Map the Meal Gap: Technical Brief

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Overview

In order to address the problem of hunger, we must first understand it. We undertook the Map the Meal Gap project to learn more about food insecurity, its distribution by income categories, and the reported need at the local level. By understanding the population, we can better identify strategies for reaching the people who need us most.

Research Goals

The primary goal of the Map the Meal Gap analysis is to more accurately assess the need for food. The methodology undertaken to make this assessment was developed to be responsive to the following questions:

- Is it directly related to the need for food?
  - Yes, it uses the USDA food insecurity measure
- Does it reflect the many determinants of the need for food?
  - Yes, along with income, our measure uses information on unemployment rates, median incomes, and other factors
- Can it be broken down by income categories?
  - Yes, we can break it down into relevant income categories
- Is it based on well-established, transparent methods?
  - Yes, the methods across the different dimensions are all well-established
- Can we provide the data without taxing the already limited resources of food banks?
  - Yes, the measures are all established by the Feeding America national office
- Can it be consistently applied to all counties in the U.S.?
  - Yes, the measure relies on publicly available data for all counties
- Can it be readily updated on an annual basis?
  - Yes, the publicly available data is released annually
- Does it allow one to see the potential effect of economic downturns?
  - Yes, by the inclusion of relevant measures of economic health in the models

The following methodological overview will provide a description of the methods and data used to establish the county-level food insecurity estimates, the food budget shortfall, the cost-of-food index, and the average cost of a meal. Following each section, we will provide information on the central results for our methods.

Summary of Methods

Food insecurity rate

Methodology: We begin by analyzing the relationship between food insecurity and indicators of food insecurity (poverty, unemployment, median income, etc.) at the state level. We then use the coefficient estimates from this analysis plus information on the same variables defined at the county level to generate estimated food insecurity rates for individuals at the county and congressional district levels.

Data Sources: CPS data are used to assess the relationship between food insecurity and indicators of food insecurity at the state level. The indicators used were selected because of their availability at the county, congressional district and state level and included: unemployment rates, median income, poverty rates, percent African American, and percent Hispanic. County and congressional district level data are drawn from the American Community Survey (ACS.)

Food-budget shortfall

Methodology: Responses from food insecure households to CPS questions about a food budget shortfall are calculated at the individual level and then averaged to arrive at a weekly food budget shortfall of $14.30. Per the USDA, households experiencing food insecurity experience this condition in, on average, in seven months of the year.

FI persons * $14.30 * 52 weeks * (7/12) =	$ reported needed by the food insecure to meet their food needs in 2010

Data Sources: CPS data includes two questions asking if and how much more money a person would need to meet the food needs of the household if and how much more money would be needed to meet the food needs of the household. These questions are posed after questions about usual weekly expenditures, but before the food security module.

Cost-of-food index

Methodology: To establish a relative price index that would allow for comparability between counties, Nielsen assigns every sale of UPC-coded food items in a county to one of the 26 food categories in the USDA Thrifty Food Plan (TFP). These are then weighted to the TFP market basket based on pounds purchased per week by age and gender. Specifically, pounds purchased by males age 19-50 are examined. While other age and gender weights may have resulted in different *total* market basket costs, *relative pricing* between counties (our goal for this analysis) would not have been affected. The total market basket is then translated into a multiplier that can be applied to any dollar amount. This multiplier differs by county, revealing differences in food costs at the county level.

Data Sources: The Nielsen Company provided in-store scanning data and Homescan data.

National average meal cost

Methodology: The average dollar amount spent on food per week by food secure individuals is divided by 21 (3 meals per day x 7 days per week). Food expenditures for *food secure* individuals were used to ensure that the result reflected the cost of an adequate diet. We then weight the national average cost per meal by the "cost-of-food index" to derive a localized estimate.

Data Sources: Before respondents are asked the food security questions on the CPS, they are asked how much money their household usually spends on food in a week.

MAP THE MEAL GAP

Technical Brief

Food insecurity Rate Estimates

Methods

Full Population of Counties (and Congressional Districts)
We proceed in two steps to estimate the extent of food insecurity in each county.

Step 1: Using state-level data from 2001-2010, we estimate a model where the food insecurity rate for individuals at the state level is determined by the following equation:

$$FI_{st} = \alpha + \beta_{UN}UN_{st} + \beta_{POV}POV_{st} + \beta_{MI}MI_{st} + \beta_{HISP}HISP_{st} + \beta_{BLACK}BLACK_{st} + \mu_t + \upsilon_s + \varepsilon_{st} \quad (1)$$

where s is a state, t is year, UN is the unemployment rate, POV is the poverty rate, MI is median income, HISP is the percent Hispanic, BLACK is the percent African-American, μ_t is a year fixed effect, υ_s is a state fixed effect, and ε_{st} is an error term. This model is estimated using weights defined as the state population. The set of questions used to identify whether someone is food insecure, i.e., living in a food insecure household, are defined at the household level.

Our choice of variables was first guided by the literature on the determinants of food insecurity insofar as we included variables that have been found to influence the probability of someone being food insecure. Next, we chose variables that are available both in the Current Population Survey and that are available at the county level, such as those in the American Community Survey or other sources (described below). Variables that are not available at both the state and county level cannot be used.

Of course, these variables do not portray everything that could potentially affect food insecurity rates. In response, we include the state and year fixed effects noted above which allow us to control for all other observed and unobserved influences on food insecurity.

Step 2: We use the coefficient estimates from Step 1 plus information on the same variables defined at the county level to generate estimated food insecurity rates for individuals defined at the county level. This can be expressed in the following equation:

$$FI^*_{cs} = \hat{\alpha} + \widehat{\beta_{UN}}UN_{cs} + \widehat{\beta_{POV}}POV_{cs} + \widehat{\beta_{MI}}MI_{cs} + \widehat{\beta_{HISP}}HISP_{cs} + \widehat{\beta_{BLACK}}BLACK_{cs} + \widehat{\mu_T} + \widehat{\upsilon_s} \quad (2)$$

where c denotes a county and T denotes the year from which the county level variables are defined. From our estimation of (2), we calculate both food insecurity rates and the number of food insecure persons in a county. The latter is defined as $FI^*_{cs} * N_{cs}$ where N is the number of persons. Congressional district food insecurity rates were estimated using the same methods.

The estimation of (1) gives us point estimates for food insecurity rates at the county level. In addition, we have established confidence intervals around these point estimates. These take into consideration both the variation around the estimated coefficients in (1) and the variation around the values in (2) (e.g., the unemployment rate).

