

Introduction

The Food Stamp Program serves as the foundation of America's national nutrition safety net, the first line of the Nation's defense against hunger, and a powerful tool to improve nutrition among millions of low-income families and individuals. Because the program has such a central role in the national nutrition safety net, there is keen interest in tracking its performance over time and across areas. While there are many aspects to the program's success, one key performance outcome is the extent to which it reaches the people it is intended to serve.

The Food and Nutrition Service (FNS) and other researchers have used a variety of approaches to calculate food stamp participation rates. While different approaches can look similar in concept, the results – for particular States or for the Nation as a whole – can often look quite different. These differences can be confusing for users who seek to describe the success of the Food Stamp Program without becoming experts in statistics and data analysis. This paper provides an overview and comparison of two sets of estimates produced by FNS as indicators of Food Stamp Program performance.

Measures of Food Stamp Participation

FNS reports the total number of individuals, households, and benefits issued each month, based on reports from every State. These data, measured frequently and reliably through administrative processes, are an important tool for FNS and its State partners in managing program funding and accounting for costs. They are also closely watched by other stakeholders, both within and outside the program, as one indicator of the program's reach. Participation levels are most informative as a way to assess whether monthly caseloads are rising or falling in ways consistent with current economic conditions and program policies.

Participation levels, however, provide only a limited measure of the program's success. A better measure of program performance is one that expresses the number of participants as a fraction of those eligible to receive benefits or otherwise in need – a *participation rate*. Such measures have three key advantages over participation levels. First, rates link the number of people served to the number of people the program is designed to serve, providing a solid indicator of the program's success in reaching its target population. Second, because the number of eligible people varies with economic conditions and changes in program policy, a participation rate that controls for these factors allows for stronger comparisons of program performance over time. Third, rates standardize information so that meaningful comparisons can be made across different groups of participants or geographic areas, independent of differences in size.

An ideal food stamp participation rate would compare participation levels with a precise count of the number of people eligible to participate at a given time. But eligibility for food stamps cannot be precisely observed without extensive information on a household's composition, income, assets, and expenses, analyzed by someone trained in the details of program rules and standards. Therefore, producing an exact count of all eligibles is not feasible, and even producing an estimate presents significant challenges. The rules governing food stamp eligibility are detailed, complex, and variable to some extent from State to State. While relevant household information can be – and sometimes is – collected through surveys, it is costly and time-consuming, prone to misreporting, often based on small samples in each State, and rarely yields a precise replication of caseworker determinations.

In practice, researchers take different approaches to estimate participation rates. In general, more detailed and precise estimates take longer to

produce and are more costly than simpler but less-accurate, indicators.

This paper examines two sets of estimates produced regularly by FNS.¹ One set provides annual estimates of the *participation rate among people eligible* for food stamp benefits for the Nation, for each State, and for selected demographic groups. The second set provides an annual *program access index* for each State and is used to award high-performance bonuses.²

Participation Rates Among Eligibles

The most precise way to reflect differences across areas, among groups, or over time in the level of need (as defined by program statute and regulations), and thus the best way to measure program performance, is to use an estimate of the number of people eligible for benefits. Because there is no perfectly accurate count of the number of eligibles, researchers have to use estimates. The most rigorous of these estimates use national survey data to replicate, as closely as possible, current program rules.

While most appealing analytically, the calculation of participation rates among eligibles is challenging. Few surveys have all of the information needed to determine eligibility, and information is not always reported correctly to the survey takers. To address these gaps, analysts may impute information from other sources, make a number of simplifying assumptions, or ignore certain elements of food stamp eligibility altogether. While these choices are made carefully to minimize impact on the accuracy of the estimate, they nonetheless potentially introduce errors.

Because of the need to compile data and ensure its accuracy, there is usually a substantial lag between the reference period for which survey

data are collected and the time they are released to the public.³ The complexity of the estimation process also means there is usually a substantial additional lag between the time survey data are made available and final estimates of participation rates are published. These lag times make it difficult to generate real-time measures of program performance.

