Contract No.: FNS-03-030-TNN / 43-3198-3-3724
MPR Reference No.: 6044-411

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Empirical Bayes Shrinkage Estimates of State Food Stamp Program Participation Rates in 2003-2005 for All Eligible People and the Working Poor

Final Report

April 2008

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EXECUTIVE SUMMARY

The Food Stamp Program (FSP) is a central component of American policy to alleviate hunger and poverty. The program's main purpose is "to permit low-income households to obtain a more nutritious diet . . . by increasing their purchasing power" (Food Stamp Act of 1977, as amended). The FSP is the largest of the domestic food and nutrition assistance programs administered by the U.S. Department of Agriculture's Food and Nutrition Service. During fiscal year 2007, the program served 26 million people in an average month at a total annual cost of over $30 billion in benefits. The average monthly FSP benefit was about $214 per household.

This report presents estimates that, for each state, measure the need for the FSP and the program's effectiveness in each of the three years from 2003 to 2005. The estimated numbers of people eligible for the FSP measure the need for the program. The estimated FSP participation rates measure, state by state, the program's performance in reaching its target population. In addition to the participation rates that pertain to all eligible people, we derived estimates of participation rates for the "working poor," that is, people who were eligible for the FSP and lived in households in which someone earned income from a job.

The estimates for all eligible people and for the working poor were derived jointly using empirical Bayes shrinkage estimation methods and data from the Current Population Survey, the decennial census, and administrative records. The shrinkage estimator that was used averaged sample estimates of participation rates in each state with predictions from a regression model. The predictions were based on observed indicators of socioeconomic conditions in the states, such as the percentage of the total state population receiving FSP benefits. The shrinkage estimates derived are substantially more precise than direct sample estimates from the Current Population Survey or the Survey of Income and Program Participation, the best sources of current data on household incomes used to model program eligibility. Shrinkage estimators improve precision by "borrowing strength," that is, by using data for multiple years from all the states to derive each state's estimates for a given year and by using not only sample survey data but also census and administrative data. This report describes our shrinkage estimator in detail.

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I. INTRODUCTION

This report presents estimates of the Food Stamp Program (FSP) participation rate and the number of people eligible for the FSP in each state for the years 2003 to 2005.[1] It also presents estimates of the participation rates for the working poor and the numbers of eligible working poor, where we define as "working poor" any person who is eligible for the FSP and lives in a household in which a member earns money from a job. These estimates were derived using "shrinkage" estimation methods. This introductory chapter overviews the advantages and some previous applications of shrinkage estimation. Chapter II describes how we derived shrinkage estimates, and Chapter III presents our state estimates for all eligible people and for the working poor. Technical details and additional information about our estimation methods are provided in Appendix A.

The principal challenge in deriving state estimates like those presented in this report is that the leading national surveys collecting current income data for families and used for estimating program eligibility—the Current Population Survey (CPS) and the Survey of Income and Program Participation (SIPP)—have small samples for most states. Thus, "direct" estimates—estimates based on data from one source for the state and time period in question—from these surveys are imprecise. For example, to calculate a direct estimate of Nebraska's 2005 FSP participation rate, we use just 2005 data on households in the CPS from Nebraska. Because of the potential errors introduced by the CPS surveying only a small number of families in Nebraska rather than all families in the state, though, we can be confident—by a commonly used standard—only that Nebraska's FSP participation rate in 2005 was between about 58 and 73

[1] The estimates presented here are also reported and compared with one another in Cunnyngham, Castner and Schirm (2007).

percent. This range is wide (but typical), reflecting our substantial uncertainty about what Nebraska's participation rate actually was.

To improve precision, statisticians have developed "indirect" estimators. These estimators "borrow strength" by using data from other states, time periods, or data sources. The assumption underlying indirect estimation is that what happened in other states in 2005 or what happened in Nebraska (and other states) in other years is relevant to estimating what happened in Nebraska in 2005. Using indirect estimation, the Census Bureau has improved the precision of state poverty rates derived from the CPS by calculating two- and three-year averages (DeNavas-Walt et al. 2007).

A generally superior indirect estimator is the "shrinkage" estimator. A shrinkage estimator averages estimates obtained from different methods. For example, Fay and Herriott (1979) developed a shrinkage estimator that combined direct sample and regression estimates of per capita income for small places (population less than 1,000). Their estimates were used to allocate funds under the General Revenue Sharing Program. Shrinkage estimators have also been used to develop state estimates of income-eligible infants and children for allocating funds under the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) (Schirm 2000). To borrow strength across both space (states) and time, the current WIC eligibles estimator uses several years of CPS data and combines direct sample estimates with predictions from a regression model. The predictions of WIC eligibles are based on, for example, state poverty rates for children according to tax return data and per capita family income according to Census 2000. States with similar socioeconomic conditions, as reflected in these poverty rate and income statistics, are observed (and predicted) to have similar proportions of infants and children eligible for WIC. The shrinkage estimator uses data for all the states (with data for prior years and data from other sources) to estimate a regression model and

formulate a prediction for Nebraska. Then, the shrinkage estimator optimally averages the direct sample and regression estimates for Nebraska to obtain a shrinkage estimate. This contrasts with the direct estimator that ignores systematic patterns across states, using, for example, only Nebraska's data to derive an estimate for Nebraska, even though conditions may be similar in Iowa or Kansas. In another application of shrinkage methods, shrinkage estimates of poor school-aged children by state and county are used in allocating Title I compensatory education funds for disadvantaged youth (National Research Council 2000).

In these and other applications of shrinkage estimation, the gain in precision from borrowing strength via a shrinkage estimator can be substantial. For example, the confidence intervals for the shrinkage estimates of WIC eligibles in 1992 were, on average, 61 percent narrower than the corresponding confidence intervals for the direct estimates (Schirm 1995). To obtain that same gain in precision with a direct estimator would require—according to rough calculations—more than a six-fold increase in sample size. Therefore, we use an indirect estimator and borrow strength to derive state estimates of FSP participation rates and counts of all eligible people and the eligible working poor (while recognizing that the gain in precision might not be as large as for the 1992 WIC estimates).

The shrinkage estimator we used combined direct sample and regression estimates and borrowed strength across states, over time, and between groups (all eligible people and the working poor). Like the estimators used in the other applications described in this chapter, our estimator also borrowed strength by using data from outside the main sample survey (the CPS), specifically, data from administrative records systems and the decennial census. In all, our estimator used one year of census data, three years of CPS data, and three years of FSP administrative data, population estimates, and unemployment insurance data for all states to

obtain estimates for each state in each year (2003 to 2005) for all eligible people and for the working poor.

The shrinkage estimates derived for any one application are not guaranteed to be more accurate than estimates obtained using some other method. They have good statistical properties in general, however, and we have found for our specific application that as in previous applications, shrinkage estimation can greatly improve precision. Additional support for shrinkage estimators is provided by the findings from simulation studies. For example, in a comprehensive evaluation of the relative accuracy of alternative estimators of state poverty rates, Schirm (1994) found that shrinkage estimates are substantially more accurate than direct estimates or indirect estimates obtained from other methods that have been widely used.

II. A STEP-BY-STEP GUIDE TO DERIVING STATE ESTIMATES

This chapter describes our procedure for estimating state FSP participation rates for all eligible people and the working poor and the numbers of people eligible for FSP benefits. This procedure, summarized by the flow chart in Figure II.1, has the following four steps:

1. From CPS data and FSP administrative data, derive direct sample estimates of state FSP participation rates for each of the three years 2003 to 2005.
2. Using a regression model, predict state FSP participation rates based on administrative and decennial census data.
3. Using "shrinkage" methods, average the direct sample estimates and regression predictions to obtain preliminary shrinkage estimates of state FSP participation rates.
4. Adjust the preliminary shrinkage estimates to obtain final shrinkage estimates of state FSP participation rates.

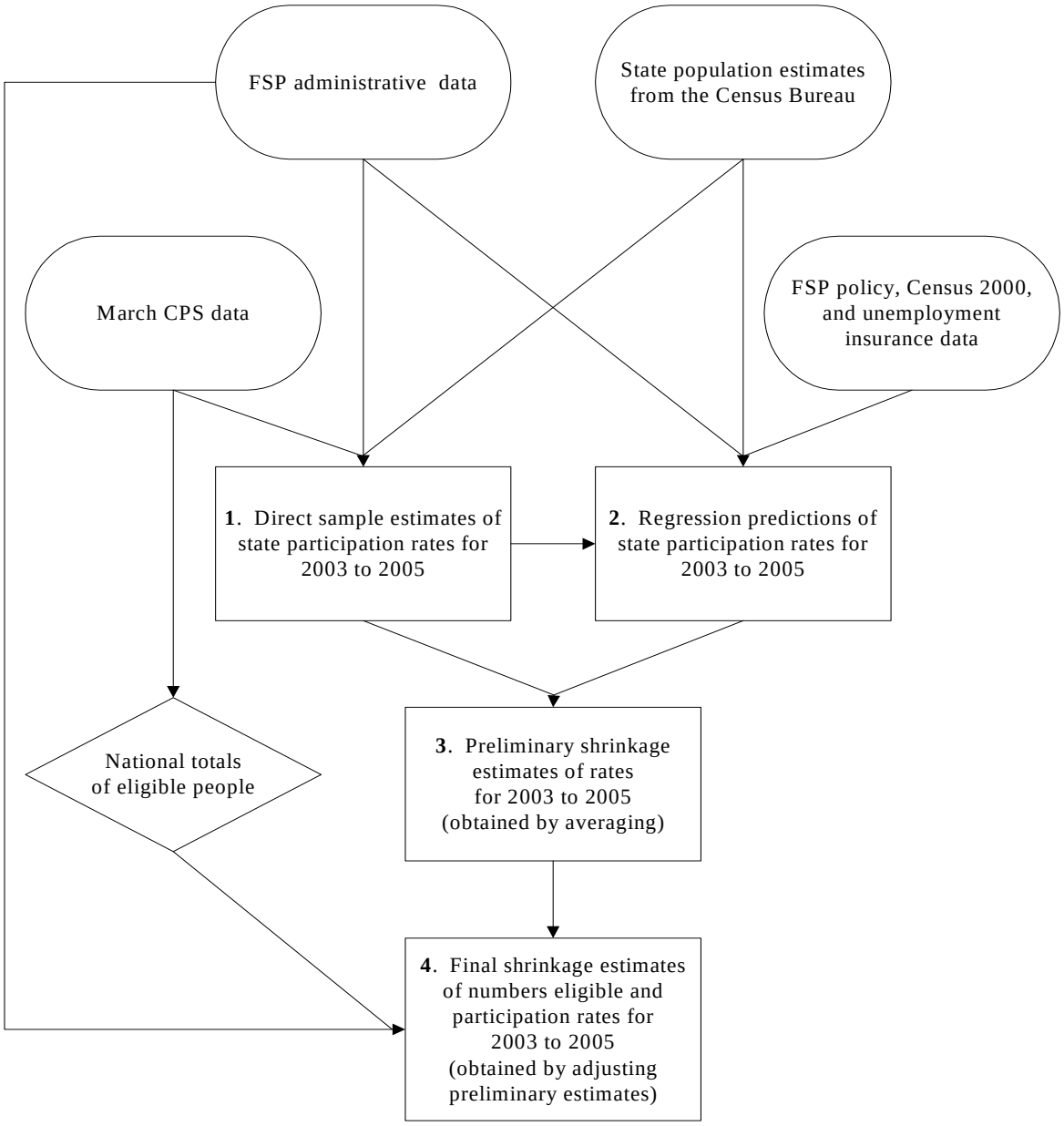
Each step is described in the remainder of this chapter. Additional technical details are provided in Appendix A.

1. From CPS data and FSP administrative data, derive direct sample estimates of state FSP participation rates for each of the three years 2003 to 2005

A FSP participation rate is obtained by dividing an estimate of the number of people participating in the FSP by an estimate of the number of people eligible for the FSP, with the resulting ratio expressed as a percentage. We used FSP administrative data to estimate numbers of participants in an average month in the fiscal year. To derive direct sample estimates of participation rates, we used CPS data to estimate numbers of eligibles. Because the CPS collects family income data for the prior calendar year, we obtained estimates of eligibles in 2005, for example, from the March 2006 CPS. To derive a participation rate for the working poor, we divided the number of working poor participants by the number of working poor people who were eligible.

FIGURE II.1

THE ESTIMATION PROCEDURE



As noted in Chapter I, direct sample estimates of participation rates are relatively imprecise. The standard errors for the estimates, reported in Appendix A along with the estimated rates, tend to be large, so our uncertainty about states' true rates is great. For example, according to commonly used statistical standards, we can be confident only that Nebraska's participation rate for all eligible people in 2005 was between 58 percent and 73 percent. This range is so wide and our uncertainty so great because the CPS sample for Nebraska is small. This lack of data, that is, the small number of sample observations that pertain directly to the target geographic area and time period—Nebraska and 2005 in our example—is the fundamental problem of "small area estimation."

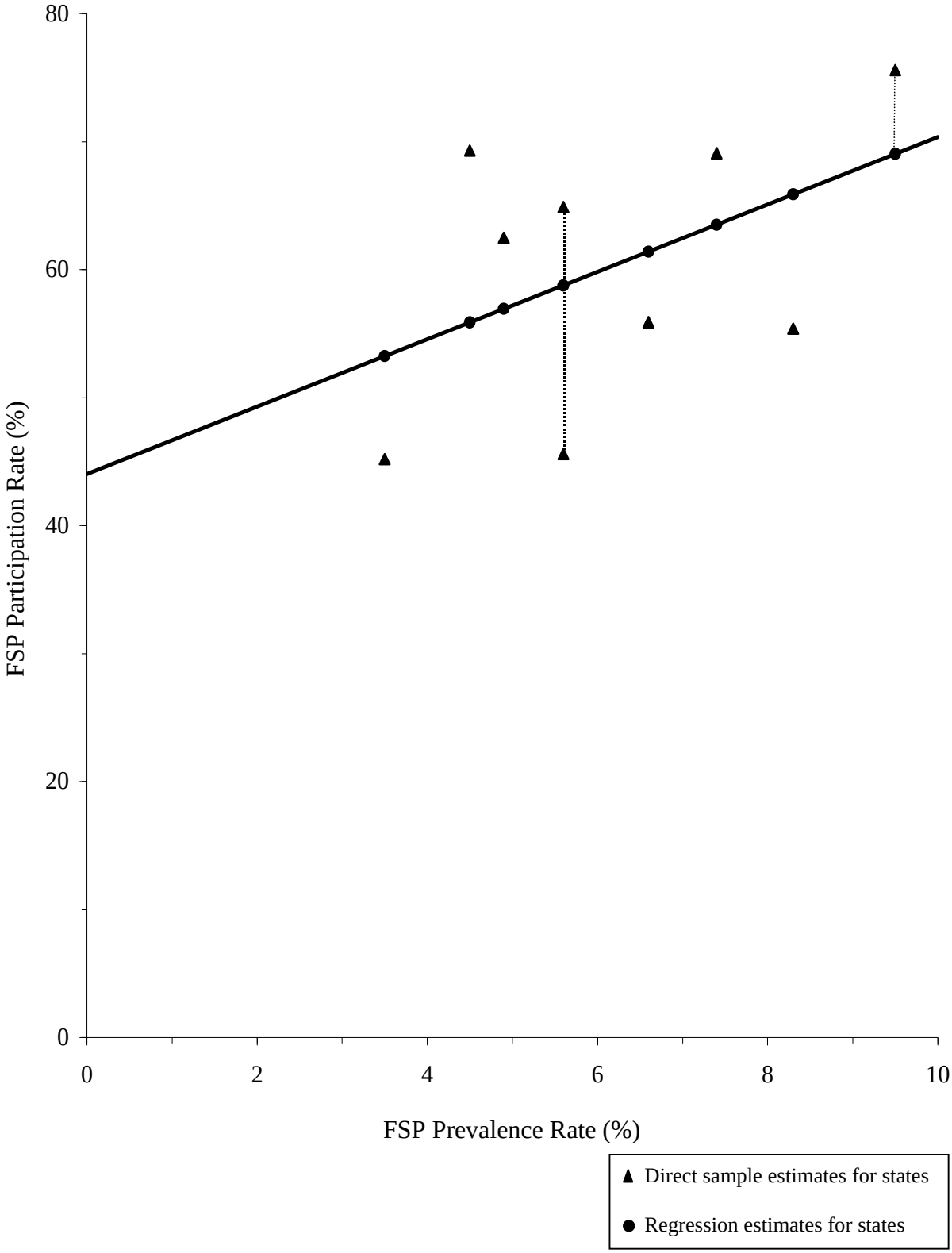
2. Using a regression model, predict state FSP participation rates based on administrative and decennial census data

The main limitation of the sample estimates derived in the previous step is imprecision. Regression can reduce that imprecision. Regression estimates are predictions based on nonsample or highly precise sample data, such as census and administrative records data. The latter include records from government tax and transfer programs.

Figure II.2 illustrates how the regression estimator works. The simple example in the figure has only nine states and data for just one year on one predictor—the FSP "prevalence" rate—that will be used to predict each state's FSP participation rate for eligible people. The FSP prevalence rate is measured by the percentage of all people (eligible and ineligible combined) who receive FSP benefits, in contrast to the FSP participation rate, which is measured by the percentage of eligible people who receive FSP benefits. The triangles in the figure correspond to direct sample estimates; a triangle shows the prevalence rate in a state (read off the horizontal axis) and the sample estimate of the participation rate in that state (read off the vertical axis). Not surprisingly, the graph suggests that prevalence and participation rates are systematically

FIGURE II.2

AN ILLUSTRATIVE REGRESSION ESTIMATOR



associated. States with higher percentages of all people participating in the FSP tend to have higher percentages of eligible people participating, although the relationship is far from perfect. To measure this relationship between prevalence and participation rates and derive predictions, we can use a technique called "least squares regression" to draw a line through the triangles (that is, we "regress" the sample estimates on the predictor). Regression estimates of participation rates are points on that line, the circles in Figure II.2. The predicted participation rate for a particular state is obtained by moving up or down from the state's direct sample estimate (the triangle) to the regression line (where there is a circle) and reading the value off the vertical axis. For example, the regression estimator predicts a participation rate of just under 60 percent for both states with prevalence rates of about 5.5 percent. In contrast, for the state with about 9.5 percent of people receiving FSP benefits, the predicted participation rate is nearly 70 percent.

To derive the regression estimates for 2003 to 2005 and for all eligible people and the working poor, we included all of the states, not just nine as in our illustrative example, and we used seven predictors, not just one. Adding six predictors improves our predictions. The seven predictors used measure:

- The percentage of the population receiving FSP benefits, that is, the FSP prevalence rate
- The percentage change in total population from July 1 of the previous year to July 1 of the current year according to the Census Bureau's population estimates
- The percentage of elderly people (age 65 or older) at or below the federal poverty level in 1999 according to Census 2000
- The percentage of adults age 25 or older who had obtained a bachelor's degree or higher in 1999 according to Census 2000
- The percentage of families that have related children and were at or below the federal poverty level in 1999 according to Census 2000
- The percentage of the population receiving first payments of unemployment insurance (UI) according to UI administrative data

- An indicator that the state's policy for counting vehicle values in the asset test was different from the federal policy in the prior year

The first and sixth predictors are obtained from administrative data and population estimates, the second predictor is derived from the Census Bureau's population estimates, and the third, fourth and fifth predictors are from the decennial census. The last predictor is based on information provided by the U.S Department of Agriculture's Food and Nutrition Service. These seven predictors were selected as the best from a longer list described in Appendix A, which provides complete definitions and sources for the predictors. Appendix A also presents the regression estimates and their standard errors. The standard errors tend to be fairly equal across the states and much smaller than the largest standard errors for direct sample estimates, reflecting substantial gains in precision from regression for the states with the most error-prone direct sample estimates.

Comparing how the direct sample and regression estimators use data reveals how the regression estimator "borrows strength" to improve precision. When we derived direct sample estimates in Step 1, we used only one year's CPS sample data from Nebraska to estimate Nebraska's participation rate in that year, even though Nebraska, like nearly all states, has a small CPS sample. Deriving regression estimates in this step, we estimated a regression line from sample, administrative, and census data for multiple years and all the states and used the estimated line (with administrative and census data for Nebraska) to predict Nebraska's participation rate in a given year. In other words, the regression estimator not only uses the sample estimates from every state for multiple years to develop a regression estimate for a single state in a single year but also incorporates data from outside the sample, namely, data in administrative records systems and the census. To improve precision even further, the estimator

borrows strength across groups—all eligible people and the working poor—by deriving estimates for the groups jointly.

