

## Reaching Those in Need:

### ESTIMATES OF STATE SUPPLEMENTAL NUTRITION ASSISTANCE PROGRAM PARTICIPATION RATES IN 2017



The Supplemental Nutrition Assistance Program (SNAP) provides nutrition assistance to eligible, low-income individuals and households in need. SNAP is the largest of the domestic nutrition assistance programs administered by the Food and Nutrition Service (FNS) of the U.S. Department of Agriculture (USDA). During fiscal year 2019, the program served nearly 38 million people in an average month at a total annual cost of nearly \$54 billion in benefits.

SNAP provides an important support for “working poor” people—people who are eligible for SNAP benefits and live in households in which someone earns income from a job. In fiscal year 2018, 43 percent of all SNAP participants lived in households that had earned income. That was up from 30 percent of all participants in 1996, the year in which passage of the Personal Responsibility and Work Opportunity Reconciliation Act placed more emphasis on work for public assistance recipients.

The SNAP participation rate is the percentage of eligible people in the United States who actually participate in the program. Vigil (2019) examined national SNAP participation rates and rates for socioeconomic and demographic subgroups of people. This research brief presents estimates of State SNAP participation rates for

all eligible people and working poor people for fiscal year 2017. These estimates can be used to assess recent program performance and focus efforts to improve access.

#### Participation rates in fiscal year 2017

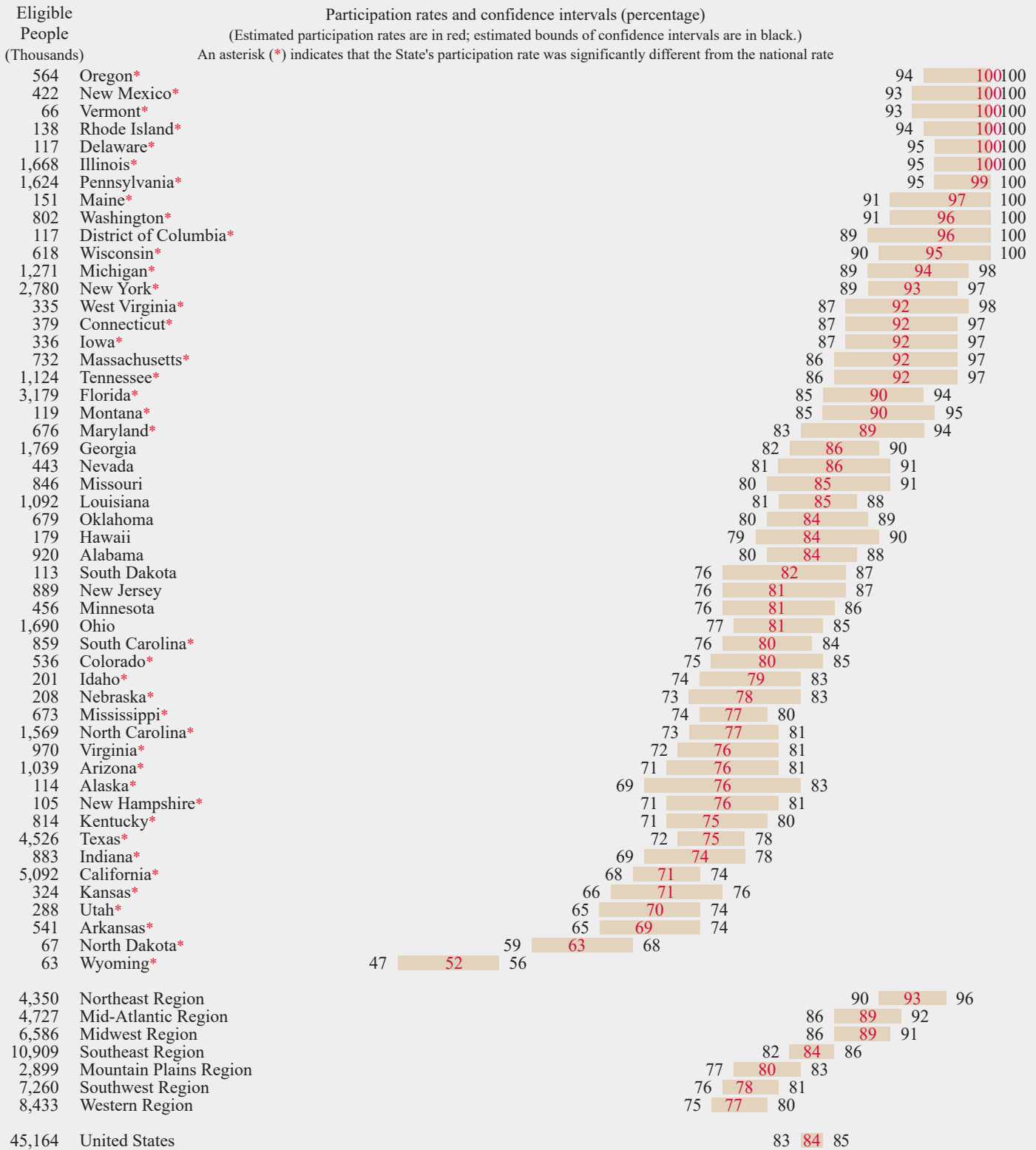
An estimated 84 percent of eligible people received SNAP benefits in fiscal year 2017. Participation rates varied widely from State to State, however. In 20 States and the District of Columbia, the rates were significantly higher (in a statistical sense) than the national rate, and in 19 States, the rates were significantly lower.