FNS publishes participation rates among eligibles in a series of reports for the Nation as a whole, for particular demographic groups, and for individual States.⁴ FNS estimates, for example, that the program served about 20.6 million participants among the 37.0 million eligible in fiscal year 2003, a participation rate of 55.6 percent. This participation rate is the ratio of the average monthly number of participants to an estimate of the number of individuals eligible for food stamps.⁵

Counts of food stamp participants come directly from monthly administrative reports that States provide to FNS. We use administrative counts in place of the survey reports of program participation because of known problems with under-reporting of participation in household surveys. We use the average monthly number of participants over the 12 months of the Federal fiscal year (October through September) to eliminate the effect of seasonality within the year. We exclude participants in Guam and the

³ As an example, consider the timeline for developing estimates from the Current Population Survey (CPS), one of the large, national household surveys administered by the Bureau of the Census. The Annual Social and Economic Supplement to the CPS collects detailed information on household composition in March of each year and on household income during the previous calendar year. In recent years, these data have been released to users in late August, 9 months after the end of the reference period.

⁴ See, for example, Cunyningham (2005) and Castner and Schirm (2005a, 2005b).

⁵ FNS also estimates that the program served 49.9 percent of the eligible households and issued 65.4 percent of the benefits that all eligibles could receive in 2003. The discussion in this paper focuses only on the participation rate among individuals for the sake of clarity.

¹ Other researchers have taken approaches that fall between the two described here. See, for example, FRAC (2005) and Fellowes and Berube (2005).

² This indicator was known as the Participant Access Rate (PAR) until 2005. The change in name was motivated by a desire to reduce some confusion caused by prior terminology.

Virgin Islands—because they are not included in the sample used to estimate eligibles—and persons receiving disaster assistance. We also adjust the count of participants to exclude the estimated number of ineligible people receiving benefits, based on food stamp quality control reviews, because the goal is to estimate the percentage of eligible people who receive food stamp benefits. Finally, we exclude some participants who receive food stamps by virtue of receiving non-cash public assistance (because we are unable to model their eligibility accurately). As a result of these adjustments, the number of participants used in the calculation of the participation rates differs from the total number of reported participants in other FNS publications.

The *estimates of eligible individuals* are derived from a computer model that uses data from the Census Bureau’s Current Population Survey (CPS) to simulate program eligibility and benefit rules. In the simulation procedure, food stamp eligibility rules that were in effect each year are applied to the data reported by each household in the CPS sample. While one of the best sources available for this purpose, the CPS does not include all of the information necessary to determine food stamp eligibility. We take several steps to address these limitations.

- We simulate the food stamp household – based on individuals who purchase and prepare food together – within the CPS dwelling unit – based on shared living quarters. Ineligible non-citizens, able-bodied adults without dependents who do not meet the work requirement, SSI recipients in California, students, and individuals living in group quarters are excluded from the food stamp household.
- We account for the categorical eligibility of households in which all members receive cash payments from SSI, TANF, or, in some places, General Assistance (GA).
- We transform reported annual income into estimated monthly income based on patterns of income receipt seen in the Survey of Income and Program Participation, a

national survey that tracks household circumstances over time. We model net income after deductible expenses based on the characteristics of the household. We then use the gross and net income limits that apply each year.

- We impute the probability that an income-eligible household passes the asset screen.

Estimates of participation rates in each State are derived using a statistical approach (shrinkage) that draws on data from the same national survey used to estimate the overall participation rate, as well as data from the decennial census and administrative records. The shrinkage estimator averages direct sample estimates of participation rates in each State with predictions from a regression model. The direct sample estimates are obtained by simulating the application of food stamp eligibility rules as described above to households in the CPS. The regression predictions of participation rates are based on observed indicators of socioeconomic conditions, such as the percentage of the total State population receiving food stamp benefits. Shrinkage estimates are substantially more precise than direct sample estimates from the CPS.

Program Access Index

To address the need for a more timely, if less precise, proxy indicator of program performance, FNS developed the Program Access Index (PAI). The PAI – formerly known as the Participant Access Rate (PAR) – is one of the measures FNS uses to reward States for high performance in the administration of the Food Stamp Program. The Farm Security and Rural Investment Act of 2002 (also known as the Farm Bill) authorized payment of \$48 million each year, shared among States with high or improved performance for actions taken to correct errors, reduce the rates of error, improve eligibility determinations, or other activities that demonstrate effective administration.