Income Bands within Counties (and Congressional Districts)
Food insecurity rates are also estimated for those above or below each state's typical Supplemental Nutrition Assistance Program (SNAP) and National School Lunch Program (NSLP) income eligibility threshold (see Appendix A for a complete list of SNAP and NSLP thresholds for each state). In this case, we continue to proceed with a two-step estimation method. The structure of the equations is slightly different than above. Equation (1) is instead specified as follows:

$$FIC_{st} = \alpha + \beta_{UN}UN_{st} + \beta_{HISP}HISP_{st} + \beta_{BLACK}BLACK_{st} + \mu_t + \upsilon_s + \varepsilon_{st} \quad (1')$$

and equation (2) is specified as:

$$FIC^*_{cs} = \hat{\alpha} + \widehat{\beta_{UN}}UN_{cs} + \widehat{\beta_{HISP}}HISP_{cs} + \widehat{\beta_{BLACK}}BLACK_{cs} + \widehat{\mu_T} + \widehat{v_s} \quad (2')$$

In this case, (1') is specified on a sample composed only of those below a particular income threshold and, as a consequence, BLACK and HISPANIC are defined with the sample restricted to an income range. UN continues to be the unemployment rate for all households, not just within income categories.

Based on our estimation of (2'), we are interested in three main things. First, directly from (2'), we have the food insecurity rate within a county for those below a particular income threshold. Second, using (2'), we can derive the percentage of food insecure persons within a county with incomes below a particular threshold. This is calculated as $(FIC^*_{cs}*NC_{cs})/(FI^*_{cs}*N_{cs})$ where NC_{cs} is the number of people below a certain income threshold. Third, the percentage of food insecure persons within a county above a particular threshold is then calculated as $1-(FIC_{cs}*NC_{cs})/(FI_{cs}*N_{cs})$. Estimated food insecurity rates by income bands within congressional districts were estimated using the same methods.

Data

The information at the state level (i.e., the information used to estimate equations (1) and (1')) is derived from the Core Food Security Module (CFSM) in the December Supplement of the Current Population Survey (CPS) for the years 2001-2010. While the CFSM has been on the CPS since 1996, it was previously on months other than December. To avoid issues of seasonality and changes in various other aspects of survey design, e.g., the screening questions, only the post-2001 years are used.

The CPS is a nationally representative survey conducted by the Census Bureau for the Bureau of Labor Statistics, providing employment, income and poverty statistics. In December of each year, 50,000 households respond to a series of questions on the CFSM in addition to questions about food spending and the use of government and community food assistance programs. Households are selected to be representative of civilian households at the state and national levels, and thus do not include information on individuals living in group quarters including nursing homes or assisted living facilities. Using information on all persons in the CPS from which we had information on (a) income and (b) food insecurity status, we aggregated information up to the state-level for each year to estimate equation (1). We aggregated in a similar manner for equation (1') only now those below a defined income threshold were used in the aggregation.

For information at the county (i.e., the information used to estimate equations (2) and (2')), we used information from the 2006-2010 five-year American Community Survey (ACS) estimates. The ACS is a sample survey of 3 million addresses administered by the Census Bureau. In order to provide estimates for areas with small populations, this sample was accumulated over a 5-year period. Information about unemployment at the county level was taken from information from the Bureau of Labor Statistics' labor force data by county, 2010 annual averages. For information at the congressional district level, including unemployment data (i.e., the information used to estimate equation (2)), we used information from the 2010 one-year ACS estimates. In 2009, this analysis used information from the 2005-2009 five-year ACS to estimate food insecurity at the congressional district level. In 2010, all the information we needed for congressional districts became available within the 2010 1-year ACS. Therefore, we used this dataset to estimate food insecurity for congressional districts. For both county and congressional districts, data was drawn from tables C17002 (ratio of income to poverty level), B19013 (median income), B02001 percent African-American) and B03002 (percent Hispanic). All 3,143 counties provided by the Census Bureau were included in the analysis.

Results

We now turn to a brief discussion of the results from the estimation of equation (1) and (1'). These results can be found in Table 1. In this table, we present coefficient estimates for selected variables and the corresponding standard errors for the full population and for various income categories.

There are several points worth emphasizing from these results. First, as expected, the effects of unemployment and poverty are especially strong with unemployment having a slightly stronger impact. Evaluated at mean levels, a one percent increase in the unemployment rate leads to a 0.31 percent increase in food insecurity while a one percent increase in the poverty rate leads to 0.26 percent increase. Second, the proportion of a state's population that is Hispanic or African-American and median income have no statistically significant effect on the food insecurity rate. This is primarily due to the small changes that occur over time at the state level in these variables. Third, at least as reflected in the variables used to predict food insecurity in our models, the substantial changes in food insecurity from 2008 through 2010 were unexpected. This can be seen in the distinctly larger coefficients on the year fixed effects in these years, with an especially pronounced increase in 2008. Of potential interest, though, is that the statistically significantly positive year fixed effects began in 2006.

To see how well the models performed, we did a series of tests. Among other issues, we compared county results aggregated to metropolitan areas with food insecurity values for these metro areas taken from the CPS, we compared results with and without state fixed effects, we compared county results aggregated to the state level with food insecurity values for states taken from the CPS, and we compared predicted results from our model at the national level with actual food insecurity rates per year. In each of these cases and in other tests, our models performed very well.

Table 1: Estimates of the Impact of Various Factors on Food Insecurity at the State Level, 2001-2010