The regression estimator improves precision by using more data. It uses that additional data to identify states with direct sample estimates that seem too high or too low because of sampling error, that is, error from drawing a sample—a subset of the population—that has a higher or lower participation rate than the entire state population has. For example, suppose a state has a low FSP prevalence rate and values for other predictors that are consistent with a low FSP participation rate. Then, our regression estimator would predict a low participation rate for that state, implying that a direct sample estimate showing a high rate is too high. The regression estimate will be lower than the direct sample estimate for such a state. On the other hand, if the sample data for a state show a much lower participation rate than expected in light of the FSP prevalence rate and the other predictors, the regression estimate for that state will be higher than the sample estimate.

3. Using "shrinkage" methods, average the direct sample estimates and regression predictions to obtain preliminary shrinkage estimates of state FSP participation rates

As noted before, the limitation of the direct sample estimator is imprecision. The limitation of the regression estimator is called "bias." Some states really have higher or lower participation rates than we expect (and predict with the regression estimator) based on the FSP prevalence rate and other predictors used. Such errors in regression estimates reflect bias.

These limitations arise for the following reasons. The direct sample estimator uses relatively little information. It uses only the typically small number of sample observations for one state and one year to obtain an estimate for that state and year. It does not use sample data for other states or other years or data from other sources, such as administrative records or the census. Although the regression estimator borrows strength, using data from all the states and

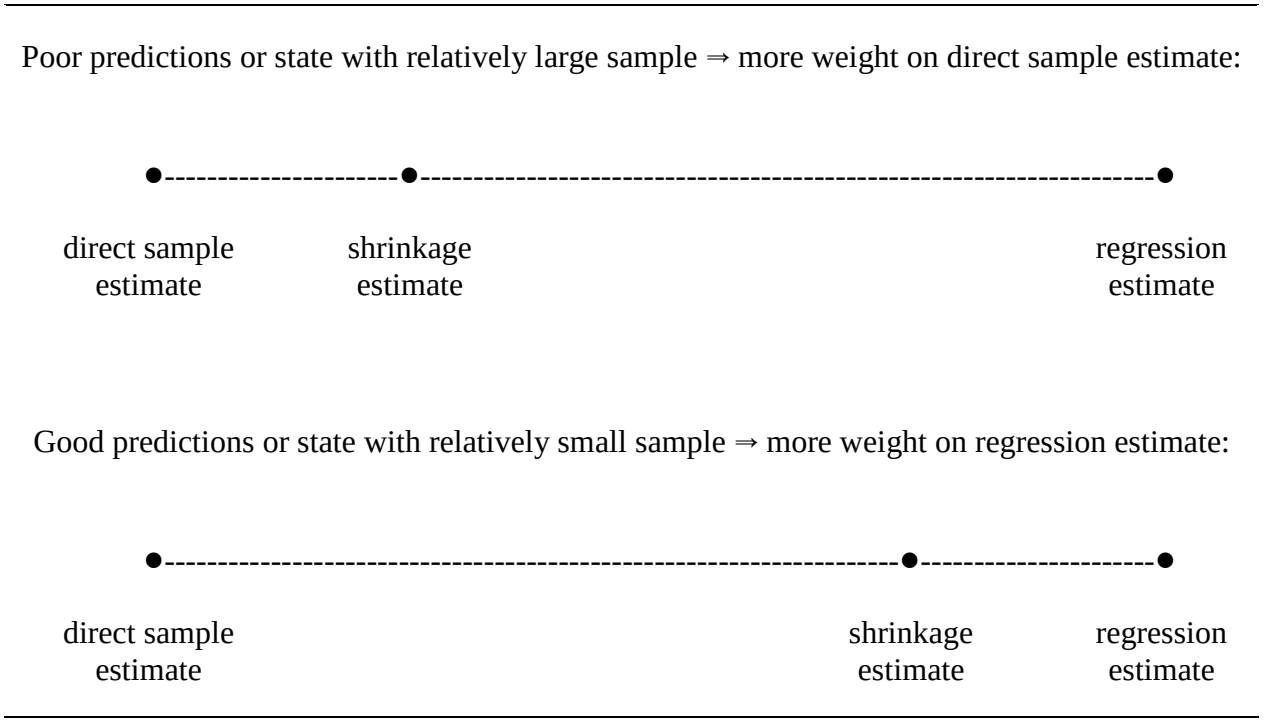
multiple years as well as administrative and census data, it makes no further use of the sample data after estimating the regression line. It treats the entire difference between the sample and regression estimates as sampling error, that is, error in the direct sample estimate. No allowance is made for prediction error, that is, error in the regression estimate. Although not all, if any, true state participation rates lie on the regression line, the assumption underlying the regression estimator is that they do.

Using all of the information at hand, a shrinkage estimator addresses the limitations of the direct sample and regression estimators by combining the sample and regression estimates, striking a compromise. As illustrated in Figure II.3, a shrinkage estimator takes a weighted average of the sample and regression estimates, weighting them according to their relative accuracy. We calculated weights using the empirical Bayes methods described in Appendix A. Generally, the more precise the direct sample estimate for a state, the closer the shrinkage estimate will be to it. The larger samples drawn in large states support more precise direct sample estimates, so shrinkage estimates tend to be closer to the direct sample estimates for large states. Given the precision of the direct sample estimate for a state, the weight given to the regression estimate depends on how well the regression line "fits." If we find good predictors reflecting why some states have higher participation rates than other states, we say that the regression line "fits well." The shrinkage estimate will be closer to the regression estimate and farther from the direct sample estimate when the regression line fits well than when the line fits poorly. Striking a compromise between the direct sample and regression estimators, the shrinkage estimator strikes a compromise between imprecision and bias. The direct sample and regression estimates are optimally weighted to improve accuracy by minimizing a measure of error that reflects both imprecision and bias. By accepting a little bias, the shrinkage estimator may be substantially more precise than the direct sample estimator. By sacrificing a little

precision, the shrinkage estimator may be substantially less biased than the regression estimator. The shrinkage estimator optimizes the tradeoff between imprecision and bias.

FIGURE II.3

SHRINKAGE ESTIMATION



In the next step of our estimation procedure, we make some fairly small adjustments to the shrinkage estimates that we derive in this step. Thus, we call the estimates from this step "preliminary" and the estimates from the next step "final."

4. Adjust the preliminary shrinkage estimates to obtain final shrinkage estimates of state FSP participation rates

We adjusted the preliminary shrinkage estimates of participation rates so that the eligibles counts implied by the rates sum to the national eligibles count estimated directly from the CPS. This adjustment was carried out separately for each year and for the two groups of eligible

people (all eligible people and the working poor). The following description of the adjustment will focus on the 2005 estimates for all eligible people. In Appendix A, we describe the results of the adjustment for other years and for the working poor and discuss our adjustment method in more detail.

To implement the adjustment, we calculated preliminary estimates of eligibles counts from the preliminary estimates of participation rates derived in Step 3 and the administrative estimates of the numbers of FSP participants obtained in Step 1. The state eligibles counts summed to 38,558,601 for 2005, while the national total for 2005 estimated directly from the CPS was 37,742,807. To obtain estimated eligibles counts for states that sum (aside from rounding error) to the direct estimate of the national total, we multiplied each of the preliminary eligibles counts by 37,742,807 ÷ 38,558,601 (≈ 0.9788). Such benchmarking of estimates for smaller areas to a relatively precise estimated total for a larger area is common practice.

Applying this adjustment, we obtained our final shrinkage estimates of the numbers of people eligible for the FSP. From those estimates and our administrative estimates of the numbers of FSP participants, we derived final shrinkage estimates of participation rates. Our final shrinkage estimates are presented in the next chapter.

III. STATE ESTIMATES OF FOOD STAMP PROGRAM PARTICIPATION RATES AND NUMBERS OF ELIGIBLE PEOPLE FOR 2003 TO 2005 FOR ALL ELIGIBLE PEOPLE AND THE WORKING POOR

Tables III.1 and III.2 present our final shrinkage estimates of FSP participation rates in each state for 2003 to 2005 for all eligible people and for the working poor, respectively. For those same years, Tables III.3 and III.4 display our final shrinkage estimates of the number of people eligible for the FSP and the number of eligible working poor in each state.

These shrinkage estimates are relatively precise; they have much smaller standard errors and narrower confidence intervals than the CPS direct sample estimates. Tables III.5 to III.10 display approximate 90-percent confidence intervals showing the uncertainty remaining after using shrinkage estimation. One interpretation of such an interval is that there is a 90-percent chance that the true value—that is, the true participation rate or the true number of eligible people—falls within the estimated bounds. For example, while our best estimate is that Nebraska's participation rate for all eligible people was 65 percent in 2005 (see Table III.1), the true rate may have been higher or lower. However, according to Table III.7, the chances are 90 in 100 that the true rate was between 61 and 70 percent, an interval that is 61 percent as wide as the interval (58 to 73 percent, as cited in Chapter I) around the direct sample estimate. A narrower interval means that we are less uncertain about the true value. According to our calculations, a shrinkage confidence interval for a participation rate is, on average, only about 60 percent as wide as the corresponding sample confidence interval. Thus, shrinkage substantially improves precision and reduces our uncertainty.

Despite the impressive gains in precision, however, substantial uncertainty about the true participation rates for some states remains even after the application of shrinkage methods. Nevertheless, as discussed in Cunnyngham, Castner, and Schirm (2007), the shrinkage estimates

are sufficiently precise to show, for example, whether a state's FSP participation rate was probably near the top, near the bottom, or in the middle of the distribution of rates in a given year. That is enough information for many important purposes, such as guiding an initiative to improve program performance.

TABLE III.1

FINAL SHRINKAGE ESTIMATES OF FOOD STAMP PROGRAM PARTICIPATION RATES, ALL ELIGIBLE PEOPLE
(Percent)

	2003	2004	2005
Alabama	58	58	65
Alaska	60	58	67
Arizona	63	68	66
Arkansas	63	69	76
California	45	48	50
Colorado	46	55	54
Connecticut	52	59	62
Delaware	52	61	65
District of Columbia	79	81	71
Florida	48	56	59
Georgia	68	66	74
Hawaii	69	72	70
Idaho	55	56	62
Illinois	62	69	75
Indiana	62	68	71
Iowa	59	61	66
Kansas	54	59	61
Kentucky	68	71	76
Louisiana	73	77	76
Maine	74	80	85
Maryland	48	54	55
Massachusetts	44	51	54
Michigan	62	67	75
Minnesota	63	62	62
Mississippi	67	60	60
Missouri	77	87	95
Montana	49	58	61
Nebraska	57	63	65
Nevada	42	49	49
New Hampshire	47	55	55
New Jersey	49	54	58
New Mexico	53	64	69
New York	49	54	61
North Carolina	48	56	58
North Dakota	54	55	57
Ohio	60	65	68
Oklahoma	69	75	77
Oregon	78	83	86
Pennsylvania	54	61	68
Rhode Island	55	53	56
South Carolina	65	67	71
South Dakota	52	53	57
Tennessee	85	84	88
Texas	47	57	60
Utah	50	60	61
Vermont	61	65	68
Virginia	58	62	62
Washington	60	64	68
West Virginia	72	76	80
Wisconsin	51	54	59
Wyoming	45	48	49
United States	56	61	65

TABLE III.2

FINAL SHRINKAGE ESTIMATES OF FOOD STAMP PROGRAM PARTICIPATION RATES, WORKING POOR
(Percent)

	2003	2004	2005
Alabama	54	52	63
Alaska	61	52	62
Arizona	46	56	54
Arkansas	63	63	76
California	35	36	34
Colorado	35	46	34
Connecticut	44	46	45
Delaware	46	55	58
District of Columbia	51	40	36
Florida	39	43	49
Georgia	52	54	69
Hawaii	59	62	57
Idaho	47	48	56
Illinois	54	59	64
Indiana	61	68	71
Iowa	49	57	57
Kansas	51	51	52
Kentucky	64	66	75
Louisiana	69	72	78
Maine	65	73	79
Maryland	39	44	41
Massachusetts	29	39	36
Michigan	65	69	75
Minnesota	49	45	47
Mississippi	57	49	61
Missouri	69	79	89
Montana	43	49	51
Nebraska	49	53	53
Nevada	31	37	42
New Hampshire	41	48	46
New Jersey	38	44	41
New Mexico	47	57	65
New York	43	43	48
North Carolina	43	47	56
North Dakota	54	52	53
Ohio	57	62	63
Oklahoma	67	72	74
Oregon	70	75	75
Pennsylvania	54	57	63
Rhode Island	40	40	42
South Carolina	61	64	70
South Dakota	48	52	54
Tennessee	76	79	83
Texas	38	48	56
Utah	41	48	50
Vermont	52	54	54
Virginia	43	50	49
Washington	44	52	55
West Virginia	73	76	81
Wisconsin	54	49	56
Wyoming	46	49	47
United States	48	52	57

TABLE III.3

FINAL SHRINKAGE ESTIMATES OF NUMBERS OF PEOPLE ELIGIBLE FOR THE FOOD STAMP PROGRAM, ALL ELIGIBLE PEOPLE
(Thousands)

	2003	2004	2005
Alabama	791	837	802
Alaska	81	85	81
Arizona	710	766	807
Arkansas	488	493	482
California	3,690	3,851	3,937
Colorado	437	434	450
Connecticut	332	328	317
Delaware	84	85	86
District of Columbia	100	107	121
Florida	2,077	2,073	2,088
Georgia	1,091	1,265	1,213
Hawaii	142	134	131
Idaho	142	157	147
Illinois	1,510	1,513	1,513
Indiana	730	743	759
Iowa	252	285	307
Kansas	286	282	285
Kentucky	714	756	741
Louisiana	869	898	925
Maine	171	166	169
Maryland	500	485	494
Massachusetts	643	641	642
Michigan	1,259	1,341	1,270
Minnesota	361	380	354
Mississippi	524	622	630
Missouri	739	773	783
Montana	143	130	130
Nebraska	168	177	178
Nevada	256	237	245
New Hampshire	92	85	92
New Jersey	686	680	670
New Mexico	359	344	343
New York	2,865	2,881	2,804
North Carolina	1,329	1,332	1,343
North Dakota	70	72	71
Ohio	1,407	1,432	1,441
Oklahoma	532	532	525
Oregon	453	458	457
Pennsylvania	1,489	1,540	1,497
Rhode Island	129	140	131
South Carolina	685	726	714
South Dakota	99	98	97
Tennessee	829	931	942
Texas	3,897	3,803	3,844
Utah	205	205	214
Vermont	67	65	62
Virginia	665	770	764
Washington	646	679	736
West Virginia	338	325	319
Wisconsin	550	572	536
Wyoming	55	53	52
United States	36,737	37,765	37,743

TABLE III.4

FINAL SHRINKAGE ESTIMATES OF NUMBERS OF PEOPLE ELIGIBLE FOR THE FOOD STAMP PROGRAM, WORKING POOR
(Thousands)

	2003	2004	2005
Alabama	342	382	330
Alaska	36	47	41
Arizona	389	392	413
Arkansas	208	213	210
California	1,946	2,037	2,098
Colorado	218	231	243
Connecticut	118	109	126
Delaware	40	41	41
District of Columbia	27	26	36
Florida	997	990	950
Georgia	537	617	560
Hawaii	73	67	64
Idaho	90	95	81
Illinois	635	686	685
Indiana	306	316	335
Iowa	118	132	152
Kansas	132	131	131
Kentucky	284	294	266
Louisiana	436	448	410
Maine	60	61	64
Maryland	172	181	208
Massachusetts	194	213	227
Michigan	509	564	563
Minnesota	169	175	153
Mississippi	223	302	272
Missouri	327	348	416
Montana	73	67	70
Nebraska	79	88	79
Nevada	115	110	91
New Hampshire	34	32	38
New Jersey	251	258	282
New Mexico	195	186	184
New York	1,090	1,062	1,073
North Carolina	547	593	541
North Dakota	34	36	35
Ohio	545	615	637
Oklahoma	246	248	243
Oregon	225	226	208
Pennsylvania	528	608	599
Rhode Island	43	46	49
South Carolina	309	327	297
South Dakota	46	48	46
Tennessee	368	405	342
Texas	2,143	2,152	2,120
Utah	116	122	130
Vermont	25	27	30
Virginia	309	379	349
Washington	294	298	342
West Virginia	117	115	114
Wisconsin	233	291	234
Wyoming	28	29	28
United States	16,578	17,467	17,238

TABLE III.5

APPROXIMATE 90-PERCENT CONFIDENCE INTERVALS FOR FINAL SHRINKAGE ESTIMATES FOR 2003, ALL ELIGIBLE PEOPLE

	Participation Rate (Percent)		Number of Eligible People (Thousands)	
	Lower Bound	Upper Bound	Lower Bound	Upper Bound
Alabama	54	63	731	851
Alaska	55	65	75	87
Arizona	58	69	647	773
Arkansas	58	68	452	524
California	43	48	3,501	3,878
Colorado	42	50	398	476
Connecticut	47	58	298	365
Delaware	47	57	76	92
District of Columbia	69	88	88	112
Florida	46	51	1,965	2,189
Georgia	63	72	1,019	1,162
Hawaii	64	75	131	154
Idaho	50	59	130	155
Illinois	58	66	1,411	1,608
Indiana	56	67	666	794
Iowa	54	65	229	275
Kansas	50	58	266	306
Kentucky	63	73	663	765
Louisiana	68	79	803	935
Maine	69	78	161	181
Maryland	44	52	457	543
Massachusetts	40	48	583	704
Michigan	58	66	1,176	1,343
Minnesota	57	69	328	395
Mississippi	61	73	479	570
Missouri	72	83	689	790
Montana	46	53	133	154
Nebraska	52	62	154	182
Nevada	38	46	231	282
New Hampshire	43	51	84	99
New Jersey	45	53	634	738
New Mexico	48	58	326	392
New York	46	53	2,654	3,075
North Carolina	45	51	1,239	1,418
North Dakota	48	59	63	77
Ohio	55	64	1,297	1,517
Oklahoma	64	74	495	569
Oregon	72	83	421	485
Pennsylvania	50	59	1,369	1,608
Rhode Island	52	59	121	137
South Carolina	61	69	641	729
South Dakota	47	57	89	108
Tennessee	79	92	767	891
Texas	44	49	3,686	4,107
Utah	46	54	189	222
Vermont	55	66	61	73
Virginia	52	63	606	724
Washington	55	65	593	699
West Virginia	66	77	312	364
Wisconsin	46	56	499	601
Wyoming	40	50	49	62
United States	55	57	36,102	37,371

TABLE III.6

APPROXIMATE 90-PERCENT CONFIDENCE INTERVALS FOR FINAL SHRINKAGE ESTIMATES FOR 2004, ALL ELIGIBLE PEOPLE

	Participation Rate (Percent)		Number of Eligible People (Thousands)	
	Lower Bound	Upper Bound	Lower Bound	Upper Bound
Alabama	54	62	776	899
Alaska	53	62	79	91
Arizona	62	73	703	829
Arkansas	64	73	462	525
California	45	50	3,654	4,049
Colorado	51	59	401	468
Connecticut	53	64	298	357
Delaware	56	66	78	92
District of Columbia	74	88	97	116
Florida	53	59	1,964	2,183
Georgia	60	73	1,141	1,389
Hawaii	67	78	123	144
Idaho	51	62	142	172
Illinois	65	73	1,433	1,592
Indiana	63	74	685	801
Iowa	56	67	259	311
Kansas	54	63	259	304
Kentucky	66	75	706	806
Louisiana	71	82	837	958
Maine	75	85	156	175
Maryland	49	58	444	525
Massachusetts	47	54	596	687
Michigan	63	70	1,274	1,408
Minnesota	57	67	347	413
Mississippi	56	63	586	658
Missouri	82	91	734	813
Montana	54	62	121	139
Nebraska	58	67	164	190
Nevada	43	55	208	265
New Hampshire	50	60	77	94
New Jersey	49	59	617	744
New Mexico	60	68	322	366
New York	51	58	2,708	3,055
North Carolina	52	60	1,227	1,438
North Dakota	50	60	66	79
Ohio	60	69	1,338	1,526
Oklahoma	70	81	494	569
Oregon	77	88	428	488
Pennsylvania	57	66	1,426	1,655
Rhode Island	48	57	129	151
South Carolina	64	71	686	766
South Dakota	49	57	91	105
Tennessee	78	91	856	1,005
Texas	54	60	3,608	3,998
Utah	56	64	192	218
Vermont	60	70	59	70
Virginia	57	67	709	832
Washington	59	69	622	736
West Virginia	72	81	304	345
Wisconsin	51	58	536	607
Wyoming	42	53	47	59
United States	60	62	37,163	38,367

