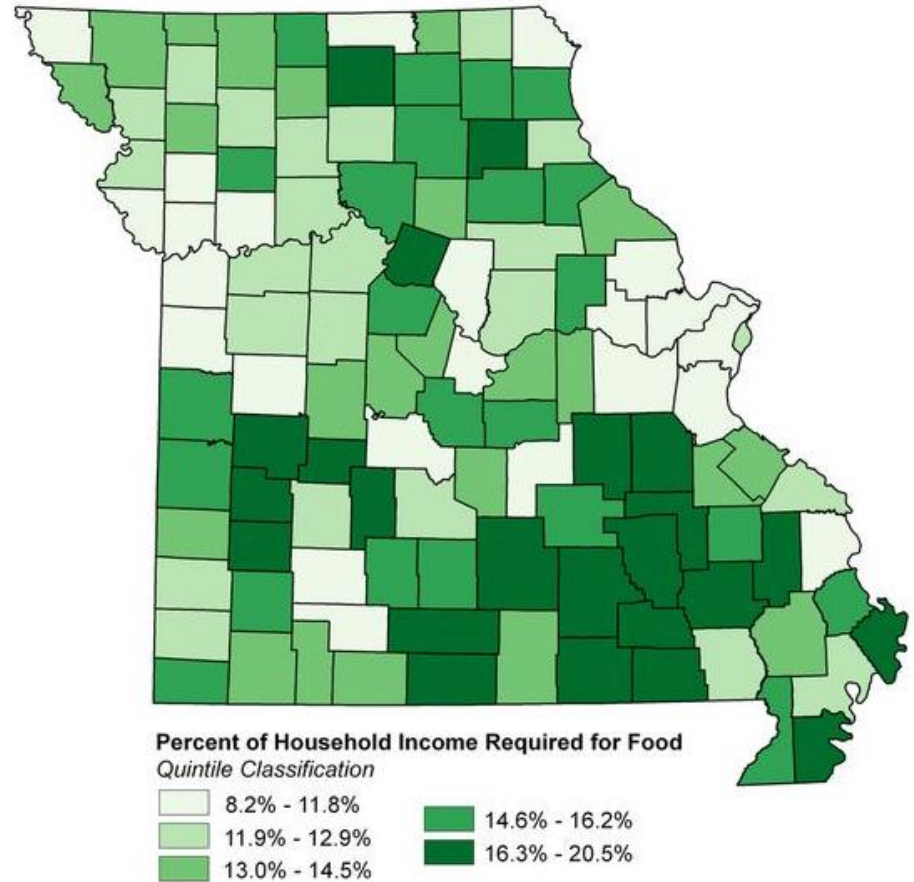
An estimate of the percent of income required each week by households in 2010 to meet average expenditures on food for that county. This indicator was calculated using the average weekly median household income and the average cost of meals as calculated by Feeding America.


Sources: 2006-2010 American Community Survey, U.S. Census Quick Facts, Feeding America's Map the Meal Gap

In order to better understand the context of rising food insecurity in Missouri a new economic indicator, food affordability, has been introduced in this edition of the Missouri Hunger Atlas. The percent of income needed to meet basic household food needs is an important determining factor in the quantity, quality, and types of food families purchase because low-income households often have to make tough choices about how to spend their money, which may ultimately lead to smaller amounts of household funds available for food expenditures. Higher food costs significantly limit household food choices. The food affordability indicator is a county-level estimate of the percent of income required for food each week. It was calculated using the median household income divided by the average household size and then divided by 52 to obtain the average weekly median household income. The average costs of meals, obtained from Feeding America, were multiplied by 21 meals each week, assuming three meals each day. This number was then divided by the average weekly median household income and multiplied by 100 to obtain a percent of weekly income used to purchase food.

Food Affordability

Data Sources: Feeding America, 2010; US Census Bureau, Small Area Income and Poverty Estimates, 2010



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Need Indicators

Food Uncertainty

Households Food Uncertain (MAP)

Estimated percent of the total households food uncertain in 2010 in a county, based on modeling of variables related to citizenship, age, mobility, race, female headed households, poverty, median household income, and unemployment. For more information on the modeling, please contact atlas authors. *Sources: American Community Survey, US Census Bureau, Bureau of Labor Statistics, USDA, and Small Area Income and Poverty Estimates.*

NOTE: Our use of food “uncertain” is not coterminous with the USDA’s use of food “insecure.” Because there is no empirical count of county-level food insecurity by the government, we model a roughly equivalent, but not identical measure, of “uncertainty.”

Households with Children Food Uncertain (MAP)

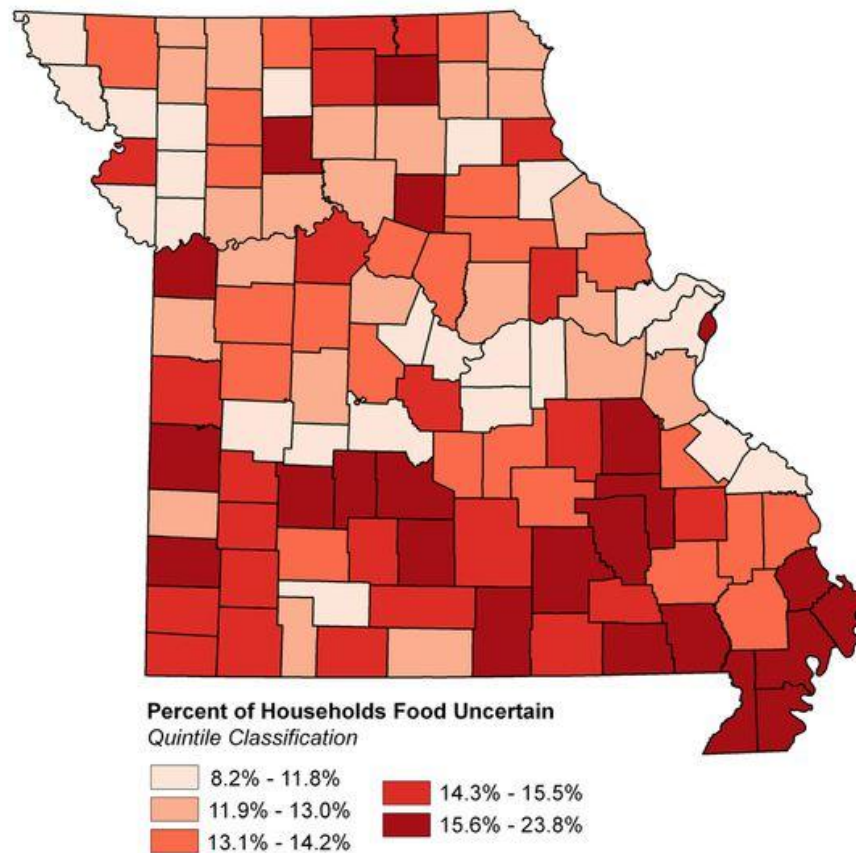
Estimated percent of the total households with children under the age of 18 food uncertain in 2010 in county, based on methods, variables and sources described above. *Sources: American Community Survey, US Census Bureau, Bureau of Labor Statistics, USDA, and Small Area Income and Poverty Estimates.*


Households Food Uncertain with Hunger (MAP)

Estimated percent of the total households food uncertain with hunger in 2010 in county, based on methods, variables and sources described above for “Households food uncertain.” *Sources: American Community Survey, US Census Bureau, Bureau of Labor Statistics, USDA, and Small Area Income and Poverty Estimates.*

Food Uncertainty

Data Sources: US Census Bureau, American Community Survey and Small Area Income and Poverty Estimates, 2010;
US Department of Labor, Bureau of Labor Statistics, 2010