	Full Population	<130% of the poverty line	<160% of the poverty line	<165% of the poverty line	<185% of the poverty line	<200% of the poverty line
	coefficient (s.e.)	coefficient (s.e.)	coefficient (s.e.)	coefficient (s.e.)	coefficient (s.e.)	coefficient (s.e.)
Poverty Rate	0.245 (0.056)**					
Unemployment Rate	0.671 (0.118)**	0.848 (0.378)*	0.959 (0.331)**	0.940 (0.324)**	0.984 (0.312)**	1.005 (0.284)**
Median Income	-0.002 (0.002)					
Percent Hispanic	-0.052 (0.079)	-0.105 (0.099)	-0.022 (0.095)	-0.029 (0.095)	-0.019 (0.101)	-0.035 (0.091)
Percent African-American	0.117 (0.083)	0.200 (0.065)**	0.153 (0.072)*	0.148 (0.071)*	0.086 (0.073)	0.120 (0.076)
2002 (year fixed effect)	-0.002 (0.003)	0.009 (0.011)	0.005 (0.010)	0.005 (0.010)	0.003 (0.010)	0.002 (0.009)
2003 (year fixed effect)	-0.000 (0.004)	0.009 (0.014)	0.005 (0.012)	0.006 (0.012)	0.005 (0.012)	0.005 (0.010)
2004 (year fixed effect)	0.010 (0.004)**	0.026 (0.012)*	0.021 (0.011)	0.020 (0.011)	-0.002 (0.010)	0.019 (0.009)*
2005 (year fixed effect)	0.006 (0.004)	0.021 (0.013)	0.013 (0.013)	0.010 (0.013)	-0.012 (0.012)	0.010 (0.011)
2006 (year fixed effect)	0.012 (0.004)**	0.030 (0.011)**	0.023* (0.010)	0.024 (0.010)*	-0.002 (0.010)	0.022 (0.008)**
2007 (year fixed effect)	0.018 (0.004)**	0.019 (0.012)	0.035 (0.011)**	0.036 (0.011)**	0.011 (0.010)	0.034 (0.009)**
2008 (year fixed effect)	0.038 (0.004)**	0.060 (0.011)**	0.062 (0.010)**	0.053 (0.011)**	0.052 (0.011)**	0.064 (0.010)**
2009 (year fixed effect)	0.018 (0.006)**	0.040 (0.020)**	0.038 (0.018)*	0.029 (0.018)	0.027 (0.017)	0.038 (0.015)*
2010 (year fixed effect)	0.013 (0.006)*	0.019 (0.019)	0.015 (0.017)	0.016 (0.017)	0.013 (0.017)	0.024 (0.015)
Constant	0.054 (0.017)**	0.292 (0.030)**	0.273 (0.030)**	0.277 (0.030)**	0.265 (0.028)**	0.241 (0.025)**

* p<0.05 ** p<0.01. The omitted year for the year fixed effects is 2001. The data used is taken from the December Supplements of the 2001-2010 Current Population Survey.

Trends in County Food Insecurity Rates between 2009 and 2010

This report reviews findings from the second year that Feeding America has conducted the Map the Meal Gap analysis, providing a first-time opportunity to look at trends between 2009 and 2010. Differences between the two years were compared to identify any notable shifts in food insecurity rates at the county level. Food insecurity estimates at the county level may be less stable from year to year than those at the state or national level due to smaller geographies, particularly in counties with very small populations. Efforts are taken to guard against unexpected fluctuations that can occur in these populations by using the five-year averages from the American Community Survey for key variables, including poverty, median income, and the percent of the population that is African American or Hispanic. However, the other key variable in the model—unemployment—is based on a one-year average estimate for each county as reported by the Bureau of labor Statistics. The model looks at the relationship between all of these variables and the rate of food insecurity as reported by USDA in order to generate the estimates.

According to the USDA, nationally, the food insecurity rate in 2010 was slightly lower than in 2009—16.1% of individuals and 14.5% of households were identified as food-insecure, versus 16.6% of individuals and 14.7% of households in 2009. As was the case at the national level, in general, county-level food insecurity rates across the country also showed modest decline. It is important to note that a majority of the changes from 2009 to 2010 were not statistically significant. Those counties which experienced a four percentage point or greater change in their food insecurity estimates were flagged for further examination (see Appendix B). We flagged these insofar as these declines were especially large. Out of 3,143 counties analyzed, only 17 experienced declines in food insecurity rates equal to or beyond the threshold of four percentage points. In 12 of these counties, the unemployment rate declined, and in the remaining five where the unemployment rate had risen, the poverty rate had declined. Most of the counties that experienced declines in their food insecurity rates are relatively small in population—the two largest are Elkhart, Indiana, with an estimated food insecure population of more than 33,000 in 2010 and Starr County, Texas, with more than 15,000 individuals estimated to be struggling with food insecurity.

There were five counties that experienced an increase in their food insecurity estimate of 4 percentage points or greater between 2009 and 2010. All are relatively small counties located in the South (three in Georgia and one each in Alabama and Louisiana). All five counties have majority African American, non-Hispanic populations ranging from 55% to 85% of the population. The unemployment rate rose between 2009 and 2010 in all five of these counties and in four of the five counties, the poverty rate also went up, markedly in some cases (See Appendix B).

Food-budget shortfall

Methods

In an effort to understand the food needs of the food insecure population, we sought to estimate the shortfall in their food budgets. To do so, we use the following question taken from the CFSM:

In order to buy just enough food to meet (your needs/the needs of your household), would you need to spend more than you do now, or could you spend less?

This question is asked prior to the 18 questions used to derive the food insecurity measure and, as a consequence, is not influenced by their responses about food insecurity. Out of those responding "more", the following question is posed:

About how much MORE would you need to spend each week to buy just enough food to meet the needs of your household?

Restricting the sample to households experiencing food insecurity over the previous 12 months, and including those who report zero dollars (i.e. those who could spend "the same" each week), we divide by the number of people in the household to arrive at a per-person figure of $14.30 per week. Denote this value as PPC.

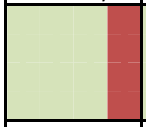
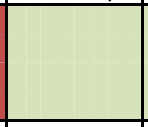
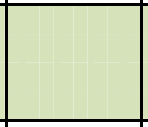
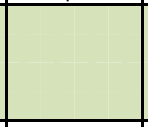
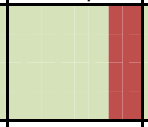
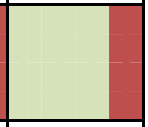
Not all food insecure households experienced needing additional food every day of the week. The phrasing of the questions, above, however, suggest that responses are given from the perspective of a week during which the household needed to "spend more." We have assumed that these responses therefore incorporate days of the week in question during which the household was able to meet its food needs and days during which it needed more money. This assumption is supported by the dollar amount reported, which amounts to approximately 5.5 meals per week (or fewer than 2 days per week, assuming 3 meals per day), and the inclusion of food insecure households which reported needing $0 more per week. These respondents were assumed to be responding from the perspective of recent week, one in which they did not require additional money.

Visually, this theoretical week would then look like this:

Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
With enough food	With enough food	With enough food	With enough food	With enough food	In need of food	In need of food

In addition to being food insecure only some days of any month in which they experience food insecurity, not all food insecure households experience food insecurity every month. As reported by the USDA, in the annual report *Household Food Security in the United States*, "the average household that was food insecure at some time during the year experienced this condition in 7 months of the year" (Coleman-Jensen, A., Nord, M., Andrews, M. & Carlson, S. USDA ERS. 2011)

Visually then, using the above illustration as a typical week, a sample year would look like this:

January	February	March	April	May	June
					
July	August	September	October	November	December

With this information, we are then able to calculate the dollar figure needed per county, per year as follows: $PPC*52*(7/12)*FI^{*}_{cs}*N_{cs}$. This calculation incorporates the number of weeks in a year (52) and the average number of months of the year in which someone experiences food insecurity (7 out of 12).