TABLE III.7

APPROXIMATE 90-PERCENT CONFIDENCE INTERVALS FOR FINAL SHRINKAGE ESTIMATES FOR 2005, ALL ELIGIBLE PEOPLE

	Participation Rate (Percent)		Number of Eligible People (Thousands)	
	Lower Bound	Upper Bound	Lower Bound	Upper Bound
Alabama	61	69	751	854
Alaska	61	73	74	88
Arizona	61	71	749	865
Arkansas	71	81	450	514
California	47	52	3,754	4,121
Colorado	49	58	413	486
Connecticut	57	68	290	344
Delaware	60	70	79	93
District of Columbia	65	77	111	131
Florida	56	63	1,956	2,219
Georgia	68	80	1,116	1,310
Hawaii	64	76	120	142
Idaho	55	69	130	164
Illinois	71	80	1,425	1,601
Indiana	66	76	707	811
Iowa	62	69	288	325
Kansas	57	65	266	304
Kentucky	71	81	693	789
Louisiana	69	84	839	1,011
Maine	80	90	158	179
Maryland	51	60	452	536
Massachusetts	50	58	591	693
Michigan	72	79	1,205	1,335
Minnesota	57	68	321	387
Mississippi	55	66	573	686
Missouri	89	100	733	833
Montana	56	65	120	140
Nebraska	61	70	166	190
Nevada	44	54	219	271
New Hampshire	50	60	84	100
New Jersey	53	62	621	718
New Mexico	65	73	322	365
New York	59	64	2,680	2,928
North Carolina	54	63	1,244	1,443
North Dakota	52	61	65	77
Ohio	65	71	1,374	1,509
Oklahoma	72	82	489	561
Oregon	80	91	427	487
Pennsylvania	64	73	1,398	1,597
Rhode Island	52	60	122	141
South Carolina	67	76	671	758
South Dakota	52	61	89	105
Tennessee	82	94	878	1,005
Texas	57	63	3,628	4,060
Utah	56	66	196	232
Vermont	62	74	57	67
Virginia	57	66	709	820
Washington	63	74	680	791
West Virginia	75	86	297	342
Wisconsin	54	63	498	575
Wyoming	43	54	46	57
United States	64	66	37,135	38,350

TABLE III.8

APPROXIMATE 90-PERCENT CONFIDENCE INTERVALS FOR FINAL SHRINKAGE ESTIMATES FOR 2003, WORKING POOR

	Participation Rate (Percent)		Number of Eligible People (Thousands)	
	Lower Bound	Upper Bound	Lower Bound	Upper Bound
Alabama	47	61	298	385
Alaska	52	70	30	41
Arizona	40	52	337	440
Arkansas	56	69	186	230
California	31	39	1,731	2,161
Colorado	29	40	185	252
Connecticut	37	52	98	137
Delaware	39	54	34	47
District of Columbia	38	64	20	34
Florida	35	44	877	1,117
Georgia	44	60	458	615
Hawaii	51	67	63	83
Idaho	40	54	76	104
Illinois	48	59	571	699
Indiana	54	68	270	342
Iowa	43	55	104	132
Kansas	46	56	119	145
Kentucky	59	70	258	310
Louisiana	61	78	382	490
Maine	58	72	54	67
Maryland	32	45	143	202
Massachusetts	24	34	162	227
Michigan	59	71	462	555
Minnesota	41	58	140	198
Mississippi	48	65	189	257
Missouri	62	77	293	361
Montana	37	49	62	83
Nebraska	42	56	68	91
Nevada	26	36	95	134
New Hampshire	33	49	28	41
New Jersey	31	45	206	296
New Mexico	40	53	166	224
New York	38	49	951	1,230
North Carolina	37	50	463	632
North Dakota	47	62	30	39
Ohio	51	63	486	604
Oklahoma	60	75	220	272
Oregon	61	80	195	254
Pennsylvania	47	61	459	596
Rhode Island	35	46	37	49
South Carolina	54	69	272	346
South Dakota	40	57	38	54
Tennessee	69	84	331	405
Texas	34	41	1,948	2,338
Utah	35	47	100	132
Vermont	45	59	21	28
Virginia	36	51	258	360
Washington	38	49	258	329
West Virginia	66	81	104	129
Wisconsin	47	61	204	261
Wyoming	38	54	23	33
United States	47	50	16,073	17,083

TABLE III.9

APPROXIMATE 90-PERCENT CONFIDENCE INTERVALS FOR FINAL SHRINKAGE ESTIMATES FOR 2004, WORKING POOR

	Participation Rate (Percent)		Number of Eligible People (Thousands)	
	Lower Bound	Upper Bound	Lower Bound	Upper Bound
Alabama	45	59	332	432
Alaska	45	60	40	53
Arizona	47	64	335	450
Arkansas	56	71	188	238
California	32	39	1,849	2,224
Colorado	40	51	202	260
Connecticut	40	53	94	123
Delaware	47	63	35	47
District of Columbia	31	49	20	32
Florida	39	48	885	1,096
Georgia	44	64	502	732
Hawaii	54	70	58	76
Idaho	41	56	80	109
Illinois	53	64	621	751
Indiana	60	76	280	351
Iowa	50	64	116	148
Kansas	45	57	116	147
Kentucky	60	72	266	322
Louisiana	64	81	395	500
Maine	65	81	55	68
Maryland	37	50	155	208
Massachusetts	32	45	177	250
Michigan	62	75	513	615
Minnesota	38	53	145	204
Mississippi	44	54	271	333
Missouri	72	85	317	378
Montana	43	55	59	75
Nebraska	47	58	79	98
Nevada	30	44	88	132
New Hampshire	40	56	26	37
New Jersey	37	52	215	302
New Mexico	50	64	163	209
New York	37	48	923	1,202
North Carolina	40	54	506	680
North Dakota	45	59	32	41
Ohio	56	68	556	674
Oklahoma	63	80	218	277
Oregon	66	84	199	254
Pennsylvania	50	63	538	679
Rhode Island	34	46	39	53
South Carolina	57	71	291	362
South Dakota	44	59	41	55
Tennessee	69	89	354	456
Texas	44	53	1,944	2,360
Utah	42	54	107	137
Vermont	46	61	23	31
Virginia	43	57	325	432
Washington	44	60	252	344
West Virginia	66	86	100	130
Wisconsin	45	54	265	318
Wyoming	40	57	24	33
United States	51	54	16,949	17,985

TABLE III.10

APPROXIMATE 90-PERCENT CONFIDENCE INTERVALS FOR FINAL SHRINKAGE ESTIMATES FOR 2005, WORKING POOR

	Participation Rate (Percent)		Number of Eligible People (Thousands)	
	Lower Bound	Upper Bound	Lower Bound	Upper Bound
Alabama	55	71	288	371
Alaska	52	72	34	47
Arizona	47	60	362	465
Arkansas	68	83	188	232
California	30	39	1,835	2,361
Colorado	29	39	208	279
Connecticut	38	53	105	147
Delaware	50	67	35	47
District of Columbia	24	48	24	48
Florida	42	55	826	1,074
Georgia	58	79	476	644
Hawaii	49	66	55	74
Idaho	48	64	69	93
Illinois	56	72	602	767
Indiana	63	80	296	375
Iowa	51	64	135	169
Kansas	46	58	116	147
Kentucky	68	82	241	292
Louisiana	67	89	353	467
Maine	71	88	57	71
Maryland	34	47	174	242
Massachusetts	29	43	182	273
Michigan	67	84	500	626
Minnesota	39	54	128	178
Mississippi	51	71	227	316
Missouri	80	99	370	461
Montana	44	58	60	80
Nebraska	46	59	70	89
Nevada	34	50	74	109
New Hampshire	38	54	32	45
New Jersey	34	49	232	332
New Mexico	57	73	162	206
New York	42	55	928	1,218
North Carolina	48	64	462	620
North Dakota	45	60	31	40
Ohio	56	70	567	707
Oklahoma	66	82	217	270
Oregon	66	84	183	233
Pennsylvania	55	70	526	671
Rhode Island	34	49	41	58
South Carolina	62	77	264	331
South Dakota	46	61	40	53
Tennessee	74	92	304	380
Texas	50	62	1,895	2,344
Utah	43	57	112	149
Vermont	46	62	25	34
Virginia	41	57	291	406
Washington	47	64	289	394
West Virginia	71	92	99	129
Wisconsin	49	63	205	263
Wyoming	39	56	23	33
United States	55	59	16,627	17,850

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APPENDIX A

THE ESTIMATION PROCEDURE: ADDITIONAL TECHNICAL DETAILS

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This appendix provides additional information and technical details about our four-step procedure to estimate state Food Stamp Program (FSP) participation rates for all eligible people and the working poor. Each step is discussed in turn.

1. From CPS data and FSP administrative data, derive direct sample estimates of state FSP participation rates for each of the three years 2003 to 2005

Tables A.1 and A.2 display direct sample estimates of participation rates for all eligible people and for the working poor, respectively. Tables A.3 and A.4 present standard errors for the direct sample estimates. The method for obtaining the standard errors is described later.

We derived direct sample estimates of participation rates for all eligible people for a given year according to:

$$(1) \quad Y_{1,i} = 100 \frac{P_i(\varepsilon_{1,i}/100)}{(E_{1,i}/100)T_i},$$

where $Y_{1,i}$ is the estimated participation rate for all eligible people for state *i*; P_i is the number of people participating in the FSP in the year in question according to FSP Statistical Summary of Operations ("Program Operations") data; $\varepsilon_{1,i}$ is the "correctly-eligible" rate, that is the percentage of participating people who are correctly receiving benefits according to FSP Quality Control (FSPQC) data, calculated as 100 minus the payment error rate; $E_{1,i}$ is the number of people who are eligible for the FSP according to the CPS, expressed as a percentage of the CPS population; and T_i is the resident population according to decennial census and administrative records (mainly vital statistics) data.[1,2,3,4]

[1] P_i is adjusted to exclude from our estimate of participants those people who received FSP benefits only because of a natural disaster, are not otherwise eligible, and, thus, are not included in our estimate of eligibles. The adjustment allows us to measure a state's participation rate under "normal" circumstances. Because P_i is obtained from FSP Program Operations data, which include the full population of FSP cases, it is not subject to sampling error. Participant figures, including counts of participants eligible only through disaster assistance, were provided by the Food and Nutrition Service (FNS).

Similarly, we derived sample estimates of participation rates for the working poor for a given year according to:

$$(2) \quad Y_{2,i} = 100 \frac{P_i(\varepsilon_{2,i}/100)}{(E_{2,i}/100)T_i},$$

where $Y_{2,i}$ is the estimated participation rate for the working poor for state i; $\varepsilon_{2,i}$ is the percentage of participating people who are working poor and correctly receiving FSP benefits according to FSPQC data;[5] $E_{2,i}$ is the number of people who are working poor and eligible for the FSP according to the CPS, expressed as a percentage of the CPS population; and P_i and T_i are as defined above.

As noted, we estimated eligibility percentages rather than eligibility counts from the CPS. Estimated percentages are more precise than estimated counts because the sampling errors in the numerators and denominators of percentages tend to be positively correlated and, therefore, partially "cancel out."

Table A.5 presents estimates of the number of people participating in the FSP, and Table A.6 presents the population totals. Table A.7 presents the percentages of participating people who are correctly receiving FSP benefits, and Table A.8 presents the percentages of participating

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(continued)

[2] We adjusted for payment errors in order to exclude from our estimates of participants those people who were ineligible for the FSP and, thus, are not included in our estimates of eligibles.

[3] We obtained estimates for 2003 to 2005 from the March CPS samples for 2004 to 2006, for which the survey instruments collected family income data for the prior calendar years, that is, 2003 to 2005.

[4] In broad terms, the population estimates derived by the Census Bureau in its Population Estimates Program are obtained by subtracting from census counts people "exiting" the population (due to death or net out-migration) and adding people "entering" the population (due to birth or net in-migration). The 2003 estimates were released in December 2004, the 2004 estimates in August 2006, and the 2005 estimates in May 2007 at http://www.census.gov/popest/datasets.html. The population estimates pertain to July 1 of each year.

[5] We use the same payment error adjustment methodology for eligible working poor participants as for all eligible participants.

people who are correctly receiving FSP benefits and are working poor. Tables A.9 and A.10 display direct sample estimates of FSP eligibility percentages for all eligible people and for the working poor, respectively.

We define as "working poor" any person who is eligible for the FSP and lives in a household in which a member earns money from a job. Working poor who are participating in the FSP are identified slightly differently in the FSPQC data than in the CPS. In the FSQPC data, they are identified not just by their earnings but also by other indicators of earnings that suggest a household was very likely to have a member who worked. Specifically, a household is identified as working poor if the household had earnings according to the edited FSPQC datafile, or if prior to the editing process, multiple earnings indicators suggest that a member of the household was working (Figure A.1).[6] In Table A.11 we show the percentage of participating households that are correctly eligible and working poor based on the indicators that suggest a member was working. The first column shows the percentage of participants in households identified as working poor based on the edited FSPQC datafile. The second column shows the additional percentage that were counted as working poor based on other household information.

We derived FSP eligibility estimates for states by applying FSP rules to CPS households. However, some key information needed to determine whether a household is eligible for the FSP is not collected in the CPS. For example, there are no data on asset balances or expenses deductible from gross income. Also, it is not possible to ascertain directly which members of a dwelling unit purchase and prepare food together or which members may be ineligible for the FSP under provisions of the Personal Responsibility and Work Opportunity Reconciliation Act of 1996 (P.L. 104-193) and subsequent legislation pertaining to noncitizens and nondisabled

[6] Wolkwitz and Ewell (2007) describe the procedure for editing the FSPQC data to ensure consistency between a household's income and FSP benefit.

childless adults ages 18 to 50. Yet another limitation is that only annual, rather than monthly, income amounts are recorded.

FIGURE A.1

ALGORITHM TO IDENTIFY WORKING POOR HOUSEHOLDS

A household is identified as working poor if it meets one of the following criteria:

1. Earnings in the edited FSPQC data
2. Multiple indicators of earnings in the unedited FSPQC data
    a. At least one person with recorded earned income AND
        i. A recorded earned income deduction or at least one person with a recorded workforce participation variable indicating he or she is employed

        OR

        ii. Recorded earned and unearned income that sum to the recorded total income, or recorded earned income with the earned income deduction already subtracted and unearned income that sum to the recorded total income (some states subtract the earned income deduction from income deemed by an ineligible member before recording it on the file)
    b. A recorded earned income deduction AND
        i. At least one person with a recorded workforce participation variable indicating that he or she is employed

        OR

        ii. Earnings implied by the recorded earned income deduction and recorded unearned income that sum to the recorded total income

        OR

        iii. Recorded gross income that is more than the earned income implied by the earned income deduction and both unearned and earned income equal zero (to account for household records that have no recorded individual income amounts but do have what appear to be consistent household-level indicators)

Methods have been developed to address these data limitations. These methods—including procedures for identifying the members of the FSP household within the (potentially) larger CPS household, taking account of the restrictions on participation by noncitizens and nonelderly nondisabled childless adults, distributing annual amounts across months, and imputing net income—are described in Wolkwitz (2007) and earlier reports in that series.[7,8]

In addition to our point estimates of participation rates, we need estimates of their sampling variability. We can estimate the variances of $Y_{1,i}$ and $Y_{2,i}$ as follows:[9]

(3) $\text{var}(Y_{1,i}) = \text{variance due to } E_{1,i} \text{ when } \varepsilon_{1,i} \text{ is fixed} + \text{variance due to } \varepsilon_{1,i} \text{ when } E_{1,i} \text{ is fixed}$
$= \text{var}_{E_1|\varepsilon_1}(Y_{1,i}) + \text{var}_{\varepsilon_1|E_1}(Y_{1,i})$

and

(4) $\text{var}(Y_{2,i}) = \text{variance due to } E_{2,i} \text{ when } \varepsilon_{2,i} \text{ is fixed} + \text{variance due to } \varepsilon_{2,i} \text{ when } E_{2,i} \text{ is fixed}$
$= \text{var}_{E_2|\varepsilon_2}(Y_{2,i}) + \text{var}_{\varepsilon_2|E_2}(Y_{2,i})$.

When a variable is held fixed, we fix it at its point estimate. Note that we do not include covariance terms in these expressions because the estimates of $E_{1,i}$ and $\varepsilon_{1,i}$—like the estimates of $E_{2,i}$ and $\varepsilon_{2,i}$—are based on independent samples.

[7] These reports also describe how we applied the FSP gross and net income tests and calculated the benefits for which an eligible household would qualify.

[8] Because our focus in this document is on participation among people who are eligible for the FSP, these estimates of FSP eligibility counts and participation rates do not include people who are not legally entitled to receive FSP benefits, such as Supplemental Security Income (SSI) recipients in California who receive cash in lieu of FSP benefits. We excluded these SSI recipients when identifying the members of FSP households. It might be useful in other contexts, however, to consider participation rates among those eligible for the FSP or a cash substitute.

[9] Correctly-eligible rates are estimated from FSPQC sample data and are subject to sampling error, although it is small relative to other sources of error in the estimated participation rates. In taking into account this sampling error when deriving the estimates presented here, we take into account its correlation with the sampling error associated with the identification of the working poor participants, also estimated using the FSPQC data. That is, we take into account the correlation between $\varepsilon_{1,i}$, the correctly eligible rate, and $\varepsilon_{2,i}$, the correctly eligible working poor rate.

For a given year, we estimated $\text{var}_{E_1|\varepsilon_1}(Y_{1,i})$ and $\text{var}_{E_2|\varepsilon_2}(Y_{2,i})$ using the jackknife estimator proposed by Rao, Wu, and Yue (1992), treating CPS rotation groups as clusters. To obtain the first of these variances, for example, we let $Z_{1,i}$ equal the CPS sample estimate of the number of eligible people in state i (i = 1, 2, ..., 51) and $Z_{1,i,r}$ equal the contribution of rotation group r (r = 1, 2, ..., 8) to that estimate. In other words:

$$(5) \quad Z_{1,i} = \sum_{r=1}^{8} Z_{1,i,r} .$$

We also let N_i equal the CPS sample estimate of the population in state i and $N_{i,r}$ equal the contribution of rotation group r to that estimate. That is:

$$(6) \quad N_i = \sum_{r=1}^{8} N_{i,r} .$$

If, as described before, $E_{1,i}$ equals the CPS sample estimate of the percentage eligible in state i:

$$(7) \quad E_{1,i} = 100 \frac{Z_{1,i}}{N_i} .$$

If we were to exclude the observations in rotation group r, we could estimate the percentage eligible in state i and the participation rate for state i by:

$$(8) \quad E_{1,i(r)} = 100 \frac{Z_{1,i} - Z_{1,i,r}}{N_i - N_{i,r}}$$

and

$$(9) \quad Y_{1,i(r)} = 100 \frac{P_i(\varepsilon_{1,i}/100)}{(E_{1,i(r)}/100)T_i} .$$

The "(r)" subscript indicates that rotation group r has been excluded. By excluding each of the eight rotation groups in turn, we obtain eight alternative estimates for the participation rate in state i. Then, we can assess the degree of sampling variability (estimate the variance of $Y_{1,i}$) by measuring the variability among the eight estimates according to:

(10) $$\text{var}_{E_1|\varepsilon_1}(Y_{1,i}) = \frac{7}{8}\sum_{r=1}^{8}(Y_{1,i(r)} - Y_{1,i})^2 .$$

The factor 7/8 enters this expression because the $Y_{1,i(r)}$ are obtained from samples that are only 7/8 the size of the full CPS sample for state *i* and, hence, are expected to be more variable than $Y_{1,i}$ (by a factor of 8/7). We obtain jackknife estimates of sampling error variances pertaining to the participation rates for the working poor in the same manner, substituting $Z_{2,i}$, the CPS sample estimate of the number of eligible working poor in state *i*, for $Z_{1,i}$; $Z_{2,i,r}$, the contribution of rotation group *r* to $Z_{2,i}$, for $Z_{1,i,r}$; $E_{2,i}$ for $E_{1,i}$; $E_{2,i(r)}$ for $E_{1,i(r)}$; $\varepsilon_{2,i}$ for $\varepsilon_{1,i}$; and $Y_{2,i(r)}$ for $Y_{1,i(r)}$, in Equations (5) to (9). This results in:

(11) $$\text{var}_{E_2|\varepsilon_2}(Y_{2,i}) = \frac{7}{8}\sum_{r=1}^{8}(Y_{2,i(r)} - Y_{2,i})^2 .$$

Then, based on Equation (1) we can estimate $\text{var}_{\varepsilon_1|E_1}(Y_{1,i})$ according to:

(12) $$\text{var}_{\varepsilon_1|E_1}(Y_{1,i}) = \left(100\frac{P_i}{T_i E_{1,i}}\right)^2 \text{var}(\varepsilon_{1,i}),$$

since P_i and T_i are constants (or, at least, subject to negligible sampling variability) and $E_{1,i}$ is held fixed at its point estimate. Also note that we estimated $\varepsilon_{1,i}$ (the correctly-eligible rate) and $\varepsilon_{2,i}$ (the percentage of participants who are working poor and correctly eligible) from the FSPQC sample data as follows:

(13) $$\varepsilon_{1,i} = 100\frac{\sum_h m_{i,h}\varepsilon_{1,i,h}}{\sum_h m_{i,h}},$$

and

$$(14) \quad \varepsilon_{2,i} = 100 \frac{\sum_h m_{i,h} \varepsilon_{2,i,h}}{\sum_h m_{i,h}},$$

where h indexes households in a state's FSPQC sample; $m_{i,h}$ equals the number of people in household h times the weight for household h; $\varepsilon_{1,i,h}$ is an indicator that household h is eligible to receive FSP benefits; and $\varepsilon_{2,i,h}$ is an indicator that household h is working poor and eligible to receive FSP benefits. Then:

$$(15) \quad \text{var}_{\varepsilon_1|E_1}(Y_{1,i}) = \left(100 \frac{P_i}{T_i E_{1,i}}\right)^2 \frac{1}{(\sum_h m_{i,h})^2} \left(\frac{n_i}{n_i - 1}\right) \sum_h m_{i,h}{}^2 \left(\varepsilon_{1,i,h} - \varepsilon_{1,i}\right)^2,$$

where n_i is the total number of households from state i in the FSPQC sample. Similarly, we estimate $\text{var}_{\varepsilon_2|E_2}(Y_{2,i})$ according to:

$$(16) \quad \text{var}_{\varepsilon_2|E_2}(Y_{2,i}) = \left(100 \frac{P_i}{T_i E_{2,i}}\right)^2 \frac{1}{(\sum_h m_{i,h})^2} \left(\frac{n_i}{n_i - 1}\right) \sum_h m_{i,h}{}^2 \left(\varepsilon_{2,i,h} - \varepsilon_{2,i}\right)^2.$$

Summing the estimates from Equations (10) and (15)—as indicated by Equation (3)—and taking the square root of the sum provides an estimated standard error of the participation rate for all eligible people. Similarly, summing the estimates from Equations (11) and (16)—as indicated by Equation (4)—and taking the square root of the sum provides an estimated standard error of the participation rate for the working poor. Estimated standard errors for the direct estimates of participation rates for all eligible people and for the working poor are presented in Tables A.3 and A.4, respectively.

