

Volume I

National and State-Level Estimates of Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) Eligibles and Program Reach, 2000–2009

Final Report



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Contents

Executive Summary.....	i
Introduction	1
Overview of Methods for National Estimates through 2008.....	1
National Eligibility Estimates: 2008 and 2009.....	8
2008 Estimates.....	11
Territories.....	17
2009 Estimates.....	20
Comparing 2009 to 2008	26
Regional and State Estimates of WIC Eligibility	28
Determining State-Level WIC Eligibility with the ACS data.....	28
Implementing the State-Level WIC Eligibility Estimates	31
Regional and State Estimates: 2008 and 2009.....	32
Validating the Results.	54
Regional and State Estimates: 2000 through 2007.....	54
Summary and Recommendations.....	61

VOLUME II

Appendix A. National Estimates: 2008 and 2009
Appendix B. Estimating Eligibility in the U.S. Territories
Appendix C. State Estimates: 2008 and 2009
Appendix D. State and Regional Estimates: 2000 through 2007
Appendix E. Computing Standard Errors
Appendix F. Estimating WIC Eligibility Among Postpartum Women
Appendix G. Annual-to-Monthly Adjustment Factor
Appendix H. Coverage Rate Maps

Figures and Tables

Exhibit ES.1: WIC Eligibles by Participant Group: A Comparison of the Change from Calendar Year 2008 to 2009	ii
Exhibit ES.2: WIC Eligibles and Coverage Rates by FNS Region, CY 2009	iii
Table 1: Adjustment Factors Used in National-Level WIC Eligibility Estimation for Infants and Children	2
Table 2: Adjustment Factors Used in National-Level WIC Eligibility Estimation for Pregnant and Postpartum Women	5
Table 3a: Steps and sources for 2008 and 2009 Estimates of WIC Eligibility: Infants and Young Children	9
Table 3b: Steps and sources for 2008 and 2009 Estimates of WIC Eligibility: Pregnant and Postpartum Women	10
Table 4: Estimates of the Total Average Monthly Number of Individuals Eligible for WIC by Participant Group, CY 2008	12
Table 5: Adjustments for Calculating the Average Monthly Number of Individuals Eligible for WIC by Participant Group, CY 2008	13
Table 6: Estimates of the Average Monthly Percentage of Infants and Children Eligible for WIC by Income and Adjunctive Eligibility in the 2009 CPS-ASEC by Demographic Characteristics, CY 2008.	16
Table 7: Adjustments for Calculating the Average Monthly Number of Individuals Eligible for WIC in Puerto Rico and the Other Island Territories by Participant Group, CY 2008	18
Table 8: Estimates of the Total Average Monthly Number of Individuals Eligible for WIC by Participant Group, CY 2008.....	21
Table 9: Adjustments for Calculating the Average Monthly Number of Individuals Eligible for WIC by Participant Group, CY 2009	23
Table 10: Estimates of the Average Monthly Number of Infants and Children Eligible for WIC by Income and Adjunctive Eligibility in the 2010 CPS-ASEC by Demographic Characteristics, CY 2009	24
Table 11: Adjustments for Calculating the Average Monthly Number of Individuals Eligible for WIC in Puerto Rico and the Other Island Territories by Participant Group, CY 2009	25
Table 12: Estimates of the Total Average Monthly Number of Individuals Eligible for WIC by Participant Group: A Comparison of the Change from Calendar Year 2008 to 2009	27
Table 13: Distribution of WIC Eligibles by FNS Region for each Participant Group, CY 2008 and CY 2009	33
Table 14: Distribution of WIC Eligibility by State and FNS Region, 2008 and 2009	34
Table 15: WIC Eligibles by FNS Region and Participant Group, CY 2008 and CY 2009	35

Figure 1: WIC Coverage Rate for All Participants by FNS Region, 2008.....	36
Figure 2: WIC Coverage Rate for All Participants by FNS Region, 2009.....	37
Table 16: WIC Eligibles and Coverage Rates by FNS Region and Participant Group, CY 2008.....	38
Table 17: WIC Eligibles and Coverage Rates by FNS Region and Participant Group, CY 2009.....	39
Figure 3: WIC Coverage Rate for Infants by FNS Region, 2009.....	40
Figure 4: WIC Coverage Rate for Children by FNS Region, 2009	41
Figure 5: WIC Coverage Rate for Pregnant Women by FNS Region, 2009	42
Figure 6: WIC Coverage Rate for All Postpartum Women by FNS Region, 2009	43
Table 18: WIC Eligibles and Coverage Rates by State and FNS Region, 2008.....	45
Figure 7: WIC Coverage Rate for All Participants by State, 2008.....	46
Table 19: WIC Eligibles and Coverage Rates by State and FNS Region, 2009.....	47
Figure 8: WIC Coverage Rate for All Participants by State, 2009.....	48
Table 20: WIC Eligibles and Standard Errors by FNS Region and Participant Group, CY 2008	50
Table 21: WIC Eligibles Standard Errors by FNS Region and Participant Group, CY 2009	51
Table 22: WIC Eligibles Standard Errors by State and FNS Region, 2008.....	52
Table 23: WIC Eligibles Standard Errors by State and FNS Region, 2009.....	53
Figure 9: All Participants Coverage Rate by FNS Region, 2000–2009	56
Figure 10: Infants Coverage Rate by FNS Region, 2000–2009	57
Figure 11: Children Coverage Rate by FNS Region, 2000–2009	58
Figure 12: Pregnant Women Coverage Rate by FNS Region, 2000–2009.....	59
Figure 13: Postpartum Women Coverage Rate by FNS Region, 2000–2009	60

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Executive Summary

The Special Supplemental Nutrition Program for Women, Infants and Children (WIC) provides supplemental nutritious foods, nutrition education and counseling, and screening and referrals to other health, welfare, and social services. On average during 2010, the program served 9.2 million people, providing benefits and services at a cost of \$6.7 billion. Because WIC is a Federal grant program for which Congress authorizes a specific amount of funds each year, the Food and Nutrition Service (FNS) requires estimates of the total number of individuals eligible for the program to anticipate funding needs.

In 2003 the Committee on National Statistics of the National Research Council (CNSTAT) published a report outlining recommendations for estimating the total number of people eligible for WIC living in the US mainland and territories. WIC eligibility is restricted to infants, children age 1 through 4, and pregnant and postpartum women. Participants must have income below 185 percent of the federal poverty guideline or be “adjunctively eligible” based on enrollment in another safety net program (Supplemental Nutrition Assistance Program or SNAP, Temporary Assistance for Needy Families or TANF, or Medicaid). Eligibility estimation requires nationally representative data and numerous assumptions that take into account program certification periods, enrollment in other programs, and breastfeeding choices. The CNSTAT methods, originally used to create estimates for 1994, detail procedures for estimating the total number of infants, children age 1 through 4, and pregnant and postpartum women (breastfeeding and non-breastfeeding) eligible for WIC. The CNSTAT recommended relying on the Annual Social and Economic Supplement to the March Current Population Survey (the CPS-ASEC) for the national estimates.

This project extends WIC national eligibility estimates to single years of age for children, produces estimates for each State and the District of Columbia, and updates methods for estimating eligibility in the territories. The project began with a thorough review of current procedures, examining each factor used to produce the national estimates. This review led to some minor corrections to the 2008 national estimates and some modifications to adjustment factors. This project also considered alternatives for extending the estimates to the 50 States, which led to a recommendation for using the American Community Survey (ACS) as the basis for the State eligibility estimates. The ACS has large samples for each State and provides the income and program participation data required to estimate WIC income and adjunctive eligibility. In order to ensure consistency with the national estimates, the numbers of WIC eligibles in each State calculated from the ACS are converted to shares of the national estimates to produce State-specific eligibility estimates.

The project required State-level estimates going back to 2000, the first year of the ACS. One complication is the lack of Medicaid enrollment information (required for estimating adjunctive eligibility) on the ACS prior to 2008. Procedures that use State-level Medicaid

enrollment over time were used to approximate the effect of Medicaid adjunctive eligibility on total WIC eligibility.

The review of existing procedures also showed that the method for estimating eligibility in the territories (basically an adjustment to the national estimates) did not produce realistic results. New methods estimate eligibility in the territories directly. The ACS sample for Puerto Rico, available beginning in 2005, allows for direct WIC eligibility estimates using procedures analogous to those implemented for the States. (Extrapolation methods are used to generate estimates for years between the 2000 Census and the 2005 ACS data.) Since Puerto Rico accounts for 80 percent of WIC eligibility in the territories, simpler methods that rely on adjustments to Census population counts are used to estimate eligibles in other territories.

The project also implemented calculation of standard errors of estimate for national, regional, State, and Puerto Rico estimates.

This report presents new national estimates for 2008 and 2009, including new estimates for single years of children’s ages and new territory estimates. The 2009 total estimates show a 6.4 percent increase in WIC eligibility relative to 2008, indicating 15.075 million individuals eligible in 2009 (Exhibit ES.1). WIC eligibility among children increased by 9.4 percent between 2008 and 2009. The weaker economy in 2009 increased the numbers of families with incomes below 185 percent of the federal poverty guidelines. In identifying characteristics of WIC-eligible infants and children, this report highlights the fact that the majority live in two-parent families and in families with incomes below the federal poverty thresholds.

**Exhibit ES.1: WIC Eligibles by Participant Group:
A Comparison of the Change from Calendar Year 2008 to 2009**

Participant Group	2009	2008	Percent Change
Infants	2,674	2,634	1.5%
Total Children Age 1 to 4	9,469	8,657	9.4%
Children Age 1	2,431	2,292	6.0%
Children Age 2	2,399	2,144	11.9%
Children Age 3	2,374	2,117	12.1%
Children Age 4	2,266	2,104	7.7%
Pregnant Women	1,376	1,355	1.5%
Postpartum Breastfeeding Women	667	639	4.3%
Postpartum Non-Breastfeeding Women	889	886	0.3%
Total WIC Eligibles	15,075	14,171	6.4%

Source: 2009 and 2010 CPS-ASEC for U.S. estimate, PRCS and Census for territories

State and regional estimates are presented for 2008 and 2009. California and Texas have the largest shares of WIC eligibles, accounting for 13 and 11 percent of all WIC-eligible individuals, respectively. Small population States, such as Delaware, North Dakota, Vermont and Wyoming, account for small shares of WIC eligibles.

Coverage rates (participants divided by eligibles) for different WIC participant groups by FNS regions and for total participants by State are presented in tabular and map formats. While the regions clustered close to the national average of 60.9 percent in 2009, the rates varied from a low of 52.8 percent in the Mountain Plains to 68.2 percent in the Western region (Exhibit ES.2). Higher coverage rates indicate higher participation among those who are eligible.

Exhibit ES.2: WIC Eligibles and Coverage Rates by FNS Region, CY 2009

FNS Region	Eligibles	Participants	Coverage Rate
Northeast	1,249	796	63.7%
Mid-Atlantic	1,662	1,041	62.6%
Southeast	3,178	1,813	57.0%
Midwest	2,278	1,306	57.3%
Southwest	2,390	1,463	61.2%
Mountain Plains	1,148	606	52.8%
Western	3,170	2,162	68.2%
Total	15,075	9,186	60.9%

Source: 2010 CPS-ASEC, 2009 ACS, 2009 PRCS, Census International Data Base, WIC Administrative Data

The standard errors for the national, regional, State, and Puerto Rico estimates are presented. The standard errors indicate only a 2 percent coefficient of variation for the overall estimate. Standard errors for many of the smaller States are quite large and suggest caution in using the single-year, State-level estimates. Additional State estimates for 2000 through 2007 are presented that apply State shares from a time series of ACS data to historic national estimates.

The report concludes with some recommendations for further research and refinement of the eligibility estimation process. This review suggests the importance of regular updates to the factor used to adjust the annual income data measured by the CPS and the ACS to account for monthly certification periods. Another recommendation suggests the calculation of the annual-to-monthly adjusters at the regional level to improve the State- and regional-level WIC eligibility estimates. The factor used to estimate income and adjunctive eligibility for pregnant and postpartum women also should be updated to reflect the most recent income volatility and safety net program participation. The recommendations also suggest reviewing the methods and data used to estimate eligible breastfeeding mothers, including the basic national and State breastfeeding rate data and adjustments related to income and adjunctive eligibility and

breastfeeding cessation rates. Other recommendations pertain to improving the estimates of WIC eligibility in Puerto Rico and island territories. Incorporating Puerto Rico–specific breastfeeding rates and Census 2010 data on income and adjunctive eligibility in the island territories would improve the estimates.