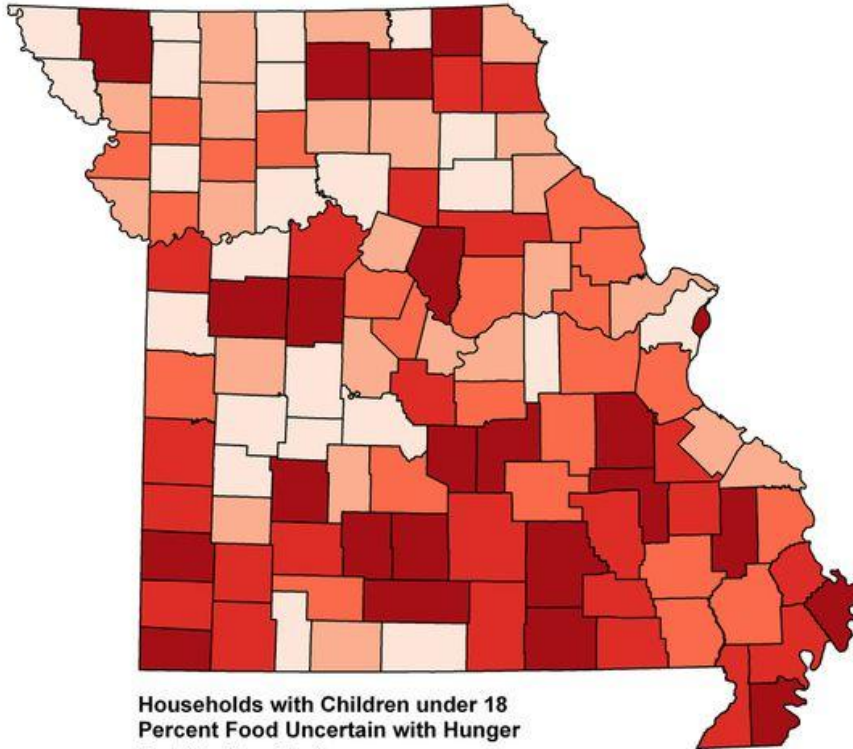


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Food Uncertainty Households with Children Under 18

Data Source: US Census Bureau, American Community Survey and
Small Area Income and Poverty Estimates, 2010
US Department of Labor, Bureau of Labor Statistics, 2010

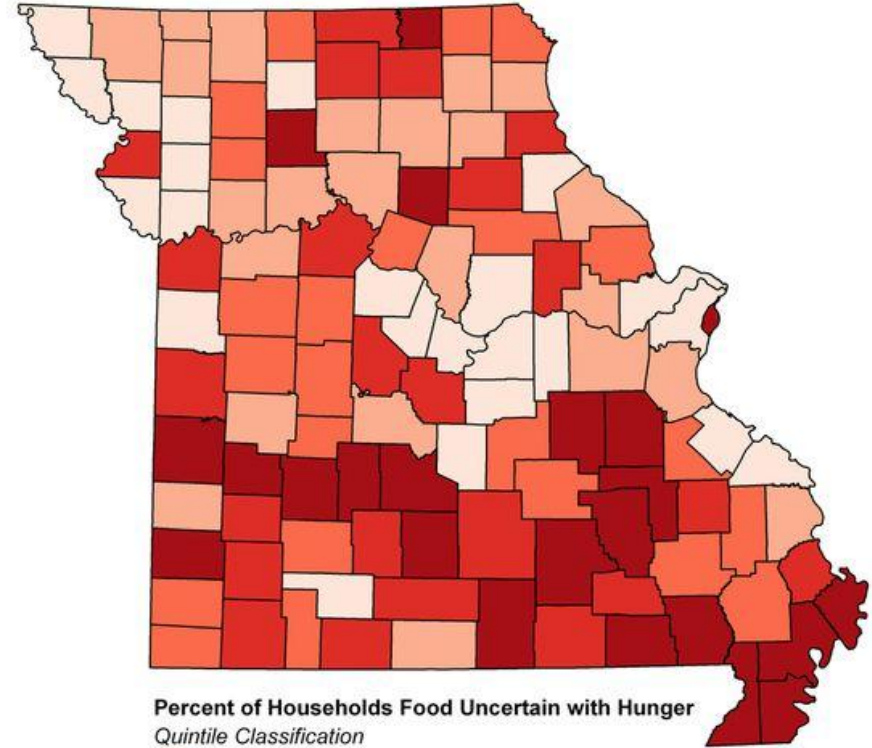


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Food Uncertainty with Hunger

Data Source: US Census Bureau, American Community Survey and
Small Area Income and Poverty Estimates, 2010
US Department of Labor, Bureau of Labor Statistics, 2010



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SNAP (Food Stamp) Program

Percent Total Population Income Eligible (MAP)

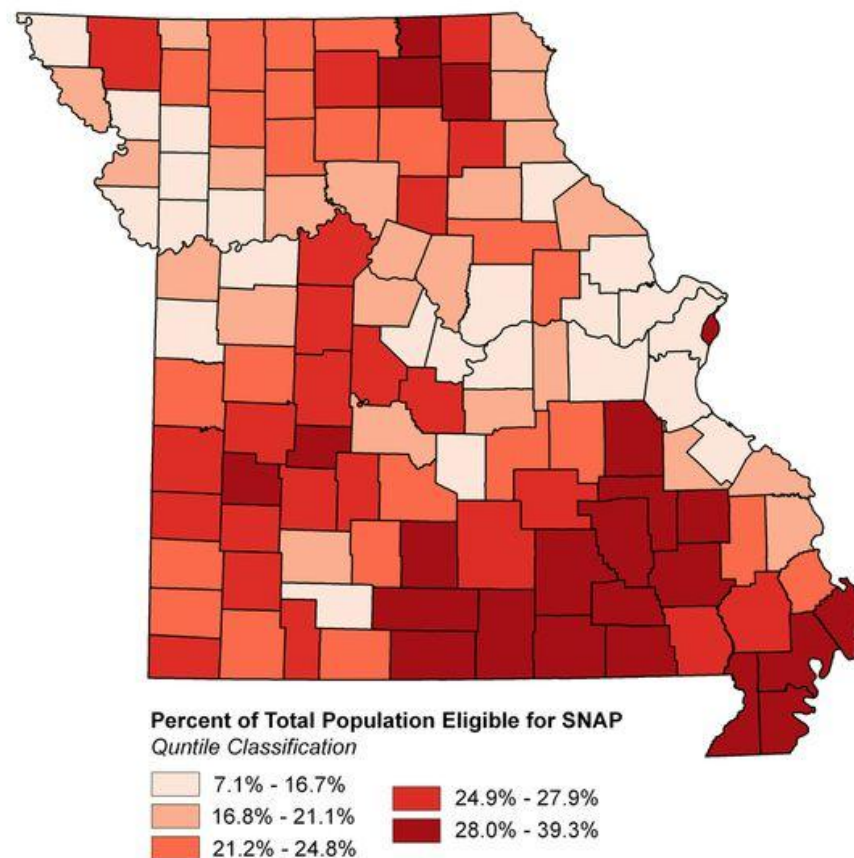
Estimated percent of total population income eligible for participation in the Supplemental Nutrition Assistance Program (formerly Food Stamps Program) in 2011. Income is the primary eligibility requirement; the formula begins by considering all households earning less than 130% of the poverty threshold². *Source: American Community Survey, for some counties modeled by Office of Social and Economic Data Analysis (MU).*

SNAP (FOOD STAMP) PROGRAM	
MISSION	To improve the diets of low-income households by increasing food access and food purchasing ability
CONSTITUENCIES	All ages
ELIGIBILITY	Primarily household-level income \leq 130 percent of poverty levels plus restrictions based on immigrant status in U.S. and household asset levels
RESOURCES PROVIDED	Direct food payments using an Electronic Benefit Transfer card
STATE LEAD	Missouri Department of Social Services, Family Support Division

² The program has other eligibility requirements that modify the number of households eligible. Although there are various ways to estimate these additional restrictions, the data needed to approximate these adjustments are not currently available at the county level.