Among the regions, the Northeast Region had the highest participation rate. Its 93 percent rate was significantly higher than the rates for all of the other regions. The Western Region’s participation rate of 77 percent was significantly lower than the rates for the other regions except the Mountain Plains Region and the Southwestern Region. (See the last page for a map that shows regional boundaries.)

An estimated 73 percent of eligible working poor people participated in SNAP in fiscal year 2017. As with participation rates for all eligible people, rates for working poor people varied widely across States. In 21 States, SNAP participation rates for working poor people were significantly higher than the national rate for working poor people, and in 13 States and the District of Columbia they were significantly lower.

In fiscal year 2017, the national SNAP participation rate for working poor people was significantly lower than the national rate for all eligible people. In 32 States and the District of Columbia, the participation rate for working poor people was likewise significantly lower than the rate for all eligible people. In 8 of these States and the District of Columbia, the difference between the rates for working poor people and all eligible people was significantly greater than the 10 percentage point difference between the national rates. In no State was the rate for working poor people significantly higher than the rate for all eligible people.

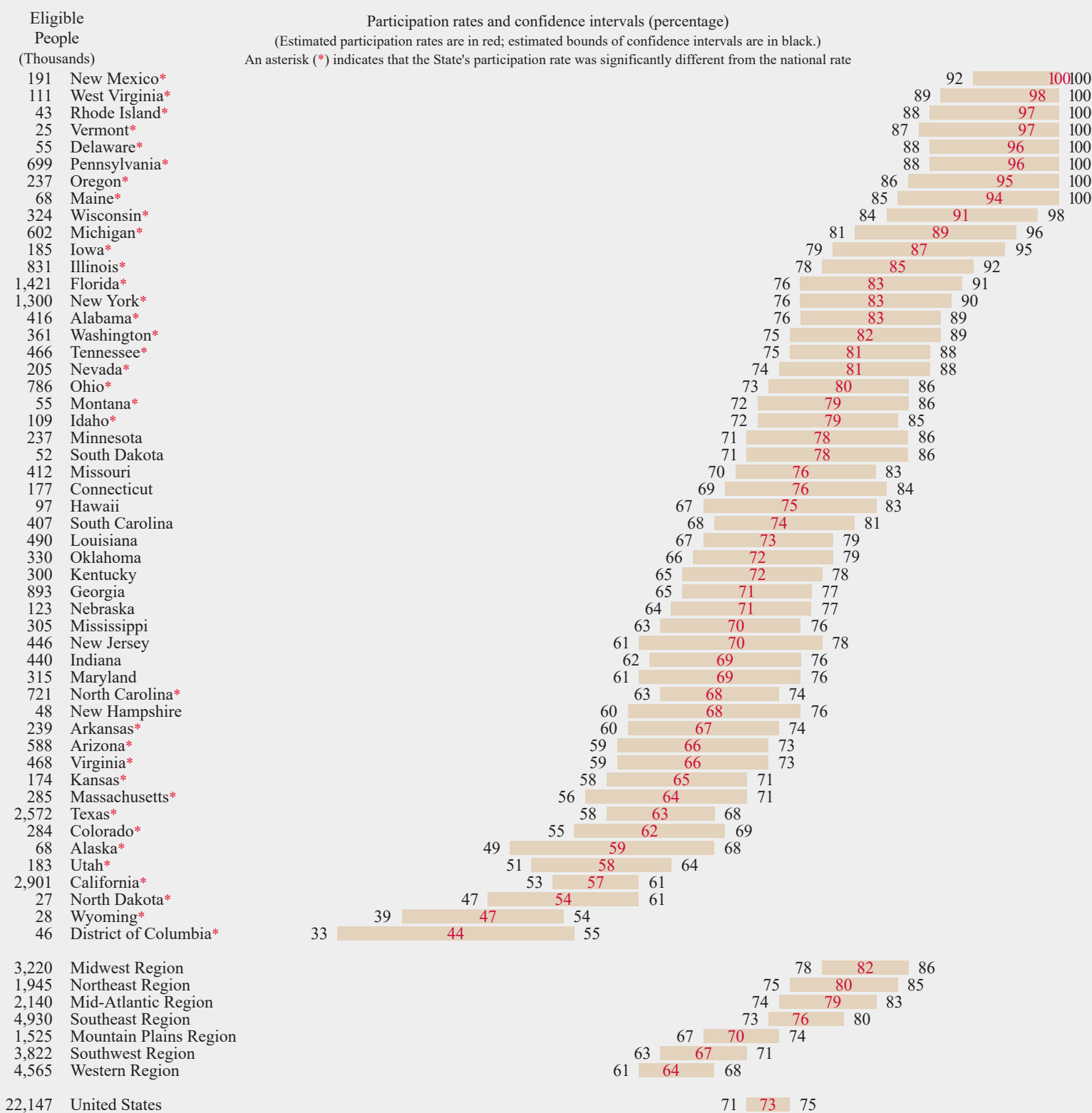
## How many people were eligible in 2017? What percentage participated?