Data

To calculate the dollars needed to for a food insecure person to meet his/her food needs, we used information from the 2010 CPS. The CPS is described above.

Results

In developing the results for the amount of money needed by a food insecure person to meet weekly food needs, described above, we examined additional possible values, including those for (a) households experiencing food insecurity any time over the prior 12-months and (b) households experiencing food insecurity any time over the prior thirty days. We further broke this analysis down for (a) a sample of those responding "more" or "same" to the first question above and (b) a sample of those responding "more" to the first question. Households responding "less" were not included in these analyses.

The value of $14.30 was selected both because it is the most conservative result and because it is the result most similar to the difference in per-person weekly food expenditures between food secure and food insecure households (Seligman, H. & Schillinger, D. Hunger and socioeconomic disparities in chronic disease. New England Journal of Medicine. 2010.)

In Table 2 we present some descriptive statistics about reports of dollars needed to be food secure from the CPS. As done above, we restrict the sample to those reporting that they need to spend more on food and food insecure households. In the first column, we present results on individuals and in the second column, we present results for households. The average cost to be food secure in 2010 was $14.30. When we break things down further by household size, income levels, and food insecurity levels, the results are consistent with expectations. Namely, larger households report needing more money to be food secure than smaller households; individuals with lower incomes report needing more money to be food secure than better-off individuals; and individuals in households with higher levels of food insecurity need more money to be food secure than households with lower levels of food insecurity. Analysis of these data over time indicates consistency with food pricing, showing a notable increase when food prices spiked in 2007.

Table 2: Breakdowns of Cost to be Food Secure ($)

	Individuals	Households
All Food Insecure	14.30	
By Household Size		
1 person		21.76
2 person		29.53

3 person		36.78
4 person		37.80
5 person		42.84
6 person		42.94
By Income Categories		
<130% of poverty line	15.28	
>130% of poverty line	13.28	
<185% of poverty line	14.79	
>185% of poverty line	13.36	
By food insecurity status		
Marginally food secure	6.22	
Low food secure	10.94	
Very low food secure	20.04	

The data used is taken from the December Supplement of the 2010 Current Population Survey.

Cost-of-food index

Methods

Because the dollar figure needed is a national average, it does not reflect the potential range of that figure's food-purchasing power at the local level. In order to estimate the *local* food budget shortfall, therefore, we worked with The Nielsen Company to incorporate differences in the price of food that exists across counties in the continental U.S. (Due to a limited number of stores and special pricing considerations, North Slope and Wade Hampton, Alaska and Kalawao, Hawaii were excluded from the analysis.) To do so, The Nielsen Company designed custom product characteristics so that UPC codes for all food items could be mapped to one of the 26 categories described in the USDA's 2006 Thrifty Food Plan (TFP). This is based on 26 categories of food items (examples include "all potato products", "fruit juices", and "whole fruits.") Each UPC-coded food item (non-food items, such as vitamins, were excluded) was assigned to one of the categories. Random-weight food items (such as loose produce or bulk grains) were not included; packaged fresh produce, such as bagged fruits and vegetables, were included. Prepared meals were categorized as a whole (rather than broken down by ingredients) and were coded to "frozen or refrigerated entrees." Processed foods, such as granola bars, cookies, etc. were coded to "sugars, sweets, and candies" or "non-whole grain breads, cereal, rice, pasta, pies, pastries, snacks, and flours," as appropriate.

The cost to purchase a market basket of these 26 categories is then calculated for each county. Sales of all items within each category were used to develop a cost-per-pound of food items in that category. Some categories, such as milk, are sold in a volume unit of measure and not in an ounces unit of measure. Volume unit of measures were converted to ounces by using "FareShare Conversion Tables" (fareshare.net/conversions=volume-to-weight.html.) Each category was priced based on the pounds purchased per week as defined by the USDA Thrifty Food Plan for each of 26 TFP categories by age and gender. We used the weights in pounds for purchases by Males 19-50 years for this analysis. Other age/gender weights may have resulted in different total market basket costs, but are unlikely to have impacted relative pricing between counties, which was the goal of the analysis. Several categories are weighted as 0.0 lbs for this age/gender grouping. These include 'popcorn and other whole grain snacks,' 'milk drinks and milk desserts,' and 'soft drinks, sodas, fruit drinks, and ades (including rice beverages.)'

For some counties, there were no sales within a category (see Appendix C for list) while in other counties, low numbers of sales in categories distorted the overall market basket prices. In cases where categories of sales are missing and in cases where extremely high prices in categories distorted the overall basket prices, we imputed a price for that category by using an average of all surrounding counties.

In an effort to most directly reflect the prices paid at the register by consumers, we elected to integrate food sales taxes into the market basket prices. County-level food taxes include all state taxes and all county taxes levied on grocery items. Within some counties, municipalities may levy additional grocery taxes. Because these taxes are not consistently applied across the county, however, they are not included. Taxes on vending machine food items or prepared foods were not included, as the market baskets do not incorporate those types of foods. For state-level market basket costs, the average of the county-level food taxes was used. Fourteen states levy grocery taxes. An additional four states (three that were included in this analysis) do not levy state-level grocery taxes, but do permit counties to levy a grocery tax. Finally, an additional two states do not levy state or county-level grocery taxes, but do permit municipalities to levy grocery taxes (more detail about the tax rates used can be found in Appendix D).

As suggested above, our interest is in the relative rather than the absolute price of the TFP so using the value of the TFP (VTFP), we then calculate an index as follows: $IVTFP=VTFP_{cs}/AVTP$ where AVTP is the weighted average value of the TFP across all counties.

We then create a value for the cost to alleviate food insecurity which incorporates these price differences. This is calculated for each county as $CAFI_{cs}=IVTFP_{cs}*PPC*52*(7/12)*FI_{cs}*N_{cs}$.

Data

To calculate the differences in food costs across counties, we used information from two data sources from Nielsen. The first is via the Nielsen Scantrack service. This includes prices paid for each UPC code in over 65,000 stores across the U.S. Nielsen does not have in-store data from all mass or club retailers, so the second source of information is from Homescan Data, which allows us to calculate national average prices paid for food items. Because these stores have national pricing, the national average provides an accurate depiction of prices paid at the local level. For all these analyses we are using data for a 4-week period ending October 31, 2010.

National average meal cost

Methods

With the above information, we have calculated a localized food budget shortfall for all food insecure individuals in a county area. In many situations, however, food banks have found it useful and meaningful to be able to discuss the “meals” or “meal equivalents” represented by these dollar values. In an effort to provide the necessary information to allow for this communication tool, we calculated an

approximation of the number of meal equivalents represented by the county-level food budget shortfall as follows.