In consultation with State agencies and other program stakeholders, FNS determined that it was important that the set of performance

awards include a measure of program access. A portion of the \$48 million available each year is distributed to the four States with the highest PAI and the four States with the largest improvement in the PAI from the previous year. The PAI is the ratio of the average number of food stamp participants to the number of people with income below poverty in each State.⁶ It offers one indication of the degree to which low-income people have access to food stamp benefits.

Counts of food stamp participants come directly from monthly administrative reports that States provide to FNS. We compute average monthly participation over a calendar year – rather than the Federal fiscal year – to better align the participation count with the annual poverty measure and eliminate the effects of seasonality. We make two adjustments to the participant counts to better reflect State performance in the administration of the program. First, we add participants in the Food Distribution Program on Indian Reservations (FDPIR). In general, these participants would qualify for food stamps, but have opted to take the FDPIR commodity package instead. This adjustment ensures that States with relatively large numbers of FDPIR participants are not disadvantaged in the competition for performance bonuses. In addition, we subtract estimates of the number of people who received food stamp disaster

assistance to better reflect State performance in the administration of the program. Disaster assistance is approved in limited circumstances and operates under special rules that differ from those of the regular Food Stamp Program.

Estimates of the number of people in poverty are published annually by the Bureau of the Census.⁷ These estimates are based on Current Population Survey reports of household income over the course of a calendar year. We make one adjustment to the poverty counts, removing poor SSI recipients in California. By law, SSI recipients in California are ineligible for food stamps because they receive a State-funded cash supplement for food. This adjustment helps level the playing field between California and all other States.⁸

Because the PAI is a ratio, and not a percentage, the value of the PAI can be greater than 100 in some States. This will occur whenever the adjusted number of food stamp participants is larger than the adjusted number of people with income less than the poverty line. A PAI greater than 100 does not imply that a State is serving people ineligible for benefits. The denominator in this index is only a rough approximation of the pool of people eligible for food stamps, and may in some cases be less than the total number of people served. As discussed below, the denominator will include some people who are not eligible for food stamp benefits and exclude others who are eligible.

Why Two Sets of Estimates?

For most purposes, the participation rate among people eligible for benefits is a better measure of program performance. FNS uses the poverty-based PAI as a basis for awarding performance bonuses because it is the best measure available

⁶ This description is based on the guidelines governing award of the 2003 and 2004 performance bonuses. FNS issued a final rule on February 7, 2005, to codify the procedures for calculating and awarding performance bonuses. The final rule renames and modifies the calculation of the PAI/PAR for fiscal year 2005 and beyond. There are two main differences between the calculations in the final rule and those described here. First, the denominator in the final rule is defined by the number of persons with income less than 125 percent of the poverty line instead of 100 percent. This change improves the correlation of State rankings between this index and participation rates among people eligible for benefits. Second, the adjustment for participants in FDPIR is made by subtracting the count from the denominator instead of the numerator. This provides for greater consistency in the treatment of FDPIR participants and SSI recipients in California.

⁷ See DeNavas-Walt, Proctor, and Lee (2005). The Census Bureau posts State poverty estimates on the Web at www.census.gov/hhes/www/poverty.html.

⁸ For most purposes, this treatment of ineligible SSI recipients in California is appropriate. It may be useful in some contexts, however, to consider participation rates among those eligible for food stamp benefits or a cash substitute.

in time to meet statutory requirements. The 2002 Farm Bill that authorizes the State performance bonuses requires payment by the end of the fiscal year following the period of performance – by the end of September 2005 for performance during fiscal year 2004, for example. The timing of the Census Bureau’s release of the official poverty statistics each year – usually in late August or early September, reflecting poverty levels for the prior calendar year – enables calculation of a PAI in time to meet the law’s requirements. There is not enough time to complete the more accurate estimates of the number of people eligible for food stamp benefits. Waiting for the more accurate estimates is inconsistent with the law and would delay payments to States.

How Comparable Are the Two Sets of Estimates?

The value of the PAI as an indicator of program success depends on how well the number of people in poverty approximates the number of people eligible for food stamps. At first glance, there is little reason to think that the official definition of poverty is a good proxy for food stamp eligibility. Eligibility rules for program benefits differ substantially from the official definition of poverty. In determining eligibility, the Food Stamp Program uses a monthly rather than annual measure of income, extends benefits to those with gross income less than 130 percent of the poverty guidelines, and considers many other factors such as assets and citizenship.