We estimated the covariance between the estimates of participation rates for all eligible people and the working poor, for a given year, according to:[10]

[10] We do not need to include additional terms because the CPS and FSPQC samples are independent.

(17) $\text{cov}(Y_{1,i}, Y_{2,i}) =$ covariance due to $E_{1,i}$ and $E_{2,i}$ when $\varepsilon_{1,i}$ and $\varepsilon_{2,i}$ are fixed
+ covariance due to $\varepsilon_{1,i}$ and $\varepsilon_{2,i}$ when $E_{1,i}$ and $E_{2,i}$ are fixed
$= \text{cov}_{E_1E_2|\varepsilon_1\varepsilon_2}(Y_{1,i}, Y_{2,i}) + \text{cov}_{\varepsilon_1\varepsilon_2|E_1E_2}(Y_{1,i}, Y_{2,i}).$

To derive an estimate of the first term in this expression, we obtained a jackknife estimate of the covariance due to $E_{1,i}$ and $E_{2,i}$ according to:

$$(18) \quad \text{cov}_{E_1E_2|\varepsilon_1\varepsilon_2}(Y_{1,i}, Y_{2,i}) = \frac{7}{8}\sum_{r=1}^{8}(Y_{1,i(r)} - Y_{1,i})(Y_{2,i(r)} - Y_{2,i}).$$

For the second term, we estimated the covariance due to $\varepsilon_{1,i}$ and $\varepsilon_{2,i}$ according to:

$$(19) \quad \text{cov}_{\varepsilon_1\varepsilon_2|E_1E_2}(Y_{1,i}, Y_{2,i}) = \left(100\frac{P_i}{T_iE_{1,i}}\right)\left(100\frac{P_i}{T_iE_{2,i}}\right)\text{cov}(\varepsilon_{1,i}, \varepsilon_{2,i})$$

where:

$$(20) \quad \text{cov}(\varepsilon_{1,i}, \varepsilon_{2,i}) = \frac{1}{(\sum_h m_{i,h})^2}\left(\frac{n_i}{n_i - 1}\right)\sum_h m_{i,h}{}^2\left(\varepsilon_{1,i,h} - \varepsilon_{1,i}\right)\left(\varepsilon_{2,i,h} - \varepsilon_{2,i}\right).$$

Because CPS samples from different years are not independent, participation rates for different years are correlated.[11] We derived a preliminary jackknife estimate of the correlation between $Y_{1,i,t}$ and $Y_{2,i,t-g}$, the sample estimate for all eligibles for one year and the sample estimate for the working poor for g years earlier, according to either:

$$(21) \quad \text{cov}(Y_{1,i,t}, Y_{2,i,t-g}) = \frac{7}{8}\left[\sum_{r=1}^{4}(Y_{1,i(r),t} - Y_{1,i,t})(Y_{2,i(r+4),t-g} - Y_{2,i,t-g}) + \sum_{r=5}^{8}(Y_{1,i(r),t} - Y_{1,i,t})(Y_{2,i(r-4),t-g} - Y_{2,i,t-g})\right],$$

if g is odd, or:

$$(22) \quad \text{cov}(Y_{1,i,t}, Y_{2,i,t-g}) = \frac{7}{8}\left[\sum_{r=1}^{8}(Y_{1,i(r),t} - Y_{1,i,t})(Y_{2,i(r),t-g} - Y_{2,i,t-g})\right],$$

[11] In contrast, FSPQC samples from different years are independent. Hence, sampling variability in estimates from the CPS is the only source of intertemporal covariation between participation rates.

if g is even.

The correlation between $Y_{1,i,t}$ and $Y_{2,i,t-g}$ is:

$$(23) \quad \text{corr}(Y_{1,i,t}, Y_{2,i,t-g}) = \frac{\text{cov}(Y_{1,i,t}, Y_{2,i,t-g})}{\sqrt{\text{var}(Y_{1,i,t})\,\text{var}(Y_{2,i,t-g})}}.$$

To improve the precision of estimated correlations (and covariances), we used a simple smoothing technique in which we "replaced" the state-specific correlation from Equation (23) by the average correlation between $Y_{1,i,t}$ and $Y_{2,i,t-g}$ across states:

$$(24) \quad \overline{\text{corr}}(Y_{1,t}, Y_{2,t-g}) = \frac{\sum_{i=1}^{51}(n_{i,t} + n_{i,t-g})\,\text{corr}(Y_{1,i,t}, Y_{2,i,t-g})}{\sum_{i=1}^{51}(n_{i,t} + n_{i,t-g})},$$

where $n_{i,t}$ and $n_{i,t-g}$ are the (unweighted) number of households in the March CPS samples for one year and g years earlier, respectively. Using this average correlation, we obtained as our final estimate of the covariance between $Y_{1,i,t}$ and $Y_{2,i,t-g}$:

$$(25) \quad \text{cov}(Y_{1,i,t}, Y_{2,i,t-g}) = \overline{\text{corr}}(Y_{1,t}, Y_{2,t-g})\sqrt{\text{var}(Y_{1,i,t})\,\text{var}(Y_{2,i,t-g})}.$$

Other intertemporal covariances—such as the covariance between the participation rates for the working poor in two different years—are similarly estimated. As described under Step 3, the variances and covariances obtained in this step are the elements of a variance-covariance matrix used in deriving shrinkage estimates of participation rates.[12]

[12] All interstate covariances equal zero because state samples are independent in both the CPS and the FSPQC.

2. Using a regression model, predict state FSP participation rates based on administrative and decennial Census data

Our regression model consisted of six equations, with three predicting FSP participation rates for all eligible people in 2003, 2004, and 2005, and three predicting FSP participation rates for the working poor in 2003, 2004, and 2005. The six equations were estimated jointly, and the values of the regression coefficients could vary from equation to equation. The predictors used were (in addition to an intercept):

- The percentage of the population receiving FSP benefits, that is, the FSP prevalence rate
- The percentage change in total population from July 1 of the previous year to July 1 of the current year according to the Census Bureau's population estimates
- The percentage of elderly people (age 65 or older) at or below the federal poverty level in 1999 according to Census 2000
- The percentage of adults age 25 or older who had obtained a bachelor's degree or higher in 1999 according to Census 2000
- The percentage of families that have related children and were at or below the federal poverty level in 1999 according to Census 2000
- The percentage of the population receiving first payments of unemployment insurance (UI) according to UI administrative data
- An indicator that the state's policy for counting vehicle values in the asset test was different from the federal policy in the prior year

The values for the third, fourth, and fifth predictors are the same in each of the six equations of our regression model. For the first two predictors and the last two predictors, we used 2003 values in both equations for predicting 2003 participation rates, 2004 values in both equations for predicting 2004 rates, and 2005 values in both equations for predicting 2005 rates. Because prediction errors were allowed to be correlated and intergroup and intertemporal correlations among direct sample estimates were taken into account as specified in the next step, the

shrinkage estimates for a group (all eligible people or the working poor) in any one year were determined by the predictions and sample estimates for all three years and both groups.

In addition to the predictors that we selected for our "best" model, we considered many other potential predictors measuring, for example, the tax return nonfiler rate for elderly people, average adjusted gross income on tax returns, and the prevalence of households with no children. All of the predictors considered had three characteristics: (1) they are face valid, that is, it is plausible that they are good indicators of differences among states in FSP participation rates; (2) they could be defined and measured uniformly across states; and (3) they could be obtained from nonsample or highly precise sample data—such as census or administrative records data—and, thus, measured with little or no sampling error.

As shown in the next step, where we describe the regression estimation procedure in more detail, we do not have to calculate regression estimates as a separate step, although we do have to select a best regression model before we can calculate shrinkage estimates. We selected our best model on the basis of its strong relative performance in predicting participation rates, judging performance by examining functions of the regression residuals, such as mean squared error.[13] In addition to assessing the predictive fit of alternative specifications, we checked for potential biases as part of our extensive model evaluation. To check for biases, we looked for a persistent tendency to under- or overpredict the number of eligibles for certain types of states categorized by, for example, population size, region, and percentage of the population that is black or Hispanic. We found no strong evidence of correctable bias.

Definitions and data sources for the predictors in our best regression model are given in Table A.12. The values for the third, fourth, and fifth predictors listed above are the same in

[13] The regression equations do not express causal relationships. Rather, they imply only statistical associations. For this reason, predictors are often called "symptomatic indicators." They are symptomatic of differences among states in conditions associated with having higher or lower participation rates.

each of the six year-and-group-specific regression equations, and are displayed in Table A.13. Values for the other predictors, which are updated each year, are presented in Tables A.14 to A.16. Regression estimates of participation rates for all eligible people are in Table A.17, and regression estimates of rates for the working poor are in Table A.18. The standard errors for the regression estimates for all eligible people and for the working poor are in Tables A.19 and A.20, respectively.

3. Using "shrinkage" methods, average the direct sample estimates and regression predictions to obtain preliminary shrinkage estimates of state FSP participation rates

To average the direct sample estimates and the regression predictions, we used an empirical Bayes shrinkage estimator.[14] The estimator does not have a closed-form expression from which we can calculate shrinkage estimates. Instead, we must numerically integrate over six scalar parameters—σ_1, σ_2, ρ, η_1, η_2, and η_{12}—that measure the lack of fit of the regression model and the correlations among regression prediction errors. To perform the numerical integration, we specified a grid of 7,900,200 equally-spaced points, starting with $\sigma_1 = 0.001$, $\sigma_2 = 0.001$, $\rho = -0.990$, $\eta_1 = 0.000$, $\eta_2 = 0.000$, and $\eta_{12} = -0.999$ and incrementing σ_1, σ_2, ρ, η_1, η_2, and η_{12} by 0.400, 0.500, 0.198, 0.400, 0.700, and 0.142, respectively, $\sigma_1 = 4.401$, $\sigma_2 = 7.001$, $\rho = 0.990$, $\eta_1 = 7.200$, $\eta_2 = 9.100$, and $\eta_{12} = 0.989$. For combination k of σ_1, σ_2, ρ, η_1, η_2, and η_{12} ($k = 1, 2, ..., 7900200$), we calculated a vector of shrinkage estimates:

$$(26) \quad \theta_k = (\Sigma_k^{-1} + V^{-1})^{-1}(\Sigma_k^{-1} X\hat{B}_k + V^{-1}Y),$$

[14] Although our shrinkage estimator averages direct sample and regression estimates, a state's shrinkage estimate for either all eligible people or the working poor in a given year does not have to be between the direct sample and regression estimates for the group and year in question. It may be above both of those estimates if, for example, they seem too low based on data from other years. In most cases, the shrinkage estimates presented in this report are between the direct sample and regression estimates. In the remaining cases, the shrinkage estimate is usually close to either the sample or regression estimate, and it is often close to both because the sample and regression estimates are close to each other.

a variance-covariance matrix:

$$(27)\quad U_k = (\Sigma_k^{-1} + V^{-1})^{-1} + (\Sigma_k^{-1} + V^{-1})^{-1}\Sigma_k^{-1}X(X'(\Sigma_k + V)^{-1}X)^{-1}X'\Sigma_k^{-1}(\Sigma_k^{-1} + V^{-1})^{-1},$$

and a probability:

$$(28)\quad p_k^* = |\Sigma_k + V|^{-1/2}|X'(\Sigma_k + V)^{-1}X|^{-1/2}\exp\left(-\frac{1}{2}(Y - X\hat{B}_k)'(\Sigma_k + V)^{-1}(Y - X\hat{B}_k)\right).$$

In these expressions, Y is a column vector of direct sample estimates (from Step 1) with 306 elements, six sample estimates for each of the 51 states. The first six elements of Y pertain to the first state, the next six to the second state, and so forth. For a given state, the first two elements are the 2003 sample estimates for all eligible people and the working poor, respectively; the second two elements are the 2004 estimates; and the final two elements are the 2005 estimates. The vector of shrinkage estimates, θ_k, has the same structure as the vector of sample estimates, Y. V is the (306 $\times$ 306) variance-covariance matrix for the sample estimates. Because state samples are independent in the CPS, V is block-diagonal with 51 (6 $\times$ 6) blocks. We described under Step 1 how we derived estimates for the elements of V. X is a (306 $\times$ 48) matrix containing values for each of the seven predictors (plus an intercept) for every state, every year (2003, 2004 and 2005), and both groups (all eligible people and the working poor). The first six rows of X pertain to the first state, the next six rows pertain to the second state, and so forth. The six rows for state i are given by:

$$(29)\quad X_i = \begin{pmatrix} x'_{i11} & \underline{0} & \underline{0} & \underline{0} & \underline{0} & \underline{0} \\ \underline{0} & x'_{i12} & \underline{0} & \underline{0} & \underline{0} & \underline{0} \\ \underline{0} & \underline{0} & x'_{i21} & \underline{0} & \underline{0} & \underline{0} \\ \underline{0} & \underline{0} & \underline{0} & x'_{i22} & \underline{0} & \underline{0} \\ \underline{0} & \underline{0} & \underline{0} & \underline{0} & x'_{i31} & \underline{0} \\ \underline{0} & \underline{0} & \underline{0} & \underline{0} & \underline{0} & x'_{i32} \end{pmatrix},$$

where x'_{it1} is a row vector for year t (t = 1 for 2003, t = 2 for 2004, and t = 3 for 2005) with eight elements (an intercept plus the seven predictors listed under Step 2) to predict participation rates for all eligible people. x'_{it2} is a row vector for year t with eight elements to predict participation rates for the working poor. $\underline{0}$ is a row vector with eight zeros. In a given year, the values of the predictors are the same for the equations for all eligible people and for the working poor. Thus, $x'_{it1} = x'_{it2}$. $\hat{B}_k$ is a (48 × 1) vector of regression coefficients, and is given by:

$$(30) \quad \hat{B}_k = (X'(\Sigma_k + V)^{-1} X)^{-1} X'(\Sigma_k + V)^{-1} Y .$$

Finally, Σ_k is a block-diagonal matrix with 51 (6 × 6) blocks, and every block equals:

$$(31) \quad \Sigma_k^* = \begin{pmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{pmatrix} \otimes \begin{pmatrix} \sigma_{1,k}^2 & \sigma_{1,k}\sigma_{2,k}\rho_k \\ \sigma_{1,k}\sigma_{2,k}\rho_k & \sigma_{2,k}^2 \end{pmatrix} + \begin{pmatrix} 1 & 1 & 1 \\ 1 & 1 & 1 \\ 1 & 1 & 1 \end{pmatrix} \otimes \begin{pmatrix} \eta_{1,k}^2 & \eta_{1,k}\eta_{2,k}\eta_{12,k} \\ \eta_{1,k}\eta_{2,k}\eta_{12,k} & \eta_{2,k}^2 \end{pmatrix}.$$

After calculating θ_k, U_k, and p_k^* 7,900,200 times (once for each combination of σ_1, σ_2, ρ, η_1, η_2, and η_{12}), we calculated the probability of ($\sigma_{1,k}$, $\sigma_{2,k}$, ρ_k, $\eta_{1,k}$, $\eta_{2,k}$, $\eta_{12,k}$):

$$(32) \quad p_k = \frac{p_k^*}{\sum_{k=1}^{7,900,200} p_k^*} ,$$

which is also an estimate of the probability that the shrinkage estimates θ_k are the true values. As Equation (32) suggests, the p_k are obtained by normalizing the p_k^* to sum to one.

To complete the numerical integration over σ_1, σ_2, ρ, η_1, η_2, and η_{12} and obtain a single set of shrinkage estimates, we calculated a weighted sum of the 7,900,200 sets of shrinkage estimates, weighting each set θ_k by its associated probability p_k. Thus, our shrinkage estimates are:

$$(33) \quad \theta = \sum_{k=1}^{7,900,200} p_k \theta_k .$$

We call these estimates "preliminary" because we make some fairly small adjustments to them in the next step to derive our "final" estimates. The variance-covariance matrix for our preliminary shrinkage estimates is:

$$(34) \quad U = \sum_{k=1}^{7,900,200} p_k U_k + \sum_{k=1}^{7,900,200} p_k (\theta_k - \theta)(\theta_k - \theta)' .$$

The first term on the right side of this expression reflects the error from sampling variability and the lack of fit of the regression model. The second term captures how the shrinkage estimates vary as σ_1, σ_2, ρ, η_1, η_2, and η_{12} vary. Thus, the second term accounts for the variability from not knowing and, thus, having to estimate σ_1, σ_2, ρ, η_1, η_2, and η_{12}. As described later, standard errors of the final shrinkage estimates for states are calculated as functions of the square roots of the diagonal elements of *U*.

Regression estimates can be similarly obtained. They are:

$$(35) \quad R = \sum_{k=1}^{7,900,200} p_k R_k ,$$

where $R_k = X\hat{B}_k$ is the vector of regression estimates obtained when $\sigma_1 = \sigma_{1,k}$; $\sigma_2 = \sigma_{2,k}$; $\rho = \rho_k$; $\eta_1 = \eta_{1,k}$; $\eta_2 = \eta_{2,k}$; and $\eta_{12} = \eta_{12,k}$. The variance-covariance matrix is:

$$(36) \quad G = \sum_{k=1}^{7,900,200} p_k G_k + \sum_{k=1}^{7,900,200} p_k (R_k - R)(R_k - R)' ,$$

where $G_k = X(X'(\Sigma_k + V)^{-1} X)^{-1} X' + \Sigma_k$. We can estimate the regression coefficient vector by:

$$(37) \quad \hat{B} = \sum_{k=1}^{7,900,200} p_k \hat{B}_k .$$

Regression estimates of participation rates for all eligible people and for the working poor were presented before in Tables A.17 and A.18, respectively. Preliminary shrinkage estimates of FSP participation rates are displayed in Tables A.21 and A.22.