On CPS there is a question that asks how much a household usually spends on food in a week:

Now think about how much (you/your household) USUALLY (spend/spends). How much (do you/does your household) USUALLY spend on food at all the different places we've been talking about IN A WEEK? (Please include any purchases made with SNAP or food stamp benefits).

Restricting the sample to households that are food secure, constructing this sample on a per-person basis, and dividing by 21 (i.e., the usual number of meals a person eats), we arrive at a per-meal cost of $2.52. We restricted the sample to food secure households to ensure that the per-meal cost was based on the experiences of those with the ability to purchase a food secure diet.

Using this information, the number of meals needed in a county can then be calculated as $MCAFI_{cs}=(IVTFP_{cs}*PPC*52*(7/12)*FI^{*}_{cs}*N_{cs})/(IVTFP_{cs}*2.52)$.

It is important to note that the "meal gap" is descriptive of a food budget shortfall, rather than a literal number of meals.

Data

To calculate the average meal cost, we used information from the 2010 CPS. The CPS is described above.

Appendix A: SNAP and NSLP thresholds

In order to be most useful for planning purposes, SNAP thresholds effective by December, 2011 were used for all states in this analysis. SNAP thresholds provided are the gross income eligibility criteria as established by the state. Applicants must meet other criteria (such as net income and asset criteria) in order to receive the SNAP benefit. SNAP clients are categorically eligible for such programs as free National School Lunch Program. In states with a SNAP threshold lower than 185% of the poverty line, persons earning between the SNAP threshold and 185% of the poverty line are income-eligible for other nutrition programs such as reduced price National School Lunch Program, WIC, etc.

State	SNAP Threshold	Other Nutrition Program Threshold (if applicable)
AK	130%	185%
AL	130%	185%
AR	130%	185%
AZ	185%	
CA	130%	185%
CO	130%	185%
CT	185%	
DC	200%	
DE	200%	
FL	200%	
GA	130%	185%
HI	200%	
IA	160%	185%
ID	130%	185%
IL	130%	185%
IN	130%	185%
KS	130%	185%
KY	130%	185%
LA	130%	185%
MA	200%	
MD	200%	
ME	185%	
MI	200%	
MN	165%	185%
MO	130%	185%
MS	130%	185%
MT	200%	

State	SNAP Threshold	Other Nutrition Program Threshold (if applicable)
NC	200%	
ND	200%	
NE	130%	185%
NH	185%	
NJ	185%	
NM	165%	185%
NV	200%	
NY	130%	185%
OH	130%	185%
OK	130%	185%
OR	185%	
PA	160%	185%
RI	185%	
SC	130%	185%
SD	130%	185%
TN	130%	185%
TX	165%	185%
UT	130%	185%
VA	130%	185%
VT	185%	
WA	200%	
WI	200%	
WV	130%	185%
WY	130%	185%

Appendix B: Food Insecurity Rate Trends

In the following 17 counties, the change in the food insecurity rate declined by more than 4 percentage points between 2009 and 2010. We flagged these insofar as these declines were especially large.

State	County	2009 Food Insecurity Rate	2010 Food Insecurity Rate	Change from 2009 to 2010	Total Population (2010)
AL	Winston	23.0%	18.8%	-4.2%	24,687
AZ	Greenlee	23.4%	16.1%	-7.3%	8,318
IN	Elkhart	21.5%	16.8%	-4.7%	196,855
MI	Hillsdale	20.7%	16.6%	-4.1%	47,033
ND	Sargent	12.1%	6.8%	-5.3%	3,971
PA	Cameron	20.5%	16.4%	-4.1%	5,197
TN	Decatur	21.6%	17.5%	-4.1%	11,716
TN	Jackson	21.2%	17.0%	-4.2%	11,491
TN	Monroe	22.2%	18.0%	-4.2%	44,015
TN	Perry	28.3%	20.9%	-7.4%	7,778
TN	Pickett	22.0%	17.8%	-4.2%	5,072
TX	Duval	22.8%	17.8%	-5.0%	11,999
TX	Kenedy	25.1%	13.1%	-12.0%	241
TX	Presidio	27.0%	22.3%	-4.7%	7,703
TX	Starr	29.6%	25.3%	-4.3%	59,989
TX	Willacy	28.4%	23.8%	-4.6%	21,769
TX	Zapata	25.7%	20.9%	-4.8%	13,609

In the following 5 counties, the change in the food insecurity rate increased by more than 4 percentage points between 2009 and 2010.

State	County	2009 Food Insecurity Rate	2010 Food Insecurity Rate	Change from 2009 to 2010	Total Population (2010)
AL	Greene	28.1%	32.2%	4.1%	9,255
GA	Clay	23.3%	27.4%	4.1%	2,981
GA	Hancock	30.4%	35.9%	5.5%	9,649
GA	Quitman	21.7%	27.4%	5.7%	2,528
LA	Tensas	22.5%	26.8%	4.3%	5,430

Appendix C: Food Cost Adjustments

In the following 89 cases, certain categories of sales were missing entirely. In these cases, The Nielsen Company imputed a price *for that category* based on information from all surrounding counties.

State	County	Population	Categories Imputed	Final Food Price Index
CO	BENT	6,125	1	1.0714
CO	CONEJOS	8,220	1	1.0675
CO	SAGUACHE	6,161	1	1.1111
GA	STEWART	5,831	1	1.1429
GA	TALBOT	6,920	1	1.0952
ID	CARIBOU	6,900	1	1.0198
ID	FREMONT	13,062	1	1.1548

State	County	Population	Categories Imputed	Final Food Price Index
CA	MARIPOSA	18,290	2	1.6032
ID	JEFFERSON	24,523	2	1.1786
KS	WILSON	9,598	2	0.8690
MN	JACKSON	10,403	2	1.0437
MN	KOOCHICHING	13,461	2	1.4802
MN	LAKE	10,900	2	0.9127
MN	RENVILLE	16,007	2	0.8294