An analysis commissioned by FNS suggests that nearly 40 percent of those with income less than the poverty line are not eligible for food stamps, mainly because they have assets that exceed the program’s limit or do not meet the program’s citizenship requirements. On the other hand, about 30 percent of those eligible for benefits have income that exceeds the poverty line, as officially defined. Many of these have gross income above the poverty line but net income after deductible expenses below poverty; others

are poor in the month they qualify for food stamps, but not over the course of a full year.⁹

In practice, however, the number of people in poverty (or with income up to 125 percent of poverty) is correlated with estimates of the number of people eligible for benefits, and ratios of participants to the poverty population can serve as a useful indicator of program performance in some circumstances. Two dimensions of comparison are of particular interest to FNS: (1) similarities in changes in these rates over time; and (2) similarities in the relative ranks among States. The tables that follow examine the correlations between the two measures in regard to these dimensions.

Table 1 compares the two national measures over recent years. Both measures show an initial decline and a more recent increase in program performance, as well as increases in both the number of participants and the number in need of or eligible for benefits. Estimated rates based on the PAI are somewhat higher with only one exception, and the difference widens between 2001 and 2003.¹⁰ But overall, both measures show that the Food Stamp Program reaches more than half but less than two-thirds of the people it is meant to serve.

In addition, the rank order of States based on the PAI is highly correlated with the rank order of States based on participation rates among eligibles. The rank order correlation between the two measures exceeds 0.80 each year between 1999 and 2003 (a perfect match would equal 1.00). This means that a State’s rank on one measure is strongly, but not perfectly, associated with its rank on the other measure.

⁹ Unpublished tabulations contained in memorandum from Karen Cunnyngham to Jenny Genser, *Distinguishing between the CPS Poverty Population and the FSP Eligible Population*, April 29, 2003.

¹⁰ Beginning in 2005, the denominator of the PAI will be the adjusted count of people with income less than 125 percent of poverty. This change will increase the count of low-income people and lower the value of the PAI, but also increase the correlation between State rankings based on the PAI and the proportion of eligibles.

Table 1. Comparison of Two Measures of Food Stamp Performance

| | 2000 | 2001 | 2002 | 2003 | 2004 |
|---|--------|--------|--------|--------|--------|
| Participation Rate Among Eligibles | | | | | |
| Adjusted Count of Participants | 16,705 | 16,898 | 18,656 | 20,591 | n/a |
| Estimate Number of Eligibles | 29,968 | 31,783 | 34,693 | 37,028 | n/a |
| Proportion | 0.557 | 0.532 | 0.538 | 0.556 | n/a |
| Program Access Index | | | | | |
| Adjusted Count of Participants | 17,196 | 17,776 | 19,619 | 21,950 | 24,408 |
| Adjusted Count of Persons in Poverty | 31,052 | 32,907 | 34,411 | 35,694 | 36,810 |
| Ratio | 0.554 | 0.540 | 0.570 | 0.615 | 0.663 |

States with high rankings based on the more refined estimates of participation rates among eligibles also tend to have high rankings based on the simpler ratio of participants to people in poverty.

Tables 2 and 3 illustrate several aspects of the association between State rankings on these two measures of food stamp participation in fiscal years 2002 and 2003. First, for most States, the difference in rankings is relatively modest. In 2003, for example, the rankings for 31 States differ by 5 places or less. Second, the difference in rankings is large for a few States, but in general the differences are not relevant to the distribution of performance awards. None of the States with large differences in rankings (more than 10 places) would have qualified for a performance award under either measure. Third, there is not much overlap in the group of States with large differences in rankings from year to year. Only 3 of the 7 States with large differences in rankings (more than 10 places) in 2003 had an equally large difference in 2002.

The estimated participation rates and the PAI are based on fairly small samples of households in each State. As a result, there is substantial uncertainty associated with the estimates for different States. Even sizable differences in estimates from year to year or between States are not necessarily indications of differences in program performance. Despite this uncertainty,

the estimates can show whether a State's participation rate is probably at the top, at the bottom, or in the middle of the distribution of all States.

