



United States
Department of
Agriculture

SUBJECT: 2011 State-Level Estimates of Infants and Pre-School-Age Children at or Below 185 Percent of Poverty

Food and
Nutrition
Service

TO: Debra Whitford
Director
Supplemental Food Programs Division

SEP 13 2013

101 Park
Center Drive

Attached are estimates of the number of infants and children (ages 1-4) in each State who were at or below 185 percent of poverty in 2011. The 2011 estimates are provided for use in the Women, Infants and Children (WIC) funding formula to determine States' fair shares of WIC food funds for fiscal year (FY) 2014. The 2011 estimates are recommended for use in FY 2014 funding allocations because they reflect the most recent data available. These estimates were primarily developed using a "shrinkage" methodology similar to that used to develop estimates used in the funding formula since FY 1995. Estimates for the territories were based on data from the 2000 Census. (Note: these estimates were produced using the Food and Nutrition Service's (FNS) historic shrinkage methodology for use in the funding formula. These estimates are not comparable to the more comprehensive eligibles estimates produced by the Urban Institute under contract with FNS and published on the FNS website in January 2013.)

Alexandria, VA
2302-1500

Nationwide, the estimated number of infants and children (ages 1-4) at or below 185 percent of poverty decreased by 7.6 percent from 2010 to 2011. Most if not all of this is due to more accurate population estimates resulting from the release of the 2010 decennial Census. The State-level estimates provided here are consistent with the national number of infants and children at or below 185 percent of poverty. Because the 2011 data will be updating 2010 data for funding formula purposes, comparisons are shown between these two years.

Attached is a brief summary of the estimates and the shrinkage methodology used to develop them. We recommend releasing these materials to the States and other interested organizations on request.

Sincerely,

JH

Jay Hirschman

Director, Special Nutrition Research and Analysis Division
Office of Policy Support

Attachments

cc: Dianne Kriviski
Anne Bartholomew
Joan Carroll

2011 STATE-LEVEL ESTIMATES OF INFANTS AND CHILDREN (AGES 1-4) AT OR BELOW 185 PERCENT OF POVERTY

Overview

Prior to Fiscal Year (FY) 1995, estimates of the number of infants and children (ages 1-4) at or below 185 percent of poverty were available for Census years only. For the FY 1995-2014 funding allocations, annual estimates have been developed using a statistical technique known as "shrinkage."

Shrinkage is a statistical approach, which combines information from survey samples with other data. For the State estimates of the number of infants and children at or below 185 percent of poverty, shrinkage is used to combine income data from the March Current Population Survey (CPS) with an estimation model that uses other State-level economic data that have been demonstrated to have value in predicting the prevalence of low-income infants and children.

Food Nutrition Service (FNS) has used this methodology to develop State-level estimates of infants and children at or below 185 percent of poverty for 1992-2010. We have now produced estimates for 2011.

Since the territories are not included in the CPS, FNS estimates assume that Puerto Rico, the Virgin Islands, Guam, American Samoa, and the Northern Mariana Islands have the same share of the number of infants and children at or below 185 percent of poverty that they did in 1999. These estimates are based on the 2000 Census (which uses 1999 income data¹).

As the most current data, the 2011 estimates should be used for funding allocations for FY 2014.

Results

For 2011, the total number of infants and children at or below 185 percent of poverty in the United States, Puerto Rico, the Virgin Islands, Guam, American Samoa, and the Northern Mariana Islands was estimated to be 9.2 million. Table 1 provides estimates of the number of infants and children at or below 185 percent of poverty in 2011 in each State and territory and the national totals. Also shown are the 2010 shrinkage estimates. Because of the downward revision of the Census estimates of the numbers of infants and children in the U.S., the 2010 and 2011 estimates are not easily compared.

¹ For Puerto Rico, the Census Bureau provided the number of infants and children at or below 185 percent of poverty. For the other territories, the Census Bureau only provided the number of infants and children below 185 percent of poverty and did not provide data on those who were exactly at 185 percent of poverty.

Use of the Estimates in the Funding Formula

State-level estimates of infants and children at or below 185 percent of poverty are used in the funding formula to determine each State's share of the national total of infants and children at or below 185 percent of poverty. This percentage share is used to determine a State's "fair share" of food funds. For example, for a State with 1 percent of the national total of infants and children at or below 185 percent of poverty, the fair share would be 1 percent of the total food funds.