SNAP (Food Stamp) Eligibility

Data Source: US Census Bureau, American Community Survey, 2011



Percent Under 18 Years Income Eligible (SNAP)

Estimated percent of total population less than 18 years of age income eligible for participation in the Food Stamps Program in 2011. Income eligibility is the primary eligibility requirement of the Food Stamp Program, a formula which starts by considering all households earning less than 130% of the poverty threshold. *Source: American Community Survey, for some counties modeled by Office of Social and Economic Data Analysis (MU).*

SNAP variable trends based on comparison of 2008 and 2011.

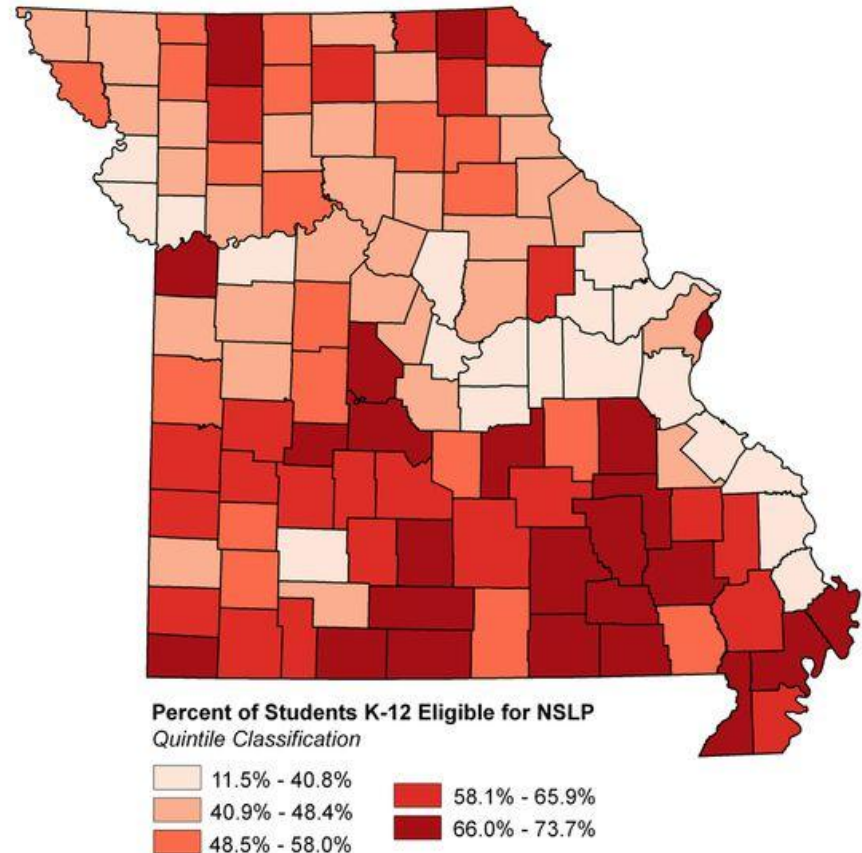
National School Lunch Program


Percent of K-12 Students Eligible

Percent of students enrolled in the county's public and private schools eligible for free or reduced price lunches in the National School Lunch Program in October of the 2010-2011 school year. Trend is based on comparison of eligibility in the 2008-2009 and 2011-2012 school years. Only schools participating in the program are included in the data. *Source: Department of Elementary and Secondary Education.*

National School Lunch Program (NSLP) Eligibility

*Data Source: Missouri Department of Elementary & Secondary Education
2011-2012 School Year*



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Women, Infants and Children Program

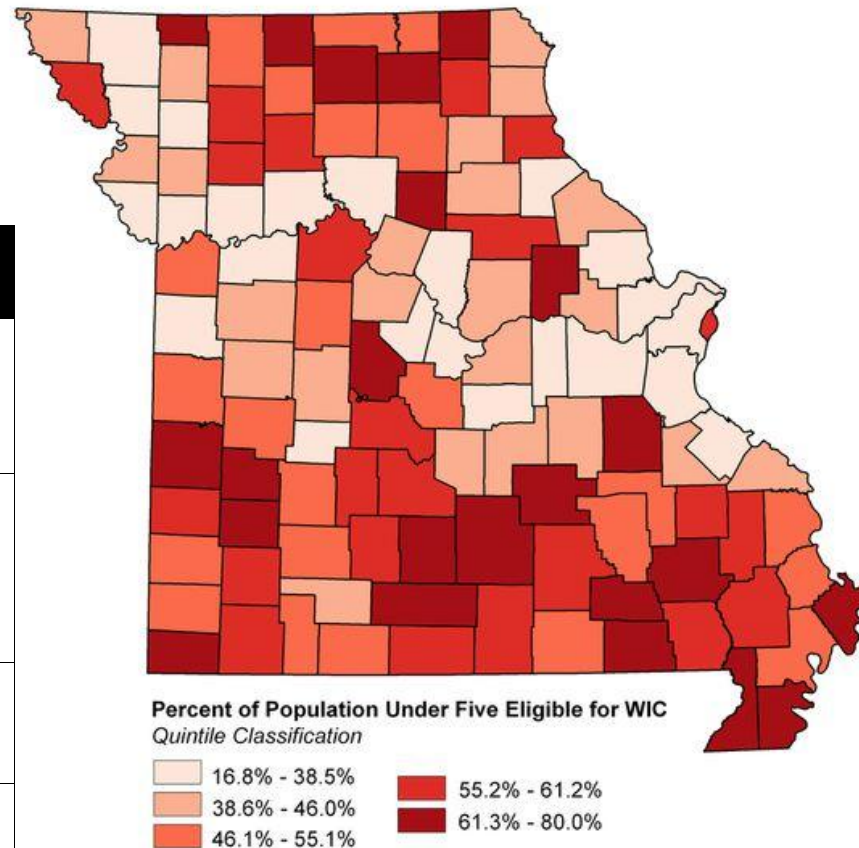
Percent of Children Under 5 Income Eligible

Percent of total infants and children under 5 years of age in the county eligible to receive WIC benefits in 2011. Trend is based on comparison of percent eligible in 2008 and 2011. *Source: American Community Survey, for some counties modeled by Office of Social and Economic Data Analysis (MU).*

WOMEN INFANTS AND CHILDREN PROGRAM	
MISSION	To safeguard the health of low-income women, and infants and children younger than 5 years who are at nutritional risk
CONSTITUENCIES	Pregnant women, nonbreastfeeding women up to 6 months postpartum, breastfeeding women up to one year postpartum, infants, and children up to fifth birthday
ELIGIBILITY	Categorical, residential, income and nutrition risk eligibility requirements. \leq 185 percent of federal poverty level
RESOURCES PROVIDED	Food, nutrition education, and referrals to health care and social service providers
STATE LEAD	Missouri Department of Health and Senior Services

WIC Eligibility, Population Under Five

Data Source: US Census Bureau, American Community Survey, 2010



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Overall Need Rank

The overall need rank is a single composite measure of food insecurity needs for each county. While seven need indicators are listed in each county table, we chose four of these to establish a composite measure of need. The four variables, which include overall measures of food uncertainty as well as county-level eligibility for participation in the primary public food assistance programs, are:

Percent of Population Food Uncertain – percent of total population that is food uncertain in 2010