Eight appendices are presented. Appendix A presents more detailed national tables, following formats used in prior years, for 2008 and 2009. Appendix B describes procedures used to estimate eligibility in the territories in more detail. Appendix C details the steps used to produce the 2008 and 2009 State estimates. Appendix D describes the procedures used to complete the 2000 through 2007 State estimates, starting with details on how the estimates of Medicaid adjunctive eligibility were completed. Appendix E details the calculation of the standard errors. Appendix F describes the calculation of WIC eligibility among postpartum women, including how estimates of breastfeeding rates are used in the estimation. This appendix describes current breastfeeding rate data and the adjustments to those rates required to estimate postpartum breastfeeding mothers. Appendix G provides an analysis of the series of adjustment factors used to account for monthly income certification. Finally, Appendix H provides a series of maps showing WIC coverage rates over time.

Introduction

This project updates national estimates of WIC eligibility for calendar years 2008 and 2009 and produces new, consistent WIC eligibility estimates for the 50 States, the District of Columbia, and five U.S. territories for calendar years 2000 through 2009. National and territory estimates are produced for infants, children by single year of age, pregnant women, and breastfeeding and non-breastfeeding postpartum women. The national estimates use the Current Population Survey, Annual Social and Economic Supplement (CPS-ASEC) data and generally follow methods originally developed by the Committee on National Statistics of the National Research Council (CNSTAT).¹ The State-level estimates are based on the American Community Survey (ACS). WIC eligibility is estimated in each State and then converted to the States' shares of WIC-eligible individuals. These shares are applied to the CPS-ASEC national estimates to produce a consistent set of national and State estimates.

The project began with a thorough review of the most recent national estimates and the separate adjustment factors used in their production. Subsequently, alternative methods for producing State-level WIC eligibility estimates were considered. The method for producing State-level estimates recommended by project staff and approved by the Food and Nutrition Service (FNS) relies on the large State samples provided in the ACS. Estimates are provided back to 2000, the first year of the ACS. The State-level estimates also required numerous decisions to implement various adjustment factors at the State level. For the first time, standard errors of estimates are provided for all of the 2008 and 2009 WIC eligibility estimates. Also, new methods were developed to provide WIC eligibility estimates for Puerto Rico and four smaller outlying island territories.

This report describes all of the analysis and results. It begins with an overview of the CNSTAT recommendations for producing the annual WIC eligibility estimates. Subsequently, the report describes the updated national estimates, new methods for territory estimates, and the development of the State-level WIC eligibility estimates. The main body of the report summarizes various decisions and results. The final section presents recommendations for further refinement of the WIC eligibility estimates. The appendices present further details on results and some of the methods used to produce the 2000 through 2009 WIC eligibility estimates.

Overview of Methods for National Estimates through 2008

The national WIC eligibility estimates that have been produced for 1994 through 2008 have been based primarily on the recommendations of the CNSTAT Panel members. They recommended using the annual CPS-ASEC data for an initial count of eligible infants and

¹ See Ver Ploeg and Betson 2003 for the CNSTAT report. The estimates were implemented for FNS by the Urban Institute for 1994 through 2004, and updated by Mathematica Policy Research (MPR) for 2004 through 2008.

children. Those figures are refined through a series of adjustment factors designed to more closely mimic program procedures and to account for WIC eligibles in the territories. The estimates of eligible infants are used to estimate WIC-eligible pregnant and postpartum women. Postpartum women are divided into breastfeeding and non-breastfeeding mothers since certification and benefits vary for these two groups. Various data sets must be used to impute breastfeeding prevalence. As described below, a new adjuster was added recently to the recommended CNSTAT procedures to refine the prediction of breastfeeding cessation.

Infants and Children: The CPS-ASEC survey conducted each spring is used to count the number of infants (less than one year old) and children (age 1 through 4 years old) whose family income in the prior calendar year was less than 185 percent of the federal poverty guideline (the threshold for income eligibility) or whose families reported participation in Supplemental Nutrition Assistance Program (SNAP, formerly called Food Stamps), Temporary Assistance for Needy Families (TANF), or their State’s Medicaid program (the programs that confer adjunctive eligibility) at any point during the calendar year. Four proportional adjustments are made to these weighted counts to arrive at the final estimates of the number of eligible infants and children, as summarized in Table 1. Since the eligibility estimates of pregnant and postpartum women are constructed through a series of proportional adjustments to the eligibility estimates of infants, the estimates of infants play an especially important role in the estimation process.

Table 1
Adjustment Factors Used in National-Level WIC Eligibility Estimation
for Infants and Children

PURPOSE	DESCRIPTION
Population	These factors apply to the sampling weights in the survey data to align the counts of infants and children to the Census Bureau’s population estimates. These factors change annually and are derived from the ratio of four years of Census population estimates to four years of weighted counts of CPS-ASEC data. For each exact age (0, 1, 2, 3, and 4) there are six separate factors, varying by sex and by race (white, black, and other).
Annual- to-Monthly	This factor adjusts for the fact that the initial eligibility estimates are based on an annual accounting period. (The CPS-ASEC asks annual income and whether the family ever participated in various programs during the calendar year.) In reality, families’ incomes and participation status may fluctuate over the year. Eligible individuals are certified for either 6 or 12 months even if their circumstances change. The 2008 and 2009 factors for infants (1.18) and children (1.01) are derived by averaging factors that account for the relationship between monthly and annual income from the 2002, 2005, and 2006 Survey of Income and Program Participation (SIPP) data.
Territories	This factor—based on analysis of Census long-form data—reflects the additional eligible infants and children residing in U.S. territories. (This is not needed if territories are estimated individually.)
Nutritional Risk	This adjustment is made to the weighted count of WIC-eligible infants and children to reflect that otherwise-eligible individuals must also meet the nutritional risk criterion. These adjustment factors, 0.97 for infants and 0.99 for children, are based upon an analysis conducted by the CNSTAT Panel.

In estimating whether an infant or child is income eligible for WIC, the filing unit recommended by the CNSTAT Panel and used subsequently has been the broad definition of family: all individuals who live in the household and who are related by blood, marriage, or adoption.² Consequently, all subfamilies and individuals related to the householder (the owner of the property or the person whose name is on the leasing agreement) are included in the unit when determining both family size and family income. People unrelated to the householder are treated separately. In particular, foster children are considered as filing units of one, and subfamilies that are not related to the householder are considered as separate family units. For example, if an unmarried partner of the householder and his or her children from another relationship live in the household, they are considered as a separate unit in estimating WIC eligibility. This would also be true in the case of an unrelated family rooming or boarding within a larger household. Because the CPS-ASEC is a survey of the non-institutionalized population, infants and children who are institutionalized are not captured in the CPS-ASEC weighted counts of potentially eligible infants and children.³

The family's annual income is compared to the poverty guideline amount based upon the number of family members. Poverty guidelines for WIC eligibility are in effect from July 1 of the year until June 30 of the next year. Consequently, a family's calendar year income will span two years of poverty guidelines. The CNSTAT Panel recommended that income eligibility be determined by using a blended poverty guideline to construct the eligibility threshold. For example, when estimating income eligibility for calendar year 2009, 185 percent of the simple average of the poverty guideline used as of July 2008 and the poverty guideline used as of July 2009 is compared to the family's income.

Individuals not income-eligible for WIC may gain adjunctive eligibility through participation in another safety net program. As long as other, noneconomic eligibility criteria are met, an individual is adjunctively eligible if the person's narrowly defined family (parents and dependent children) receives benefits from the TANF program, if the person's household receives benefits from SNAP, or if the person is enrolled in Medicaid.⁴ The CPS-ASEC asks about

² WIC regulations define the family as "related or nonrelated individuals who are living together as one economic unit" (Code of Federal Regulations, Title 7, Part 246). In some cases, the economic unit as defined by the local WIC agency could be smaller or larger than the family unit used in the WIC eligibility estimates. For example, when a household includes two unmarried parents, the current definition of the family includes only one of the parents.

³ Some institutionalized individuals do receive WIC services, but food benefits are not provided if the institution provides all meals. The CPS-ASEC sample also excludes military families living on base when there is no nonmilitary adult, and it does not capture homeless families; both of these types of families could receive food benefits. The CPS-ASEC includes some types of non-institutional group quarters (such as rooming houses), but these are excluded from the counts.

⁴ Enrollment in a State's Medicaid-expansion program funded through the Children's Health Insurance Program (CHIP) also confers adjunctive eligibility, but enrollment in a separate State health program funded by CHIP does not. However, if eligibility in a separate State health program is limited to individuals with incomes at or below the WIC income threshold, *and* the program collects income information in the enrollment process, then participation in such a program can serve as evidence of income eligibility for WIC. Because the CPS-ASEC data do not separately identify the two types of CHIP programs, enrollment in CHIP is not counted as conferring adjunctive eligibility; this may lead to a slight underestimate of the count of adjunctively eligible infants and children.

enrollment in each of these programs during the prior year. However, adjunctive eligibility is likely underestimated due to the underreporting of benefit receipt in survey data.⁵

After the preliminary counts of infants and children who appear to be eligible (income or adjunctively), the CPS-ASEC person weights are adjusted so that the weights reflect Census population estimates. These population adjustment factors are annually recomputed and reflect the Census population estimates by age (five, one-year groups: age 0 through 4 years old), race (three groups: white, black, and other), and gender (two groups: female and male) over a four-year period relative to the weighted counts in the CPS-ASEC for the same period. This adjustment has fluctuated dramatically since 1994, the first year for which estimates were performed in the current historical series. For infants, the net effect has ranged from a reduction of 2.1 percent in the weighted counts of infants in the CPS-ASEC (used for the 1994 through 1997 estimates) to an increase of 6.0 percent (used for the 2000 through 2002 estimates). The adjustment in the weights of young children has ranged from a reduction of 3.8 percent (for the 1999 estimates) to a reduction of only 0.3 percent (in the CY 2008 estimates). Adjustments for subgroups are larger; for example, in producing the national estimates for CY 2000 through 2002, the weights of black male infants were increased by 27.7 percent. While the population adjustment varies over time, the adjustment brings the weighted CPS-ASEC counts up to the Census population estimates that show much more stability over time.

After the adjusted weighted count of income-eligible or adjunctively eligible infants and children is determined from the CPS-ASEC, adjustments are made to the estimates to account for differences between annual and monthly income, eligibility in the territories, and nutritional risk. The annual-to-monthly adjustment attempts to address the difference between a family's income as a percentage of the poverty guideline when assessed using annual income as opposed to the time period used by the program—a month or shorter. It also reflects the impact of certification periods. This adjustment factor differs for infants and children, reflecting the fact that eligible infants are certified for a year (they remain enrolled for the year even if the family's income increases) while eligible children are certified for only six months. After the certification period ends, income or adjunctive eligibility must again be demonstrated. The CNSTAT Panel recommended that the Survey of Income and Program Participation (SIPP) be used to construct proportional adjustments by comparing eligibility based upon monthly data and including certification periods with the results based upon a single annual determination. To date, estimates of the annual-to-monthly adjustment have been produced for different years using the 1996, 2001, and 2004 panels of the SIPP.

The CNSTAT recommended a simple territorial adjustment since the CPS-ASEC does not interview families in the territories while FNS requires eligibility estimates to include these geographical areas. The territorial adjustment simply increased the national estimates to account for WIC eligibles in Puerto Rico and four smaller areas—American Samoa, Guam, the Northern Mariana Islands, and the Virgin Islands—based on decennial Census data. Recent

⁵ All surveys underestimate enrollment because some individual fail to report participation (Wheaton 2007). The CNSTAT-recommended methods do not attempt to correct for the impacts of program underreporting.

estimates have been based on the 2000 Census. (As described below, the territory estimates for 2008 and 2009 use a different approach.)

The nutritional risk adjustment factor has remained constant or almost constant across the time period of the historical estimates of national eligibility (1994 through 2008). Using data from the Continuing Survey of Food Intake by Individuals (CSFII), the Panel found that at least 97 percent of income-eligible pregnant women were at nutritional risk. Since an infant whose mother would have qualified for WIC during pregnancy is automatically considered at-risk, the nutritional risk adjustment factor for infants has been 0.97. The CSFII data also suggested that more than 99 percent of young children failed to meet dietary guidelines, leading to a 0.99 nutritional risk adjustment for children.

Pregnant and Postpartum Women: Estimates of the number of WIC-eligible women (pregnant, postpartum breastfeeding, and postpartum non-breastfeeding) are based upon adjusted counts of WIC-eligible infants rather than separate counts of the CPS-ASEC data. (The CPS-ASEC does not identify pregnancy or breastfeeding status.) The proportional adjustments made to the infant estimates to arrive at the final estimates for women are summarized in Table 2.