A confidence interval expresses our level of certainty about the true value of a participation rate. Each interval displayed here is a 90 percent confidence interval. One interpretation of such an interval is that there is a 90 percent chance that the true participation rate falls within the estimated bounds. For example, although our best estimate is that Oklahoma's participation rate was 84 percent in 2017, the true rate might have been higher or lower. However, the chances are 90 in 100 that the true rate was between 80 and 89 percent.

See the Estimation method section for information on participation rates of 100 percent.

## How many working poor people were eligible in 2017? What percentage participated?



A confidence interval expresses our level of certainty about the true value of a participation rate. Each interval displayed here is a 90 percent confidence interval. One interpretation of such an interval is that there is a 90 percent chance that the true participation rate falls within the estimated bounds. For example, although our best estimate is that Montana's working poor participation rate was 79 percent in 2017, the true rate might have been higher or lower. However, the chances are 90 in 100 that the true rate was between 72 and 86 percent.

See the Estimation method section for information on participation rates of 100 percent.

## State comparisons

The estimated SNAP participation rates presented here are based on fairly small samples of households in each State. Although there is substantial uncertainty associated with the estimates for some States and with comparisons of estimates from different States, the estimates show whether a State's participation rate for all eligible people was probably at the top, at the bottom, or in the middle of the distribution. In fiscal year 2017, Oregon, New Mexico, Vermont, and Rhode Island were very likely at the top, with higher rates for all eligible people than other States. In contrast, Wyoming likely had a lower rate than other States.

Similarly, it is possible to determine that some States were probably at the top, at the bottom, or in the middle of the distribution of rates for working poor people. In fiscal year 2017, New Mexico, West Virginia, Rhode Island, Vermont, and Delaware were very likely at the top, with higher rates for working poor people than most States. In contrast, the District of Columbia, Wyoming, and North Dakota likely had lower rates than most States.

How a State compares with other States can fluctuate over time due to both statistical variability in estimated rates and true changes in rates. The statistical variability is sufficiently great that a large change in a State's rate from the prior year should be interpreted cautiously, as should differences between the rates of that State and other States. It might be incorrect to conclude that program performance in the State has improved or deteriorated dramatically. Despite this uncertainty, the estimated participation rates for all eligible people and working poor people suggest that some States have been fairly consistently in the top or bottom of the distribution of rates in recent years. In all 3 years from 2015 to 2017, Delaware, Illinois, New Mexico, Oregon, Rhode Island, and Vermont had significantly higher participation rates for all eligible people than two-thirds of the States. Connecticut, the District of Columbia, Florida, Michigan, Pennsylvania, Tennessee, Washington, Wisconsin, and West Virginia had significantly higher rates than half of the States. Arizona, Kansas, and Virginia had significantly lower rates than half of the States in all three years, whereas Arkansas, California, North Dakota, Texas, Utah, and Wyoming had significantly lower rates than two-thirds of the States.

A State ranked near the top or bottom of the distribution of SNAP participation rates for all eligible people is



likely to rank near the top or bottom, respectively, of the distribution of rates for working poor people. However, rankings of States by participation rates for working poor people and all eligible people are not always similar. Four States—Idaho, Minnesota, Ohio, and South Dakota—are ranked significantly higher for all three fiscal years when ranked by their participation rate for working poor people than when ranked by their rate for all eligible people. In contrast, 3 States—Connecticut, Maryland, and Massachusetts—and the District of Columbia are ranked significantly lower for all 3 fiscal years when ranked by their participation rate for working poor people than when ranked by their rate for all eligible people.