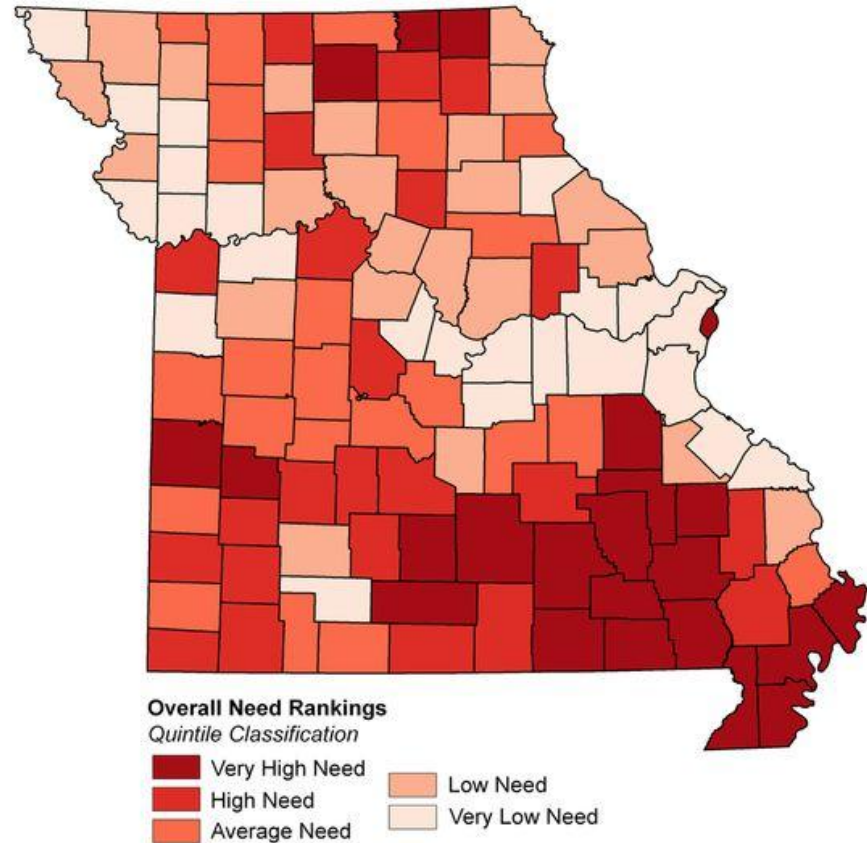
Percent of Total Population Eligible for SNAP/Food Stamps – percent of county residents eligible for SNAP/food stamps in 2011

Percent of K-12 School Enrollment Eligible for Free or Reduced Lunches (NSLP) – percent of K-12 students enrolled in schools (public and private) eligible for free and reduced lunches in the National School Lunch Program during the 2011-2012 school year

Percent of Population Under 5 WIC Eligible – percent of infants and children under 5 years of age in the county eligible to receive WIC benefits in 2011

Overall Need Rankings

Calculated From 2013 Hunger Atlas Data



Beginning with the individual county rankings for food uncertainty, SNAP eligibility, NSLP eligibility, and WIC under 5 eligibility, we use two steps to establish a county's overall need rank. First, we combined the four variable ranks to establish a composite score. Rather than use a simple average of the four variable ranks, we assigned a weight to each rank in the construction of the composite score.

ranks as the 28th highest in the state, which places the county in the second highest quintile (labeled “high”) for Missouri.

In brief, the weighting model we use assigns

- 30 percent of the composite score to each of the measures of
 - Percent of households food uncertain and
 - Percent of total population eligible for Food Stamps;
- 20 percent of the composite score to both
 - Percent of K-12 school enrollment eligible for NSLP and
 - Under 5 years eligible for WIC.

For example, Adair County had ranks of 17, 19, 91, and 22 for these four variables. The county's composite score, based on the weighted model and rounded off to the nearest whole number, is 33. The second step of the process is an overall state ranking of the composite scores in which the composite scores of the 115 locations are compared to each other. In keeping with our ranking scale, in which 1=highest need and 115=lowest need, the county with the lowest numerical composite score is assigned 1 in the overall need ranking, which suggest the highest overall need in that county. Similarly, the county with the highest composite score is assigned number 115, which signifies the lowest average need. In the case of Adair County, the composite score of 33

Performance Indicators

SNAP (Food Stamp Program) Participation

Average Number of Monthly Participants

Average number of total county residents who used food stamps each month in Missouri FY2012 (July 1, 2011 – June 30, 2012). *Source: Missouri Department of Social Services*

Percent of Total Population Using SNAP

Average percent of total county population that used food stamps each month in FY2012. *Source: Missouri Department of Social Services and U.S. Census Bureau*

Percent of Eligible Population Participating (MAP)

Percent of county residents eligible for food stamps in FY2012 who participated in the program. *Sources: Missouri Department of Social Services and American Community Survey, for some counties modeled by Office of Social and Economic Data Analysis (MU).*

Number of Monthly Participants Under 18 Years

Average number of county residents < 18 years of age who used food stamps each month in FY2012.

Source: Missouri Department of Social Services and Missouri Census Data Center

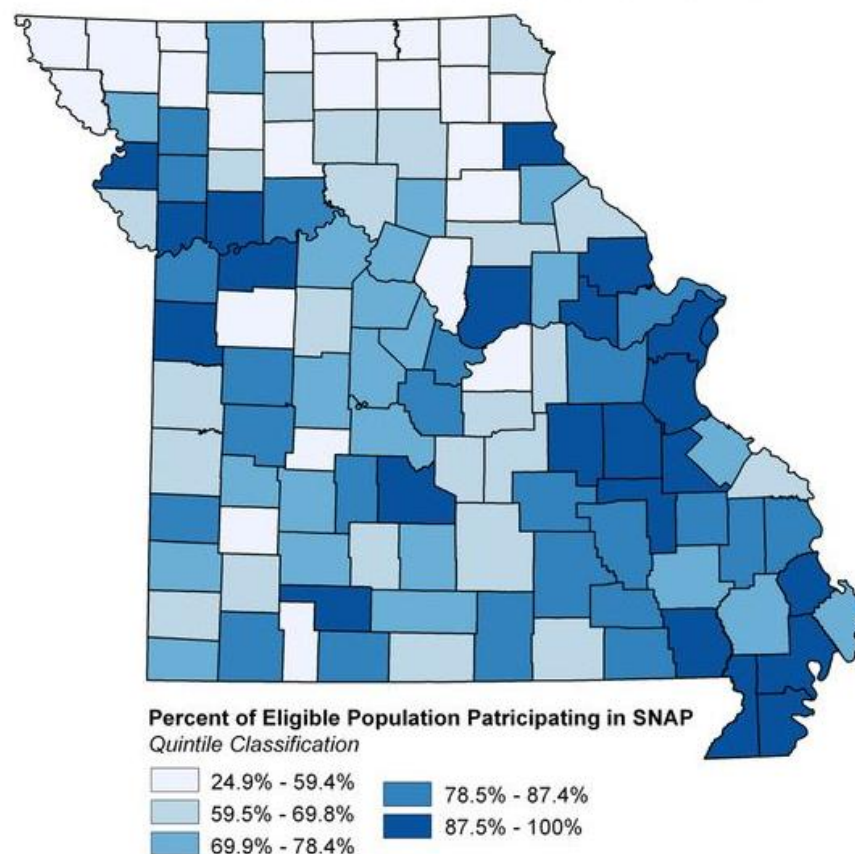
Percent of Under 18 Population Participating

Average percent of county population under 18 years of age that used food stamps each month in FY2012.