State	County	Population	Categories Imputed	Final Food Price Index
ID	GOODING	15,140	1	1.0952
ID	OWYHEE	11,389	1	1.1786
ID	TETON	9,413	1	1.2222
ID	WASHINGTON	10,105	1	1.1786
IN	BROWN	15,271	1	1.3333
IN	OHIO	6,067	1	1.0397
MI	ALCONA	11,238	1	1.0357
MI	MENOMINEE	24,245	1	1.1190
MN	CASS	28,648	1	0.8492
MN	KANABEC	16,379	1	0.9206
MN	MILLE LACS	26,075	1	1.2222
MN	SWIFT	9,946	1	1.0754
MN	WABASHA	21,743	1	1.0873
MO	BOLLINGER	12,445	1	1.0913
MT	SHERIDAN	3,505	1	1.1071
NE	CUMING	9,243	1	0.8492
NV	LINCOLN	5,060	1	1.1032
NM	GUADALUPE	4,698	1	1.1270
NM	HIDALGO	4,964	1	1.4087
ND	BOWMAN	3,102	1	1.0556
ND	CAVALIER	4,046	1	0.9405
ND	DICKEY	5,340	1	0.9087
ND	MORTON	26,712	1	1.0675
ND	RANSOM	5,624	1	0.8968
PA	SULLIVAN	6,467	1	1.0119
SD	BRULE	5,128	1	0.9921
SD	CHARLES MIX	9,075	1	0.9524
SD	DAY	5,714	1	0.8810
SD	DEWEY	5,354	1	1.2103
SD	HAND	3,402	1	0.9405
SD	TRIPP	5,743	1	0.9444
TX	CARSON	6,284	1	1.1468
TX	FISHER	4,057	1	1.1270
UT	EMERY	10,728	1	1.0238
UT	KANE	6,893	1	1.1151
VA	CRAIG	5,173	1	1.1032
VA	BUENA VISTA CITY	6,653	1	1.0635
WI	BURNETT	15,749	1	1.0516

State	County	Population	Categories Imputed	Final Food Price Index
MN	STEVENS	9,711	2	0.9405
MO	SCOTLAND	4,831	2	0.8730
MT	BIG HORN	12,663	2	0.9167
NE	BUTLER	8,382	2	1.0476
ND	FOSTER	3,434	2	1.0079
ND	MOUNTRAIL	7,228	2	1.0159
ND	PEMBINA	7,530	2	0.9603
ND	PIERCE	4,364	2	0.8810
OK	ELLIS	4,041	2	0.8929
SD	BENNETT	3,441	2	1.1230
TX	COCHRAN	3,155	2	1.1032
WY	HOT SPRINGS	4,720	2	0.9603
CA	MODOC	9,605	3	1.3929
CO	COSTILLA	3,536	3	1.1032
ID	LEMHI	7,861	3	1.0238
LA	TENSAS	5,430	3	1.0913
MN	CHISAGO	52,844	3	1.1706
MN	PIPESTONE	9,570	3	0.8492
MT	LINCOLN	19,507	3	0.8690
MT	RICHLAND	9,498	3	0.9087
NV	LANDER	5,545	3	1.1508
NV	WHITE PINE	9,765	3	1.1270
SD	TODD	9,575	3	1.1310
CA	COLUSA	21,165	4	1.4286
CO	CUSTER	3,899	4	1.0952
KS	COFFEY	8,587	4	0.9325
ID	VALLEY	9,846	5	1.3690
MI	LEELANAU	21,757	5	1.6865
WY	BIG HORN	11,448	5	0.9484
ND	MCKENZIE	6,004	6	1.9127
TN	CANNON	13,631	6	1.3532
SD	UNION	13,903	7	2.1865
KY	WASHINGTON	11,593	8	1.2381
OR	CROOK	21,515	8	1.3175
CO	PHILLIPS	4,394	21	1.2302
MT	MUSSELSHELL	4,339	22	1.1746
MT	SWEET GRASS	3,717	22	1.3373

The following 293 counties had no store data available. In these cases, all 26 category prices were imputed based on information for all surrounding counties.

State	County	Population	Final Food Price Index
AK	ALEUTIANS EAST	3,703	1.0675
AK	BETHEL	16,838	1.0675
AK	BRISTOL BAY	1,049	1.1349

State	County	Population	Final Food Price Index
AK	DENALI	1,144	1.2540
AK	DILLINGHAM	4,817	1.1032
AK	HAINES	1,658	1.1310

State	County	Population	Final Food Price Index
AK	HOONAH-ANGOON	2,029	1.1032
AK	LAKE AND PENINSULA	1,626	1.1349
AK	NORTHWEST ARCTIC	7,477	1.2262
AK	PETERSBURG	3,841	1.0238
AK	PRINCE OF WALES	5,507	1.0317
AK	SITKA	8,894	1.0238
AK	SKAGWAY	1,140	1.1032
AK	WRANGELL	2,338	1.0238
AK	YAKUTAT	638	1.1230
AK	YUKON KOYUKUK	5,635	1.0794
CA	ALPINE	1,176	1.0119
CA	SIERRA	3,366	1.0119
CA	TRINITY	13,701	1.0198
CO	CHEYENNE	2,194	0.9405
CO	CROWLEY	5,897	0.9683
CO	DOLORES	2,027	0.9841
CO	GILPIN	5,126	0.9683
CO	HINSDALE	489	1.0198
CO	JACKSON	1,464	1.0000
CO	KIOWA	1,643	0.9405
CO	MINERAL	1,020	0.9921
CO	OURAY	4,319	0.9881
CO	PARK	16,286	0.9683
CO	RIO BLANCO	6,494	1.0198
CO	SAN JUAN	752	1.0079
CO	SAN MIGUEL	7,299	0.9722
CO	SEDGWICK	2,412	0.9603
CO	WASHINGTON	4,773	0.9484
GA	ECHOLS	3,973	0.9960
GA	TALIAFERRO	2,041	1.0079
GA	WEBSTER	2,727	0.9881
ID	ADAMS	3,942	1.0833
ID	BENEWAH	9,302	1.0675
ID	BOISE	7,122	1.0833
ID	BUTTE	2,842	1.0754
ID	CAMAS	1,216	1.0794
ID	CLARK	857	1.0794
ID	CLEARWATER	8,766	1.0675
ID	CUSTER	4,277	1.0794
ID	IDAHO	15,947	1.0675
ID	LEWIS	3,761	1.0675
ID	LINCOLN	5,021	1.0754
ID	ONEIDA	4,212	1.0714
IL	CALHOUN	5,118	0.9563
IL	HENDERSON	7,462	0.9563
IL	POPE	4,426	0.9643
IL	PUTNAM	5,982	0.9643
IN	WARREN	8,563	0.9643
IA	FREMONT	7,528	0.9365
IA	VAN BUREN	7,645	0.9405