## Estimation method

We derived the estimates presented here using shrinkage estimation methods developed to improve precision when sample sizes are small (Cunningham 2020). The shrinkage estimator averaged direct sample estimates of participation rates with predictions from a regression model, using data for all the States, all three years, and both groups (all eligible people and working poor people) to derive each estimate.

We obtained the direct sample estimates by applying SNAP eligibility rules to households in the Current Population Survey Annual Social and Economic Supplement to estimate numbers of eligible people and by using SNAP administrative data to estimate numbers of participating people. Vigil (2019) describes details on the estimation methods used to derive the direct sample estimates.



## Estimates of participation rates (percentage)

|                        | All eligible people |      |      | Working poor |      |      |
|------------------------|---------------------|------|------|--------------|------|------|
|                        | 2015                | 2016 | 2017 | 2015         | 2016 | 2017 |
| Alabama                | 84                  | 86   | 84   | 78           | 81   | 83   |
| Alaska                 | 83                  | 73   | 76   | 67           | 58   | 59   |
| Arizona                | 72                  | 74   | 76   | 61           | 65   | 66   |
| Arkansas               | 73                  | 73   | 69   | 65           | 68   | 67   |
| California             | 69                  | 71   | 71   | 58           | 59   | 57   |
| Colorado               | 72                  | 80   | 80   | 60           | 74   | 62   |
| Connecticut            | 91                  | 91   | 92   | 70           | 71   | 76   |
| Delaware               | 100                 | 100  | 100  | 86           | 88   | 96   |
| District of Columbia   | 99                  | 97   | 96   | 62           | 66   | 44   |
| Florida                | 90                  | 93   | 90   | 76           | 77   | 83   |
| Georgia                | 84                  | 86   | 86   | 72           | 76   | 71   |
| Hawaii                 | 88                  | 85   | 84   | 74           | 70   | 75   |
| Idaho                  | 84                  | 83   | 79   | 78           | 81   | 79   |
| Illinois               | 100                 | 100  | 100  | 83           | 84   | 85   |
| Indiana                | 85                  | 78   | 74   | 75           | 76   | 69   |
| Iowa                   | 87                  | 89   | 92   | 78           | 83   | 87   |
| Kansas                 | 74                  | 77   | 71   | 67           | 80   | 65   |
| Kentucky               | 82                  | 75   | 75   | 73           | 68   | 72   |
| Louisiana              | 77                  | 84   | 85   | 68           | 77   | 73   |
| Maine                  | 89                  | 92   | 97   | 79           | 84   | 94   |
| Maryland               | 94                  | 92   | 89   | 73           | 70   | 69   |
| Massachusetts          | 85                  | 91   | 92   | 59           | 64   | 64   |
| Michigan               | 100                 | 98   | 94   | 89           | 92   | 89   |
| Minnesota              | 82                  | 83   | 81   | 77           | 81   | 78   |
| Mississippi            | 84                  | 83   | 77   | 72           | 71   | 70   |
| Missouri               | 88                  | 87   | 85   | 75           | 79   | 76   |
| Montana                | 82                  | 88   | 90   | 71           | 85   | 79   |
| Nebraska               | 71                  | 81   | 78   | 66           | 79   | 71   |
| Nevada                 | 81                  | 85   | 86   | 74           | 77   | 81   |
| New Hampshire          | 80                  | 81   | 76   | 68           | 73   | 68   |
| New Jersey             | 79                  | 82   | 81   | 65           | 65   | 70   |
| New Mexico             | 100                 | 100  | 100  | 92           | 98   | 100  |
| New York               | 87                  | 92   | 93   | 76           | 79   | 83   |
| North Carolina         | 82                  | 87   | 77   | 74           | 83   | 68   |
| North Dakota           | 60                  | 63   | 63   | 53           | 61   | 54   |
| Ohio                   | 86                  | 85   | 81   | 79           | 82   | 80   |
| Oklahoma               | 79                  | 82   | 84   | 67           | 73   | 72   |
| Oregon                 | 100                 | 100  | 100  | 91           | 94   | 95   |
| Pennsylvania           | 93                  | 98   | 99   | 83           | 90   | 96   |
| Rhode Island           | 100                 | 100  | 100  | 83           | 88   | 97   |
| South Carolina         | 81                  | 80   | 80   | 74           | 75   | 74   |
| South Dakota           | 83                  | 82   | 82   | 77           | 81   | 78   |
| Tennessee              | 95                  | 92   | 92   | 81           | 80   | 81   |
| Texas                  | 70                  | 74   | 75   | 66           | 71   | 63   |
| Utah                   | 69                  | 71   | 70   | 62           | 66   | 58   |
| Vermont                | 100                 | 100  | 100  | 88           | 92   | 97   |
| Virginia               | 73                  | 76   | 76   | 65           | 71   | 66   |
| Washington             | 100                 | 100  | 96   | 87           | 88   | 82   |
| West Virginia          | 96                  | 97   | 92   | 87           | 88   | 98   |
| Wisconsin              | 99                  | 94   | 95   | 89           | 90   | 91   |
| Wyoming                | 58                  | 57   | 52   | 53           | 57   | 47   |
| Mid-Atlantic Region    | 87                  | 89   | 89   | 74           | 77   | 79   |
| Midwest Region         | 93                  | 91   | 89   | 82           | 84   | 82   |
| Mountain Plains Region | 78                  | 81   | 80   | 68           | 76   | 70   |
| Northeast Region       | 88                  | 92   | 93   | 73           | 76   | 80   |
| Southeast Region       | 86                  | 87   | 84   | 75           | 77   | 76   |
| Southwest Region       | 74                  | 78   | 78   | 68           | 73   | 67   |
| Western Region         | 76                  | 77   | 77   | 64           | 65   | 64   |
| United States          | 83                  | 85   | 84   | 72           | 75   | 73   |