4. Adjust the preliminary shrinkage estimates to obtain final shrinkage estimates of state FSP participation rates

We adjusted the preliminary shrinkage estimates of FSP participation rates so that the eligibles counts implied by the rates sum to the national eligibles counts estimated directly from the CPS. This adjustment was carried out for each year and each group separately. The following description of the adjustment will focus on the 2005 estimates for all eligible people.

To implement the adjustment, we calculated preliminary estimates of counts for all eligible people according to:

$$(38) \quad \psi_{1,i} = \frac{P_i(\varepsilon_{1,i}/100)}{(\theta_{1,i}/100)},$$

where $\psi_{1,i}$ is the preliminary count of all eligible people for state *i*, P_i and $\varepsilon_{1,i}$ are the participant count and correctly-eligible rate (100 minus the payment error rate) figures used in Equation (1), and $\theta_{1,i}$ is the preliminary participation rate derived in Equation (33). The state eligibles counts from Equation (38) summed to 38,558,601 for 2005, while the national total for 2005 estimated directly from the CPS was 37,742,807. To obtain estimated eligibles counts for states that sum (aside from rounding error) to the direct estimate of the national total, we multiplied each of the eligibles counts from Equation (38) by 37,742,807 ÷ 38,558,601 ($\approx$ 0.9788).[15]

Our final shrinkage estimates of the numbers of people eligible for the FSP were shown earlier in Table III.3 of Chapter III. From those final shrinkage estimates of the numbers of eligible people, we calculated final shrinkage estimates of participation rates according to:

[15] The adjustment factors for 2003 and 2004 for all eligible people were, respectively, 0. 9791, and 0.9885. The direct estimates of the national totals for all eligibles for those years were 36,736,637 and 37,764,923. The adjustment factors for 2003, 2004, and 2005 for working poor eligibles were, respectively, 0.9723, 0.9756 and 0.9674. The direct estimates of the national totals for working poor eligibles for those years were 16,578,079, 17,466,928, and 17,238,285.

$$(39) \quad \theta_{F,1,i} = 100 \frac{P_i(\varepsilon_{1,i}/100)}{\psi_{F,1,i}},$$

where $\theta_{F,1,i}$ is the final shrinkage estimate of the participation rate for all eligible people in state *i*, and $\psi_{F,1,i}$ is the final shrinkage estimate of the number of all eligible people. P_i and $\varepsilon_{1,i}$ are the participant count and correctly-eligible rate figures used in Equations (1) and (38). Participation rates for all states and all eligible people were shown in Chapter III, Table III.1. We derived final participation rates for the working poor in the same way. Our final estimates of the number of eligible working poor people were shown in Chapter III, Table III.4, and the final participation rates were shown in Chapter III, Table III.2.

In Tables III.5 to III.7 of Chapter III, we reported approximate 90-percent confidence intervals for our final shrinkage estimates for all eligible people. In Tables III.8 to III.10 we reported the confidence intervals for the final shrinkage estimates for the working poor. The upper and lower bounds of the confidence intervals were calculated according to:

$$(40) \quad \textit{Upper Bound}_i = F_i + 1.645\, e_i$$

and:

$$(41) \quad \textit{Lower Bound}_i = F_i - 1.645\, e_i,$$

where F_i is the final shrinkage estimate for state *i* and e_i is the standard error of that estimate. For participation rates and eligibles counts, the standard errors are, respectively:

$$(42) \quad e_i = \frac{1}{r}\sqrt{U(6i-1,6i-1)}$$

and

$$(43) \quad e_i = \frac{\psi_{F,1,i}}{\theta_{F,1,i}} \frac{1}{r}\sqrt{U(6i-1,6i-1)},$$

where *r* is the ratio used to adjust preliminary estimates of state eligibles counts to the direct estimate of the national total (≈ 0.9788 for all eligible people for 2005), and *U*(6*i*-1,6*i*-1*)* is the

(6*i*-1,6*i*-1) diagonal element of *U*, which was derived according to Equation (34).[16] Our estimate of e_i does not take account of the correlation between *r* and our preliminary shrinkage estimates for states, which were summed to obtain the denominator of *r*. Instead, *r* is treated as a constant.

Tables A.23 and A.24 present final shrinkage estimates of participation rates for all eligible people (values of $\theta_{F,1,i}$) and for the working poor (values of $\theta_{F,2,i}$), respectively. Tables A.25 and A.26 present standard errors for the rates. Tables A.27 and A.28 display final shrinkage estimates of the numbers of all eligible people (values of $\psi_{F,1,i}$) and eligible working poor (values of $\psi_{F,2,i}$), respectively, and Tables A.29 and A.30 present the standard errors for those estimated counts.[17] Finally, Tables A.31 and A.32 show payment-error-adjusted numbers of all people receiving FSP benefits (values of $P_i(\varepsilon_{1,i}/100)$) and the working poor receiving FSP benefits (values of $P_i(\varepsilon_{2,i}/100)$).

[16] The square root of *U*(6*i*-1,6*i*-1) is the standard error of the preliminary shrinkage estimate of the 2005 participation rate for all eligible people for state *i*. When deriving estimates for 2003 and 2004, we would use the (6*i*-5,6*i*-5) and (6*i*-3,6*i*-3) diagonal elements of *U*, respectively. When deriving estimates for the working poor for 2002, 2003, and 2004, we would use the (6*i*-4,6*i*-4), (6*i*-2,6*i*-2), and (6*i*,6*i*) diagonal elements of *U*, respectively.

[17] The rates and counts for all eligible people in Tables A.23 and A.27 are the same as the rates and counts in Tables III.1 and III.3 of Chapter III, except for the number of digits displayed. Likewise, the rates and counts for the working poor in Tables A.24 and A.28 are the same as the rates and counts in Tables III.2 and III.4 of Chapter III, except for the number of digits displayed.

TABLE A.1

DIRECT SAMPLE ESTIMATES OF FSP PARTICIPATION RATES,
ALL ELIGIBLE PEOPLE

	2003	2004	2005
Alabama	55.371	54.635	65.118
Alaska	59.476	56.718	60.715
Arizona	63.649	68.970	65.224
Arkansas	56.150	69.071	83.405
California	45.180	47.456	48.580
Colorado	45.806	52.470	46.405
Connecticut	50.736	49.544	60.596
Delaware	56.674	61.837	64.235
District of Columbia	81.996	83.313	69.713
Florida	47.852	55.247	61.238
Georgia	70.264	68.984	74.206
Hawaii	73.030	94.109	82.423
Idaho	57.244	60.518	60.371
Illinois	60.574	67.610	79.593
Indiana	59.828	62.712	65.324
Iowa	56.952	58.984	64.098
Kansas	52.727	52.429	57.451
Kentucky	66.298	67.315	72.320
Louisiana	69.595	77.008	81.947
Maine	69.410	84.832	85.177
Maryland	48.292	49.536	49.072
Massachusetts	40.491	50.016	52.009
Michigan	62.226	65.220	72.962
Minnesota	62.508	71.959	65.908
Mississippi	73.090	59.622	55.955
Missouri	89.503	88.072	103.843
Montana	45.266	58.581	61.521
Nebraska	61.403	58.943	65.621
Nevada	41.935	50.812	46.823
New Hampshire	43.298	59.356	56.163
New Jersey	49.727	57.945	60.378
New Mexico	52.709	64.637	67.846
New York	50.948	53.108	59.890
North Carolina	44.994	59.158	56.258
North Dakota	55.792	59.649	54.720
Ohio	64.230	61.922	63.610
Oklahoma	69.815	88.175	70.757
Oregon	79.192	77.992	85.350
Pennsylvania	53.342	62.205	73.314
Rhode Island	51.675	53.480	56.513
South Carolina	66.768	66.114	66.137
South Dakota	55.421	50.859	60.703
Tennessee	86.901	85.278	89.401
Texas	44.945	55.375	56.917
Utah	46.429	58.863	66.546
Vermont	60.796	71.896	80.202
Virginia	53.747	62.736	65.509
Washington	53.211	62.662	79.165
West Virginia	63.067	79.212	78.065
Wisconsin	50.775	53.603	55.943
Wyoming	48.261	53.777	50.786

TABLE A.2

DIRECT SAMPLE ESTIMATES OF FSP PARTICIPATION RATES,
WORKING POOR

	2003	2004	2005
Alabama	48.482	49.223	60.811
Alaska	63.672	52.518	57.387
Arizona	45.223	61.450	50.571
Arkansas	58.360	58.812	75.683
California	35.631	34.758	32.568
Colorado	34.103	46.073	27.961
Connecticut	48.545	40.341	40.582
Delaware	51.213	68.282	71.100
District of Columbia	48.503	30.023	35.602
Florida	39.619	40.059	48.943
Georgia	54.241	66.692	72.329
Hawaii	62.621	76.854	74.904
Idaho	54.265	48.914	52.132
Illinois	50.913	55.965	72.824
Indiana	55.056	57.665	72.274
Iowa	43.011	53.968	53.724
Kansas	51.007	42.441	48.523
Kentucky	60.708	62.376	67.817
Louisiana	67.601	82.978	82.819
Maine	58.960	75.660	82.369
Maryland	41.822	40.501	34.137
Massachusetts	23.442	41.434	35.696
Michigan	64.365	69.810	76.460
Minnesota	60.379	42.593	44.293
Mississippi	60.798	46.296	60.087
Missouri	75.553	77.602	105.596
Montana	37.627	50.065	51.480
Nebraska	52.156	47.567	48.867
Nevada	28.614	33.052	37.370
New Hampshire	41.748	45.195	50.962
New Jersey	38.128	56.804	44.448
New Mexico	46.157	63.437	70.165
New York	47.480	40.867	45.489
North Carolina	39.973	46.908	54.248
North Dakota	61.429	56.770	48.866
Ohio	56.489	57.754	58.035
Oklahoma	72.862	89.552	67.213
Oregon	73.562	72.738	70.720
Pennsylvania	54.950	56.807	70.832
Rhode Island	35.196	40.428	37.527
South Carolina	64.768	66.821	58.917
South Dakota	47.057	54.706	59.390
Tennessee	80.162	88.819	67.645
Texas	35.305	45.699	55.378
Utah	35.584	45.133	57.932
Vermont	53.554	62.542	67.209
Virginia	42.615	53.246	59.436
Washington	37.205	51.094	81.009
West Virginia	68.032	83.482	72.998
Wisconsin	57.479	46.559	54.192
Wyoming	48.364	66.142	66.009

TABLE A.3

STANDARD ERRORS OF DIRECT SAMPLE ESTIMATES OF PARTICIPATION RATES, ALL ELIGIBLE PEOPLE

	2003	2004	2005
Alabama	4.304	3.815	3.685
Alaska	3.420	2.913	5.904
Arizona	5.805	7.514	3.786
Arkansas	4.294	4.522	6.525
California	1.466	1.558	1.483
Colorado	3.198	3.484	3.596
Connecticut	6.584	7.896	6.108
Delaware	5.511	6.454	8.511
District of Columbia	7.807	5.140	3.784
Florida	1.796	2.122	3.349
Georgia	3.266	7.201	4.083
Hawaii	5.723	10.375	13.882
Idaho	4.651	6.623	5.794
Illinois	4.163	2.962	4.692
Indiana	6.760	6.777	5.289
Iowa	5.235	5.695	3.155
Kansas	3.079	5.898	4.271
Kentucky	5.333	4.625	5.275
Louisiana	6.493	5.593	6.961
Maine	3.657	4.560	6.587
Maryland	3.402	4.288	4.836
Massachusetts	3.125	2.591	3.903
Michigan	3.646	2.501	3.354
Minnesota	6.228	4.925	7.937
Mississippi	6.237	2.317	4.646
Missouri	6.501	3.377	7.321
Montana	2.646	3.087	6.711
Nebraska	5.136	4.960	4.446
Nevada	2.836	6.110	3.999
New Hampshire	3.053	6.373	5.594
New Jersey	2.777	6.875	3.566
New Mexico	5.092	3.314	3.761
New York	2.985	2.521	1.911
North Carolina	2.277	3.706	4.072
North Dakota	5.587	5.962	4.590
Ohio	3.980	4.327	2.272
Oklahoma	4.670	8.114	6.516
Oregon	4.933	6.151	6.583
Pennsylvania	4.026	5.351	5.354
Rhode Island	2.616	4.204	3.133
South Carolina	3.768	3.101	4.264
South Dakota	5.760	3.175	4.985
Tennessee	8.333	8.712	6.456
Texas	1.658	2.218	2.797
Utah	3.251	2.819	5.764
Vermont	6.436	6.105	10.688
Virginia	5.436	5.565	4.271
Washington	4.308	5.283	7.726
West Virginia	4.817	4.027	6.018
Wisconsin	4.840	2.456	3.651
Wyoming	5.482	7.146	6.165

TABLE A.4

STANDARD ERRORS OF DIRECT SAMPLE ESTIMATES OF PARTICIPATION RATES, WORKING POOR

	2003	2004	2005
Alabama	6.398	6.131	8.327
Alaska	7.697	5.332	8.747
Arizona	4.770	10.075	5.078
Arkansas	5.961	8.879	9.760
California	2.417	2.018	2.778
Colorado	3.948	4.286	3.437
Connecticut	8.014	5.729	8.499
Delaware	9.023	13.511	18.265
District of Columbia	10.209	6.171	8.298
Florida	3.381	3.215	5.805
Georgia	6.190	10.324	8.024
Hawaii	9.138	12.368	16.906
Idaho	7.777	7.879	5.424
Illinois	4.535	4.769	10.229
Indiana	7.492	9.094	12.274
Iowa	4.219	5.412	5.402
Kansas	3.777	5.816	5.996
Kentucky	4.882	5.391	7.013
Louisiana	11.714	10.500	9.856
Maine	6.656	8.692	9.692
Maryland	5.727	5.647	5.878
Massachusetts	3.243	4.980	6.294
Michigan	4.757	5.137	10.891
Minnesota	9.321	7.136	8.481
Mississippi	8.349	3.225	10.218
Missouri	7.505	5.477	12.574
Montana	5.046	4.808	7.871
Nebraska	8.696	4.592	5.910
Nevada	3.492	5.770	6.100
New Hampshire	7.271	9.905	8.346
New Jersey	5.895	7.584	6.811
New Mexico	6.055	6.090	7.459
New York	4.282	4.374	6.138
North Carolina	5.457	5.910	8.552
North Dakota	7.568	6.984	6.324
Ohio	4.924	4.910	6.418
Oklahoma	7.035	14.560	8.614
Oregon	9.564	12.145	9.808
Pennsylvania	7.274	6.648	10.861
Rhode Island	4.253	5.227	6.376
South Carolina	7.879	6.667	8.223
South Dakota	13.893	7.460	7.715
Tennessee	6.865	13.194	10.179
Texas	2.197	3.461	4.952
Utah	4.608	4.557	6.522
Vermont	7.990	9.695	15.610
Virginia	6.682	6.909	11.204
Washington	3.914	8.266	16.124
West Virginia	6.550	12.190	13.884
Wisconsin	5.793	3.032	6.073
Wyoming	7.693	9.637	11.853

TABLE A.5

NUMBER OF PEOPLE RECEIVING FSP BENEFITS, MONTHLY AVERAGE

	2003	2004	2005
Alabama	472,066	497,591	533,881
Alaska	50,687	49,323	55,567
Arizona	466,153	529,559	550,291
Arkansas	310,359	346,441	372,517
California	1,708,354	1,855,898	1,990,919
Colorado	208,053	241,780	245,926
Connecticut	180,512	195,980	204,146
Delaware	46,027	55,642	61,586
District of Columbia	81,777	88,655	88,799
Florida	1,041,315	1,202,227	1,283,661
Georgia	750,208	867,148	917,940
Hawaii	100,382	98,589	93,548
Idaho	81,524	91,395	93,441
Illinois	953,929	1,069,596	1,158,271
Indiana	470,182	526,324	555,875
Iowa	153,816	179,179	206,696
Kansas	160,705	169,528	177,782
Kentucky	502,677	544,744	570,277
Louisiana	649,761	705,700	736,743
Maine	132,582	141,929	152,910
Maryland	252,294	273,872	288,943
Massachusetts	292,200	334,939	368,122
Michigan	837,629	943,713	1,047,594
Minnesota	234,631	247,465	259,937
Mississippi	355,783	376,864	387,814
Missouri	591,532	699,616	766,425
Montana	71,320	77,478	80,870
Nebraska	99,243	113,900	117,415
Nevada	111,352	120,275	121,707
New Hampshire	44,783	48,449	52,310
New Jersey	339,047	368,695	392,416
New Mexico	194,795	222,716	240,637
New York	1,434,936	1,598,143	1,754,861
North Carolina	644,503	747,301	799,747
North Dakota	39,663	41,421	42,204
Ohio	855,401	945,435	1,007,172
Oklahoma	380,299	411,840	424,402
Oregon	398,377	419,736	429,358
Pennsylvania	822,696	960,941	1,042,809
Rhode Island	74,068	77,528	76,085
South Carolina	450,556	497,218	521,125
South Dakota	51,176	53,459	56,095
Tennessee	728,305	806,490	848,739
Texas	1,872,473	2,258,951	2,418,865
Utah	105,630	123,411	133,263
Vermont	41,333	42,862	45,218
Virginia	390,783	485,877	488,481
Washington	403,992	453,497	508,472
West Virginia	246,890	255,936	262,442
Wisconsin	296,719	324,047	345,748
Wyoming	25,306	25,649	25,482

TABLE A.6

POPULATION ON JULY 1

	2003	2004	2005
Alabama	4,503,726	4,525,375	4,548,327
Alaska	648,280	657,755	663,253
Arizona	5,579,222	5,739,879	5,953,007
Arkansas	2,727,774	2,750,000	2,775,708
California	35,462,712	35,842,038	36,154,147
Colorado	4,547,633	4,601,821	4,663,295
Connecticut	3,486,960	3,498,966	3,500,701
Delaware	818,166	830,069	841,741
District of Columbia	557,620	554,239	582,049
Florida	16,999,181	17,385,430	17,768,191
Georgia	8,676,460	8,918,129	9,132,553
Hawaii	1,248,755	1,262,124	1,273,278
Idaho	1,367,034	1,395,140	1,429,367
Illinois	12,649,087	12,712,016	12,765,427
Indiana	6,199,571	6,226,537	6,266,019
Iowa	2,941,976	2,952,904	2,965,524
Kansas	2,724,786	2,733,697	2,748,172
Kentucky	4,118,189	4,141,835	4,172,608
louisiana	4,493,665	4,506,685	4,507,331
Maine	1,309,205	1,314,985	1,318,220
Maryland	5,512,310	5,561,332	5,589,599
Massachusetts	6,420,357	6,407,382	6,433,367
Michigan	10,082,364	10,104,206	10,100,833
Minnesota	5,064,172	5,096,546	5,126,739
Mississippi	2,882,594	2,900,768	2,908,496
Missouri	5,719,204	5,759,532	5,797,703
Montana	918,157	926,920	934,737
Nebraska	1,737,475	1,747,704	1,758,163
Nevada	2,242,207	2,332,898	2,412,301
New Hampshire	1,288,705	1,299,169	1,306,819
New Jersey	8,642,412	8,685,166	8,703,150
New Mexico	1,878,562	1,903,006	1,925,985
New York	19,212,425	19,280,727	19,315,721
North Carolina	8,421,190	8,540,468	8,672,459
North Dakota	633,400	636,308	634,605
Ohio	11,437,680	11,450,143	11,470,685
Oklahoma	3,506,469	3,523,546	3,543,442
Oregon	3,564,330	3,591,363	3,638,871
Pennsylvania	12,370,761	12,394,471	12,405,348
Rhode Island	1,076,084	1,079,916	1,073,579
South Carolina	4,148,744	4,197,892	4,246,933
South Dakota	764,905	770,621	774,883
Tennessee	5,845,208	5,893,298	5,955,745
Texas	22,103,374	22,471,549	22,928,508
Utah	2,352,119	2,420,708	2,490,334
Vermont	619,343	621,233	622,387
Virginia	7,365,284	7,481,332	7,564,327
Washington	6,131,298	6,207,046	6,291,899
West Virginia	1,811,440	1,812,548	1,814,083
Wisconsin	5,474,290	5,503,533	5,527,644
Wyoming	502,111	505,887	508,798