Sources: Missouri Department of Social Services and U.S. Census Bureau

Percent of Eligible Population Participating in SNAP (Food Stamps)

*Data Sources: Missouri Department of Social Services, 2011
US Census Bureau, Office of Social & Economic Data Analysis, 2011*



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Average Monthly Benefits

Average value of food stamp benefits each month for FY2012. Sources: Missouri Department of Social Services and U.S. Bureau of Economic Analysis

All SNAP participation trends based on comparison of figures for FY2009 and FY2012.

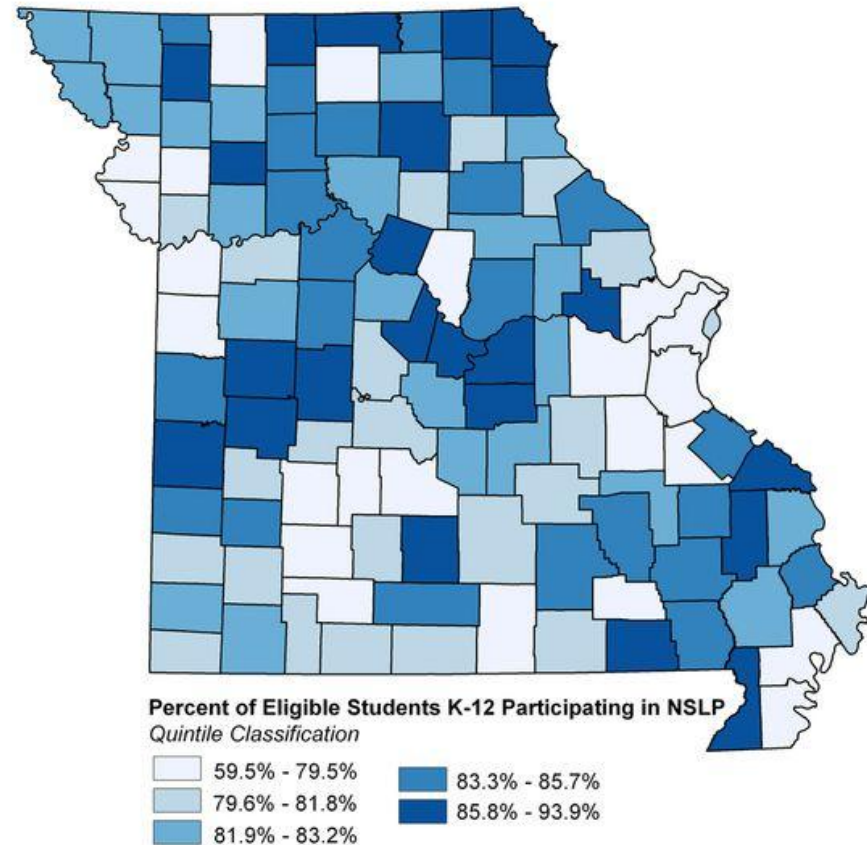
National School Lunch Program Participation

Percent Eligible and Participating (MAP)

Percent of students eligible for free or reduced lunches who participated in the program in October, 2011. Trend is based on comparison of participation rates in 2008-2009 and 2011-2012. Source: Missouri Department of Elementary and Secondary Education

Percent of Eligible Students K-12 Participating in NSLP

Data Sources: Missouri Department of Elementary & Secondary Education
2011-2012 School Year



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Women, Infants and Children Program

Number of Monthly Participants

Average monthly number of women, infants and children enrolled in program during FY2012. *Source: Missouri Department of Health and Senior Services*

Number Monthly Infants and Children

Average monthly number of infants and children enrolled in program during FY2012. *Source: Missouri Department of Health and Senior Services*

Percent of Eligible Population Under 5 Participating

(MAP) Percent of infants and children under 5 years of age in the county receiving WIC benefits per month in FY2012. *Source: Missouri Department of Health and Senior Services and American Community Survey, for some counties modeled by Office of Social and Economic Data Analysis (MU)*

Trends for all WIC variables based on comparison of figures for FY2009 and FY2012

Summer Food Service Program

Number of Sites

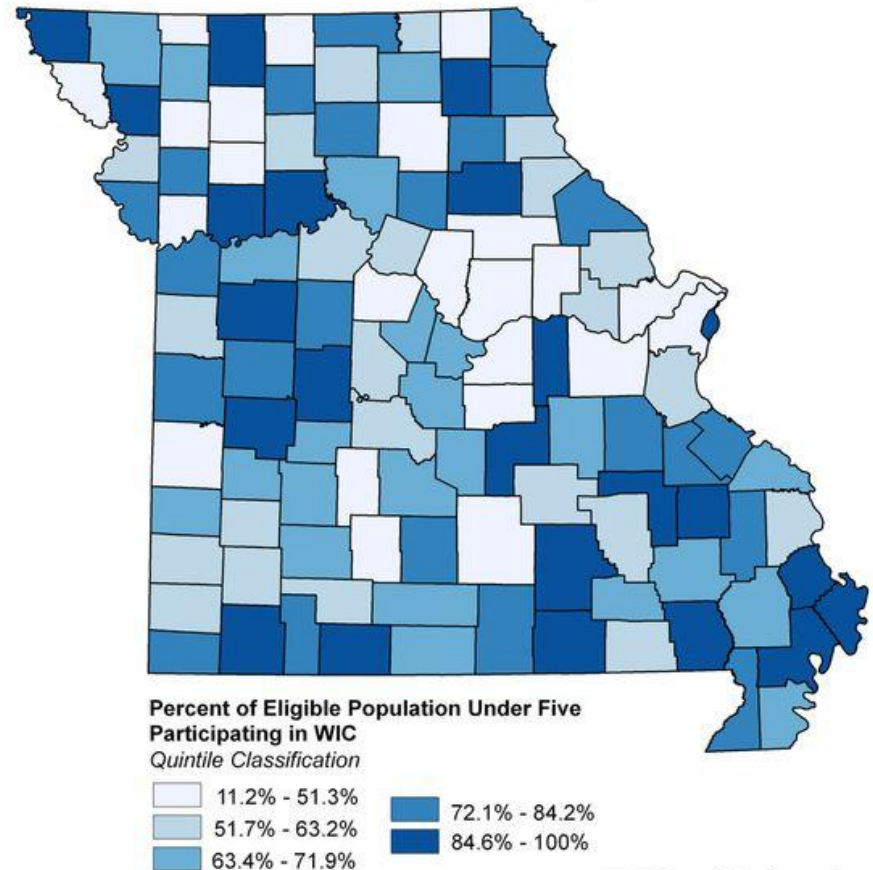
Number of locations in county participating in 2011. Trend is based on comparison of reimbursements in 2009 and 2011. *Source: Missouri Department of Health and Senior Services*


Total Reimbursements

Total reimbursements to county for 2011 programs. Trend is based on comparison of reimbursements in 2009 and 2011. *Source: Missouri Department of Health and Senior Services*

Percent of Eligible Population Under Five Participating in WIC

Data Sources: US Census, American Community Survey, 2011
Missouri Department of Health and Senior Services
Office of Social and Economic Data Analysis, 2011



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Child & Adult Care Food Program

Total Reimbursements

Total amount of funds reimbursed in 2011 to child and adult care facilities in county. Trend is based on comparison of reimbursements in 2009 and 2011.