Table 2
Adjustment Factors Used in National-Level WIC Eligibility Estimation
for Pregnant and Postpartum Women

PURPOSE	DESCRIPTION
Fetal and Infant Deaths and Multiple Births	If an infant dies or there are multiple births, the number of infants will misstate the number of pregnant and postpartum women. A single factor is used for both pregnant and postpartum women. The 0.9961 factor is derived from Vital Statistics on fetal and infant deaths, multiple births.
Gestation	A pregnant woman is eligible only during her pregnancy (at most nine months). Also, she may not be eligible during her pregnancy even though she and her child may be eligible postpartum. The CNSTAT Panel examined SIPP data and estimated that a women eligible for WIC after the birth of her child was eligible for an average of 6.4 months of WIC during the pregnancy. The resulting 0.533 adjustment factor has been used subsequently.
Breast-feeding	This adjustment factor reflects that breastfeeding postpartum mothers are eligible for a maximum of 12 months while non-breastfeeding mothers are eligible for up to 6 months postpartum. Consequently, both the rate and the duration of breastfeeding are important. The Ross Mother’s Survey provides basic breastfeeding rates for WIC-enrolled mothers in the hospital and at six months. These rates are adjusted for higher rates of breastfeeding among WIC-eligible, non-participating mothers. An additional factor, not included in the Panel’s recommendations, takes into account the decline in breastfeeding through the year, assuming that women report the cessation of breastfeeding prior to the end of a certification period.
Nutritional Risk	This adjustment is made to the weighted count of WIC-eligible pregnant women to reflect that the recipient must also meet the nutritional risk criterion. All postpartum women are assumed to be at nutritional risk. Historically, this adjustment factor has been assumed to be 0.97 for infants, 0.99 for children, 0.97 for pregnant women, and 1.00 for postpartum women.

The first adjustment to the count of WIC-eligible infants accounts for the lack of a one-to-one relationship between mothers and infants. The number of pregnant and postpartum women can be less than the number of infants due to multiple births. However, the number of pregnant and postpartum women can be greater than the number of infants in the CPS-ASEC due to fetal and infant deaths (the infants are absent in the CPS-ASEC). The adjustment that accounts for both of these factors is small (0.9966 from 2000 through 2003 and 0.9961 from 2004 through 2009).

The eligibility estimates for pregnant women take into account that some mothers of WIC-eligible infants were not themselves eligible during pregnancy. (It is also possible that a woman could be WIC-eligible during pregnancy but not WIC-eligible after the birth.). In research conducted for the Panel, Yelowitz (2002) analyzed data from the 1990 through 1996 panels of SIPP and found that women whose infants were eligible for WIC were themselves eligible in an average of 6.4 months of pregnancy, or 71 percent of the maximum nine months of pregnancy eligibility. Thus, the gestation adjustment factor used consistently since 1994 has been 0.5330 (0.71 x 0.75).

Although the CNSTAT Panel recommended that no adjustment be made for the nutritional risk criterion in the WIC program, the number of pregnant women after this adjustment for gestation is reduced by an additional 3 percent to reflect that an otherwise-eligible pregnant woman may not be at nutritional risk. However, the estimates assume that all postpartum women are at nutritional risk.

For a postpartum woman, the duration of WIC eligibility depends on the extent to which she breastfeeds her child as well as the other eligibility factors. A new mother can be certified to receive benefits for up to 12 months, if she is breastfeeding and her child is not receiving the fully formula fed food package. If the mother is not breastfeeding or her child receives the fully formula fed food package, then she can be eligible for benefits as a postpartum woman until her infant turns six months old. To account for the fact that the mother's WIC eligibility may differ from the infant's eligibility, breastfeeding adjustments are applied to the count of mothers whose infants are WIC-eligible.

The breastfeeding adjustments combine data from three sources: the Ross Labs Mothers Survey (RLMS, now named the Infant Feeding Survey or IFS), the National Health and Nutrition Examination Survey (NHANES), and the SIPP. Ross Labs annually releases their estimates of the percentage of WIC mothers who breastfeed their infant in the hospital and the percentage who are breastfeeding at six months. For 2009, for example, the Ross Labs data show 50.7 percent of WIC mothers breastfeeding in the hospital, and 17.6 percent breastfeeding at six months. Since estimates show that mothers who are eligible but not participating in WIC have higher rates of breastfeeding than WIC participants, the rates reported in RLMS for WIC participants will underestimate rates for all WIC-eligible mothers. The NHANES data are used to adjust for this difference. The NHANES ratios of breastfeeding rates for WIC-eligible to WIC-participating mothers in the hospital and at six months are applied to

the Ross Labs annual estimates to reflect the rates expected in the eligible population. The most recent analysis of NHANES data showed that the breastfeeding rate of WIC-eligible mothers in the hospital was 5.6 percent higher than for WIC participants. At six months, WIC-eligible mothers were 15.0 percent more likely to breastfeed than WIC participants.⁶ The estimated percentage of WIC-eligible mothers breastfeeding at birth gives an initial breakdown of postpartum women by breastfeeding versus non-breastfeeding status for the first six months postpartum. The estimated percentage of women breastfeeding at six months gives an initial estimate of the number of women who may be certified for an additional six months.

The estimation of postpartum WIC eligibility is complicated by the decline in breastfeeding throughout the first year and by the fact that a woman may not be eligible even if her infant is eligible. If a mother is not initially eligible for WIC (for example the infant is eligible due to Medicaid enrollment but the mother is not enrolled in Medicaid), but the mother then becomes income-eligible or adjunctively eligible later in the year, her eligibility will depend on whether she is breastfeeding at that point (not whether she was breastfeeding in the hospital or at six months). Although the CNSTAT Panel did not discuss an adjustment factor to address these issues, both the Urban Institute and Mathematica Policy Research, Incorporated (MPR) have simulated postpartum WIC eligibility using SIPP data to test the impact of these complications.

The most recent SIPP-based simulations of postpartum WIC eligibility assume that mothers inform WIC staff members as soon as they stop breastfeeding. Mothers have this incentive because WIC provides non-breastfeeding mothers with infant formula (although mothers whose infants are more than six months old will lose their own WIC eligibility if they report that they are no longer breastfeeding). The simulations assign a breastfeeding status and duration to each postpartum mother of a WIC-eligible infant, using breastfeeding rates for WIC-eligible mothers from NHANES. Eligibility is then simulated month-by-month, using each woman's monthly income, program participation, and breastfeeding status, in combination with the appropriate certification periods, to estimate her months of eligibility. One simulation uses the in-hospital breastfeeding status for the first six months and the status at six months for the remainder of the year, while a second simulation uses the monthly status. In the second simulation, fewer eligible women are counted as breastfeeding, and the total number of WIC-eligible postpartum women is also lower. The ratio of the second set of estimates to the first provides an additional adjustment factor. In the most recently published WIC eligibility estimates, the SIPP-based factor reduced the previous estimates of postpartum breastfeeding mothers.⁷

⁶ These adjusters have been used since 2008 and reflect updated estimates computed from 2005–2006 NHANES data.

⁷ Harper, Hirschman, Mabli, Nelson, and Hourihan 2009.

National Eligibility Estimates: 2008 and 2009

Under this project, national WIC eligibility estimates were produced for 2008 and 2009. As noted earlier, the project began with a thorough vetting of the methods and adjustment factors most recently used in 2008.⁸ This review identified a minor deviation from the Panel's recommended methods in the production of the 2008 estimates, which was corrected in the updated estimates. The new estimates for 2008 and 2009 include national estimates for single years of age, State estimates, and regional estimates (all as required by this contract). New methods were developed and applied to estimate WIC eligibility in territories, calculate State eligibility estimates (in a manner that remains consistent with the national estimates), and calculate standard errors of the estimates.

The methods used to produce the estimates for 2008 and 2009 are summarized in Tables 3A (for infants and children) and 3B (for women). These methods follow the recommendations of the CNSTAT Panel as outlined earlier with the addition of the breastfeeding cessation factor. Newer data are incorporated from the CPS-ASEC, the Ross Laboratories Mother Survey, the Census Bureau, and the Puerto Rico ACS. Also, this is the first time since the issuance of the CNSTAT Panel report that national estimates have been produced for children by single years of age.

The section begins by presenting the 2008 national estimates. Then we describe each factor used to produce the estimates along with improvements made to those procedures. (New procedures are documented more fully in the appendices referenced.) We next summarize the characteristics of the WIC population living in the United States. Then we present the 2009 national estimates. Since the methods match those used for 2008, we only highlight methods when factors were updated to reflect new data. The final national summary compares the 2009 and 2008 estimates. More detailed tables related to the 2008 and 2009 national estimates are provided in Appendix A.

⁸ All methods were validated by programming the procedures both in SAS (using updated historical code) and STATA and verifying the dual estimates until they matched.

TABLE 3A
 STEPS AND SOURCES FOR 2008 and 2009 ESTIMATES OF WIC ELIGIBILITY:
 INFANTS AND YOUNG CHILDREN

Step	Description	Sources for Updates to Estimates and Adjustment Factors
Demographic eligibility	Identify individuals age 0, 1, 2, 3, or 4 in the survey.	CPS-ASEC - National Estimates ACS - State Estimates Census Bureau International Data Base - Other Island Territories
Weight adjustment	Adjust sampling weights to account for undercount or overcount in the CPS relative to Census estimates, by exact age, gender, and race.	National Estimates: Updated population estimates from the Census Bureau and the CPS-ASEC based on four years of data. State Estimates: Updated population estimates by age and State from the Census Bureau using same Census year as the calendar year being estimated.
Income eligibility	Count as eligible if prior year's annual family income is \leq 185 percent of the applicable poverty guideline--"family" for income purposes is the broadly-defined family, with related subfamilies included in the primary family. Poverty guidelines are the blended poverty guidelines from current and prior year to reflect WIC eligibility rules.	CPS ASEC - National Estimates ACS - State Estimates Blended poverty guidelines: FY 2007 and FY 2008 guidelines used for CY 2008 estimates FY 2008 and FY 2009 guidelines used for CY 2009 estimates
Adjunctive eligibility	Add in as eligible those infants/children whose household reports SNAP, whose family reports TANF, or who are themselves reported as enrolled in Medicaid during the prior calendar year. For TANF receipt, "family" is the narrowly defined family (with subfamilies separate from the primary family). In the CPS, the family also includes any related children whose parents are not present in the household. The ACS does not separately identify Medicaid; all children reporting public health coverage are considered adjunctively eligible.	CPS-ASEC ACS - State Estimates
Adjust for fluctuations in monthly income and certification periods	Multiply the estimates by a factor of 1.18 for infants and 1.01 for children to account for the impact of monthly fluctuations in income and program participation, and for the impact of 6- and 12-month certification periods.	SIPP panels from 2001 and 2004
Adjust for nutritional risk	Multiply the infant estimates by 0.97 and the child estimates by 0.99 to account for the fact that some otherwise-eligible infants and children might not be found to be at nutritional risk.	No update because CNSTAT-derived factors
Territories	Eligibility in Puerto Rico is based on the PRCS and is estimated with the same methods as those used for the State estimates. Eligibility in the Other Island Territories is based on a proportion of the estimated population of infants and children.	American Community Survey sample (PRCS) - Puerto Rico Census Bureau International Data Base - Other Island Territories

TABLE 3B

STEPS AND SOURCES FOR 2008 and 2009 ESTIMATES OF WIC ELIGIBILITY:
PREGNANT AND POSTPARTUM WOMEN

Step	Description	Sources for Updates to Estimates and Adjustment Factors
Starting point	Use as a starting point the final average monthly eligibility estimate for infants	Eligible infants from CPS-ASEC.
Adjust for multiple births and infant deaths	Multiply by a factor of 0.9961 to account for the impact of multiple births and infant deaths (so the number of pregnant women/mothers is not exactly equal to the number of infants).	Multiple birth, infant and fetal death data from 2004 vital statistics data. March 2004 Census estimates for count of infants.
<i>For pregnant women:</i> Adjust for length of pregnancy and difference in income and adjunctive eligibility during pregnancy vs. after birth	Multiply by 0.533 to account for 9 months of pregnancy (0.75 factor) and to account for lower likelihood of financial or adjunctive eligibility during pregnancy vs. after birth (additional 0.71)	No update because CNSTAT-derived factor.
<i>For postpartum mothers:</i> Separately estimate the average monthly number who are eligible as breastfeeding mothers and the number eligible as postpartum non-breastfeeding mothers	1) To estimate eligible breastfeeding mothers before and after the 6-month point, use Ross Labs Mothers Survey (RLMS) rates of breastfeeding by WIC participating mothers in-hospital and at 6 months (52.3% and 19.5% in 2008; 53.5% and 20.2% in 2009) 2) Adjust these estimates to apply to WIC-eligible mothers, using multiplicative factors derived from NHANES (1.056 and 1.150 for in-hospital and at 6 months, respectively). 3) Multiply estimates from step 2 to account using SIPP based factors that account for the interaction between women's certification periods, breastfeeding cessation, and the fact that women may not be income or adjunctively eligible throughout the year (0.620, 0.832). 4) Use above information to divide postpartum women between breastfeeding and not breastfeeding in first half of the year; and to estimate eligible breastfeeding women in second half of the year.	Annual Ross Laboratories Mothers Survey (RLMS); 2001-2002, 2003-2004, and 2005-2006 waves of National Health and Nutrition Examination Survey (NHANES); 1996, 2001, and 2004 SIPP panels. Territorial estimates assume the national breastfeeding rates.
Adjust for nutritional risk	Multiply the estimate for pregnant women by 0.97 to account for the fact that some otherwise-eligible pregnant women might not be found to be at nutritional risk. Assume all postpartum women are at nutritional risk (factor of 1.0).	No update because CNSTAT-derived factor.