TABLE A.7

PERCENTAGES OF PARTICIPANTS WHO ARE CORRECTLY ELIGIBLE

	2003	2004	2005
Alabama	97.566	97.424	97.877
Alaska	95.969	98.873	97.414
Arizona	96.267	97.759	96.574
Arkansas	99.077	98.153	98.534
California	97.978	98.981	98.355
Colorado	96.970	99.218	97.850
Connecticut	96.214	97.954	96.750
Delaware	94.335	92.793	91.008
District of Columbia	96.352	97.569	96.845
Florida	96.716	97.349	96.539
Georgia	98.271	96.820	97.740
Hawaii	98.263	98.177	98.017
Idaho	95.539	96.676	97.050
Illinois	98.361	97.662	98.545
Indiana	95.909	96.573	96.956
Iowa	97.296	97.634	97.186
Kansas	96.390	97.251	97.547
Kentucky	96.930	97.972	98.391
Louisiana	97.875	97.451	96.013
Maine	94.860	93.390	93.770
Maryland	95.425	95.298	94.796
Massachusetts	96.023	97.173	94.564
Michigan	92.936	94.794	91.476
Minnesota	97.152	95.263	85.079
Mississippi	98.610	98.847	97.752
Missouri	96.626	96.083	97.524
Montana	98.676	97.515	97.640
Nebraska	96.976	97.434	98.771
Nevada	97.124	97.196	98.476
New Hampshire	95.428	96.947	96.588
New Jersey	99.224	99.247	98.276
New Mexico	98.161	98.319	98.238
New York	98.748	98.242	98.096
North Carolina	98.674	99.756	97.989
North Dakota	95.156	95.362	95.009
Ohio	98.070	97.776	97.048
Oklahoma	96.319	97.234	95.498
Oregon	88.312	90.375	91.316
Pennsylvania	98.192	98.446	97.759
Rhode Island	95.818	94.771	96.846
South Carolina	98.534	98.285	97.664
South Dakota	99.518	97.259	98.235
Tennessee	96.945	97.387	97.395
Texas	96.846	96.686	95.435
Utah	97.999	99.099	97.347
Vermont	97.675	97.754	93.535
Virginia	98.038	97.680	97.011
Washington	95.447	95.835	98.861
West Virginia	98.010	96.921	97.723
Wisconsin	94.296	95.845	90.941
Wyoming	98.457	97.899	98.777

TABLE A.8

PERCENTAGES OF PARTICIPANTS WHO ARE CORRECTLY ELIGIBLE AND WORKING POOR

	2003	2004	2005
Alabama	38.881	39.981	38.824
Alaska	42.925	49.404	45.325
Arizona	38.251	41.202	40.385
Arkansas	41.953	38.902	42.554
California	39.564	38.960	36.284
Colorado	36.310	43.723	34.065
Connecticut	28.845	25.763	27.850
Delaware	40.365	40.674	38.774
District of Columbia	17.013	11.684	14.599
Florida	37.804	35.534	35.926
Georgia	37.275	38.657	41.866
Hawaii	43.157	42.169	39.496
Idaho	51.958	49.713	48.454
Illinois	35.686	37.640	37.714
Indiana	39.941	40.870	43.008
Iowa	37.538	41.873	42.247
Kansas	42.048	39.523	38.209
Kentucky	36.421	35.489	34.908
Louisiana	46.649	45.869	43.331
Maine	29.559	31.671	33.275
Maryland	26.517	29.015	29.156
Massachusetts	19.223	24.556	22.196
Michigan	39.396	41.042	40.547
Minnesota	35.551	32.062	27.492
Mississippi	35.491	39.273	42.644
Missouri	38.343	39.066	48.407
Montana	43.552	42.706	43.961
Nebraska	39.373	41.092	35.635
Nevada	32.001	33.965	31.457
New Hampshire	31.332	31.570	33.547
New Jersey	28.350	30.977	29.741
New Mexico	46.592	47.629	49.576
New York	33.044	28.340	29.546
North Carolina	36.874	37.167	37.643
North Dakota	47.009	45.820	44.138
Ohio	36.112	40.177	40.087
Oklahoma	43.641	43.235	42.605
Oregon	39.701	40.242	36.537
Pennsylvania	34.522	35.969	35.938
Rhode Island	23.271	23.804	26.979
South Carolina	42.069	41.832	39.713
South Dakota	43.495	46.464	44.228
Tennessee	38.531	39.714	33.550
Texas	42.951	46.051	49.359
Utah	44.903	47.124	49.096
Vermont	31.208	33.494	35.375
Virginia	34.312	39.255	35.122
Washington	31.750	34.029	37.019
West Virginia	34.671	34.161	35.442
Wisconsin	42.439	44.503	37.662
Wyoming	50.457	54.100	52.298

TABLE A.9

DIRECT SAMPLE ESTIMATES OF PERCENTAGES OF PEOPLE ELIGIBLE FOR THE FSP, ALL ELIGIBLE PEOPLE

	2003	2004	2005
Alabama	18.469	19.607	17.643
Alaska	12.616	13.072	13.442
Arizona	12.637	13.077	13.687
Arkansas	20.076	17.902	15.855
California	10.447	10.800	11.149
Colorado	9.685	9.935	11.120
Connecticut	9.817	11.074	9.311
Delaware	9.364	10.059	10.366
District of Columbia	17.233	18.733	21.194
Florida	12.381	12.185	11.389
Georgia	12.093	13.647	13.239
Hawaii	10.816	8.149	8.737
Idaho	9.953	10.465	10.509
Illinois	12.246	12.154	11.234
Indiana	12.158	13.017	13.167
Iowa	8.932	10.044	10.568
Kansas	10.782	11.503	10.984
Kentucky	17.846	19.142	18.594
Louisiana	20.335	19.816	19.151
Maine	13.840	11.882	12.770
Maryland	9.044	9.474	9.986
Massachusetts	10.793	10.156	10.404
Michigan	12.408	13.575	13.003
Minnesota	7.201	6.428	6.545
Mississippi	16.652	21.539	23.294
Missouri	11.166	13.252	12.415
Montana	16.933	13.914	13.731
Nebraska	9.021	10.773	10.052
Nevada	11.502	9.862	10.611
New Hampshire	7.659	6.091	6.884
New Jersey	7.828	7.271	7.339
New Mexico	19.311	17.802	18.091
New York	14.476	15.333	14.881
North Carolina	16.784	14.755	16.062
North Dakota	10.680	10.407	11.547
Ohio	11.419	13.038	13.396
Oklahoma	14.963	12.889	16.165
Oregon	12.464	13.543	12.624
Pennsylvania	12.242	12.270	11.209
Rhode Island	12.763	12.722	12.145
South Carolina	16.027	17.608	18.120
South Dakota	12.014	13.266	11.715
Tennessee	13.900	15.628	15.525
Texas	18.254	17.552	17.689
Utah	9.479	8.583	7.828
Vermont	10.722	9.381	8.473
Virginia	9.678	10.112	9.563
Washington	11.819	11.174	10.092
West Virginia	21.181	17.277	18.110
Wisconsin	10.066	10.528	10.168
Wyoming	10.282	9.230	9.741

TABLE A.10

DIRECT SAMPLE ESTIMATES OF PERCENTAGES OF PEOPLE ELIGIBLE FOR THE FSP, WORKING POOR

	2003	2004	2005
Alabama	8.406	8.931	7.494
Alaska	5.271	7.054	6.617
Arizona	7.067	6.186	7.382
Arkansas	8.179	8.333	7.546
California	5.349	5.804	6.135
Colorado	4.871	4.986	6.425
Connecticut	3.076	3.577	4.002
Delaware	4.434	3.993	3.99
District of Columbia	5.144	6.225	6.256
Florida	5.845	6.134	5.303
Georgia	5.942	5.636	5.818
Hawaii	5.540	4.286	3.874
Idaho	5.710	6.658	6.076
Illinois	5.286	5.659	4.699
Indiana	5.502	5.991	5.279
Iowa	4.563	4.708	5.481
Kansas	4.862	5.775	5.094
Kentucky	7.323	7.483	7.035
Louisiana	9.978	8.656	8.552
Maine	5.077	4.518	4.686
Maryland	2.902	3.528	4.415
Massachusetts	3.732	3.098	3.558
Michigan	5.085	5.491	5.5
Minnesota	2.728	3.655	3.147
Mississippi	7.205	11.021	9.463
Missouri	5.249	6.115	6.06
Montana	8.991	7.130	7.388
Nebraska	4.312	5.630	4.87
Nevada	5.554	5.298	4.247
New Hampshire	2.608	2.605	2.635
New Jersey	2.917	2.315	3.017
New Mexico	10.467	8.787	8.828
New York	5.198	5.748	5.901
North Carolina	7.060	6.933	6.399
North Dakota	4.792	5.254	6.007
Ohio	4.781	5.744	6.065
Oklahoma	6.496	5.643	7.592
Oregon	6.032	6.466	6.096
Pennsylvania	4.178	4.909	4.265
Rhode Island	4.551	4.227	5.095
South Carolina	7.054	7.415	8.271
South Dakota	6.184	5.892	5.391
Tennessee	5.989	6.119	7.068
Texas	10.306	10.130	9.403
Utah	5.667	5.323	4.535
Vermont	3.889	3.695	3.824
Virginia	4.272	4.788	3.816
Washington	5.623	4.866	3.693
West Virginia	6.946	5.778	7.024
Wisconsin	4.002	5.628	4.347
Wyoming	5.258	4.147	3.968

TABLE A.11

PERCENTAGE OF FSP PARTICIPANTS WITH EARNERS IN THE HOUSEHOLD, BY INDICATORS OF EARNINGS, 2005

	Earned Income in Household	No Earned Income But Identified Based on Other Household Information	Total
Alabama	39.5	0.1	39.7
Alaska	46.5	0.0	46.5
Arizona	41.8	0.0	41.8
Arkansas	42.7	0.5	43.2
California	33.5	3.4	36.9
Colorado	34.0	0.8	34.8
Connecticut	28.7	0.3	29.0
Delaware	46.4	0.0	46.4
District of Columbia	14.2	0.8	15.1
Florida	37.1	0.0	37.2
Georgia	42.8	0.0	42.8
Hawaii	40.1	0.4	40.4
Idaho	49.8	0.1	49.9
Illinois	38.1	0.2	38.3
Indiana	44.4	0.0	44.4
Iowa	42.9	0.5	43.5
Kansas	39.4	0.1	39.5
Kentucky	35.2	0.2	35.5
Louisiana	45.1	0.0	45.1
Maine	36.8	0.5	37.3
Maryland	32.9	0.2	33.0
Massachusetts	26.1	0.2	26.3
Michigan	46.9	0.0	46.9
Minnesota	34.1	0.8	34.9
Mississippi	43.6	0.0	43.6
Missouri	49.7	0.0	49.7
Montana	43.9	1.1	45.1
Nebraska	35.9	0.2	36.1
Nevada	32.1	0.0	32.1
New Hampshire	35.0	0.0	35.0
New Jersey	30.0	0.3	30.3
New Mexico	50.2	0.3	50.5
New York	30.0	0.1	30.1
North Carolina	38.4	0.1	38.5
North Dakota	48.7	0.0	48.7
Ohio	41.1	0.2	41.3
Oklahoma	43.8	0.8	44.6
Oregon	43.0	0.6	43.6
Pennsylvania	35.4	1.3	36.8
Rhode Island	27.9	0.0	27.9
South Carolina	40.7	0.0	40.7
South Dakota	45.7	0.0	45.7
Tennessee	34.4	0.0	34.4
Texas	52.7	0.0	52.7
Utah	51.0	0.0	51.0
Vermont	39.6	0.4	40.0
Virginia	36.2	0.0	36.2
Washington	37.4	0.0	37.4
West Virginia	35.4	0.8	36.3
Wisconsin	44.6	0.2	44.8
Wyoming	52.9	0.1	52.9

TABLE A.12

DEFINITIONS AND DATA SOURCES FOR PREDICTORS

Predictor[a]	Definition	Principal Data Source[b]
FSP prevalence rate	$100 \times \frac{\text{Number of people receiving FSP benefits}}{\text{Resident population}}$	Counts of people receiving FSP benefits are from FSP Program Operations data and were provided by the Food and Nutrition Service. For more information, see the first footnote of Appendix A.
Population growth rate	$100 \times \frac{\text{Resident population minus previous year resident population}}{\text{Resident population}}$	All data for this predictor were obtained from the U.S. Census Bureau.
Elderly poverty rate	$100 \times \frac{\text{Number of elderly people (age 65 or older) below the poverty level}}{\text{Total number of elderly people (age 65 or older)}}$	The data for constructing these predictors were obtained from the Census 2000 Demographic Profiles released between May 7, 2002 and June 4, 2002 at http://www2.census.gov/census_2000/datasets/100_and_sample_profile.
Bachelor's degree rate	$100 \times \frac{\text{Number of adults age 25 or older with at least a bachelor's degree}}{\text{Total number of adults age 65 or older}}$	
Family with related children poverty rate	$100 \times \frac{\text{Number of families with related children and below the poverty level}}{\text{Total number of families with related children}}$	
Unemployment insurance rate	$100 \times \frac{\text{Number of people receiving first payments of unemployment insurance}}{\text{Resident population}}$	The data for constructing this predictor were obtained from the U.S. Department of Labor and the U.S. Census Bureau.
Vehicle policy indicator	1, if state's rule for counting vehicle values in the asset test was different from the federal rule in the prior year 0, if state used federal rule for counting vehicle values in the prior year	The data for constructing this predictor were collected from various sources, including the Food and Nutrition Service, state websites, and the Center for Budget and Policy Priorities (http://www.cbpp.org).

[a]Values for the first two predictors and the last two predictors vary across the year-specific equations of our regression model, while values for the third, fourth, and fifth predictors do not vary.

[b]For estimates of the resident population in a given year, we used the July 1 population estimates published by the Census Bureau for that year. The 2003 population estimates were released in December 2004, the 2004 estimates in August 2006, and the 2005 estimates in June 2007 at http://www.census.gov/popest/datasets.html.

TABLE A.13

VALUES FOR TEMPORALLY CONSTANT PREDICTORS

	Bachelor's Degree Rate	Family with Related Children Poverty Rate	Elderly Poverty Rate
Alabama	19.035	18.152	15.534
Alaska	24.715	9.349	6.793
Arizona	23.531	15.238	8.372
Arkansas	16.661	18.120	13.845
California	26.621	15.261	8.082
Colorado	32.693	9.232	7.440
Connecticut	31.407	8.623	7.005
Delaware	25.049	9.853	7.863
District of Columbia	39.070	24.478	16.377
Florida	22.335	14.188	9.067
Georgia	24.300	13.896	13.546
Hawaii	26.174	11.274	7.395
Idaho	21.665	12.233	8.273
Illinois	26.061	11.550	8.326
Indiana	19.408	10.156	7.674
Iowa	21.209	9.293	7.708
Kansas	25.804	9.983	8.117
Kentucky	17.135	18.064	14.160
Louisiana	18.728	22.078	16.687
Maine	22.872	11.916	10.217
Maryland	31.450	8.665	8.526
Massachusetts	33.190	10.126	8.852
Michigan	21.762	11.312	8.207
Minnesota	27.433	7.578	8.194
Mississippi	16.904	22.233	18.796
Missouri	21.582	12.839	9.906
Montana	24.370	16.396	9.067
Nebraska	23.743	10.177	8.020
Nevada	18.156	11.416	7.140
New Hampshire	28.654	6.481	7.184
New Jersey	29.779	9.220	7.832
New Mexico	23.453	20.768	12.812
New York	27.373	16.904	11.328
North Carolina	22.463	13.312	13.228
North Dakota	21.989	12.002	11.133
Ohio	21.095	12.154	8.139
Oklahoma	20.279	16.533	11.114
Oregon	25.081	12.362	7.585
Pennsylvania	22.351	12.091	9.069
Rhode Island	25.601	14.250	10.555
South Carolina	20.418	15.655	13.886
South Dakota	21.505	13.880	11.143
Tennessee	19.565	15.011	13.469
Texas	23.238	16.635	12.774
Utah	26.126	8.706	5.818
Vermont	29.445	9.715	8.475
Virginia	29.465	10.225	9.490
Washington	27.731	11.157	7.499
West Virginia	14.832	21.443	11.874
Wisconsin	22.419	8.803	7.430
Wyoming	21.910	12.351	8.883

TABLE A.14

2003 VALUES FOR TEMPORALLY VARIABLE PREDICTORS

	FSP Prevalence Rate	Population Growth Rate	Percentage Receiving Unemployment Insurance	Expanded Vehicle Rules in Previous Year
Alabama	10.482	0.554	3.123	1
Alaska	7.819	1.060	7.635	1
Arizona	8.355	2.538	2.077	0
Arkansas	11.378	0.795	3.792	1
California	4.817	1.316	3.891	0
Colorado	4.575	1.035	2.526	1
Connecticut	5.177	0.820	4.449	1
Delaware	5.626	1.516	4.012	1
District of Columbia	14.665	-2.027	3.773	1
Florida	6.126	1.842	1.919	1
Georgia	8.646	1.550	2.934	0
Hawaii	8.039	0.652	2.387	1
Idaho	5.964	1.780	4.389	0
Illinois	7.541	0.498	3.599	1
Indiana	7.584	0.693	3.434	1
Iowa	5.228	0.209	3.860	0
Kansas	5.898	0.480	3.278	1
Kentucky	12.206	0.694	3.299	1
Louisiana	14.459	0.390	2.409	1
Maine	10.127	1.105	2.489	1
Maryland	4.577	1.134	2.357	1
Massachusetts	4.551	-0.022	4.363	1
Michigan	8.308	0.390	4.979	1
Minnesota	4.633	0.784	3.354	0
Mississippi	12.342	0.553	2.490	0
Missouri	10.343	0.876	3.199	1
Montana	7.768	0.855	2.983	1
Nebraska	5.712	0.574	2.659	1
Nevada	4.966	3.449	3.498	1
New Hampshire	3.475	1.122	1.787	1
New Jersey	3.923	0.783	4.250	1
New Mexico	10.369	1.432	1.982	1
New York	7.469	0.408	3.118	1
North Carolina	7.653	1.389	4.132	1
North Dakota	6.262	-0.081	2.459	1
Ohio	7.479	0.254	3.097	1
Oklahoma	10.846	0.481	2.193	1
Oregon	11.177	1.249	5.215	1
Pennsylvania	6.650	0.340	4.575	1
Rhode Island	6.883	0.726	4.005	0
South Carolina	10.860	1.096	3.583	1
South Dakota	6.691	0.588	1.546	1
Tennessee	12.460	0.957	3.436	0
Texas	8.471	1.686	2.414	1
Utah	4.491	1.437	2.439	1
Vermont	6.674	0.476	4.564	1
Virginia	5.306	1.063	2.249	0
Washington	6.589	1.059	4.370	0
West Virginia	13.629	0.363	3.012	1
Wisconsin	5.420	0.636	5.762	1
Wyoming	5.040	0.658	3.109	1

TABLE A.15

2004 VALUES FOR TEMPORALLY VARIABLE PREDICTORS

	FSP Prevalence Rate	Population Growth Rate	Percentage Receiving Unemployment Insurance	Expanded Vehicle Rules in Previous Year
Alabama	10.996	0.481	2.620	1
Alaska	7.499	1.462	7.028	1
Arizona	9.226	2.880	1.675	1
Arkansas	12.598	0.815	3.085	1
California	5.178	1.070	3.101	0
Colorado	5.254	1.192	1.902	1
Connecticut	5.601	0.344	3.655	1
Delaware	6.703	1.455	3.324	1
District of Columbia	15.996	-0.606	3.034	1
Florida	6.915	2.272	1.725	1
Georgia	9.723	2.785	2.336	0
Hawaii	7.811	1.071	1.895	1
Idaho	6.551	2.056	3.585	0
Illinois	8.414	0.498	3.086	1
Indiana	8.453	0.435	2.996	1
Iowa	6.068	0.371	3.013	0
Kansas	6.201	0.327	2.500	1
Kentucky	13.152	0.574	2.915	1
Louisiana	15.659	0.290	1.988	1
Maine	10.793	0.441	2.504	1
Maryland	4.925	0.889	1.964	1
Massachusetts	5.227	-0.202	3.729	1
Michigan	9.340	0.217	4.572	1
Minnesota	4.856	0.639	2.887	1
Mississippi	12.992	0.630	2.083	0
Missouri	12.147	0.705	2.890	1
Montana	8.359	0.954	2.405	1
Nebraska	6.517	0.589	2.443	1
Nevada	5.156	4.045	2.847	1
New Hampshire	3.729	0.812	1.608	1
New Jersey	4.245	0.495	3.822	1
New Mexico	11.703	1.301	1.705	1
New York	8.289	0.356	2.663	1
North Carolina	8.750	1.416	3.197	1
North Dakota	6.510	0.459	2.072	1
Ohio	8.257	0.109	2.672	1
Oklahoma	11.688	0.487	1.696	1
Oregon	11.687	0.758	4.108	1
Pennsylvania	7.753	0.192	3.898	1
Rhode Island	7.179	0.356	3.760	1
South Carolina	11.844	1.185	2.926	1
South Dakota	6.937	0.747	1.332	1
Tennessee	13.685	0.823	2.848	0
Texas	10.052	1.666	1.880	1
Utah	5.098	2.916	1.853	1
Vermont	6.900	0.305	3.646	1
Virginia	6.495	1.576	1.678	1
Washington	7.306	1.235	3.354	0
West Virginia	14.120	0.061	2.455	1
Wisconsin	5.888	0.534	4.893	1
Wyoming	5.070	0.752	2.758	1