There is substantial uncertainty associated with most of these estimates. Cunyningham (2020) presented confidence intervals that measure the uncertainty in the estimates for 2015 and 2016. These confidence intervals are generally about as wide as the confidence intervals presented here for the 2017 estimates.

See the Estimation method section for information on participation rates of 100 percent.

The regression predictions of participation rates drew on data from the American Community Survey, individual tax returns, population estimates, and administrative records, and were based on indicators of socioeconomic conditions, such as the percentage of the State population receiving SNAP benefits. Because of differences between the years being estimated, the regression model differs slightly from the one developed for Cunyningham (2019). The regression model developed for this year's report was chosen for its strong predictive ability for all 3 years and its consistency with the model developed for the prior report.

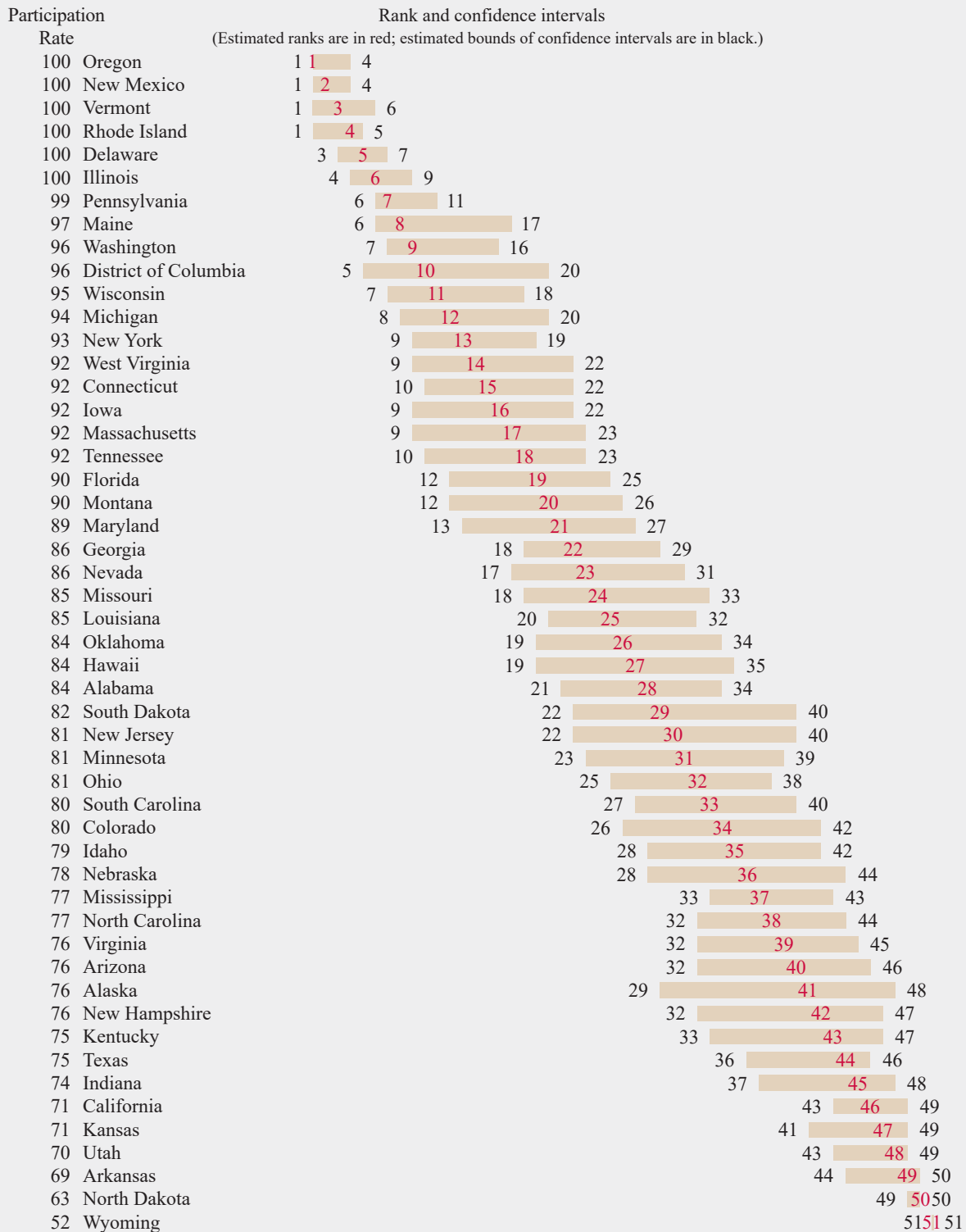
The shrinkage estimates presented here are substantially more precise than the direct sample estimates (Cunyningham 2020). Estimates for fiscal years 2015 and 2016 differ from estimates presented in Cunyningham (2019) because of differences in the 3 fiscal years being jointly estimated and the regression model.