Source: Missouri Department of Health and Senior Services

Food Bank Distributions

Total Pounds in County

Total amount of pounds of food (including USDA commodity foods) distributed from regional food banks to food pantries in the county during 2012. *Source: Central Missouri Food Bank, Harvesters: The Community Food Network, Ozarks Food Harvest, Saint Louis Area Food Bank, Second Harvest Community Food Bank, Southeast Missouri Food Bank*

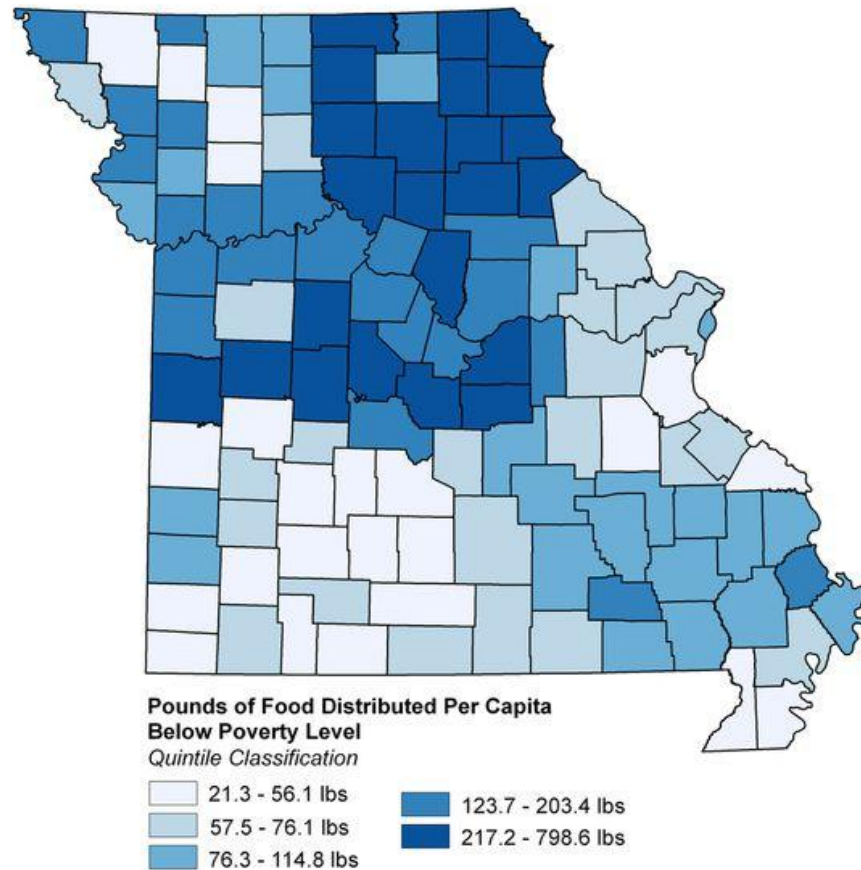
Pounds of Food Distributed per Capita Below Poverty Level (MAP)


Number of pounds of food distributed per capita of individuals with income below 100 percent of the poverty level to food pantries in the county by regional food banks in 2012. Trend based on comparison of 2009 and 2011.

Source: Central Missouri Food Bank, Harvesters: The Community Food Network, Ozarks Food Harvest, Saint Louis Area Food Bank, Second Harvest Community Food Bank, Southeast Missouri Food Bank and U.S. Census Bureau Small Area Income and Poverty Estimates

Pounds of Food Distributed by Food Banks Per Capita Below Poverty Level

*Data Sources: Regional Food Banks of Missouri, 2011
US Census Bureau, 2011*



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Overall Performance Rank

We constructed an overall performance rank for each county. We selected four indicators (from the 15 performance measures included for each county) to establish a composite measure of performance. The four variables include participation rates for three primary public programs and one measure of private program activity:

Percent of eligible residents who received food stamps – estimated percent of total population with incomes at 130% or less than federal poverty thresholds who participated in this program in FY2012

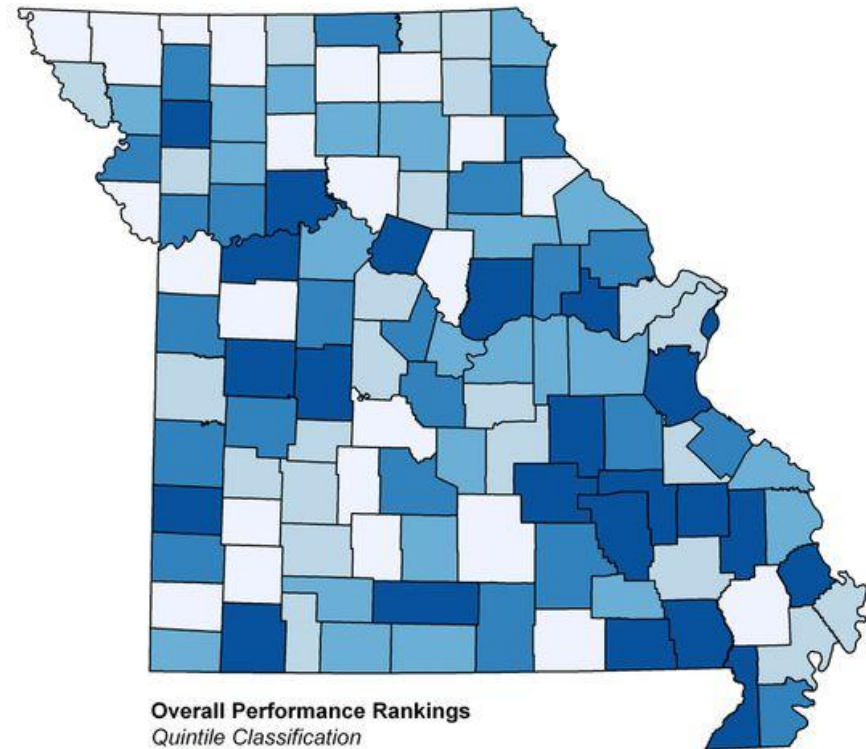
Percent of eligible students who received free or reduced lunches – percent of students eligible for free or reduced lunches who participated in the program in October 2010

Percent of income eligible infants and children receiving WIC benefits – percent of income eligible infants and children under 5 years of age in 2012 who were enrolled in the Special Supplemental Nutrition Program for Women, Infants and Children

Pounds of food distributed per capita < 100% poverty – Number of pounds of food per capita under 100 percent poverty level in the county distributed by the regional food banks in 2012

Overall Performance Rankings

Calculated From 2013 Hunger Atlas Data



Overall Performance Rankings
Quintile Classification



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We use the individual county rankings for SNAP participation, NSLP participation, WIC participation, and pounds of food distributed per capita below 100% poverty level to establish a composite rank score. As with the overall need ranks, rather than use a simple average of the four variable ranks, we assigned a weight to each rank in constructing the composite rank score.

In brief, the weighting model we used assigns

- 35 percent of the composite rank to the measure of
 - SNAP (Food Stamp) participation as percent of total population eligible;
- 25 percent each to the variables of
 - NSLP participation as a percent of total school population eligible and
 - WIC participation as percent of the eligible under 5 years old population; and,
- 15 percent to
 - regional food bank distributions to the county in terms of pounds per capita of food insecure individuals.

We place the most weight on the Food Stamps variable as this program is by far the most extensive in the state and addresses all age groups. We place lower emphasis on the food bank distributions because the food banks are only one source of supply for local food pantries and on-site meal providers and we have no comprehensive measure of total private assistance in the state. Again using Adair County for an example, the county had ranks of 106, 64, 64, and 48 respectively for these four variables. The county's composite

score, based on the weighted model and rounded off to the nearest whole number, is 77. The second step of the process is an overall state ranking of the composite performance scores in which the composite scores of the 115 locations are compared to each other. In keeping with our performance rank scale, where 1=highest performance and 115=lowest performance, the county with the best, or lowest, numerical composite score is assigned 1 in the overall performance rank, which suggest the highest overall performance in that county. Similarly, the county with the highest average composite score is assigned 115, which signifies the lowest overall performance. In the case of Adair County, the composite score of 77 ranks as the 98th highest in the state, and so it is ranked in the lowest, or —very low, quintile. The individual ranks for the four indicators, composite score and overall performance ranks for each county are in Appendix 2 of this atlas.