TABLE A.16

2005 VALUES FOR TEMPORALLY VARIABLE PREDICTORS

	FSP Prevalence Rate	Population Growth Rate	Percentage Receiving Unemployment Insurance	Expanded Vehicle Rules in Previous Year
Alabama	11.738	0.507	2.347	1
Alaska	8.378	0.836	6.626	1
Arizona	9.244	3.713	1.275	1
Arkansas	13.421	0.935	2.836	1
California	5.507	0.871	2.697	1
Colorado	5.274	1.336	1.585	1
Connecticut	5.832	0.050	3.472	1
Delaware	7.317	1.406	2.891	1
District of Columbia	15.256	5.018	2.855	1
Florida	7.225	2.202	1.373	1
Georgia	10.051	2.404	2.126	0
Hawaii	7.347	0.884	1.558	1
Idaho	6.537	2.453	3.061	0
Illinois	9.074	0.420	2.757	1
Indiana	8.871	0.634	2.951	1
Iowa	6.970	0.427	3.087	1
Kansas	6.469	0.530	2.220	1
Kentucky	13.667	0.743	2.654	1
Louisiana	16.345	0.014	6.636	1
Maine	11.600	0.246	2.423	1
Maryland	5.169	0.508	1.778	1
Massachusetts	5.722	0.406	3.393	1
Michigan	10.371	-0.033	4.454	1
Minnesota	5.070	0.592	2.813	1
Mississippi	13.334	0.266	3.528	1
Missouri	13.220	0.663	2.366	1
Montana	8.652	0.843	2.286	1
Nebraska	6.678	0.598	2.208	1
Nevada	5.045	3.404	2.462	1
New Hampshire	4.003	0.589	1.851	1
New Jersey	4.509	0.207	3.620	1
New Mexico	12.494	1.208	1.503	1
New York	9.085	0.182	2.529	1
North Carolina	9.222	1.545	2.888	1
North Dakota	6.650	-0.268	1.974	1
Ohio	8.780	0.179	2.491	1
Oklahoma	11.977	0.565	1.337	1
Oregon	11.799	1.323	3.650	1
Pennsylvania	8.406	0.088	3.718	1
Rhode Island	7.087	-0.587	3.581	1
South Carolina	12.271	1.168	2.729	1
South Dakota	7.239	0.553	1.211	1
Tennessee	14.251	1.060	2.587	1
Texas	10.550	2.034	1.557	1
Utah	5.351	2.876	1.441	1
Vermont	7.265	0.186	3.676	1
Virginia	6.458	1.109	1.457	1
Washington	8.081	1.367	2.917	1
West Virginia	14.467	0.085	2.243	1
Wisconsin	6.255	0.438	4.753	1
Wyoming	5.008	0.575	2.354	1

TABLE A.17

REGRESSION ESTIMATES OF FSP PARTICIPATION RATES,
ALL ELIGIBLE PEOPLE

	2003	2004	2005
Alabama	57.520	58.072	63.667
Alaska	60.405	58.486	67.410
Arizona	60.914	65.876	63.538
Arkansas	62.355	67.637	73.612
California	41.932	45.403	47.140
Colorado	49.308	59.242	58.202
Connecticut	52.099	59.459	61.913
Delaware	49.937	60.075	63.864
District of Columbia	74.812	78.102	67.761
Florida	45.044	54.210	55.210
Georgia	62.130	62.542	69.235
Hawaii	65.205	68.410	65.791
Idaho	51.952	54.220	59.379
Illinois	59.897	67.537	72.131
Indiana	62.518	69.863	72.104
Iowa	58.130	60.367	63.612
Kansas	54.323	59.959	61.325
Kentucky	67.761	70.952	75.210
Louisiana	72.515	76.455	75.094
Maine	71.931	77.297	82.212
Maryland	49.422	56.482	57.540
Massachusetts	46.322	52.709	55.926
Michigan	62.807	69.058	76.980
Minnesota	57.706	55.692	56.616
Mississippi	64.466	58.865	58.954
Missouri	71.070	82.157	89.186
Montana	50.976	58.684	60.972
Nebraska	53.372	60.884	61.776
Nevada	39.494	47.092	46.202
New Hampshire	49.068	56.097	55.876
New Jersey	43.418	48.854	51.666
New Mexico	53.951	64.342	69.349
New York	47.585	54.450	60.236
North Carolina	50.116	56.247	59.327
North Dakota	51.927	53.232	55.188
Ohio	59.233	66.203	69.671
Oklahoma	67.773	74.214	76.359
Oregon	75.468	82.302	83.776
Pennsylvania	51.982	59.455	64.801
Rhode Island	54.548	51.212	54.039
South Carolina	64.174	68.404	71.622
South Dakota	50.315	53.694	55.181
Tennessee	81.631	82.057	84.183
Texas	50.235	61.468	63.594
Utah	49.763	58.740	58.263
Vermont	57.609	61.842	64.631
Virginia	56.277	60.261	59.600
Washington	60.388	64.156	67.248
West Virginia	71.905	75.462	79.445
Wisconsin	50.628	54.916	58.692
Wyoming	43.733	46.728	47.487

TABLE A.18

REGRESSION ESTIMATES OF FSP PARTICIPATION RATES,
WORKING POOR

	2003	2004	2005
Alabama	53.887	51.458	61.657
Alaska	57.949	49.312	59.481
Arizona	45.073	53.521	53.317
Arkansas	61.143	63.072	74.027
California	28.882	32.876	32.633
Colorado	35.057	43.471	38.699
Connecticut	41.398	46.420	44.635
Delaware	43.499	51.463	54.669
District of Columbia	52.790	45.613	37.410
Florida	37.542	45.145	47.296
Georgia	47.973	48.808	63.051
Hawaii	56.587	58.780	53.545
Idaho	43.692	46.899	54.743
Illinois	52.945	58.193	60.788
Indiana	62.414	69.221	69.930
Iowa	54.342	58.579	59.560
Kansas	48.494	52.721	50.853
Kentucky	65.391	66.196	75.149
Louisiana	66.101	67.510	73.309
Maine	64.482	70.929	75.851
Maryland	36.103	42.815	40.548
Massachusetts	35.262	37.421	36.518
Michigan	61.678	64.638	71.821
Minnesota	46.111	47.456	45.623
Mississippi	55.908	51.284	59.573
Missouri	65.918	75.983	83.888
Montana	43.267	47.880	49.282
Nebraska	49.009	55.433	53.824
Nevada	35.724	41.556	44.660
New Hampshire	39.342	47.604	43.020
New Jersey	34.709	37.112	36.632
New Mexico	42.442	50.459	58.375
New York	37.552	40.440	45.641
North Carolina	44.526	47.382	54.605
North Dakota	49.684	48.531	50.019
Ohio	57.566	63.136	64.185
Oklahoma	62.798	68.125	70.874
Oregon	67.648	72.385	73.326
Pennsylvania	50.464	54.311	58.608
Rhode Island	42.942	40.689	43.009
South Carolina	58.839	60.413	68.582
South Dakota	45.667	48.173	49.436
Tennessee	72.305	75.755	82.419
Texas	40.538	49.733	55.355
Utah	41.883	48.143	46.838
Vermont	48.768	50.007	50.239
Virginia	39.848	46.432	44.851
Washington	47.261	51.996	53.632
West Virginia	71.367	72.818	78.900
Wisconsin	50.946	51.229	53.694
Wyoming	41.324	41.865	41.097

TABLE A.19

STANDARD ERRORS OF REGRESSION ESTIMATES OF PARTICIPATION RATES, ALL ELIGIBLE PEOPLE

	2003	2004	2005
Alabama	4.056	4.035	4.084
Alaska	4.646	4.732	4.874
Arizona	4.503	4.283	4.311
Arkansas	3.960	3.902	3.970
California	4.254	4.360	4.193
Colorado	4.000	4.025	4.038
Connecticut	3.924	3.895	4.004
Delaware	3.751	3.723	3.771
District of Columbia	6.336	5.771	5.605
Florida	3.912	3.951	3.941
Georgia	4.249	4.795	5.329
Hawaii	4.025	3.909	3.881
Idaho	4.019	4.181	5.453
Illinois	3.736	3.745	3.836
Indiana	4.005	4.016	3.921
Iowa	4.408	4.389	3.805
Kansas	3.747	3.816	3.741
Kentucky	3.959	3.903	3.982
Louisiana	4.230	4.104	5.127
Maine	4.095	3.992	4.111
Maryland	4.007	4.029	4.078
Massachusetts	4.114	4.108	4.062
Michigan	3.925	3.933	4.093
Minnesota	4.160	3.924	3.945
Mississippi	4.644	4.507	4.710
Missouri	3.941	4.104	4.366
Montana	3.935	3.939	3.964
Nebraska	3.840	3.801	3.733
Nevada	4.538	4.756	4.794
New Hampshire	4.109	4.171	4.063
New Jersey	3.885	3.933	3.967
New Mexico	4.160	4.041	4.118
New York	3.955	3.912	3.929
North Carolina	4.111	4.056	4.143
North Dakota	4.180	3.995	4.014
Ohio	3.956	3.949	3.834
Oklahoma	3.969	3.962	4.085
Oregon	4.588	4.309	4.351
Pennsylvania	3.881	3.795	3.755
Rhode Island	3.917	3.883	3.987
South Carolina	3.936	3.916	3.955
South Dakota	4.017	3.989	3.975
Tennessee	4.505	4.723	4.237
Texas	3.884	3.816	3.846
Utah	3.901	4.170	4.164
Vermont	3.869	3.828	3.911
Virginia	4.140	3.988	3.975
Washington	4.017	4.261	3.819
West Virginia	4.533	4.539	4.695
Wisconsin	4.123	3.998	4.112
Wyoming	3.980	4.013	3.970

TABLE A.20

STANDARD ERRORS OF REGRESSION ESTIMATES OF PARTICIPATION RATES, WORKING POOR

	2003	2004	2005
Alabama	5.585	5.588	5.866
Alaska	6.802	6.820	7.180
Arizona	6.045	5.936	6.072
Arkansas	5.411	5.412	5.594
California	5.877	6.055	5.946
Colorado	5.466	5.494	5.562
Connecticut	5.375	5.293	5.586
Delaware	5.137	5.070	5.196
District of Columbia	8.545	7.678	8.992
Florida	5.356	5.393	5.438
Georgia	5.881	6.873	7.715
Hawaii	5.543	5.368	5.402
Idaho	5.480	5.768	7.452
Illinois	5.081	5.104	5.380
Indiana	5.425	5.520	5.569
Iowa	5.926	6.014	5.306
Kansas	5.092	5.175	5.117
Kentucky	5.392	5.423	5.625
Louisiana	5.777	5.749	7.517
Maine	5.637	5.516	5.873
Maryland	5.527	5.527	5.615
Massachusetts	5.570	5.619	5.671
Michigan	5.373	5.455	5.918
Minnesota	5.652	5.356	5.468
Mississippi	6.466	6.273	7.044
Missouri	5.387	5.762	6.399
Montana	5.377	5.459	5.599
Nebraska	5.253	5.158	5.126
Nevada	6.217	6.471	6.890
New Hampshire	5.746	5.718	5.608
New Jersey	5.298	5.400	5.518
New Mexico	5.642	5.600	5.913
New York	5.382	5.360	5.554
North Carolina	5.767	5.642	6.004
North Dakota	5.763	5.487	5.681
Ohio	5.394	5.457	5.432
Oklahoma	5.431	5.572	5.868
Oregon	6.522	6.122	6.413
Pennsylvania	5.273	5.187	5.220
Rhode Island	5.345	5.333	5.639
South Carolina	5.433	5.409	5.585
South Dakota	5.610	5.515	5.599
Tennessee	6.124	6.703	6.066
Texas	5.324	5.221	5.382
Utah	5.347	5.722	5.807
Vermont	5.299	5.205	5.431
Virginia	5.679	5.489	5.473
Washington	5.467	5.962	5.308
West Virginia	6.253	6.665	7.040
Wisconsin	5.665	5.491	5.837
Wyoming	5.448	5.511	5.574

TABLE A.21

PRELIMINARY SHRINKAGE ESTIMATES OF FSP PARTICIPATION RATES,
ALL ELIGIBLE PEOPLE

	2003	2004	2005
Alabama	57.036	57.235	63.749
Alaska	58.848	56.866	65.376
Arizona	61.875	66.805	64.456
Arkansas	61.660	68.122	74.488
California	44.417	47.148	48.681
Colorado	45.228	54.577	52.401
Connecticut	51.238	57.912	60.949
Delaware	50.682	60.105	63.889
District of Columbia	77.094	80.234	69.812
Florida	47.480	55.797	58.107
Georgia	66.189	65.619	72.406
Hawaii	67.865	71.491	68.431
Idaho	53.550	55.704	60.479
Illinois	60.853	68.266	73.847
Indiana	60.485	67.639	69.493
Iowa	58.153	60.722	64.148
Kansas	53.011	57.877	59.604
Kentucky	66.793	69.761	74.141
Louisiana	71.646	75.718	74.851
Maine	71.977	79.100	83.130
Maryland	47.141	53.226	54.277
Massachusetts	42.713	50.164	53.054
Michigan	60.521	65.945	73.861
Minnesota	61.783	61.328	61.113
Mississippi	65.507	59.229	58.918
Missouri	75.697	85.908	93.418
Montana	48.138	57.399	59.349
Nebraska	55.997	62.040	63.880
Nevada	41.291	48.853	47.807
New Hampshire	45.675	54.325	53.844
New Jersey	47.990	53.162	56.374
New Mexico	52.208	62.883	67.388
New York	48.431	53.861	60.093
North Carolina	46.863	55.307	57.102
North Dakota	52.502	54.008	55.389
Ohio	58.357	63.830	66.378
Oklahoma	67.426	74.476	75.532
Oregon	76.061	81.896	84.022
Pennsylvania	53.129	60.711	66.637
Rhode Island	53.934	51.944	54.875
South Carolina	63.436	66.515	69.747
South Dakota	50.615	52.381	55.463
Tennessee	83.393	83.430	85.935
Texas	45.563	56.769	58.783
Utah	49.327	59.062	59.265
Vermont	59.391	64.203	66.743
Virginia	56.420	60.914	60.675
Washington	58.444	63.274	66.893
West Virginia	70.112	75.512	78.605
Wisconsin	49.802	53.693	57.393
Wyoming	44.105	47.176	47.545

TABLE A.22

PRELIMINARY SHRINKAGE ESTIMATES OF FSP PARTICIPATION RATES, WORKING POOR

	2003	2004	2005
Alabama	52.223	50.797	60.797
Alaska	59.492	50.863	60.094
Arizona	44.571	54.263	52.001
Arkansas	60.979	61.753	73.122
California	33.777	34.634	33.308
Colorado	33.635	44.574	33.295
Connecticut	43.019	45.242	43.672
Delaware	45.136	53.831	56.573
District of Columbia	49.659	39.200	35.019
Florida	38.393	42.090	46.954
Georgia	50.644	53.010	66.360
Hawaii	57.646	60.188	55.509
Idaho	45.687	46.896	54.142
Illinois	52.115	57.266	61.731
Indiana	59.647	66.471	69.027
Iowa	47.542	55.333	55.556
Kansas	49.697	49.784	50.109
Kentucky	62.637	64.165	72.348
Louisiana	67.573	70.544	75.315
Maine	63.151	71.338	76.647
Maryland	37.744	42.760	39.212
Massachusetts	28.082	37.588	34.783
Michigan	63.051	66.966	72.997
Minnesota	47.961	44.274	45.131
Mississippi	55.060	47.796	58.914
Missouri	67.436	76.708	86.379
Montana	41.577	48.275	49.213
Nebraska	47.820	51.618	51.095
Nevada	30.187	36.131	40.576
New Hampshire	39.913	46.923	44.415
New Jersey	37.214	43.109	40.012
New Mexico	45.215	55.733	62.732
New York	42.284	41.596	46.740
North Carolina	42.238	45.704	53.832
North Dakota	52.830	50.816	50.839
Ohio	55.109	60.241	61.317
Oklahoma	65.580	70.183	71.861
Oregon	68.46	72.781	72.891
Pennsylvania	52.327	55.430	60.550
Rhode Island	38.949	39.286	40.169
South Carolina	59.690	62.132	67.329
South Dakota	46.824	50.416	51.935
Tennessee	74.184	77.156	80.550
Texas	36.486	47.160	54.486
Utah	39.715	46.554	48.592
Vermont	50.588	52.423	52.239
Virginia	42.244	49.135	47.598
Washington	42.489	50.552	53.289
West Virginia	71.436	74.027	78.695
Wisconsin	52.648	48.280	53.810
Wyoming	44.477	47.394	45.913

TABLE A.23

FINAL SHRINKAGE ESTIMATES OF FSP PARTICIPATION RATES,
ALL ELIGIBLE PEOPLE

	2003	2004	2005
Alabama	58.255	57.901	65.127
Alaska	60.106	57.528	66.789
Arizona	63.197	67.583	65.850
Arkansas	62.978	68.915	76.098
California	45.366	47.697	49.733
Colorado	46.194	55.212	53.534
Connecticut	52.333	58.586	62.266
Delaware	51.765	60.805	65.270
District of Columbia	78.741	81.168	71.321
Florida	48.495	56.446	59.363
Georgia	67.604	66.383	73.971
Hawaii	69.316	72.323	69.910
Idaho	54.694	56.353	61.787
Illinois	62.153	69.061	75.444
Indiana	61.778	68.427	70.995
Iowa	59.396	61.429	65.535
Kansas	54.144	58.551	60.892
Kentucky	68.220	70.573	75.744
Louisiana	73.177	76.600	76.469
Maine	73.515	80.021	84.926
Maryland	48.148	53.845	55.451
Massachusetts	43.626	50.748	54.200
Michigan	61.814	66.713	75.457
Minnesota	63.103	62.042	62.434
Mississippi	66.907	59.918	60.191
Missouri	77.314	86.909	95.438
Montana	49.167	58.067	60.632
Nebraska	57.194	62.762	65.261
Nevada	42.173	49.422	48.841
New Hampshire	46.651	54.958	55.008
New Jersey	49.016	53.781	57.593
New Mexico	53.323	63.615	68.844
New York	49.466	54.488	61.392
North Carolina	47.864	55.951	58.336
North Dakota	53.624	54.637	56.586
Ohio	59.604	64.573	67.812
Oklahoma	68.867	75.343	77.164
Oregon	77.687	82.849	85.838
Pennsylvania	54.265	61.418	68.077
Rhode Island	55.087	52.548	56.061
South Carolina	64.792	67.289	71.254
South Dakota	51.697	52.991	56.662
Tennessee	85.175	84.402	87.792
Texas	46.536	57.430	60.054
Utah	50.381	59.750	60.546
Vermont	60.660	64.950	68.186
Virginia	57.626	61.623	61.986
Washington	59.693	64.010	68.339
West Virginia	71.610	76.391	80.304
Wisconsin	50.867	54.319	58.634
Wyoming	45.047	47.725	48.572