2008 Estimates.⁹

Table 4 shows that 14.171 million individuals are estimated to be eligible for WIC in the average month of CY 2008, across the 50 States, the District of Columbia, Puerto Rico, and four other island territories.¹⁰ The estimate includes 2.634 million infants (59 percent of all infants in the United States and territories) and 8.657 million children age 1 through 4 (51 percent of all young children). The number of children eligible for WIC declines with each year of age, as eligibility and participation decline slightly over time. The estimated average monthly number of pregnant women eligible for WIC, 1.355 million, derives directly from the number of eligible infants (adjusted for multiple births and differences in income and adjunctive eligibility between infants and mothers, and adjusted for a maximum of nine months of benefits). The average monthly number of WIC-eligible postpartum women also derives from the number of eligible infants and the estimates of breastfeeding rates calculated as summarized in Table 3B above. There are an estimated 0.639 million women eligible as breastfeeding mothers in the average month of CY 2009, and an estimated 0.886 million eligible non-breastfeeding postpartum women.

These totals are derived from numerous factors. We focus first on the estimates for the 50 States and the District of Columbia (Table 5). The estimation process begins by adjusting counts of the number of infants and children from the 2009 CPS-ASEC (reflecting income in CY 2008) to compensate for difference between CPS-ASEC weighted population counts and Census Bureau population estimates. This slightly increases the numbers of infants and two-year-olds and decreases the numbers of children age one, three, and four. The numbers of income-eligible infants and children, based on 185 percent of a two-year average of the federal poverty guidelines, are shown. They comprise about 40 percent of all infants and young children in the 50 States and the District of Columbia. Adjunctive eligibility due to enrollment in SNAP, TANF, or Medicaid increases the infant eligibility estimate by 31 percent and increases the estimate for young children by 23 percent. Medicaid accounts for most of those adjunctively eligible for WIC in 2008 (0.424 million infants and 1.307 million children age 1 to 4). These patterns reflect program eligibility policies and caseload sizes. More children are enrolled in Medicaid than the other two programs,¹¹ as many States have expanded eligibility for Medicaid to income levels above 185 percent of poverty.¹²

⁹ As explained, 2008 estimates were updated to correct the poverty guidelines, use an annual-to-monthly adjuster that averages only the more recent SIPP estimates, and implement new methods for territory estimates, and they were extended to provide estimates by single year of age for children. Appendix C, which details the 2008 State estimates, also provides a summary of the effects of these changes compared with the 2008 estimates provided to FNS by MPR in 2009.

¹⁰ The tables provide the unrounded eligibility estimates in order to show the precise impact of each adjustment. However, all the estimates are subject to sampling variability, discussed later.

¹¹ In 2007, 28 million children (under age 18) were enrolled in Medicaid and 13.5 million children were enrolled in SNAP. Medicaid caseload from Kaiser (2009) and SNAP caseload from Walkwitz and Trippe (2009).

¹² In 2007, for example, 12 States offered Medicaid coverage to infants in families with incomes above 185 percent of poverty; 10 of these States offered this coverage to children through age 5. An additional 10 States offered CHIP coverage through Medicaid to children in families with incomes above 185 percent of poverty, but 3 of these

Table 4: Estimates of the Total Average Monthly Number of Individuals Eligible for WIC by Participant Group, CY 2008

NOTE: This table includes estimates for the territories.

Participant Group	2008		
	Eligibles ^a	Non-Eligibles ^b	Total
Infants	2,633,819	1,811,679	4,445,498
Total Children Age 1 to 4	8,657,117	8,399,639	17,056,756
Children Age 1	2,292,023	2,054,735	4,346,758
Children Age 2	2,143,513	2,176,247	4,319,761
Children Age 3	2,117,479	2,113,062	4,230,541
Children Age 4	2,104,102	2,055,595	4,159,697
Pregnant Women	1,355,127		
Postpartum Breastfeeding Women	639,003		
Postpartum Non-Breastfeeding Women	886,312		
Total WIC Eligibles	14,171,378		

Source: 2009 CPS-ASEC for U.S. estimate, PRCS and Census for territories

Notes:

^a The eligible estimates represent the average monthly number of individuals income or adjunctively eligible for WIC in 2008, taking into account all adjustments as explained in Table 3a.

^b The non-eligible infants and children represent the difference between the Total estimates of infants and children age 1 to 4 in the total United States and the WIC-eligible infants and children.

States limited the coverage to infants or children under age 2. Tabulated from Kaiser Family Foundation, Statehealthfacts.org, <http://www.statehealthfacts.org/comparecat.jsp?cat=4&rgn=6&rgn=1>.

Table 5: Adjustments for Calculating the Average Monthly Number of Individuals Eligible for WIC by Participant Group, CY 2008^a

U.S. States and D.C. (2009 CPS-ASEC)	Infants	Children Age 1	Children Age 2	Children Age 3	Children Age 4	Total Children Age 1 to 4	Pregnant Women	Postpartum Breastfeeding Women	Postpartum Non-Breastfeeding Women	Total
Total number of infants/children in the 2009 CPS-ASEC	4,300,938	4,345,399	4,206,092	4,193,299	4,141,181	16,885,971				21,186,909
Number (non-U.S. Territory) after adjustment for CPS under/overcount	4,392,888	4,292,829	4,264,202	4,174,087	4,103,644	16,834,762				21,227,650
Number with annual income <185% FPG	1,720,897	1,783,702	1,698,508	1,654,750	1,734,785	6,871,745				8,592,642
Number of additional people adjunctively eligible above 185% FPG	537,864	464,903	400,517	418,266	324,990	1,608,675				2,146,540
Through Food Stamps	109,341	92,110	68,757	85,028	42,794	288,689				398,030
Through TANF	4,499	3,168	3,836	5,486	0	12,489				16,989
Through Medicaid	424,024	369,625	327,924	327,752	282,196	1,307,497				1,731,521
Total number income and adjunctively eligible	2,258,761	2,248,605	2,099,025	2,073,016	2,059,775	8,480,420				10,739,182
Number after monthly income adjustment	2,665,338	2,271,091	2,120,015	2,093,746	2,080,373	8,565,225				11,230,563
Total Eligibles - Number after adjustment for nutritional risk (infants and children)	2,585,378	2,248,380	2,098,815	2,072,808	2,059,569	8,479,572				11,064,951
Starting point for estimates of women is fully eligible infants							2,585,378	2,585,378	2,585,378	7,756,135
Number after adjustment for length of pregnancy and income of woman during pregnancy							1,376,714			1,376,714
Number after adjustment for multiple births and infant deaths							1,371,345	2,575,295	2,575,295	6,521,935
Number after adjustment for breastfeeding								627,251	870,012	1,497,262
Total Eligibles - Number after adjustment for nutritional risk (pregnant and postpartum women)							1,330,204	627,251	870,012	2,827,467

Source: 2009 CPS-ASEC

Eligibles in the U.S. Territories	Infants	Children Age 1	Children Age 2	Children Age 3	Children Age 4	Total Children Age 1 to 4	Pregnant Women	Postpartum Breastfeeding Women	Postpartum Non-Breastfeeding Women	Total
Total Eligibles in the U.S. Territories	48,440	43,642	44,698	44,671	44,533	177,544	24,923	11,752	16,301	278,961

Source: 2008 PRCS and Census International Data Base

See Table 7 for details.

Total Eligibles - States and Territories U.S. Total **2,633,819** **2,292,023** **2,143,513** **2,117,479** **2,104,102** **8,657,117** **1,355,127** **639,003** **886,312** **14,171,378**

Note: ^a See Tables 1, 2, 3a, and 3b for adjustment factors applied.

The next adjustment accounts for intra-year income fluctuation and the fact that individuals are certified eligible for a number of months. The number of infants who appear eligible based on annual income and program participation is increased by 18 percent and the number of children by 1 percent. These factors represent the average factors calculated for 2002, 2005, and 2006 (from the 2001 and 2004 SIPP panels). Estimates from the 1996 SIPP panel (included in earlier annual-to-monthly adjustments) are not included in the average to reflect more recent income volatility and adjunctive eligibility patterns. As explained further in Appendix G, the annual-to-monthly adjustment has been declining over time for both infants and children. These declines may reflect changes in income volatility and increased safety net program enrollment. Changes in Medicaid and SNAP program eligibility rules, such as 12-month certification periods and income eligibility above 185 percent of the poverty guidelines mean that more infants, children, and women will gain adjunctive eligibility for WIC. The CPS-ASEC data estimate increasing numbers of adjunctively eligible infants and children over time, many with annual incomes above 185 percent of the federal poverty guidelines. Thus, the annual-to-monthly adjustment is smaller and has less impact on WIC eligibility.

The final adjustment to the number of infants and children reduces the estimates slightly to reflect the fact that some may meet all other criteria but not be considered at nutritional risk. The estimate for infants is reduced by 3 percent and the estimate for children is reduced by 1 percent, as in prior analyses.

The estimates for pregnant women begin from the estimate of 2.585 million WIC-eligible infants in the average month of CY 2008. This figure is adjusted for the length of pregnancy and the fact that a woman may have higher income during pregnancy than after birth (a combined adjustment factor of 0.533). The next adjustment compensates for the fact that the count of infants very slightly overstates the count of pregnant women (the factor is 0.9961) and final adjustment (0.97) reflects the assumption that 3 percent of otherwise-eligible pregnant woman would not be found to be at nutritional risk. The final estimate is 1.330 million women eligible for WIC during pregnancy in the average month of CY 2008.

The estimates for postpartum women—breastfeeding and non-breastfeeding—also begin from the estimate of 2.585 million WIC-eligible infants. As in the estimation process for pregnant women, this figure is adjusted by a factor of 0.9961 to adjust for fetal and infant deaths and multiple births. The next adjustments shown are intended to reflect that not all mothers of WIC-eligible infants will receive WIC, that those who do receive WIC may not receive it for as many months as their infants, and that both breastfeeding and non-breastfeeding women may receive WIC during the first six months of the infant's life. The average monthly estimate of postpartum breastfeeding women eligible for WIC is 24.4 percent of the estimated infant eligibility (this counts women both before and after the six-month point), and the estimate of postpartum non-breastfeeding women is 33.8 percent of the estimated infant eligibility. Summing across both subgroups of women, the aggregate number of months that postpartum mothers are estimated to be eligible for WIC is about 58 percent of

the estimated months of infant eligibility. As shown in Table 5, there is no further adjustment for nutritional risk; all postpartum women are assumed to be at nutritional risk.

The characteristics of WIC income-eligible and adjunctively eligible infants and children provide a profile of children eligible for WIC in 2008 (Table 6). Infants and children that are income-eligible for WIC are predominantly white (about 37 to 38 percent) and Hispanic (36 percent). Most (61 percent of infants and 57 percent of children) live in two-parent families. Almost a quarter live in large households (with six or more persons). Most WIC-eligible children also live with working parents (62 percent of infants and 68 percent of children). Among those who are estimated to be eligible based on income, 60 percent of infants and 55 percent of children live in families with annual incomes below the poverty threshold.¹³

The table also provides some insight into the characteristics of infants and children who become eligible through adjunctive eligibility. As would be expected, these children live in families with higher economic status than children income-eligible for WIC. More of these children have two parents and working parents. Also, their families tend to have higher incomes. About half of the adjunctively eligible infants and children have annual income of 250 percent of the poverty threshold and higher. Even though annual income seems relatively high, they may have experienced drops in income during the year that led the family to enroll in TANF, SNAP, or Medicaid. In that case, their eligibility for WIC would depend on their income and program participation at the point they applied for benefits. Some of the children at higher annual income levels may be adjunctively eligible because the TANF, SNAP, and Medicaid programs do not necessarily count all the income of all members of the family. For example, when a child's caretaker is his or her grandparent, the grandparent's income is typically not a factor in the child's eligibility for Medicaid.