The estimates for all eligible people include people in households that pass all applicable Federal SNAP income and resource tests or in which all members receive cash public assistance. The estimates presented here do not include people eligible solely through State categorical eligibility policies. The estimates for eligible working poor people include people who are eligible for SNAP as defined above and live in a household in which a member earns income from a job.

Estimated participation rates of 100 percent are the result of differences between the data used to estimate the number of eligible people and the data used to estimate the number of participants; they should not be interpreted to mean that every eligible person participated in SNAP. Using different data sources to estimate rate denominators and numerators can result in a preliminary estimate of eligible people in a particular State that is lower than the corresponding estimate of participants, leading to a participation rate that exceeds 100 percent. We capped participation rates at 100 percent by adjusting estimates of eligible people so no State had fewer eligible people than participants. Cunyningham (2020) provides details on how we made the adjustments.

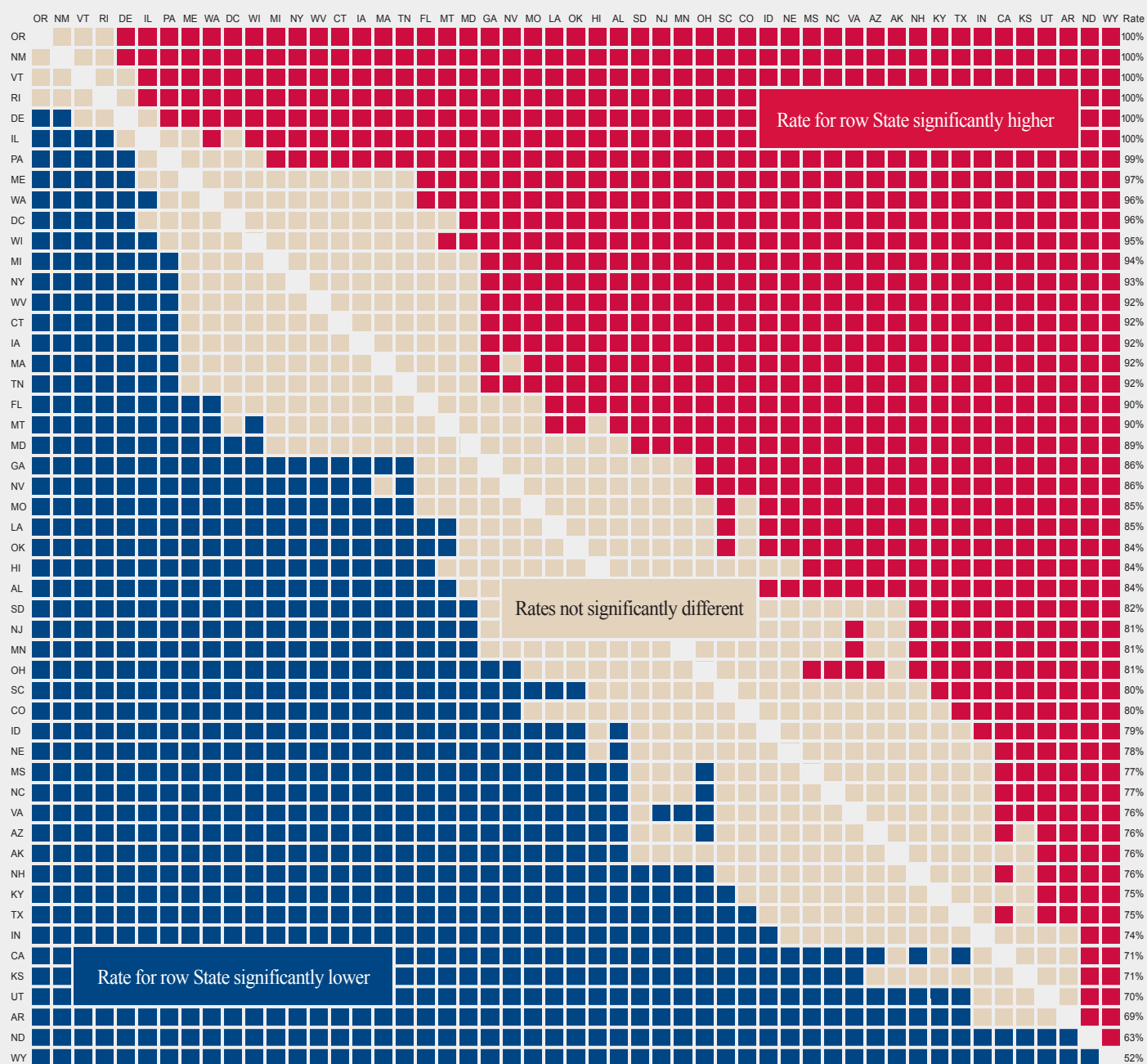
Because the Current Population Survey does not collect data on participation in the Food Distribution Program on Indian Reservations, we did not adjust the estimates presented here to reflect the fact that participants in