TABLE A.24

FINAL SHRINKAGE ESTIMATES OF FSP PARTICIPATION RATES,
WORKING POOR

	2003	2004	2005
Alabama	53.712	52.068	62.845
Alaska	61.188	52.136	62.119
Arizona	45.841	55.621	53.753
Arkansas	62.717	63.298	75.586
California	34.739	35.501	34.430
Colorado	34.594	45.690	34.417
Connecticut	44.245	46.374	45.143
Delaware	46.423	55.178	58.479
District of Columbia	51.075	40.181	36.199
Florida	39.487	43.143	48.536
Georgia	52.088	54.337	68.596
Hawaii	59.289	61.694	57.379
Idaho	46.989	48.070	55.966
Illinois	53.601	58.699	63.811
Indiana	61.348	68.134	71.353
Iowa	48.897	56.718	57.428
Kansas	51.114	51.030	51.797
Kentucky	64.423	65.770	74.786
Louisiana	69.500	72.309	77.853
Maine	64.952	73.123	79.230
Maryland	38.820	43.830	40.533
Massachusetts	28.883	38.529	35.955
Michigan	64.848	68.641	75.457
Minnesota	49.328	45.382	46.652
Mississippi	56.630	48.992	60.899
Missouri	69.358	78.628	89.289
Montana	42.763	49.483	50.871
Nebraska	49.183	52.910	52.817
Nevada	31.048	37.035	41.943
New Hampshire	41.051	48.097	45.912
New Jersey	38.275	44.187	41.360
New Mexico	46.504	57.127	64.846
New York	43.489	42.637	48.315
North Carolina	43.442	46.847	55.645
North Dakota	54.336	52.087	52.552
Ohio	56.680	61.749	63.383
Oklahoma	67.450	71.939	74.282
Oregon	70.412	74.603	75.347
Pennsylvania	53.818	56.817	62.591
Rhode Island	40.059	40.269	41.522
South Carolina	61.392	63.687	69.598
South Dakota	48.159	51.677	53.684
Tennessee	76.299	79.087	83.264
Texas	37.526	48.340	56.322
Utah	40.848	47.719	50.229
Vermont	52.030	53.735	54.000
Virginia	43.448	50.365	49.202
Washington	43.700	51.817	55.084
West Virginia	73.473	75.880	81.346
Wisconsin	54.148	49.488	55.623
Wyoming	45.745	48.580	47.460

TABLE A.25

STANDARD ERRORS OF FINAL SHRINKAGE ESTIMATES OF PARTICIPATION RATES, ALL ELIGIBLE PEOPLE

	2003	2004	2005
Alabama	2.689	2.579	2.558
Alaska	2.801	2.580	3.708
Arizona	3.424	3.393	2.861
Arkansas	2.824	2.697	3.071
California	1.410	1.486	1.409
Colorado	2.499	2.583	2.677
Connecticut	3.206	3.204	3.201
Delaware	2.962	2.951	3.131
District of Columbia	5.640	4.358	3.569
Florida	1.592	1.809	2.270
Georgia	2.695	3.957	3.587
Hawaii	3.355	3.486	3.597
Idaho	2.903	3.272	4.284
Illinois	2.474	2.217	2.679
Indiana	3.282	3.249	2.963
Iowa	3.348	3.374	2.399
Kansas	2.281	2.799	2.501
Kentucky	2.966	2.827	2.976
Louisiana	3.357	3.137	4.302
Maine	2.693	2.852	3.171
Maryland	2.537	2.737	2.879
Massachusetts	2.495	2.190	2.612
Michigan	2.482	2.033	2.354
Minnesota	3.561	3.261	3.510
Mississippi	3.525	2.116	3.281
Missouri	3.206	2.725	3.704
Montana	2.184	2.346	2.879
Nebraska	2.890	2.853	2.700
Nevada	2.507	3.614	3.157
New Hampshire	2.425	3.262	3.002
New Jersey	2.255	3.059	2.537
New Mexico	2.984	2.469	2.638
New York	2.210	1.993	1.645
North Carolina	1.954	2.685	2.623
North Dakota	3.203	3.076	2.921
Ohio	2.832	2.577	1.924
Oklahoma	2.914	3.229	3.238
Oregon	3.334	3.292	3.439
Pennsylvania	2.653	2.778	2.759
Rhode Island	2.153	2.567	2.375
South Carolina	2.530	2.264	2.630
South Dakota	2.953	2.395	2.844
Tennessee	3.886	4.088	3.616
Texas	1.527	1.792	2.055
Utah	2.398	2.297	3.055
Vermont	3.304	3.196	3.470
Virginia	3.123	2.991	2.735
Washington	2.963	3.248	3.149
West Virginia	3.307	2.938	3.491
Wisconsin	2.844	2.061	2.565
Wyoming	3.192	3.325	3.210

TABLE A.26

STANDARD ERRORS OF FINAL SHRINKAGE ESTIMATES OF PARTICIPATION RATES, WORKING POOR

	2003	2004	2005
Alabama	4.137	4.117	4.799
Alaska	5.379	4.536	6.021
Arizona	3.691	4.976	4.053
Arkansas	4.038	4.506	4.808
California	2.333	1.987	2.620
Colorado	3.234	3.487	3.038
Connecticut	4.411	3.731	4.569
Delaware	4.584	4.782	5.118
District of Columbia	7.833	5.610	7.330
Florida	2.879	2.793	3.857
Georgia	4.629	6.155	6.265
Hawaii	4.853	4.951	5.213
Idaho	4.457	4.561	4.906
Illinois	3.274	3.401	4.694
Indiana	4.344	4.679	5.116
Iowa	3.502	4.178	3.869
Kansas	3.022	3.691	3.701
Kentucky	3.540	3.764	4.347
Louisiana	5.253	5.177	6.561
Maine	4.374	4.677	5.060
Maryland	4.015	3.891	3.992
Massachusetts	2.960	4.000	4.355
Michigan	3.600	3.768	5.117
Minnesota	5.106	4.639	4.647
Mississippi	5.221	3.021	6.117
Missouri	4.390	4.167	5.888
Montana	3.753	3.652	4.445
Nebraska	4.428	3.376	3.840
Nevada	3.224	4.463	4.927
New Hampshire	4.645	5.006	4.696
New Jersey	4.180	4.511	4.462
New Mexico	4.243	4.286	4.758
New York	3.388	3.399	3.965
North Carolina	4.077	4.168	4.914
North Dakota	4.599	4.251	4.287
Ohio	3.722	3.595	4.262
Oklahoma	4.311	5.190	4.874
Oregon	5.595	5.496	5.536
Pennsylvania	4.252	4.002	4.614
Rhode Island	3.369	3.769	4.350
South Carolina	4.479	4.236	4.748
South Dakota	5.228	4.559	4.619
Tennessee	4.679	6.071	5.596
Texas	2.075	2.838	3.628
Utah	3.484	3.596	4.352
Vermont	4.515	4.629	5.144
Virginia	4.360	4.324	4.939
Washington	3.237	4.890	5.128
West Virginia	4.753	6.064	6.462
Wisconsin	4.053	2.710	4.201
Wyoming	4.809	4.965	5.276

TABLE A.27

FINAL SHRINKAGE ESTIMATES OF NUMBERS OF PEOPLE ELIGIBLE FOR THE FSP, ALL ELIGIBLE PEOPLE

	2003	2004	2005
Alabama	790,626	837,239	802,353
Alaska	80,931	84,771	81,046
Arizona	710,079	766,013	807,047
Arkansas	488,258	493,425	482,346
California	3,689,572	3,851,343	3,937,370
Colorado	436,740	434,484	449,506
Connecticut	331,870	327,671	317,204
Delaware	83,879	84,914	85,872
District of Columbia	100,067	106,569	120,578
Florida	2,076,764	2,073,397	2,087,538
Georgia	1,090,529	1,264,746	1,212,904
Hawaii	142,303	133,832	131,159
Idaho	142,405	156,793	146,770
Illinois	1,509,647	1,512,560	1,512,940
Indiana	729,952	742,820	759,142
Iowa	251,964	284,782	306,523
Kansas	286,096	281,581	284,800
Kentucky	714,222	756,231	740,788
Louisiana	869,057	897,802	925,046
Maine	171,076	165,641	168,833
Maryland	500,021	484,711	493,965
Massachusetts	643,153	641,352	642,266
Michigan	1,259,355	1,340,943	1,269,989
Minnesota	361,230	379,973	354,216
Mississippi	524,368	621,712	629,817
Missouri	739,285	773,471	783,179
Montana	143,137	130,113	130,230
Nebraska	168,274	176,822	177,706
Nevada	256,441	236,541	245,394
New Hampshire	91,606	85,465	91,851
New Jersey	686,343	680,390	669,620
New Mexico	358,591	344,217	343,379
New York	2,864,552	2,881,445	2,804,041
North Carolina	1,328,669	1,332,371	1,343,356
North Dakota	70,382	72,295	70,861
Ohio	1,407,449	1,431,562	1,441,389
Oklahoma	531,897	531,502	525,238
Oregon	452,862	457,865	456,758
Pennsylvania	1,488,669	1,540,281	1,497,471
Rhode Island	128,834	139,822	131,437
South Carolina	685,196	726,259	714,277
South Dakota	98,515	98,118	97,252
Tennessee	828,949	930,571	941,578
Texas	3,896,767	3,803,059	3,843,966
Utah	205,465	204,685	214,265
Vermont	66,554	64,510	62,029
Virginia	664,835	770,172	764,496
Washington	645,971	678,969	735,570
West Virginia	337,908	324,718	319,371
Wisconsin	550,055	571,781	536,257
Wyoming	55,310	52,614	51,820

TABLE A.28

FINAL SHRINKAGE ESTIMATES OF NUMBERS OF PEOPLE ELIGIBLE FOR THE FSP, WORKING POOR

	2003	2004	2005
Alabama	341,719	382,081	329,818
Alaska	35,558	46,738	40,545
Arizona	388,968	392,280	413,441
Arkansas	207,606	212,918	209,724
California	1,945,610	2,036,720	2,098,121
Colorado	218,373	231,374	243,412
Connecticut	117,682	108,877	125,943
Delaware	40,021	41,016	40,834
District of Columbia	27,240	25,779	35,812
Florida	996,932	990,187	950,161
Georgia	536,863	616,921	560,247
Hawaii	73,069	67,388	64,392
Idaho	90,145	94,520	80,899
Illinois	635,098	685,870	684,570
Indiana	306,116	315,714	335,054
Iowa	118,083	132,283	152,056
Kansas	132,201	131,301	131,144
Kentucky	284,184	293,939	266,190
Louisiana	436,127	447,659	410,054
Maine	60,337	61,472	64,219
Maryland	172,335	181,301	207,840
Massachusetts	194,474	213,470	227,250
Michigan	508,869	564,264	562,930
Minnesota	169,099	174,834	153,182
Mississippi	222,977	302,100	271,565
Missouri	327,015	347,603	415,507
Montana	72,637	66,867	69,885
Nebraska	79,448	88,460	79,219
Nevada	114,771	110,305	91,279
New Hampshire	34,181	31,801	38,222
New Jersey	251,128	258,470	282,174
New Mexico	195,163	185,687	183,972
New York	1,090,297	1,062,250	1,073,145
North Carolina	547,059	592,884	541,013
North Dakota	34,315	36,437	35,447
Ohio	544,992	615,152	636,995
Oklahoma	246,060	247,513	243,420
Oregon	224,620	226,414	208,202
Pennsylvania	527,722	608,344	598,757
Rhode Island	43,027	45,829	49,436
South Carolina	308,747	326,594	297,358
South Dakota	46,220	48,066	46,214
Tennessee	367,793	404,985	341,987
Texas	2,143,193	2,151,967	2,119,825
Utah	116,117	121,872	130,257
Vermont	24,792	26,717	29,622
Virginia	308,609	378,701	348,695
Washington	293,518	297,817	341,716
West Virginia	116,505	115,223	114,345
Wisconsin	232,555	291,404	234,106
Wyoming	27,912	28,564	28,080

TABLE A.29

STANDARD ERRORS OF FINAL SHRINKAGE ESTIMATES OF NUMBERS OF PEOPLE ELIGIBLE FOR THE FSP, ALL ELIGIBLE PEOPLE

	2003	2004	2005
Alabama	36,493	37,298	31,511
Alaska	3,772	3,802	4,499
Arizona	38,475	38,453	35,060
Arkansas	21,891	19,313	19,465
California	114,710	120,015	111,561
Colorado	23,627	20,329	22,479
Connecticut	20,330	17,918	16,306
Delaware	4,800	4,122	4,119
District of Columbia	7,167	5,721	6,034
Florida	68,181	66,455	79,829
Georgia	43,466	75,395	58,820
Hawaii	6,888	6,451	6,748
Idaho	7,558	9,103	10,176
Illinois	60,081	48,552	53,734
Indiana	38,777	35,272	31,684
Iowa	14,201	15,640	11,219
Kansas	12,053	13,459	11,696
Kentucky	31,053	30,293	29,109
Louisiana	39,864	36,763	52,042
Maine	6,266	5,903	6,303
Maryland	26,351	24,636	25,644
Massachusetts	36,787	27,672	30,951
Michigan	50,565	40,863	39,625
Minnesota	20,386	19,975	19,912
Mississippi	27,625	21,951	34,331
Missouri	30,653	24,253	30,396
Montana	6,359	5,257	6,184
Nebraska	8,503	8,039	7,351
Nevada	15,243	17,297	15,863
New Hampshire	4,762	5,073	5,012
New Jersey	31,581	38,696	29,497
New Mexico	20,069	13,358	13,158
New York	127,969	105,378	75,141
North Carolina	54,241	63,928	60,409
North Dakota	4,204	4,071	3,658
Ohio	66,880	57,133	40,889
Oklahoma	22,505	22,776	22,038
Oregon	19,436	18,195	18,297
Pennsylvania	72,782	69,660	60,699
Rhode Island	5,036	6,830	5,568
South Carolina	26,758	24,434	26,363
South Dakota	5,627	4,435	4,881
Tennessee	37,819	45,072	38,784
Texas	127,898	118,676	131,506
Utah	9,779	7,869	10,810
Vermont	3,625	3,175	3,157
Virginia	36,029	37,388	33,735
Washington	32,070	34,457	33,890
West Virginia	15,606	12,489	13,885
Wisconsin	30,750	21,700	23,458
Wyoming	3,920	3,665	3,425

TABLE A.30

STANDARD ERRORS OF FINAL SHRINKAGE ESTIMATES OF NUMBERS OF PEOPLE ELIGIBLE FOR THE FSP, WORKING POOR

	2003	2004	2005
Alabama	26,323	30,213	25,184
Alaska	3,126	4,067	3,930
Arizona	31,316	35,092	31,176
Arkansas	13,367	15,156	13,340
California	130,653	114,003	159,672
Colorado	20,413	17,656	21,489
Connecticut	11,733	8,760	12,746
Delaware	3,952	3,555	3,573
District of Columbia	4,178	3,599	7,252
Florida	72,687	64,103	75,499
Georgia	47,707	69,882	51,169
Hawaii	5,981	5,407	5,851
Idaho	8,551	8,968	7,091
Illinois	38,797	39,735	50,353
Indiana	21,678	21,683	24,024
Iowa	8,456	9,744	10,245
Kansas	7,817	9,498	9,369
Kentucky	15,615	16,823	15,474
Louisiana	32,964	32,050	34,558
Maine	4,063	3,932	4,102
Maryland	17,824	16,095	20,468
Massachusetts	19,931	22,162	27,527
Michigan	28,252	30,973	38,175
Minnesota	17,502	17,873	15,260
Mississippi	20,556	18,627	27,277
Missouri	20,699	18,422	27,401
Montana	6,376	4,935	6,107
Nebraska	7,153	5,645	5,760
Nevada	11,918	13,293	10,722
New Hampshire	3,868	3,310	3,909
New Jersey	27,424	26,386	30,442
New Mexico	17,808	13,932	13,499
New York	84,927	84,676	88,078
North Carolina	51,345	52,745	47,776
North Dakota	2,905	2,974	2,892
Ohio	35,787	35,816	42,832
Oklahoma	15,726	17,855	15,971
Oregon	17,849	16,681	15,297
Pennsylvania	41,690	42,851	44,134
Rhode Island	3,619	4,289	5,179
South Carolina	22,525	21,721	20,287
South Dakota	5,018	4,240	3,976
Tennessee	22,555	31,090	22,986
Texas	118,522	126,322	136,539
Utah	9,903	9,183	11,287
Vermont	2,151	2,302	2,822
Virginia	30,970	32,515	35,004
Washington	21,739	28,107	31,813
West Virginia	7,536	9,208	9,083
Wisconsin	17,406	15,955	17,682
Wyoming	2,935	2,920	3,122

TABLE A.31

NUMBER OF PEOPLE RECEIVING FSP BENEFITS, ADJUSTED FOR PAYMENT ERRORS, ALL ELIGIBLE PEOPLE

	2003	2004	2005
Alabama	460,576	484,773	522,547
Alaska	48,644	48,767	54,130
Arizona	448,752	517,692	531,438
Arkansas	307,494	340,042	367,056
California	1,673,811	1,836,986	1,958,168
Colorado	201,749	239,889	240,639
Connecticut	173,678	191,970	197,511
Delaware	43,420	51,632	56,048
District of Columbia	78,794	86,500	85,997
Florida	1,007,118	1,170,356	1,239,233
Georgia	737,237	839,573	897,195
Hawaii	98,638	96,792	91,693
Idaho	77,887	88,357	90,684
Illinois	938,294	1,044,589	1,141,418
Indiana	450,947	508,287	538,954
Iowa	149,657	174,940	200,880
Kansas	154,904	164,868	173,421
Kentucky	487,245	533,697	561,101
Louisiana	635,954	687,712	707,369
Maine	125,767	132,547	143,384
Maryland	240,752	260,995	273,906
Massachusetts	280,579	325,470	348,111
Michigan	778,459	894,583	958,297
Minnesota	227,949	235,743	221,152
Mississippi	350,838	372,519	379,096
Missouri	571,574	672,212	747,448
Montana	70,376	75,553	78,961
Nebraska	96,242	110,977	115,972
Nevada	108,150	116,902	119,852
New Hampshire	42,736	46,970	50,525
New Jersey	336,416	365,919	385,651
New Mexico	191,213	218,972	236,397
New York	1,416,971	1,570,048	1,721,448
North Carolina	635,957	745,478	783,664
North Dakota	37,742	39,500	40,098
Ohio	838,892	924,409	977,440
Oklahoma	366,300	400,449	405,295
Oregon	351,815	379,336	392,073
Pennsylvania	807,822	946,008	1,019,440
Rhode Island	70,970	73,474	73,685
South Carolina	443,951	488,691	508,952
South Dakota	50,929	51,994	55,105
Tennessee	706,055	785,416	826,629
Texas	1,813,415	2,184,089	2,308,444
Utah	103,516	122,299	129,728
Vermont	40,372	41,899	42,295
Virginia	383,116	474,605	473,880
Washington	385,598	434,609	502,681
West Virginia	241,977	248,056	256,466
Wisconsin	279,794	310,583	314,427
Wyoming	24,916	25,110	25,170

TABLE A.32

NUMBER OF PEOPLE RECEIVING FSP BENEFITS, ADJUSTED FOR PAYMENT ERRORS, WORKING POOR

	2003	2004	2005
Alabama	183,544	198,942	207,274
Alaska	21,757	24,368	25,186
Arizona	178,308	218,189	222,235
Arkansas	130,205	134,772	158,521
California	675,893	723,058	722,385
Colorado	75,544	105,713	83,775
Connecticut	52,069	50,490	56,855
Delaware	18,579	22,632	23,879
District of Columbia	13,913	10,358	12,964
Florida	393,659	427,199	461,168
Georgia	279,640	335,213	384,305
Hawaii	43,322	41,574	36,948
Idaho	42,358	45,435	45,276
Illinois	340,419	402,596	436,830
Indiana	187,795	215,109	239,071
Iowa	57,739	75,028	87,323
Kansas	67,573	67,003	67,929
Kentucky	183,080	193,324	199,072
Louisiana	303,107	323,698	319,238
Maine	39,190	44,950	50,881
Maryland	66,901	79,464	84,244
Massachusetts	56,170	82,248	81,708
Michigan	329,992	387,319	424,768
Minnesota	83,414	79,342	71,462
Mississippi	126,271	148,006	165,379
Missouri	226,811	273,312	371,003
Montana	31,061	33,088	35,551
Nebraska	39,075	46,804	41,841
Nevada	35,634	40,851	38,285
New Hampshire	14,031	15,295	17,548
New Jersey	96,120	114,211	116,708
New Mexico	90,759	106,077	119,298
New York	474,160	452,914	518,491
North Carolina	237,654	277,749	301,049
North Dakota	18,645	18,979	18,628
Ohio	308,902	379,847	403,745
Oklahoma	165,966	178,059	180,816
Oregon	158,160	168,910	156,875
Pennsylvania	284,011	345,641	374,765
Rhode Island	17,236	18,455	20,527
South Carolina	189,544	207,996	206,954
South Dakota	22,259	24,839	24,810
Tennessee	280,623	320,289	284,752
Texas	804,246	1,040,270	1,193,928
Utah	47,431	58,156	65,427
Vermont	12,899	14,356	15,996
Virginia	134,085	190,731	171,564
Washington	128,267	154,320	188,231
West Virginia	85,599	87,430	93,015
Wisconsin	125,925	144,211	130,216
Wyoming	12,769	13,876	13,327