References

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Table 2. Comparison of State Rankings: 2002

| State | Proportion of Eligibles | Rank | PAI | Rank | Difference in Ranks |
|----------------|-------------------------|------|-------------|------|---------------------|
| Alabama | 0.53 | 30 | 0.70 | 14 | 16 |
| Alaska | 0.62 | 12 | 0.85 | 3 | 9 |
| Arizona | 0.53 | 30 | 0.57 | 33 | -3 |
| Arkansas | 0.56 | 20 | 0.54 | 36 | -16 |
| California | 0.49 | 38 | 0.38 | 51 | -13 |
| Colorado | 0.45 | 46 | 0.42 | 48 | -2 |
| Connecticut | 0.58 | 16 | 0.62 | 24 | -8 |
| Delaware | 0.51 | 34 | 0.57 | 31 | 3 |
| DC | 0.66 | 7 | 0.78 | 7 | 0 |
| Florida | 0.44 | 47 | 0.49 | 45 | 2 |
| Georgia | 0.54 | 28 | 0.71 | 13 | 15 |
| Hawaii | 0.74 | 2 | 0.77 | 9 | -7 |
| Idaho | 0.46 | 43 | 0.51 | 42 | 1 |
| Illinois | 0.59 | 14 | 0.57 | 32 | -18 |
| Indiana | 0.66 | 7 | 0.77 | 8 | -1 |
| Iowa | 0.52 | 32 | 0.54 | 39 | -7 |
| Kansas | 0.49 | 38 | 0.54 | 38 | 0 |
| Kentucky | 0.67 | 5 | 0.81 | 5 | 0 |
| Louisiana | 0.67 | 5 | 0.78 | 6 | -1 |
| Maine | 0.64 | 11 | 0.68 | 18 | -7 |
| Maryland | 0.48 | 41 | 0.59 | 27 | 14 |
| Massachusetts | 0.39 | 51 | 0.39 | 50 | 1 |
| Michigan | 0.65 | 10 | 0.67 | 20 | -10 |
| Minnesota | 0.56 | 20 | 0.69 | 17 | 3 |
| Mississippi | 0.56 | 20 | 0.65 | 22 | -2 |
| Missouri | 0.69 | 4 | 0.95 | 2 | 2 |
| Montana | 0.50 | 36 | 0.57 | 30 | 6 |
| Nebraska | 0.54 | 28 | 0.51 | 41 | -13 |
| Nevada | 0.42 | 50 | 0.54 | 37 | 13 |
| New Hampshire | 0.46 | 43 | 0.58 | 28 | 15 |
| New Jersey | 0.43 | 48 | 0.47 | 47 | 1 |
| New Mexico | 0.55 | 25 | 0.55 | 35 | -10 |
| New York | 0.50 | 36 | 0.51 | 43 | -7 |
| North Carolina | 0.46 | 43 | 0.51 | 44 | -1 |
| North Dakota | 0.51 | 34 | 0.59 | 25 | 9 |
| Ohio | 0.56 | 20 | 0.69 | 16 | 4 |
| Oklahoma | 0.58 | 16 | 0.75 | 11 | 5 |
| Oregon | 0.81 | 1 | 0.98 | 1 | 0 |
| Pennsylvania | 0.55 | 25 | 0.67 | 19 | 6 |
| Rhode Island | 0.57 | 18 | 0.62 | 23 | -5 |
| South Carolina | 0.59 | 14 | 0.70 | 15 | -1 |
| South Dakota | 0.56 | 20 | 0.71 | 12 | 8 |
| Tennessee | 0.66 | 7 | 0.75 | 10 | -3 |
| Texas | 0.47 | 42 | 0.48 | 46 | -4 |
| Utah | 0.43 | 48 | 0.41 | 49 | -1 |
| Vermont | 0.60 | 13 | 0.66 | 21 | -8 |
| Virginia | 0.52 | 32 | 0.51 | 40 | -8 |
| Washington | 0.57 | 18 | 0.56 | 34 | -16 |
| West Virginia | 0.72 | 3 | 0.81 | 4 | -1 |
| Wisconsin | 0.55 | 25 | 0.59 | 26 | -1 |
| Wyoming | 0.49 | 38 | 0.57 | 29 | 9 |
| US | 0.54 | | 0.57 | | |