¹³ The table shows family income relative to the poverty threshold, the measure used for the Census Bureau's tabulations of poverty status for research purposes (as opposed to the poverty guidelines, used for program administrative purposes).

Table 6: Estimates of the Average Monthly Percentage of Infants and Children Eligible for WIC by Income and Adjunctive Eligibility in the 2009 CPS-ASEC by Demographic Characteristics - CY 2008
Fully adjusted weights^a

Demographic Characteristics	WIC-Eligible Infants			WIC-Eligible Children Age 1 to 4			Total WIC-Eligible Infants and Children Age 0 to 4		
	Family income	Adjunct- ively eligible ^c	Total	Family income	Adjunct- ively eligible ^c	Total	Family income	Adjunct- ively eligible ^c	Total
	<185% FPG ^b			<185% FPG ^b			<185% FPG ^b		
Total	1,969,739	615,640	2,585,378	6,871,058	1,608,514	8,479,572	8,840,797	2,224,153	11,064,950
Gender									
Male	52.0	49.6	51.4	50.6	51.5	50.8	50.9	50.9	50.9
Female	48.0	50.4	48.6	49.4	48.5	49.2	49.1	49.1	49.1
Race/ethnicity									
White, non-Hispanic	33.5	50.8	37.7	34.7	47.9	37.2	34.5	48.7	37.3
Black, non-Hispanic	23.4	16.4	21.8	23.6	15.8	22.1	23.6	16.0	22.1
Other, non-Hispanic	4.7	4.2	4.6	4.9	4.9	4.9	4.9	4.7	4.8
Hispanic	38.3	28.5	36.0	36.8	31.4	35.7	37.1	30.6	35.8
Living arrangement									
Two-parent family	59.2	68.3	61.4	53.9	62.1	55.5	55.1	63.8	56.9
Single-parent family	36.9	26.0	34.3	40.9	31.8	39.1	40.0	30.2	38.0
No-parent family	3.8	5.8	4.3	5.2	6.1	5.4	4.9	6.0	5.1
Related non-parent caretaker	2.6	5.8	3.4	3.4	6.1	4.0	3.3	6.0	3.8
Unrelated non-parent caretaker	1.2	0	0.9	1.7	0	1.4	1.6	0.0	1.3
Household size (number of persons)									
2	4.8	2.3	4.2	5.4	3.6	5.0	5.3	3.2	4.8
3	25.9	27.4	26.3	19.8	22.0	20.2	21.2	23.5	21.7
4	27.2	25.5	26.8	27.5	30.2	28.1	27.5	28.9	27.8
5	18.2	17.3	18.0	23.4	20.6	22.9	22.3	19.7	21.7
6 or more	23.8	27.5	24.7	23.8	23.6	23.8	23.8	24.7	24.0
Number with working parent(s)	57.8	75.7	62.1	65.1	78.9	67.8	63.5	78.0	66.4
Annual family income relative to poverty ^b									
Less than 50% FPL	33.1	0	25.3	26.6	0	21.6	28.1	0	22.4
50% to <100% FPL	26.5	0	20.2	28.6	0	23.1	28.1	0	22.5
100% to <130% FPL	18.2	0	13.9	18.7	0	15.2	18.6	0	14.9
130% to <185% FPL ^d	21.8	7.4	18.4	25.9	7.6	22.4	25.0	7.5	21.5
185% to <200% FPL	0.3	10.6	2.8	0.1	12.4	2.5	0.2	11.9	2.5
200% to <250% FPL	0	26.7	6.4	0	29.9	5.7	0	29.0	5.9
250% FPL and above	0	55.3	13.2	0	50.1	9.5	0	51.6	10.4
Benefit receipt									
No benefit receipt	23.6	0.0	17.9	29.0	0.0	23.5	27.8	0	22.2
FSP, TANF, & Medicaid	8.3	1.7	6.7	6.5	2.9	5.8	6.9	2.5	6.0
FSP & TANF	0	0	0	0	0	0	0	0	0
FSP & Medicaid	0	0	0	0.1	0	0.1	0.1	0	0.1
TANF & Medicaid	29.6	13.9	25.9	30.5	12.1	27.0	30.3	12.6	26.8
FSP only	0.9	0.8	0.9	1.1	0.8	1.0	1.0	0.8	1.0
TANF only	0	0	0	0	0	0	0	0	0
Medicaid only	4.4	4.8	4.5	4.8	3.0	4.5	4.7	3.5	4.5

Source: 2009 CPS-ASEC

Notes for Table 6:

FPG - Federal Poverty Guidelines

FPL - Federal Poverty Level

^a These estimates are tabulated from the unadjusted person weights on the 2009 CPS-ASEC. They are not adjusted to account for the under or over count of infants and children in the CPS relative to Census estimates, eligibility in the U.S. Territories, monthly income, or nutritional risk. See Appendix Tables A.3, A.4a/b for the adjustment factors.

^b This table uses both the Federal Poverty Guidelines (FPG) and the Federal Poverty Thresholds or "Levels" (FPL). The thresholds are used to calculate the ratio of annual family income to the poverty threshold for their family size. The guidelines are used in determining WIC eligibility.

^c Infants and children adjunctively eligible are those whose family income was not below 185% FPG but who reported receipt of Food Stamps, Medicaid, or TANF. Therefore, the two categories are mutually exclusive.

Territories.

As described further in Appendix B, the prior method for estimating the number of WIC-eligible infants and children in the U.S. territories no longer produces reasonable estimates. The prior method relied on an estimate of the total infants and children income-eligible for WIC in Puerto Rico and the other territorial islands¹⁴ as a percentage of the number of income-eligible infants and children residing in the 50 States and the District of Columbia. The factor was re-estimated once with 1990 Census data (resulting in an estimate of the number of WIC-eligible infants and children in the territories as 0.0388 of the number of WIC-eligible infants and children in the 50 States and the District of Columbia) and again with 2000 Census data (0.0332).

The prior method would greatly overestimate the number of WIC-eligible infants and children for 2008 and 2009. Applying the 2000-based territorial factor to the national estimates of WIC-eligible infants and children would yield an estimate of 0.367 million infants and children WIC-eligible in Puerto Rico and the territories in calendar year 2008 and 0.396 million infants and children in calendar year 2009. However, the Census Bureau estimates the total number of infants and children residing in all of the territories as 0.275 million in 2008 and 0.270 million in 2009.

The updated methods used for 2008 and 2009 improve the estimates for the territories by making them independent of the estimates for the mainland. With the advent of the ACS fielded in Puerto Rico in 2005, the number of WIC-eligible infants and children in Puerto Rico can be estimated in a manner that parallels the methodology used for the 50 States and the District of Columbia. Since over 90 percent of infants and children in the U.S. territories reside in Puerto Rico, this approach greatly improves the estimates for the territories and provides direct estimates of the number of children by age.

We computed the number of infants and children (age 1 to 4) residing in Puerto Rico and adjusted the number for the Census under/overcount (Table 7). The estimated number with income below 185 percent of the poverty guidelines shows that 78 percent of the adjusted count of infants and 80 percent of the adjusted count for children were eligible for WIC in Puerto Rico in 2008 based on annual income alone—double the percentage of infants and children in the 50 States and the District of Columbia who appear income-eligible. Adjunctive eligibility increases estimated WIC eligibility by 6 percent for infants (2,128) and by 3 percent for children (5,066). Given the high proportions of infants and children who are income-eligible, it is reasonable that adjunctive eligibility due to program enrollment matters less in Puerto Rico than in the 50 States and the District of Columbia.

¹⁴ For 2000, the Puerto Rico estimate was obtained from the 2000 Census Summary File 4. For the other U.S. island territories—American Samoa, Guam, the U.S. Virgin Islands, and the Northern Mariana Islands—FNS provided an estimate of the number of income-eligible infants and children.

Table 7: Adjustments for Calculating the Average Monthly Number of Individuals Eligible for WIC in Puerto Rico and the Other Island Territories by Participant Group, CY 2008^a

	Infants	Children Age 1	Children Age 2	Children Age 3	Children Age 4	Total Children Age 1 to 4	Pregnant Women	Postpartum Breastfeeding Women	Postpartum Non-Breastfeeding Women	Total
Puerto Rico										
Total number of infants/children in the 2008 PRCS	40,515	47,760	50,422	44,988	47,085	190,255				230,770
Number after adjustment for PRCS under/overcount	45,541	46,607	48,324	49,081	48,767	192,779				238,320
Number with annual income <185% FPG	35,441	37,574	38,582	38,589	38,676	153,421				188,862
Number of additional people adjunctively eligible above 185% FPG	2,128	1,292	1,397	1,272	1,104	5,066				7,193
Through Food Stamps	932	700	423	536	408	2,066				2,998
Through TANF	0	0	0	85	0	85				85
Through Medicaid	1,196	592	975	651	696	2,914				4,110
Total number income and adjunctively eligible	37,568	38,866	39,979	39,862	39,780	158,487				196,055
Number after monthly income adjustment	44,331	39,255	40,379	40,260	40,178	160,071				204,402
Total Eligibles - Number after adjustment for nutritional risk (infants and children)	43,001	38,862	39,975	39,858	39,776	158,471				201,472
Starting point for estimates of women is fully eligible infants							43,001	43,001	43,001	129,002
Number after adjustment for length of pregnancy and income of woman during pregnancy							22,898			22,898
Number after adjustment for multiple births and infant deaths							22,809	42,833	42,833	108,475
Number after adjustment for breastfeeding								10,433	14,470	24,903
Total Eligibles - Number after adjustment for nutritional risk (pregnant and postpartum women)							22,124	10,433	14,470	47,027
Source: 2008 PRCS										
Other Island Territories										
Territories Age 0 to 4 distributed by Puerto Rico's age demographics	7,068	7,322	7,235	7,373	7,286	29,216				36,284
Number income and adjunctively eligible	4,752	4,781	4,724	4,814	4,757	19,076				23,828
Number after monthly income adjustment	5,608	4,829	4,771	4,862	4,805	19,266				24,874
Total Eligibles - Number after adjustment for nutritional risk (infants and children)	5,440	4,780	4,723	4,813	4,757	19,074				24,513
Starting point for estimates of women is fully eligible infants							5,440	5,440	5,440	16,319
Number after adjustment for length of pregnancy and income of woman during pregnancy ^g							2,897			2,897
Number after adjustment for multiple births and infant deaths							2,885	5,418	5,418	13,722
Number after adjustment for breastfeeding								1,320	1,830	3,150
Total Eligibles - Number after adjustment for nutritional risk (pregnant and postpartum women)							2,799	1,320	1,830	5,949
Source: Census Bureau International Data Base										
Total Eligibles - U.S. Territories Total	48,440	43,642	44,698	44,671	44,533	177,544	24,923	11,752	16,301	278,961

Note: ^aSee Tables 1, 2, 3a, and 3b for adjustment factors applied.

An adjustment must be applied to the direct estimates from the ACS to take into account monthly income or certification periods. The SIPP-estimated annual-to-monthly adjustment factors (1.18 for infants and 1.01 for children) do not reflect data for Puerto Rico. Since a high proportion of infants and children are income-eligible in Puerto Rico, it is possible that the true factors should be lower. However, in the absence of other data, the SIPP annual-to-monthly factors are applied to derive the Puerto Rico eligibility estimates. The nutritional risk adjustment factors of 0.97 for infants and 0.99 for children also are applied for comparability with prior estimates. The final average monthly eligibility estimates for Puerto Rico equal 94 percent of the total adjusted infant population and 82 percent of total children age 1 to 4.

For infants and children residing in other island territories, the only data available are annual population estimates (from the Census Bureau's International Database) for the combined age group of 0 to 4 years and once-in-a-decade estimates of the number of infants and children who are income and adjunctively eligible (from decennial Census data). Our methods therefore use each year's population estimate (allowing the eligibility estimate to rise or fall with the estimated population of infants and young children), but assume that a constant percentage of the population is WIC-eligible (since there are no data to support other assumptions). Because the available population data pertain only to the combined age group, we use vital statistics data for these territories over the five preceding years to allocate each year's total population estimate to the number of infants and to each of the four years of children (age 1 to 4).

Based upon 2000 Census data, 56.8 percent of infants and children in the other island territories were income-eligible for WIC in 2008. While this percentage represents the most recently available evidence on income eligibility in the other island territories, it does not account for adjunctive eligibility. To estimate the additional number of infants and children who would gain eligibility through participation in other safety net programs, we examined the relationship between adjunctive eligibility and income eligibility in Puerto Rico and the mainland. That information implies roughly an increase of 18 percent in the number of WIC-eligible infants, and an increase of 15 percent in the number of WIC-eligible children, due to adjunctive eligibility. We estimated the number of WIC-eligible infants in American Samoa, Guam, the Northern Mariana Islands, and the U.S. Virgin Islands to be 0.672 times the population estimates for each area, and we estimated the number of WIC-eligible children in these areas as 0.653 times the population estimates. (The calculations are described in greater detail in Appendix B.)