Estimates of pregnant, postpartum and breastfeeding women at or below 185 percent of poverty are not used in determining fair share for the allocation process. Women are estimated as a direct constant function of the number of infants at or below 185 percent of poverty. As a result, inclusion of estimates of women would have no significant impact on the percentage distribution of people at or below 185 percent of poverty among States. Therefore, for simplicity, estimates of pregnant, postpartum, and breastfeeding women are not included in the calculation.

Shrinkage Methodology for Estimates of the Number of Infants and Children at or Below 185 Percent of Poverty

For the estimates, shrinkage is used to develop estimates of the proportion of infants and children in each State in households with incomes at or below 185 percent of poverty. These proportions are then applied to State population estimates of infants and children by single age category.

These estimates were derived using an empirical Bayes shrinkage estimator. The estimator used Current Population Survey Annual Social and Economic Supplement (CPS ASEC) data pertaining to 2007 to 2011, American Community Survey (ACS) three-year estimates for 2005–2007 to 2009–2011, and administrative data from individual income tax returns and population estimates pertaining to 2007 to 2011 for all the States to jointly derive estimates for 2007 to 2011 for each State. Estimates for five years are jointly derived because of the availability of five sets of ACS three-year estimates.

The data from the econometric model provides more information to use in developing an estimate. The "shrinkage" estimate that results from the combination of the CPS with these additional data provides an estimate that is more precise than the CPS sample estimates taken alone. The shrinkage technique averages the sample and the model estimates using weights that reflect the relative precision of each estimate.² Thus, in cases where the CPS estimate has a high standard error, the model estimate would tend to receive more weight than it does in cases where the CPS standard error is lower.

The shrinkage estimates are, for many purposes, superior to either the direct sample estimates or the model estimates. In particular, the shrinkage estimates have substantially lower standard errors than the direct sample estimates.

² Specifically, the weights are chosen to minimize mean squared error (MSE).

2011 Estimates

The model estimates were developed using a regression model, which estimates the proportion of infants and children at or below 185 percent of poverty. As in prior years, the regression model for 2011 incorporates both Census and individual income tax data.

The following five steps were used to derive the 2011 State WIC eligibles estimates:

1. From the CPS ASEC surveys for 2008-2012, we used the income data collected for each of the five calendar years 2007-2011 to obtain for those years direct sample estimates of the percentage of children ages 0 to 4 in families with incomes at or below 185 percent of poverty in each State.
2. Using a regression model, we predicted State eligibility percentages (the percentage of children ages 0 to 4 who are in families with incomes at or below 185 percent of poverty) for each of the five years (2007-2011) based on administrative and decennial census data. (The predictors used are listed below.)
3. Using shrinkage methods, we averaged the direct sample estimates and regression predictions to obtain preliminary shrinkage estimates of State eligibility percentages.
4. For each State, we multiplied the preliminary shrinkage eligibility percentages by (separately) the State populations of children ages 0 and ages 1 to 4 to obtain preliminary shrinkage estimates of the numbers of infants and of children who are income-eligible for WIC.
5. We ratio adjusted the preliminary State shrinkage estimates of the numbers eligible to derive final shrinkage estimates that sum to the national total for children ages 0 to 4 obtained directly from the CPS.

The regression model used to predict eligibility percentages had the following predictors (in addition to an intercept):

- the poverty rate for all individuals according to individual income tax data, namely, the percentage of exemptions that are claimed on tax returns with adjusted gross income below the poverty level
- the elderly non-filer rate—the percentage of elderly individuals who were not claimed on tax returns—according to individual income tax data and population estimates
- the percentage of households with a female householder, no husband present, and related children under 18 years according to ACS three-year estimates
- the percentage of individuals with household income under 200 percent of the federal poverty level according to ACS three-year estimates
- median adjusted gross income according to individual income tax data
- the percentage of individuals who are not U.S. citizens according to ACS three-year estimates, and
- the percentage of households with earnings according to ACS three-year estimates

The predictors all varied by year. For example, the 2011 estimates were based on tax return data and population estimates for 2011 and the 2009–2011 ACS three-year estimates.