Comparing Need and Performance

Having compiled county-level composite ranks in the areas of food insecurity and hunger need and program performance, a final and useful step is to compare how each county ranks in terms of the combination of their ranks on need *and* performance. In essence, we can ask whether counties that have high need are doing comparatively well or comparatively poorly in addressing those needs. Counties with high needs that have high performance rankings, for example, are likely more successful in serving the needs of their food insecure populations while counties with high needs but low performance are potential target locations for increased public and private sector attention.

We used several steps to perform this analysis. First, we labeled counties as high need if their composite need rank fell in the upper two quintiles (very high or high) of need. We designated counties as low need if their composite need rank fell in the lowest two quintiles (low or very low) of need. Similarly, we labeled counties as high performance if their composite performance ranks fell in the upper two quintiles (very high or high) of performance. We designated counties as low performance if their composite performance ranks fell in the lowest two quintiles (low or very low) of performance. We did not include counties that scored in the average, or middle, quintile in either of these composite ranks in this analysis but they are included in the map.

The designation of counties as either high need or low need, and as either high performance or low performance offers the possibility of counties falling into one of four categories:

- (1) high need/high performance
- (2) high need/low performance
- (3) low need/high performance
- (4) low need/low performance

As shown in the map and table on the following pages, this analysis yielded some interesting results. Eighteen counties and St. Louis City have both high need and high performance. However, 23 counties were labeled high need and low performance. A significant change from the 2010 edition of this atlas was the transition from a majority of high need counties also being high performing to a majority being low performing. The fact that more than half of the counties with high need also rate low in performance suggests that services are not well provided or used in places that have the highest need for them. We have no way of knowing whether public and private agencies are having difficulty targeting resources to these high need counties, but trends reveal that recent economic conditions have taken their toll on Missouri counties. Most of these counties are located south of the Missouri River and a cluster is dispersed throughout the southwest quarter of the state. We note that many of the high need, high performing counties are concentrated adjacent to these high need, low performing counties, in the southeast quarter of the state. This could suggest focusing more individual attention on service delivery in these particular counties.

We found eighteen counties qualifying as low need and high performance. In these areas, the results suggest that service

providers are adequately handling food insecurity and hunger needs in their regions.

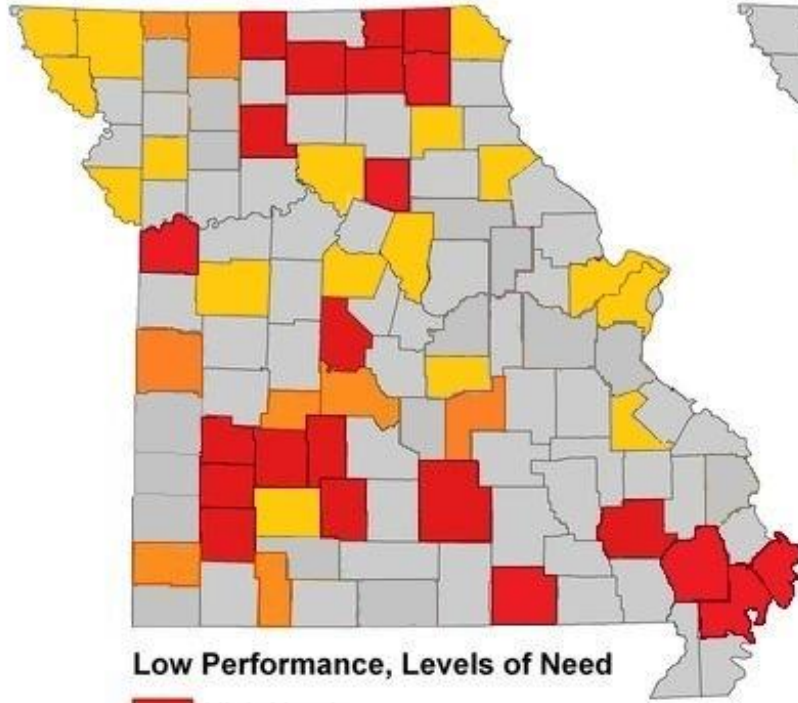
High Need/High Performance		High Need/Low Performance	
Barry	Madison	Adair	Oregon
Bollinger	Montgomery	Cedar	Polk
Butler	Pemiscot	Dade	Randolph
Dent	Reynolds	Dallas	Schuyler
Douglas	Ripley	Jackson	Scotland
Dunklin	Shannon	Knox	Stoddard
Howell	Vernon	Lawrence	Sullivan
Iron	Washington	Livingston	Texas
Jasper	St. Louis	Mercer	Vernon
Laclede	City	Mississippi	Wayne
		Morgan	Webster
		New Madrid	
Low Need/High Performance		Low Need/Low Performance	
Buchanan	Jefferson	Atchison	Maries
Callaway	Lafayette	Boone	Nodaway
Carroll	Lewis	Chariton	Platte
Cass	Lincoln	Clinton	Ralls
Clay	Moniteau	Cooper	Shelby
DeKalb	Monroe	Greene	St. Charles
Gasconade	Ray	Holt	St. Francois
Gentry	St.	Johnson	St. Louis
Howard	Genevieve		
	Warren		

At the other end of the spectrum are sixteen counties that have comparatively low percents of populations with hunger needs but are also doing comparatively worse in meeting the requirements of these populations. Many of these counties are in relatively affluent regions near all of Missouri’s major

cities. Although the percent in need is relatively low in these areas, in many cases the low percents denote relatively large numbers of people because the base populations are often quite high. In fact, four of the ten most populated counties in the state (St. Louis, St. Charles, Greene, and Boone) fall into this category.

While the Missouri Hunger Atlas cannot scientifically prove why these counties are subject to low performance, we can offer a couple of explanations that could be tested with more research. First, residents living in regions with high levels of need and visible public programs might experience less social shame or stigma as participants in public programs. If one lives in a region in which sizeable proportions of a population regularly participate in public programs, an individual or family’s choice to similarly participate would be in line with others’ decisions and be subject to less social angst or difference. On the other hand, residents of regions with high levels of social and economic inequality and smaller percentages of program participation might face social discomfort or ostracism related to participation. A student who is one of a limited number of persons qualifying for free lunches or a shopper who is one of a small group that separates items at a supermarket for WIC participation would be required to demonstrate a lower economic status in a public context in which such status contrasts with that of the majority. A second possible explanation is that public and private agencies have made logical decisions to focus scarce human, technical and financial resources in high-need areas. As a consequence, programs in low-need areas have a more difficult time conducting the type of outreach and education to attract high participation rates among eligible residents in their counties.