Table 3. Comparison of State Rankings: 2003

| State | Proportion of Eligibles | Rank | PAI | Rank | Difference in Ranks |
|----------------|-------------------------|------|-------------|------|---------------------|
| Alabama | 0.56 | 26 | 0.72 | 20 | 6 |
| Alaska | 0.65 | 13 | 0.77 | 17 | -4 |
| Arizona | 0.64 | 16 | 0.68 | 22 | -6 |
| Arkansas | 0.62 | 17 | 0.67 | 25 | -8 |
| California | 0.45 | 49 | 0.39 | 51 | -2 |
| Colorado | 0.48 | 44 | 0.50 | 46 | -2 |
| Connecticut | 0.53 | 33 | 0.66 | 26 | 7 |
| Delaware | 0.53 | 31 | 0.80 | 15 | 16 |
| DC | 0.72 | 4 | 0.91 | 6 | -2 |
| Florida | 0.48 | 42 | 0.50 | 47 | -5 |
| Georgia | 0.65 | 14 | 0.78 | 16 | -2 |
| Hawaii | 0.67 | 8 | 0.86 | 10 | -2 |
| Idaho | 0.53 | 32 | 0.63 | 28 | 4 |
| Illinois | 0.61 | 19 | 0.62 | 32 | -13 |
| Indiana | 0.65 | 15 | 0.80 | 13 | 2 |
| Iowa | 0.57 | 24 | 0.60 | 34 | -10 |
| Kansas | 0.55 | 27 | 0.57 | 36 | -9 |
| Kentucky | 0.67 | 9 | 0.88 | 9 | 0 |
| Louisiana | 0.69 | 6 | 0.89 | 8 | -2 |
| Maine | 0.72 | 5 | 0.92 | 3 | 2 |
| Maryland | 0.48 | 40 | 0.53 | 43 | -3 |
| Massachusetts | 0.43 | 51 | 0.47 | 49 | 2 |
| Michigan | 0.65 | 12 | 0.74 | 19 | -7 |
| Minnesota | 0.59 | 23 | 0.64 | 27 | -4 |
| Mississippi | 0.60 | 20 | 0.80 | 14 | 6 |
| Missouri | 0.76 | 3 | 1.035 | 1 | 2 |
| Montana | 0.50 | 38 | 0.56 | 37 | 1 |
| Nebraska | 0.56 | 25 | 0.62 | 30 | -5 |
| Nevada | 0.44 | 50 | 0.48 | 48 | 2 |
| New Hampshire | 0.46 | 47 | 0.62 | 29 | 18 |
| New Jersey | 0.47 | 46 | 0.47 | 50 | -4 |
| New Mexico | 0.52 | 36 | 0.61 | 33 | 3 |
| New York | 0.48 | 43 | 0.54 | 41 | 2 |
| North Carolina | 0.49 | 39 | 0.52 | 44 | -5 |
| North Dakota | 0.51 | 37 | 0.75 | 18 | 19 |
| Ohio | 0.61 | 18 | 0.72 | 21 | -3 |
| Oklahoma | 0.67 | 10 | 0.97 | 2 | 8 |
| Oregon | 0.83 | 1 | 0.91 | 4 | -3 |
| Pennsylvania | 0.54 | 30 | 0.67 | 24 | 6 |
| Rhode Island | 0.53 | 34 | 0.62 | 31 | 3 |
| South Carolina | 0.65 | 11 | 0.90 | 7 | 4 |
| South Dakota | 0.52 | 35 | 0.67 | 23 | 12 |
| Tennessee | 0.82 | 2 | 0.91 | 5 | -3 |
| Texas | 0.48 | 41 | 0.54 | 42 | -1 |
| Utah | 0.48 | 45 | 0.52 | 45 | 0 |
| Vermont | 0.60 | 21 | 0.80 | 12 | 9 |
| Virginia | 0.54 | 29 | 0.55 | 40 | -11 |
| Washington | 0.60 | 22 | 0.55 | 39 | -17 |
| West Virginia | 0.68 | 7 | 0.81 | 11 | -4 |
| Wisconsin | 0.55 | 28 | 0.59 | 35 | -7 |
| Wyoming | 0.46 | 48 | 0.55 | 38 | 10 |
| US | 0.56 | | 0.62 | | |

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