TABLE 1
STATE-LEVEL ESTIMATES OF INFANTS AND CHILDREN AT OR BELOW 185% OF POVERTY, 2010 AND 2011

State	2010	2010	2010	2011	2011	2011
	Infants	Children (ages 1-4)	Infants + Children (ages 1-4)	Infants	Children (ages 1-4)	Infants + Children (ages 1-4)
Alabama	32,780	133,339	166,119	30,915	122,941	153,856
Alaska	5,186	20,651	25,837	4,381	16,310	20,691
Arizona	46,428	194,274	240,702	42,388	182,921	225,309
Arkansas	22,490	93,140	115,630	20,316	84,646	104,962
California	244,741	1,001,691	1,246,432	236,132	923,406	1,159,538
Colorado	27,046	112,310	139,356	23,187	97,933	121,120
Connecticut	11,293	48,590	59,883	10,792	46,232	57,024
Delaware	4,934	20,387	25,321	4,522	17,546	22,068
District of Columbia	3,058	10,810	13,868	3,330	10,040	13,370
Florida	106,518	439,332	545,850	108,323	439,488	547,811
Georgia	72,359	299,515	371,874	61,989	260,047	322,036
Hawaii	7,001	27,228	34,229	7,541	28,616	36,157
Idaho	12,583	52,320	64,903	11,549	50,172	61,721
Illinois	77,411	319,484	396,895	70,483	284,197	354,680
Indiana	42,383	175,804	218,187	39,965	163,986	203,951
Iowa	15,564	64,817	80,381	14,062	60,147	74,209
Kansas	20,851	84,077	104,928	18,035	72,355	90,390
Kentucky	27,602	113,682	141,284	28,705	115,613	144,318
Louisiana	36,043	146,526	182,569	30,695	122,830	153,525
Maine	4,983	21,346	26,329	5,404	22,786	28,190
Maryland	26,735	109,006	135,741	19,137	77,141	96,278
Massachusetts	21,704	89,662	111,366	22,441	89,456	111,897
Michigan	56,752	237,841	294,593	52,341	217,073	269,414
Minnesota	24,145	100,166	124,311	20,872	87,314	108,186
Mississippi	25,665	108,435	134,100	22,022	95,097	117,119
Missouri	37,140	153,232	190,372	33,410	139,274	172,684
Montana	5,408	22,389	27,797	5,423	22,865	28,288
Nebraska	11,256	45,624	56,880	9,768	38,933	48,701
Nevada	17,635	72,549	90,184	16,715	68,728	85,443
New Hampshire	3,193	13,978	17,171	3,265	13,906	17,171
New Jersey	33,775	139,649	173,424	32,182	135,609	167,791
New Mexico	17,010	70,056	87,066	15,769	63,971	79,740
New York	106,351	422,107	528,458	102,311	386,518	488,829
North Carolina	64,970	267,128	332,098	56,801	241,117	297,918
North Dakota	2,840	11,357	14,197	2,848	11,270	14,118
Ohio	64,478	269,692	334,170	60,636	256,355	316,991
Oklahoma	28,159	114,773	142,932	23,966	102,134	126,100
Oregon	21,211	88,081	109,292	20,815	88,296	109,111
Pennsylvania	54,823	227,476	282,299	59,827	242,155	301,982
Rhode Island	4,641	19,643	24,284	4,430	18,378	22,808
South Carolina	32,431	133,330	165,761	30,382	129,458	159,840
South Dakota	5,627	23,196	28,823	5,434	22,238	27,672
Tennessee	40,428	167,979	208,407	37,735	154,307	192,042
Texas	219,821	890,443	1,110,264	188,813	776,874	965,687
Utah	21,758	87,254	109,012	19,228	80,871	100,099
Vermont	2,159	9,423	11,582	2,316	9,657	11,973
Virginia	32,504	132,623	165,127	30,148	121,497	151,645
Washington	36,342	146,891	183,233	34,311	140,819	175,130
West Virginia	8,374	34,794	43,168	11,037	44,837	55,874
Wisconsin	27,327	113,633	140,960	27,168	112,187	139,355
Wyoming	3,143	13,089	16,232	2,598	11,417	14,015
United States	1,879,059	7,714,822	9,593,881	1,746,863	7,121,964	8,868,827
Puerto Rico	59,950	246,136	306,086	55,732	227,221	282,954
Virgin Islands	1,494	6,138	7,632	1,389	5,666	7,055
Guam	2,399	9,852	12,251	2,230	9,095	11,325
American Samoa	1,863	7,647	9,510	1,732	7,060	8,791
CNMI	1,204	4,253	5,457	1,120	3,925	5,045
Total- US + territories	1,945,970	7,988,847	9,934,817	1,809,067	7,374,931	9,183,997