State	County	Population	Final Food Price Index
KS	CHEYENNE	2,783	1.0198
KS	CLARK	2,231	0.9921
KS	EDWARDS	3,052	1.0040
KS	ELK	2,930	1.0040
KS	GOVE	2,721	1.0159
KS	GREELEY	1,294	1.0079
KS	HODGEMAN	1,955	1.0079
KS	JEWELL	3,151	1.0079
KS	KEARNY	3,966	1.0000
KS	KIOWA	2,671	1.0040
KS	LANE	1,725	0.9960
KS	LINCOLN	3,308	1.0079
KS	MORTON	3,244	0.9921
KS	NESS	3,120	0.9960
KS	RAWLINS	2,594	1.0159
KS	RUSH	3,290	0.9960
KS	STANTON	2,197	1.0079
KS	WABAUNSEE	7,004	1.0079
KS	WALLACE	1,440	1.0000
KY	ROBERTSON	2,278	0.9722
MI	KEWEENAW	2,122	0.9563
MI	LUCE	6,685	0.9841
MN	BIG STONE	5,324	0.9365
MN	CLEARWATER	8,593	0.9405
MN	COOK	5,211	0.9405
MN	DODGE	19,829	0.9365
MN	GRANT	6,082	0.9405
MN	KITTSON	4,620	0.9405
MN	LAC QUI PARLE	7,343	0.9365
MN	LAKE OF THE WOODS	4,147	0.9405
MN	LINCOLN	5,935	0.9365
MN	MARSHALL	9,580	0.9405
MN	MURRAY	8,779	0.9365
MN	NORMAN	6,865	0.9405
MN	RED LAKE	4,094	0.9365
MN	SIBLEY	15,219	0.9365
MN	TRAVERSE	3,657	0.9405
MN	WILKIN	6,636	0.9405
MN	YELLOW MEDICINE	10,514	0.9365
MS	ISSAQUENA	1,893	1.0159
MO	SCHUYLER	4,361	0.9722
MT	BROADWATER	5,287	1.0040
MT	CARBON	9,994	1.0040
MT	CARTER	1,289	0.9563
MT	CHOUTEAU	5,765	0.9960
MT	DANIELS	1,649	0.9643
MT	FALLON	2,813	0.9563
MT	GARFIELD	1,224	0.9722
MT	GOLDEN VALLEY	810	0.9960
MT	GRANITE	3,044	1.0040

State	County	Population	Final Food Price Index
MT	JEFFERSON	11,166	1.0079
MT	JUDITH BASIN	1,967	1.0000
MT	LIBERTY	2,261	1.0079
MT	MCCONE	1,714	0.9603
MT	MADISON	7,588	1.0119
MT	MEAGHER	2,024	1.0040
MT	MINERAL	4,193	1.0079
MT	PETROLEUM	598	0.9841
MT	PONDERA	6,145	1.0040
MT	POWDER RIVER	1,659	0.9603
MT	PRAIRIE	1,089	0.9643
MT	ROSEBUD	9,134	0.9643
MT	SANDERS	11,366	1.0040
MT	STILLWATER	8,934	1.0000
MT	TETON	6,105	1.0040
MT	TREASURE	848	0.9683
MT	WHEATLAND	2,118	0.9960
MT	WIBAUX	1,067	0.9643
NE	ARTHUR	426	0.9444
NE	BANNER	720	0.9484
NE	BLAINE	539	0.9405
NE	BOYD	2,107	0.9365
NE	CLAY	6,554	0.9365
NE	DEUEL	1,963	0.9444
NE	DIXON	6,000	0.9365
NE	DUNDY	1,963	0.9444
NE	FRANKLIN	3,229	0.9365
NE	FRONTIER	2,808	0.9405
NE	FURNAS	4,942	0.9405
NE	GARDEN	2,060	0.9405
NE	GARFIELD	2,081	0.9365
NE	GOSPER	2,058	0.9405
NE	GRANT	661	0.9444
NE	GREELEY	2,542	0.9365
NE	HARLAN	3,460	0.9365
NE	HAYES	1,025	0.9405
NE	HITCHCOCK	2,925	0.9405
NE	HOOKER	690	0.9405
NE	KEYA PAHA	740	0.9405
NE	LOGAN	682	0.9405
NE	LOUP	635	0.9365
NE	MCPHERSON	489	0.9405
NE	NANCE	3,755	0.9365
NE	PAWNEE	2,767	0.9365
NE	PERKINS	2,983	0.9444
NE	PIERCE	7,308	0.9365
NE	POLK	5,412	0.9365
NE	ROCK	1,651	0.9365
NE	SHERMAN	3,144	0.9365
NE	SIOUX	1,340	0.9484

State	County	Population	Final Food Price Index
NE	STANTON	6,207	0.9365
NE	THOMAS	756	0.9405
NE	WEBSTER	3,815	0.9365
NE	WHEELER	751	0.9365
NV	ESMERALDA	892	1.0119
NV	EUREKA	1,724	1.0119
NV	STOREY	4,016	1.0119
NM	CATRON	3,652	0.9603
NM	DE BACA	1,772	0.9405
NM	HARDING	943	0.9405
NM	MORA	4,923	0.9524
NY	HAMILTON	4,908	0.9960
NC	CAMDEN	9,719	1.0040
ND	ADAMS	2,348	0.9524
ND	BENSON	6,662	0.9405
ND	BILLINGS	897	0.9603
ND	BURKE	1,948	0.9524
ND	DIVIDE	2,050	0.9563
ND	DUNN	3,477	0.9524
ND	EDDY	2,455	0.9405
ND	EMMONS	3,617	0.9484
ND	GOLDEN VALLEY	1,539	0.9603
ND	GRANT	2,486	0.9484
ND	GRIGGS	2,426	0.9365
ND	HETTINGER	2,506	0.9524
ND	KIDDER	2,521	0.9444
ND	LAMOURE	4,233	0.9405
ND	LOGAN	2,001	0.9444
ND	MCHENRY	5,400	0.9444
ND	MCINTOSH	2,917	0.9444
ND	MCLEAN	8,861	0.9444
ND	NELSON	3,185	0.9405
ND	OLIVER	1,808	0.9524
ND	RENVILLE	2,442	0.9484
ND	SARGENT	3,971	0.9405
ND	SHERIDAN	1,293	0.9444
ND	SIOUX	4,121	0.9484
ND	SLOPE	727	0.9563
ND	STEELE	1,977	0.9405
ND	TOWNER	2,289	0.9405
ND	WELLS	4,276	0.9444
OK	BEAVER	5,564	0.9921
OK	DEWEY	4,720	0.9881
OK	GRANT	4,579	0.9841
OK	ROGER MILLS	3,530	0.9841
OR	GILLIAM	1,731	1.0198
OR	GRANT	7,349	1.0317
OR	MORROW	11,112	1.0159
OR	SHERMAN	1,819	1.0159
OR	WHEELER	1,443	1.0317