## How did your State rank in 2017?



A confidence interval expresses our uncertainty about the true value of a State's rank. Each interval displayed here is a 90 percent confidence interval. One interpretation of such an interval is that there is a 90 percent chance that the true rank falls within the estimated bounds. For example, although our best estimate is that Oklahoma had the 26th highest participation rate in 2017, the true rank might have been higher or lower. However, the chances are 90 in 100 that the true rank was between 19 and 34 among all of the States. To determine how Oklahoma or your State compares with any other State, see the chart on page 7.

### How did your State compare with other States in 2017 for all eligible people?



This figure can be used to determine whether one State has a significantly higher participation rate than another by finding the row for the first State at the left of the figure and the column for the second State at the top of the figure. If the box where the row and column intersect is red, there is at least a 90 percent chance that the first State (the row State) has a higher true participation rate. If the box is blue, there is at least a 90 percent chance that the second State (the column State) has a higher true participation rate. Equivalently, there is less than a 10 percent chance that the first State has a higher rate. If the box is tan, there is more than a 10 percent chance but less than a 90 percent chance that the first State has a higher rate; thus, we conclude that neither estimated rate is significantly higher.

Taking Oklahoma, the State in the middle of the distribution, as an example, we see that it had a significantly lower participation rate than 19 States (Oregon, New Mexico, Vermont, Rhode Island, Delaware, Illinois, Pennsylvania, Maine, Washington, Wisconsin, Michigan, New York, West Virginia, Connecticut, Iowa, Massachusetts, Tennessee, Florida, and Montana) and the District of Columbia and a significantly higher rate than 18 States (Wyoming, North Dakota, Arkansas, Utah, Kansas, California, Indiana, Texas, Kentucky, New Hampshire, Alaska, Arizona, Virginia, North Carolina, Mississippi, Nebraska, Idaho, and South Carolina). Its rate was neither significantly higher nor significantly lower than the rates for the other 13 States, suggesting that Oklahoma is probably in the broad center of the distribution, unlike, for example, Oregon and Wyoming, which were surely at or near the top and bottom of the distribution, respectively. Although we use the statistical definition of *significance* here, most of the significant differences were at least 10 percentage points, a difference that seems important as well as significant, and each was at least 4 percentage points.