As with the estimates for Puerto Rico, the final steps in the estimation of WIC-eligible infants and children in the other island territories are to apply the annual-to-monthly adjustment factors and the nutritional risk adjustment factors. The final eligibility estimates suggest that in the other island territories combined, the average monthly number of eligible infants is 0.005 million (77 percent of total infants), and the average monthly number of eligible children is 0.019 million (65 percent of total children).

Combining the 2008 estimates for Puerto Rico and the other island areas gives estimates of 0.048 million eligible infants (1.9 percent of the estimate for the 50 States and the District of Columbia) and 0.178 million eligible children (2.1 percent of the estimate for the 50 States and the District of Columbia). Thus, these estimates are substantially lower than would have been produced by the previously used assumption of 3.3 percent.

Estimates for pregnant and postpartum women in Puerto Rico and the other island territories are determined using a method that parallels that used for the estimates for the 50 States and the District of Columbia. The estimates begin with the number of fully eligible infants in the territories. The estimates for pregnant women are adjusted for length of pregnancy and income, fetal and infant deaths and multiple births, and nutritional risk. All adjustments are the same as those applied at the national level. The estimates for postpartum women are adjusted for fetal and infant deaths and multiple births, breastfeeding, and nutritional risk. Since the RLMS does not provide breastfeeding rates for Puerto Rico or the other island territories, the national breastfeeding rates were assumed. We estimate in 2008 that there were 0.025 million WIC-eligible pregnant women, 0.012 million WIC-eligible postpartum breastfeeding women, and 0.016 million WIC-eligible non-breastfeeding women (Table 7).

2009 Estimates.

The same methods described above and outlined in Tables 3A and 3B were applied to produce the 2009 WIC eligibility estimates. These estimates are based on the March 2010 CPS-ASEC, the 2009 ACS Puerto Rico sample, updated Census Bureau estimates for persons age 0 to 4 living in the territories, and updated single-year population estimates for the 50 States and the District of Columbia from the Census Bureau. Appendix A provides full documentation of the data, factors, and results for 2009. This section gives an overview of the results.

In 2009, the estimates show that 15.075 million women, infants, and children were eligible for WIC (Table 8). Patterns of eligibility are similar to those reported for 2008. The number of children eligible for WIC declines slightly with each year increase in the age of the children's participant groups. In 2009, 62 percent of infants and 54 percent of children living in the United States and its territories were eligible for WIC. These eligibility rates are higher than the 59 percent for infants and 51 percent for children estimated for 2008 (and shown previously in Table 4).

Table 8: Estimates of the Total Average Monthly Number of Individuals Eligible for WIC by Participant Group, CY 2009

NOTE: This table includes estimates for the territories.

Participant Group	2009		Total
	Eligibles ^a	Non-Eligibles ^b	
Infants	2,673,683	1,656,385	4,330,068
Total Children Age 1 to 4	9,469,217	8,039,591	17,508,808
Children Age 1	2,430,554	1,938,702	4,369,256
Children Age 2	2,398,905	2,027,367	4,426,272
Children Age 3	2,373,651	2,027,147	4,400,798
Children Age 4	2,266,106	2,046,376	4,312,482
Pregnant Women	1,375,638		
Postpartum Breastfeeding Women	666,796		
Postpartum Non-Breastfeeding Women	889,257		
Total WIC Eligibles	15,074,591		

Source: 2010 CPS-ASEC for the U.S. estimate, PRCS and Census for territories

Notes:

^a The eligible estimates represent the average monthly number of individuals income or adjunctively eligible for WIC in 2009 taking into account all adjustments explained in Table 3a.

^b The non-eligible infants and children represent the difference between the total estimates of infants and children age 1 to 4 in the United States and its territories and the WIC-eligible infants and children.

Focusing first on the 50 States and the District of Columbia, about 1.843 million infants and 7.594 million children were income-eligible in 2009 (Table 9). An additional 0.448 million infants and 1.700 million children were adjunctively eligible. The annual-to-monthly income adjustment, accounting for continued eligibility during the certification period, adds 0.413 million infants (18 percent) and 0.093 million children (1 percent) to the WIC eligibles. The nutritional risk adjustment subtracts 3 percent of the infants and 1 percent of the children. The final component of the number of WIC-eligible infants and children—estimated eligibility in the territories—adds 0.050 million infants and 0.176 million children. Counts for women that derive from these estimates indicate that in the 50 States and the District of Columbia, 1.350 million pregnant women are eligible and 1.527 million postpartum women are eligible (including 0.654 million estimated to be breastfeeding). Territory estimates add 0.026 million pregnant women and 0.029 million postpartum women.

The characteristics of WIC-eligible infants and children, available only for the U.S. mainland population, show that about 57 percent of the infants and children who are income-eligible live in poor families (with income below the federal poverty thresholds) (Table 10). Including the infants and children who are adjunctively eligible, 47 percent of all WIC-eligible infants and children live in poor families. The majority of WIC-eligible infants and children (59 percent) live in two-parent families. About 76 percent of WIC-eligible infants and 74 percent of WIC-eligible children in 2009 also have Medicaid coverage (either alone or with other government benefits).

Table 11 summarizes the 2009 calculations used to produce estimates of WIC-eligible individuals living in Puerto Rico and other island territories. As shown, the number of eligibles living in Puerto Rico—approximately 0.045 million infants, 0.157 million children, and 0.049 million women—comprise the great majority of the total estimates for territories. The direct method for estimating WIC eligibles that relies on the ACS data provides more accurate estimates than the adjusters used in the past. As noted earlier, the adjusters for income fluctuations and certification periods (the annual-to-monthly adjustment) use national estimates based on SIPP analyses.

Table 9: Adjustments for Calculating the Average Monthly Number of Individuals Eligible for WIC by Participant Group, CY 2009^a

U.S. States and D.C. (2010 CPS-ASEC)	Infants	Children Age 1	Children Age 2	Children Age 3	Children Age 4	Total Children Age 1 to 4	Pregnant Women	Postpartum Breastfeeding Women	Postpartum Non-Breastfeeding Women	Total
Total number of infants/children in the 2010 CPS-ASEC	4,205,909	4,353,792	4,281,374	4,336,084	4,257,131	17,228,381				21,434,290
Number (non-U.S. Territory) after adjustment for CPS under/overcount	4,277,778	4,316,877	4,372,660	4,345,666	4,256,307	17,291,510				21,569,288
Number with annual income <185% FPG	1,843,336	1,902,086	1,953,867	1,906,057	1,831,964	7,593,974				9,437,310
Number of additional people adjunctively eligible above 185% FPG	448,617	485,373	402,934	421,534	390,144	1,699,985				2,148,602
Through Food Stamps	83,160	85,873	80,905	67,880	70,693	305,351				388,511
Through TANF	5,206	2,405	4,047	10,070	14,586	31,108				36,314
Through Medicaid	360,251	397,095	317,982	343,584	304,865	1,363,526				1,723,777
Total number income and adjunctively eligible	2,291,953	2,387,459	2,356,801	2,327,591	2,222,108	9,293,959				11,585,912
Number after monthly income adjustment	2,704,505	2,411,334	2,380,369	2,350,867	2,244,329	9,386,899				12,091,403
Total Eligibles - Number after adjustment for nutritional risk (infants and children)	2,623,370	2,387,220	2,356,565	2,327,358	2,221,886	9,293,030				11,916,399
Starting point for estimates of women is fully eligible infants							2,623,370	2,623,370	2,623,370	7,870,109
Number after adjustment for length of pregnancy and income of woman during pregnancy							1,396,944			1,396,944
Number after adjustment for multiple births and infant deaths							1,391,496	2,613,138	2,613,138	6,617,773
Number after adjustment for breastfeeding								654,248	872,523	1,526,771
Total Eligibles - Number after adjustment for nutritional risk (pregnant and postpartum women)							1,349,751	654,248	872,523	2,876,522

Source: 2010 CPS-ASEC

Eligibles in the U.S. Territories	Infants	Children Age 1	Children Age 2	Children Age 3	Children Age 4	Total Children Age 1 to 4	Pregnant Women	Postpartum Breastfeeding Women	Postpartum Non-Breastfeeding Women	Total
Total Eligibles in the U.S. Territories	50,314	43,334	42,340	46,293	44,221	176,187	25,887	12,548	16,734	281,670

Source: 2009 PRCS and Census International Data Base
See Appendix Table S7 for details.

Total Eligibles - States and Territories U.S. Total	2,673,683	2,430,554	2,398,905	2,373,651	2,266,106	9,469,217	1,375,638	666,796	889,257	15,074,591
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Note: ^aSee Tables 1, 2, 3a, and 3b for adjustment factors applied.

Table 10: Estimates of the Average Monthly Number of Infants and Children Eligible for WIC by Income and Adjunctive Eligibility in the 2010 CPS-ASEC by Demographic Characteristics - CY 2009

Fully adjusted weights^a

Demographic Characteristics	WIC-Eligible Infants			WIC-Eligible Children Age 1 to 4			Total WIC-Eligible Infants and Children Age 0 to 4		
	Family income <185% FPG ^b	Adjunct- ively eligible ^c	Total	Family income <185% FPG ^b	Adjunct- ively eligible ^c	Total	Family income <185% FPG ^b	Adjunct- ively eligible ^c	Total
	Total	2,109,883	513,488	2,623,370	7,593,214	1,699,815	9,293,030	9,703,097	2,213,303
Gender									
Male	48.3	55.3	49.7	50.4	50.4	50.4	49.9	51.6	50.2
Female	51.7	44.7	50.3	49.6	49.6	49.6	50.1	48.4	49.8
Race/ethnicity									
White, non-Hispanic	33.0	50.8	36.4	35.4	47.8	37.7	34.9	48.5	37.4
Black, non-Hispanic	24.8	17.3	23.4	23.5	14.2	21.8	23.8	14.9	22.1
Other, non-Hispanic	5.8	4.5	5.6	4.9	7.1	5.3	5.1	6.5	5.4
Hispanic	36.4	27.4	34.6	36.2	30.9	35.2	36.2	30.1	35.1
Living arrangement									
Two-parent family	61.3	68.9	62.7	56.3	65.5	58.0	57.4	66.3	59.0
Single-parent family	35.3	27.9	33.8	38.6	29.3	36.9	37.9	29.0	36.2
No-parent family	3.5	3.2	3.4	5.1	5.1	5.1	4.7	4.7	4.7
Related non-parent caretaker	2.6	3.2	2.7	3.4	5.1	3.7	3.2	4.7	3.5
Unrelated non-parent caretaker	0.9	0	0.7	1.7	0	1.4	1.5	0.0	1.2
Household size (number of persons)									
2	5.0	3.6	4.7	5.5	3.4	5.1	5.4	3.4	5.0
3	22.3	25.9	23.0	17.6	18.8	17.8	18.6	20.4	19.0
4	29.6	29.3	29.5	29.1	27.5	28.8	29.2	27.9	29.0
5	18.8	19.2	18.9	20.8	23.3	21.3	20.4	22.3	20.7
6 or more	24.3	22.0	23.9	27.0	27.0	27.0	26.5	25.9	26.3
% with working parent(s)	60.7	77.9	64.1	63.9	82.1	67.3	63.3	81.2	66.6
Annual family income relative to poverty ^b									
Less than 50% FPL	28.2	0	22.7	27.4	0	22.4	27.6	0	22.5
50% to <100% FPL	29.4	0	23.7	29.5	0	24.1	29.5	0	24.0
100% to <130% FPL	13.3	0	10.7	16.3	0	13.3	15.7	0	12.8
130% to <185% FPL ^d	28.1	4.8	23.6	25.9	2.7	21.6	26.4	3.2	22.1
185% to <200% FPL	0.9	7.6	2.2	0.8	9.5	2.4	0.9	9.0	2.4
200% to <250% FPL	0	32.5	6.4	0.1	26.8	5.0	0.1	28.1	5.3
250% FPL and above	0	55.1	10.8	0	61.1	11.2	0	59.7	11.1
Benefit receipt									
No benefit receipt	24.6	0	19.8	25.6	0	21.0	25.4	0	20.7
FSP, TANF, & Medicaid	6.6	0.1	5.3	7.2	1.0	6.1	7.1	0.8	5.9
FSP & TANF	0	0	0	0.0	0	0	0	0	0
FSP & Medicaid	31.7	15.9	28.6	34.9	13.0	30.9	34.2	13.7	30.4
TANF & Medicaid	0.9	1.2	0.9	0.7	1.8	0.9	0.8	1.7	0.9
FSP only	5.1	2.5	4.6	5.4	3.9	5.1	5.3	3.6	5.0
TANF only	0	0	0	0	0	0	0	0	0
Medicaid only	31.1	80.3	40.7	26.2	80.2	36.0	27.2	80.2	37.1

Source: 2010 CPS-ASEC

Notes for Table 10:

FPG - Federal Poverty Guidelines

FPL - Federal Poverty Level

^a These estimates are tabulated from the unadjusted person weights on the 2010 CPS-ASEC. They are not adjusted to account for the under or over count of infants and children in the CPS relative to Census estimates, eligibility in the U.S. Territories, monthly income, or nutritional risk. See Appendix Tables A.3, A.4a, and A.4b for the adjustment factors.