State	County	Population	Final Food Price Index
SD	AURORA	2,739	0.9762
SD	BON HOMME	7,080	0.9762
SD	BUFFALO	1,932	0.9762
SD	CAMPBELL	1,431	0.9841
SD	CLARK	3,702	0.9762
SD	CORSON	4,053	0.9841
SD	DEUEL	4,373	0.9762
SD	DOUGLAS	3,046	0.9762
SD	EDMUNDS	4,047	0.9802
SD	FAULK	2,386	0.9762
SD	GREGORY	4,272	0.9762
SD	HAAKON	1,886	0.9841
SD	HAMLIN	5,761	0.9762
SD	HANSON	3,382	0.9762
SD	HARDING	1,250	0.9921
SD	HYDE	1,520	0.9762
SD	JACKSON	2,991	0.9841
SD	JERAULD	2,038	0.9762
SD	JONES	1,076	0.9802
SD	KINGSBURY	5,169	0.9762
SD	LYMAN	3,736	0.9762
SD	MCCOOK	5,639	0.9722
SD	MCPHERSON	2,506	0.9802
SD	MARSHALL	4,618	0.9762
SD	MELLETTE	2,032	0.9802
SD	MINER	2,411	0.9762
SD	PERKINS	2,976	0.9841
SD	POTTER	2,380	0.9802
SD	SANBORN	2,380	0.9762
SD	SHANNON	13,437	0.9841
SD	STANLEY	2,896	0.9802
SD	SULLY	1,328	0.9802
SD	TURNER	8,368	0.9762
SD	ZIEBACH	2,765	0.9841
TX	ARMSTRONG	1,958	0.9286
TX	BORDEN	564	0.9206
TX	BRISCOE	1,723	0.9286
TX	CONCHO	4,047	0.9167
TX	COTTLE	1,618	0.9246
TX	DICKENS	2,441	0.9206
TX	EDWARDS	2,029	0.9167
TX	FOARD	1,379	0.9246
TX	GLASSCOCK	1,317	0.9167
TX	HUDSPETH	3,441	0.9405
TX	IRION	1,673	0.9167
TX	JEFF DAVIS	2,340	0.9206
TX	KENEDY	241	0.9206
TX	KENT	772	0.9206
TX	KING	219	0.9206
TX	LIPSCOMB	3,218	0.9325

State	County	Population	Final Food Price Index
TX	LOVING	41	0.9246
TX	MCMULLEN	897	0.9167
TX	MOTLEY	1,123	0.9246
TX	OLDHAM	2,020	0.9286
TX	REAL	3,279	0.9167
TX	ROBERTS	877	0.9286
TX	STERLING	1,160	0.9167
TX	STONEWALL	1,434	0.9206
TX	TERRELL	850	0.9127
TX	THROCKMORTON	1,814	0.9206
UT	DAGGETT	839	1.0317
UT	GARFIELD	4,958	1.0357
UT	MORGAN	9,013	1.0437
UT	PIUTE	1,661	1.0357
UT	RICH	2,181	1.0357
UT	WAYNE	2,706	1.0317
VT	ESSEX	6,359	1.0119
VT	GRAND ISLE	7,105	1.0079
VA	BATH	4,779	1.0040
VA	CHARLES CITY	7,205	1.0040
VA	KING AND QUEEN	6,926	1.0040
VA	RAPPAHANNOCK	7,376	1.0040
WA	COLUMBIA	3,957	1.0079
WA	FERRY	7,504	1.0159
WA	GARFIELD	2,240	1.0079
WA	KLICKITAT	20,055	1.0079
WA	PACIFIC	21,192	1.0079
WA	SAN JUAN	15,551	1.0198
WA	SKAMANIA	10,869	1.0079
WA	WAHKIAKUM	3,982	1.0079
WI	BAYFIELD	15,114	0.9405
WI	FLORENCE	4,587	0.9643
WI	IRON	6,075	0.9524
WI	MENOMINEE	4,251	0.9603
WY	CROOK	6,761	0.9524
WY	NIOBRARA	2,430	0.9484
WY	SUBLETTE	9,322	1.0000

In two additional counties in Alaska, there was no store data available nor was there enough data available on surrounding counties to calculate a market basket cost.

State	County	Population	Final Food Price Index
AK	NORTH SLOPE	8,852	N/A
AK	WADE HAMPTON	7,398	N/A

Appendix D: Food Tax Rates

States not listed in this appendix do not levy grocery taxes and do not permit counties or municipalities to levy grocery taxes (with the exception of Alaska and Hawaii, as noted below). In some cases, as noted below, municipalities may levy additional grocery taxes. These taxes were not included in this analysis. Documentation regarding state and/or county rates/policies is provided through the hyperlink. A full list of individual counties' rates is not provided here, but is available upon request.

Fourteen states levy grocery taxes.

In the following six states, no additional grocery taxes are levied at the individual county level. In South Dakota, additional taxes may be levied by municipalities, but those rates were not included in this analysis.

State	2010 Food Tax (state rate)
MS	7.0%
NC	2.0%
SD	4.0%
UT	3.0%
VA	2.5%
WV	3.0%

In the following eight states, additional grocery taxes are levied at the county or municipal level. Only those rates levied at the county and state level were incorporated into this analysis.

State	County	2010 Food Tax (state rate)	2010 Food Tax (average of all county rates)	Total Food Tax (state + county)
AL	All Counties	4.0%	1.9%	5.9%
AR	All Counties	2.0%	1.5%	3.5%
ID	All Counties	6.0%	0.0%	6.0%
IL	All Counties	1.0%	0.0 %	1.0%
KS	All Counties	6.3%	1.0%	7.3%
MO	All Counties	1.225%	1.57 %	2.8%
OK	All Counties	4.5%	1.2%	5.7%
TN	All Counties	5.5%	2.5 %	8%

An additional four states do not levy state-level grocery taxes, but do permit counties and municipalities to levy a grocery tax (one of these states, Alaska, is excluded from the list below because it was not included in the food price analysis). Municipal taxes were not included in this analysis.

State	County	2010 Food Tax (state rate)	2010 Food Tax (average of all county rates)
CO	All Counties	0%	1.1%
GA	All Counties	0% (rate history)	2.9 %
SC	All Counties	0%	1 %

Finally, an additional two states do not levy state or county-level grocery taxes, but do permit municipalities to levy grocery taxes. In these cases, no taxes were factored into the food-cost index, but it is worth noting that additional burden may be placed on residents of municipalities in which food taxes are in effect.

State	Food Tax (state rate)	Food Tax (county rate)
AZ	0%	0.000%
LA	0%	0.000%