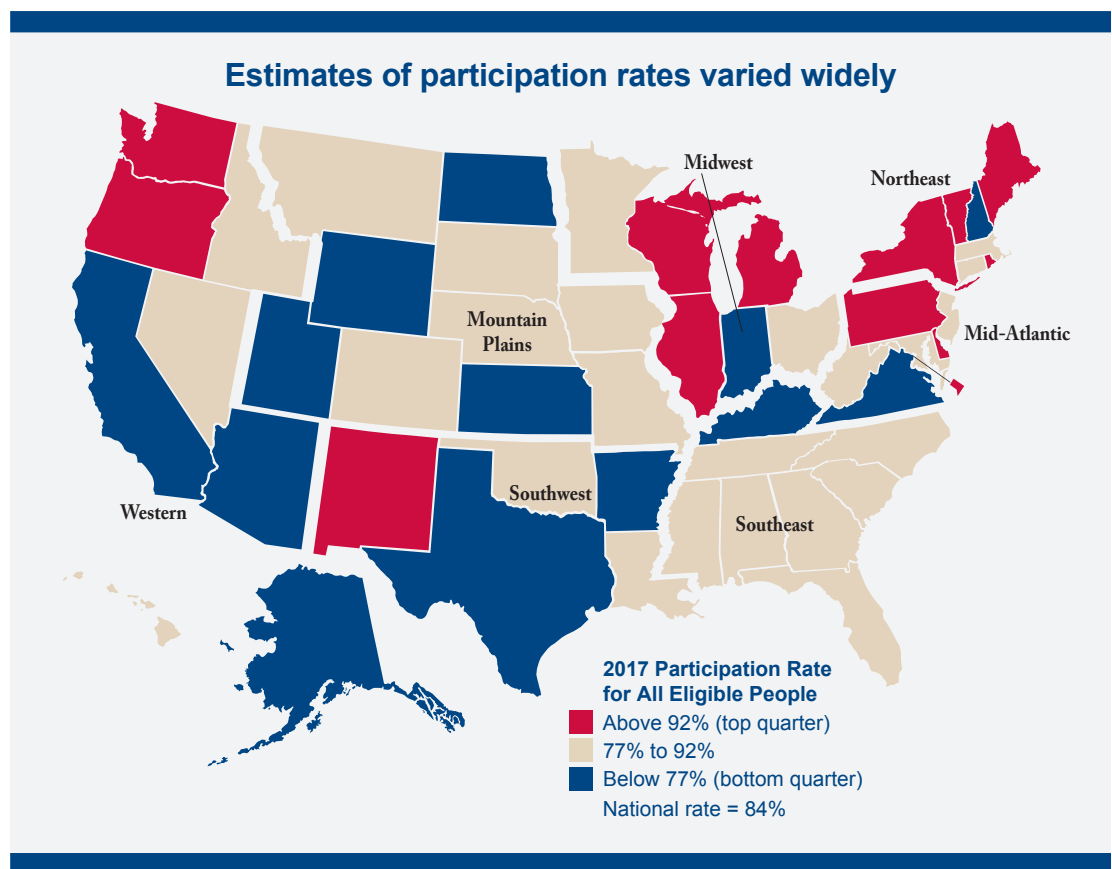
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that program were not eligible to receive SNAP benefits at the same time (Vigil 2019). The Food Distribution Program on Indian Reservations served about 93,000 people in fiscal year 2017, so the effects of such adjustments would be negligible in almost all States. Because the focus in this document is on participation among people who were eligible for SNAP, we adjusted the estimates of eligible people using available data to reflect the fact that Supplemental Security Income recipients in California were not eligible to receive SNAP benefits because they received cash instead.<sup>1</sup> However, in some other contexts, it might be useful to consider participation rates among those eligible for SNAP benefits or a cash substitute.

## References

Cunyngham, Karen. “Reaching Those in Need: Estimates of State Supplemental Nutrition Assistance Program Participation Rates in 2016.” Final report submitted to the U.S. Department of Agriculture, Food and Nutrition Service. Washington, DC: Mathematica, March 2019.

<sup>1</sup>In 2017, about 1.3 million Supplemental Security Income recipients in California received a small food assistance benefit through the State supplement. In the absence of the State rule excluding these people from receiving SNAP benefits, about 800,000 more California residents would have been eligible for SNAP in 2017.



Vigil, Alma. “Trends in Supplemental Nutrition Assistance Program Participation Rates: Fiscal Year 2010 to Fiscal Year 2017.” Final report submitted to the U.S. Department of Agriculture, Food and Nutrition Service. Washington, DC: Mathematica, September 2019.

Cunyngham, Karen. “Empirical Bayes Shrinkage Estimates of State Supplemental Nutrition Assistance Program Participation Rates in Fiscal Year 2015 to Fiscal Year 2017 for All Eligible People and Working Poor People.” Final report submitted to the U.S. Department of Agriculture, Food and Nutrition Service. Washington, DC: Mathematica, August 2020. Available at <https://www.mathematica.org/our-publications-and-findings/publications/empirical-bayes-shrinkage-estimates-of-state-snap-participation-rates-in-fiscal-year-2015-to-2017>.