^b This table uses both the Federal Poverty Guidelines (FPG) and the Federal Poverty Thresholds or "Levels" (FPL). The thresholds are used to calculate the ratio of annual family income to the poverty threshold for their family size. The guidelines are used in determining WIC eligibility.

^c Infants and children adjunctively eligible are those whose family income was not below 185% FPG but who reported receipt of Food Stamps, Medicaid, or TANF. Therefore, the two categories are mutually exclusive.

Table 11: Adjustments for Calculating the Average Monthly Number of Individuals Eligible for WIC in Puerto Rico and the Other Island Territories by Participant Group, CY 2009^a

		Children	Children	Children	Children	Total	Pregnant	Postpartum	Postpartum	
	Infants	Age 1	Age 2	Age 3	Age 4	Children	Women	Breastfeeding	Non-	Total
Puerto Rico						Age 1 to 4		Women	Breastfeeding	
Total number of infants/children in the 2009 PRCS	37,934	50,492	50,661	49,957	44,492	195,602				233,536
Number after adjustment for PRCS under/overcount	45,100	45,304	46,443	47,994	48,850	188,591				233,691
Number with annual income <185% FPG	36,366	35,658	36,453	40,103	37,556	149,770				186,136
Number of additional people adjunctively eligible above 185% FPG	2,737	3,042	1,190	1,514	1,865	7,611				10,348
Through Food Stamps	1,226	1,541	488	617	348	2,993				4,219
Through TANF	244	202	159	0	257	617				861
Through Medicaid	1,267	1,299	544	897	1,260	4,001				5,268
Total number income and adjunctively eligible	39,103	38,699	37,643	41,617	39,422	157,381				196,484
Number after monthly income adjustment	46,142	39,086	38,020	42,033	39,816	158,955				205,097
Total Eligibles - Number after adjustment for nutritional risk (infants and children)	44,757	38,695	37,639	41,613	39,418	157,366				202,123
Starting point for estimates of women is fully eligible infants							44,757	44,757	44,757	134,272
Number after adjustment for length of pregnancy and income of woman during pregnancy							23,833			23,833
Number after adjustment for multiple births and infant deaths							23,740	44,583	44,583	112,906
Number after adjustment for breastfeeding								11,162	14,886	26,048
Total Eligibles - Number after adjustment for nutritional risk (pregnant and postpartum women)							23,028	11,162	14,886	49,077
Source: 2009 PRCS										
		Children	Children	Children	Children	Total	Pregnant	Postpartum	Postpartum	
	Infants	Age 1	Age 2	Age 3	Age 4	Children	Women	Breastfeeding	Non-	Total
Other Island Territories						Age 1 to 4		Women	Breastfeeding	
Territories Age 0 to 4 distributed by Puerto Rico's age demographics	7,190	7,075	7,169	7,138	7,325	28,707				35,897
Number income and adjunctively eligible	4,854	4,639	4,701	4,680	4,803	18,824				23,678
Number after monthly income adjustment	5,728	4,686	4,748	4,727	4,851	19,012				24,740
Total Eligibles - Number after adjustment for nutritional risk (infants and children)	5,556	4,639	4,700	4,680	4,803	18,822				24,378
Starting point for estimates of women is fully eligible infants							5,556	5,556	5,556	16,668
Number after adjustment for length of pregnancy and income of woman during pregnancy							2,959			2,959
Number after adjustment for multiple births and infant deaths							2,947	5,534	5,534	14,016
Number after adjustment for breastfeeding								1,386	1,848	3,234
Total Eligibles - Number after adjustment for nutritional risk (pregnant and postpartum women)							2,859	1,386	1,848	6,092
Source: Census Bureau International Data Base										
Total Eligibles - U.S. Territories Total	50,314	43,334	42,340	46,293	44,221	176,187	25,887	12,548	16,734	281,670

Note: ^aSee Tables 1, 2, 3a, and 3b for adjustment factors applied.

Comparing 2009 to 2008.

Estimates of the number of people in all categories of WIC-eligible children and women increased between 2008 and 2009 (Table 12). The number of infants eligible for WIC increased by 1.5 percent (40,000) and the number of WIC-eligible children age 1 to 4 increased by 9.4 percent (812,000). The increase in the estimated number of pregnant women eligible for WIC follows the increase for infants (since this estimate begins with the number of infants). The estimated number of postpartum breastfeeding women eligible for WIC increased by 4.4 percent.

These increases likely result from numerous changes. The total number of infants decreased by 2.8 percent while the number of children age 1 to 4 increased by 2.5 percent (including the under/over count adjustment). In the 50 States and the District of Columbia, the number of infants and children in families with annual income below 185 percent of the poverty guidelines increased by 7.1 and 10.5 percent, respectively (Tables 5 and 9). This increase reflects continued weakness in the economy and long-term unemployment in 2009. The effect of adjunctive eligibility for infants declined from 2008 to 2009, with fewer infants adjunctively eligible through SNAP and Medicaid enrollment. In contrast, adjunctive eligibility for children increased by 5.7 percent between 2008 and 2009, reflecting enrollment increases in all three programs.¹⁵ The annual-to-monthly income adjustment further increased WIC eligibility, as expected, using the adjusters of 1.18 for infants and 1.01 for children. The eligibility estimates for the territories are relatively flat between 2008 and 2009, with the total estimated eligibility across women, infants, and children increasing by only 1 percent. (As discussed, the new method for 2008 and 2009 directly uses the Puerto Rico Community Survey, and estimates for the other territories reflect a series of factors applied to Census population counts.)

¹⁵ Note that the large percentage increase in adjunctive eligibility through TANF likely reflects small sample sizes. Adjunctive eligibility through TANF fluctuated between 2000 and 2007 for infants, from a low of 3,400 (2007) to a high of 16,800 (2006) and for children from a low of 16,800 (2007) to a high of 39,000 (2005). This program is relatively small and very few families that are enrolled in TANF are not also eligible for WIC through the program's income eligibility rules.

**Table 12: Estimates of the Total Average Monthly Number of Individuals Eligible
for WIC by Participant Group:
A Comparison of the Change from Calendar Year 2008 to 2009**

NOTE: This table includes estimates for the territories.

Participant Group	2009			2008			Percent Change		
	Eligibles ^a	Non-Eligibles ^b	Total	Eligibles ^a	Non-Eligibles ^b	Total	Eligibles	Non-Eligibles	Total
Infants	2,673,683	1,656,385	4,330,068	2,633,819	1,811,679	4,445,498	1.51%	-8.57%	-2.60%
Total Children Age 1 to 4	9,469,217	8,039,591	17,508,808	8,657,117	8,399,639	17,056,756	9.38%	-4.29%	2.65%
Children Age 1	2,430,554	1,938,702	4,369,256	2,292,023	2,054,735	4,346,758	6.04%	-5.65%	0.52%
Children Age 2	2,398,905	2,027,367	4,426,272	2,143,513	2,176,247	4,319,761	11.91%	-6.84%	2.47%
Children Age 3	2,373,651	2,027,147	4,400,798	2,117,479	2,113,062	4,230,541	12.10%	-4.07%	4.02%
Children Age 4	2,266,106	2,046,376	4,312,482	2,104,102	2,055,595	4,159,697	7.70%	-0.45%	3.67%
Pregnant Women	1,375,638			1,355,127			1.51%		
Postpartum Breastfeeding Women	666,796			639,003			4.35%		
Postpartum Non-Breastfeeding Women	889,257			886,312			0.33%		
Total WIC Eligibles	15,074,591			14,171,378			6.37%		

Source: 2009 and 2010 CPS-ASEC for U.S. estimate, PRCS and Census for territories

Notes:

^a The eligible estimates represent the average monthly number of individuals eligible for WIC in 2009 and 2008 taking into account all adjustments explained in Table 3a.

^b The non-eligible infants and children represent the difference between the total estimates of infants and children age 1 to 4 in the total United States and territories and the WIC-eligible infants and children.

Regional and State Estimates of WIC Eligibility

A fundamental requirement of this task order is the creation of a methodology for estimating WIC eligibility at the State level. This required identifying the best data source for State estimates and considering State-level adjustments for population counts, annual-to-monthly income, and breastfeeding. It required construction of a time series of State-level WIC eligibility based upon the recommended methodology.

We considered the usefulness of the CPS-ASEC for State-level estimation through both shrinkage estimates and multiple years of the CPS-ASEC in comparison to the much larger American Community Survey. We concluded that the ACS is sufficiently large to support modeling at the State level with reasonable levels of precision. For the great majority of States, the ACS provides a more precise estimate of WIC eligibility than the CPS-ASEC, and for all States a more up-to-date estimate than using an average of three years of CPS-ASEC data.

We noted two limitations with this approach: 2000 is the first year that a full sample of the ACS is available and 2008 represents the first year that the ACS included a question on health insurance status. Insurance status is required to determine adjunctive eligibility for WIC through Medicaid enrollment. FNS concluded that an approach should be chosen to allow the best available estimates for WIC eligibility moving forward. Thus, a decision was reached to use the ACS in the estimation of State-level WIC eligibility. Estimates for 2008 and 2009 can be made directly with the ACS, and estimates for 2000 through 2007 can be generated using adjustments for the effect of Medicaid adjunctive eligibility. The discussion below outlines all of the steps required for the State-level estimates using the ACS. We first discuss methods and results for 2008 and 2009. These methods can be applied for future State-level estimates. A separate section describes the State-level estimates for 2000 through 2007, including procedures for estimating the effect of Medicaid enrollment on WIC.

Determining State-Level WIC Eligibility with the ACS data.

While the ACS collects data from substantially more households than does the CPS-ASEC, the data collected from each household are somewhat less detailed. The data provided by the ACS are less than ideal for defining the WIC filing unit and for estimating income eligibility.

As explained earlier, the CNSTAT Panel recommended that all members of a household related by blood, marriage, or adoption be considered as one family unit for the purposes of determining WIC eligibility. While for many households this definition amounts to defining the entire household as a filing unit, some households are more complex. For example, an unmarried partner of the householder (reference person) with a child from a prior relationship would be considered a separate filing unit in the CPS-ASEC data used for the national

estimation process. However, the only information the ACS provides on family relationships is each individual's relationship to the reference person (householder). Since the Minnesota Population Center's IPUMS-USA provides researchers with educated conjectures about the relationships between persons not related to the householder, State-level eligibility estimates begin with these data.¹⁶ This allows WIC eligibility to be assessed within ACS families that are unrelated to the household head, as is done with the CPS-ASEC data. The IPUMS is a respected and widely used data set created within weeks of when the ACS is released.¹⁷

The ACS surveys households on an ongoing basis throughout the year, and households are asked to report income received from various sources in the preceding 12-month period. Consequently, only ACS households interviewed in January provide their income for the previous calendar year (analogous to the CPS-ASEC). All other households have income that reflects a mixture of previous year's income with the current year's income. For example, those households interviewed in March 2010 report their income from March of 2009 through February of 2010. The ACS income reporting period presents a challenge to determining which infants and children meet the WIC income and adjunctive eligibility criteria. To facilitate annual income estimation with the ACS, the Census Bureau internally computes inflation factors to convert the reported income to the current calendar year. The Census Bureau releases only the average of the 12 factors computed for a given year's data. We applied that average factor to the ACS incomes prior to determining income eligibility for each year.

Like the process for estimating national-level WIC eligibility from the CPS-ASEC data, the process for estimating State-level eligibility from the ACS data involves the use of adjustment factors. State-specific data were used in two of the adjustments—for population and for breastfeeding.

Population Adjustment: For the State estimates, the adjustments to the ACS weights mirror the adjustments that are made to the CPS national data.¹⁸ Using Census Bureau State population estimates by age, the ACS person weights for infants and children are proportionally adjusted so that the sum of the persons of a given age are equal to the Census population estimates for each State.

Breastfeeding Adjustment: As explained earlier, the breastfeeding adjustment includes three components—the in-hospital and six-month breastfeeding rates for women participating in WIC, the adjustment for differences between WIC participants and WIC-eligible women, and the adjustment for the fact that breastfeeding declines from each month to the next. For the State-level WIC eligibility estimates, the second and third components of the adjustment

¹⁶ Ruggles, Alexander, Genadek, Goeken, Schroeder, and Sobek 2010.