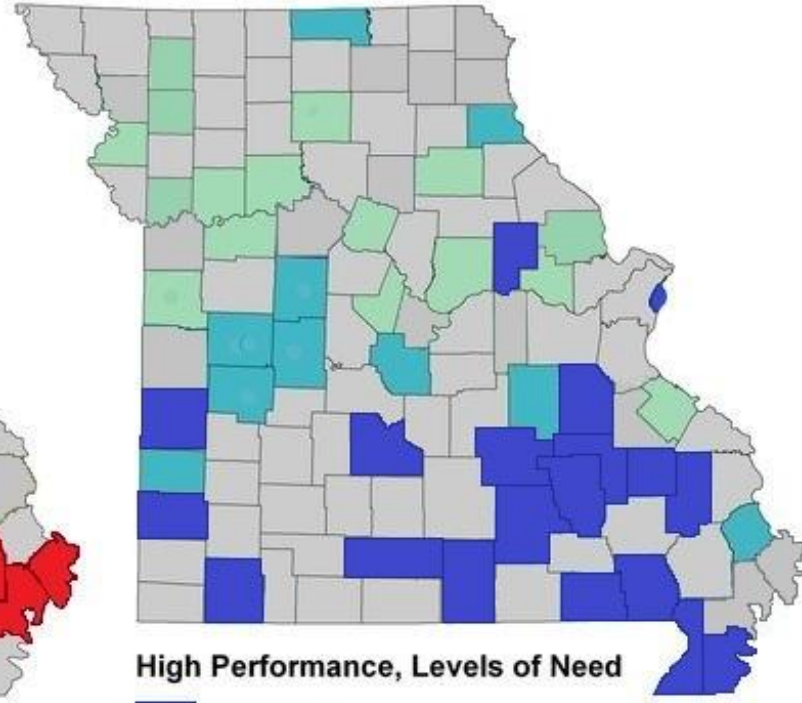
Low Performance Level of Need



Low Performance, Levels of Need

- High Need
- Average Need
- Low Need

High Performance Level of Need



High Performance, Levels of Need

- High Need
- Average Need
- Low Need

Concluding Remarks

Food insecurity and hunger are facts of life for far too many Missourians. The USDA's assessment that 16 percent of Missouri households were food insecure in 2011 applied to the mid-year estimated number of households (2,436,000) suggests that 389,760 households faced uncertainty in acquiring sufficient food for their household. Further, the USDA estimated that 6.7 percent of households in Missouri experienced very low food security (prior to 2007 labeled as —food insecure with hunger), or roughly 163,212 households. This translates into roughly 400,000 Missourians experiencing hunger. Regretfully, trends in food insecurity and hunger are not positive ones for our state, as current averages for both reflect a trend that has continuously increased over the first decade of this century.

The best predictor of food insecurity and hunger in Missouri, and throughout the United States, is poverty. Further, income level is typically the primary eligibility criteria for participation in all public food assistance programs. Thus economic, labor and income trends are most significant in the spatial distribution of need and program entitlement. The deterioration of the state (and national) economic picture over the past several years parallels our findings and suggests that residual economic fallout has had a negative impact on households' abilities to access food or resources.

Reports for food banks and pantries reveal continued increases in numbers of clients (at a time when USDA contributions through commodity and other programs are flat or decreasing). Participation in WIC, Food Stamps and other programs also continues to grow. For example, trends in

Food Stamp Program numbers almost always rise and fall following changes in unemployment rates, and US and Missouri levels of participation are both the highest in the history of the program. It follows from this that the most direct first step to alleviating hunger is to develop successful strategies for raising the income of the poor. Reversing poverty is more difficult, however, if not impossible, for individuals and households in which adult members are elderly or disabled or who, for various reasons, are unable to seek salaries and wages for food purchases.

The establishment of public and private programs and activities is a necessary safety net response to meeting the short-term needs of the food insecure and hungry citizens who inhabit every county and corner of our state. These programs do not provide a long-term solution to the factors that lead to hunger, but they are critical to ameliorating the day-to-day struggles of hundreds of thousands of Missourians. Well over 1.4 billion dollars was spent in this state in 2012 to help people have enough to eat, and hopefully enough nutritious food to lead healthy and active lives.

It is not our goal to editorialize on whether or not public and private support for food assistance programs is too high or too low. Certainly we know that the 1.4 billion dollar figure underestimates the costs of this social problem in at least three important ways.

- The programs included in this atlas are not comprehensive of the financial and human resources being brought to bear on hunger and food insecurity. It is especially difficult to comprehensively document contributions from the private sector. While food

banks, for example, contribute over 90 million pounds a year to food pantries and other facilities, many of these locations rely on food banks for only a portion of the food they provide to clients. And certainly there are hundreds, if not thousands, of faith-based organizations, civic groups, and other organizations that provide food for residents who need help without using food banks at all.

- The financial numbers presented here do not include the administrative and organizational costs of operating these programs. We document the amount of benefits provided through SNAP (Food Stamp Program) and the reimbursements given to schools for NSLP (free and reduced lunches); however, we do not include the hundreds of positions at state agencies and in county governments that are necessary to operate these efforts, monitor participation, solicit and evaluate perspective participants, and to conduct the dozens of other tasks necessary for their operation.
- Most significantly, the costs of food insecurity and hunger are critically underestimated if these are understood solely as the costs of providing assistance directly related to the acquisition of sufficient amounts of food. The cost of hunger extends far beyond the cost of having food. The costs of hunger should properly include the health care costs incurred because children and adults are more susceptible to, and recover more slowly from, disease and illness. It should include the healthcare costs for the management of chronic diseases, such as diabetes and hypertension, which are brought on in part by the

reliance on high calorie, high fat and low nutrient-dense foods. The costs of hunger extend to the costs of lower work productivity and missed days of work. And the costs of hunger include the social and psychological angst of not having sufficient and nutritious foods and the mental stress and discord that results for individuals and households. As much as poverty is a leading cause of food insecurity, so too are food insecurity and hunger leading causes of continued poverty.

Importantly, the figures on food insecurity and hunger in Missouri remain high, and are not declining in spite of the myriad of mostly federally-originated public programs and locally-initiated private programs. Food insecurity and hunger continue to affect all regions of the state. Generally, one can point to larger proportions of counties with high need in the southern half of the state, but needs are also high in counties near the Iowa border in north central and northeast regions, and in St. Louis City. In general, the clustering of high need quintiles is similar to the grouping of counties with high and persistent poverty levels. County-level performance is more variable and high and low performance counties are more dispersed throughout the state. On a somber note, a majority of counties characterized as —high need are also —low performance in contrast to a much lower number of high need/high performance counties. This result suggests programs are could be more effective in targeting high need areas. Generally there is —low performance in all metro and suburban areas, with the notable exception of St. Louis City, which means a larger number of people are at risk of hunger, even if their need is relatively low.

The data reported in this atlas suggests the following future needs:

- Targeted assessments of program implementation in counties characterized by high need and low performance, with particular attention to the north/central region and southwest corner of Missouri.
- Increased recognition of the importance of the public and private programs that provide food assistance – they are the barrier between hunger and non-hunger for probably hundreds of thousands of Missourians.
- Focus on improving understanding of patterns of low performance in all metro areas (except St. Louis City) and most suburban counties. Greater knowledge of reasons for lower program participation rates in these regions should result in the implementation of new program and outreach strategies.
- Greater emphasis on the nutritional and health impacts of food choices among staff and clients of all public and private programs. Research has demonstrated that poverty is positively correlated both with food insecurity and with chronic diseases such as diabetes, obesity and hypertension. Foods that tend to be cheaper and more widely available are also typically high in calories and low in nutrition and this contributes to levels of health vulnerabilities. Many of the counties that have the highest food insecurity and hunger in Missouri also have the highest levels of residents with these poor health conditions. While

educational activities exist as part of most public and private programs, these need to be strengthened and invigorated with innovative designs and implementation. Recent changes in school meal programs in some districts towards more nutritious menus is an example of a positive trend that needs to be broadened both in this program and throughout the public sector. For the same reasons, we highly encourage state participation in the WIC and Senior Farmers' Market Nutrition program.

- Strengthened linkages between private sector temporary food assistance programs (e.g., food pantries) and local food systems. The demand for the goods and services provided by private programs continues to grow. Creative efforts can link local food systems (e.g., community gardens) with these programs
- Assessments of community food security as a core local need, alongside such social concerns as education and health. In addition, technical support should be given to communities committed to developing action plans to address the results of community food security assessments.