¹⁷ Although the ACS has a broader sampling frame than the CPS-ASEC—including many types of institutions—all types of institutions and group quarters are excluded for purposes of the WIC eligibility estimates.

¹⁸ One difference between the methodology used for the ACS population adjustments and the CPS-ASEC population adjustments is that the ACS adjustments are based on one year of Census Bureau estimates and one year of ACS data, while the CPS-ASEC adjustments are based on four-year accumulations of population estimates and survey data.

remain as in the national estimates, but the first component—breastfeeding rates in the hospital and at six months—is modified to capture State-level variation in breastfeeding rates.¹⁹ Ross Labs publishes both in-hospital and at-six-month breastfeeding rates for women participating in WIC by State. This annual series began in 1999 and has been updated through 2009.²⁰

For other adjustment factors, the national factors were used in each State.

Annual-to-Monthly Adjustment: Ideally, the annual-to-monthly adjustment factor would be modified to account for State-specific differences in economic factors that affect income patterns during the year (monthly unemployment, seasonal employment, and so on) and those that affect adjunctive eligibility during the year. States' eligibility criteria and certification periods for SNAP and Medicaid differ. Ideally, State-specific annual-to-monthly adjusters would also account for the sample design differences between the ACS and CPS-ASEC data. While the numerator in the adjustment factor (number of months of eligibility given monthly income and certification) would remain the same, the denominator reflecting annual eligibility would need to be altered to reflect the differences in the sample design. The rolling time frame for income in the ACS, as opposed to the calendar year income from the CPS-ASEC, also affects income eligibility.

The SIPP remains the only data source for estimation of the annual-to-monthly adjustment at the national or sub-national levels. However, the SIPP is too small to support State-specific adjusters. Consequently, these initial State estimates use the national annual-to-monthly adjusters for infants and children.

Nutritional Risk: The current values for the nutritional risk adjustments reflect the CNSTAT Panel's analysis of data from the 1994 to 1998 Continuing Survey of Food Intake (CSFI) for WIC-eligible individuals.²¹ These data represent the latest years from this survey. We use the current national adjustment factors at the State level.

Fetal and Infant Deaths and Multiple Births: To estimate the number of mothers of WIC-eligible infants, we use the national-level adjustment factor (0.9961) in all States.

Pregnancy Adjustments: The ACS-based estimates of eligibility due to pregnancy use the same factor (0.533) as the national estimates to adjust for the duration of pregnancy and for

¹⁹ For example, in 2009 the in-hospital breastfeeding rate was 47 percent in Alabama and 78 percent in Vermont; the six-month estimates were 23 and 42 percent for Alabama and Vermont, respectively, according to the Ross Labs data.

²⁰ As discussed earlier and in Appendix F, the RLMS shows declining rates of breastfeeding over time since 2000. The trend varies from other data and needs to be vetted further in the future. Validation of RLMS rates by State also would be useful for future refinement of the estimates.

²¹ The CNSTAT Panel noted that a potentially preferable data set to account for the full range of nutritional risk criteria would be the NHANES, which contains many of the questions asked in the CSFI. However, sample sizes are quite small, and resources for this project did not allow re-estimation of these factors.

the possibility that a woman might not be eligible for WIC during pregnancy even if the infant is eligible. It is possible that the relationship between income before and after the child's birth varies across States or regions.

Implementing the State-Level WIC Eligibility Estimates.

After considering both 'top-down' and 'bottom-up' approaches for producing the State-level estimates, we concluded that a top-down approach was superior. In a top down approach, national estimates of WIC eligibility are first produced using the CPS-ASEC, and then the ACS is used to allocate the national total to individual States. The bottom-up approach would begin with State estimates of WIC eligibility directly from the ACS and an aggregation of the State estimates would create the national WIC eligibility estimates. One clear advantage of the top-down approach is that there currently exists an accepted methodology for producing national estimates and a time series of estimates. A bottom-up strategy likely would not align with the current set of national estimates. The nationally representative CPS-ASEC sample is well suited for WIC eligibility determination compared to the ACS due to its timeliness and more complete income and program participation data. Also, the CPS asks respondents for their income during the calendar year, while the ACS's income covers not only the calendar year for which the estimate is being made but also income from the previous time period. Consequently the ACS is less likely to detect increases in eligibility as the economy falters or decreases in eligibility when the economy improves.

We examined the differences between the top-down and bottom-up approaches to estimating State level estimates of WIC-eligible infants using national and State estimates from the CPS-ASEC and the ACS. This analysis showed differences in the number of infants in the ACS and the CPS-ASEC and higher WIC eligibility estimates using the ACS than the CPS. This analysis confirmed that national estimates from the ACS would differ from the prior time series used by FNS. This analysis also showed that the ACS produced lower standard errors of estimate at the State level compared with estimates from multiple years of the CPS.

The analysis led us to recommend and FNS to accept a method that uses the ACS to estimate the shares of eligible infants, children, and women in each State. As explained further in Appendix C, the State and regional estimates are produced by first adjusting ACS population counts by the Census estimates for each year. Then WIC income and adjunctive eligibility (those enrolled in SNAP, TANF, or public health insurance) are estimated using the ACS data. Adjustments for annual-to-monthly income and for nutritional risk are applied using the national factors. Estimates for pregnant and postpartum women are derived from the infant estimates as with the national estimates, with the exception that the breastfeeding adjustments incorporate State variation in breastfeeding rates.

The ACS analysis results in State shares for each subgroup, which are applied to the CPS-ASEC national estimates. This produces estimates by subgroup at the FNS regional level and total WIC eligibility estimates at the State level. While estimates for subpopulations help to

build total WIC eligibility variation across the States, they are not sufficiently reliable to publish individually. Eligibility subgroups are relatively small in many States.

Regional and State Estimates: 2008 and 2009.

The estimated distribution of WIC eligibility by FNS region (Table 13) shows the greatest portions of WIC eligibles in the Western and Southeast regions (each with approximately 21 percent of all WIC eligibles), while the Northeast and Mountain Plains regions have the fewest WIC-eligible individuals (about 8 percent). The distribution of estimated eligibility across regions is approximately the same for each subgroup of WIC-eligible individuals. By State (Table 14) California has the greatest share of WIC eligibles, with an estimated 13 percent of all WIC-eligible individuals. Other States with large shares of total WIC eligibility are Texas (11 percent), Florida (6 percent), New York (5 percent), and Illinois (4 percent).

As discussed earlier, the overall eligibility estimate increased by 6.4 percent from 2008 to 2009, with increases for all subgroups at the national level. Eligibility increased for each subgroup in most but not all of the regions (Table 15). In the Southwest, the estimated number of WIC-eligible infants declined by 1.6 percent from 2008 to 2009, leading to similar declines in the estimated numbers of WIC-eligible pregnant women and postpartum mothers in this region. The decline in infant eligibility likely reflects declines in total infants in two of the Southwestern States (Arkansas and Louisiana) coupled with relatively low increases in WIC eligibility in this region.²² In the Northeast, the estimated numbers of WIC eligibles increased for all subgroups except postpartum women; the decline for postpartum women is related in part to fluctuations in the Ross Labs breastfeeding estimates at the State level.

The regional and State level eligibility estimates allow the computation of regional and State coverage rates, defined as the number of individuals enrolled in the WIC program divided by the number eligible in each State. (These are alternately referred to as participation rates.) Considering all WIC-eligible individuals combined, the overall WIC coverage rate is lowest in the Mountain Plains region, at 54 percent in 2008 and 53 percent in 2009 (Figures 1 and 2 and Tables 16 and 17). The overall WIC coverage rate is highest in the Western region (71 percent in 2008 and 68 percent in 2009). Some regions have higher coverage rates than the national average for some but not all subgroups. In 2009, the Northeast has higher coverage rates than any other region for infants (86.3 percent) and postpartum women (88.6 percent), while its coverage rates for children and pregnant women are higher than the national averages but lower than the rates in the Western region (Table 17 and Figures 3 through 6).

²² Texas and Oklahoma had smaller increases in unemployment between 2008 and 2009 compared with the nation. The Texas rate increased from 4.9 to 7.6 percent, the Oklahoma rate increased from 3.7 to 6.6 percent, and the U.S. rate increased from 5.8 to 9.3 percent between 2008 and 2009. Data from the Bureau of Labor Statistics: <http://stats.bls.gov/lau/lastrk08.htm> and <http://stats.bls.gov/lau/lastrk09.htm>.

Table 13: Distribution of WIC Eligibles by FNS Region for each Participant Group, CY 2008 and CY 2009

	Infants	Children (age 1 to 4)	Pregnant Women	All Postpartum Women	Total
Distribution of Eligibles, 2008					
Northeast	8.2%	8.4%	8.2%	8.7%	8.4%
Mid-Atlantic	10.6%	11.2%	10.6%	10.2%	10.9%
Southeast	20.8%	21.0%	20.8%	20.3%	20.9%
Midwest	15.3%	14.8%	15.3%	15.2%	15.0%
Southwest	16.5%	16.4%	16.5%	16.0%	16.4%
Mountain Plains	7.6%	7.4%	7.6%	7.8%	7.5%
Western	21.0%	20.7%	21.0%	21.9%	20.9%
Total	100.0%	100.0%	100.0%	100.0%	100.0%
Distribution of Eligibles, 2009					
Northeast	8.2%	8.4%	8.2%	8.1%	8.3%
Mid-Atlantic	11.1%	11.0%	11.1%	10.7%	11.0%
Southeast	21.1%	21.2%	21.1%	20.5%	21.1%
Midwest	15.2%	15.1%	15.2%	15.0%	15.1%
Southwest	16.0%	15.9%	16.0%	15.3%	15.9%
Mountain Plains	7.7%	7.5%	7.7%	8.3%	7.6%
Western	20.8%	21.0%	20.8%	22.1%	21.0%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

Source: 2009 CPS-ASEC, 2008 ACS, 2008 PRCS, Census International Data Base

Table 14: Distribution of WIC Eligibility by State and FNS Region, CY 2008 and CY 2009

	Distribution of Eligibles, 2008	Distribution of Eligibles, 2009		Distribution of Eligibles, 2008	Distribution of Eligibles, 2009
State					
Alabama	1.6%	1.6%	New York	5.4%	5.3%
Alaska	0.2%	0.3%	North Carolina	3.3%	3.3%
Arizona	2.7%	2.6%	North Dakota	0.2%	0.2%
Arkansas	1.2%	1.1%	Ohio	3.3%	3.3%
California	13.1%	13.0%	Oklahoma	1.4%	1.4%
Colorado	1.5%	1.5%	Oregon	1.2%	1.2%
Connecticut	0.7%	0.7%	Pennsylvania	3.1%	3.1%
Delaware	0.2%	0.3%	Puerto Rico	1.8%	1.7%
D.C.	0.2%	0.2%	Rhode Island	0.2%	0.3%
Florida	5.5%	5.9%	South Carolina	1.6%	1.6%
Georgia	3.8%	3.8%	South Dakota	0.3%	0.3%
Hawaii	0.3%	0.4%	Tennessee	2.2%	2.2%
Idaho	0.6%	0.6%	Texas	10.9%	10.7%
Illinois	4.0%	4.1%	Utah	1.0%	1.0%
Indiana	2.1%	2.1%	Vermont	0.1%	0.2%
Iowa	0.8%	0.8%	Virginia	1.8%	1.9%
Kansas	0.9%	0.8%	Washington	1.9%	2.0%
Kentucky	1.5%	1.5%	West Virginia	0.5%	0.5%
Louisiana	1.9%	1.7%	Wisconsin	1.4%	1.4%
Maine	0.3%	0.3%	Wyoming	0.2%	0.2%
Maryland	1.3%	1.4%			
Massachusetts	1.3%	1.3%	FNS Region^a		
Michigan	2.9%	2.9%	Northeast	8.4%	8.3%
Minnesota	1.2%	1.3%	Mid-Atlantic	10.9%	11.0%
Mississippi	1.3%	1.3%	Southeast	20.9%	21.1%
Missouri	1.9%	1.9%	Midwest	15.0%	15.1%
Montana	0.3%	0.3%	Southwest	16.4%	15.9%
Nebraska	0.6%	0.6%	Mountain Plains	7.5%	7.6%
Nevada	0.8%	0.9%	Western	20.9%	21.0%
New Hampshire	0.2%	0.2%			
New Jersey	1.9%	2.0%	Total	100.0%	100.0%
New Mexico	0.9%	0.9%			

Source: 2009 CPS-ASEC, 2008 ACS, 2008 PRCS, Census International Data Base

Notes:

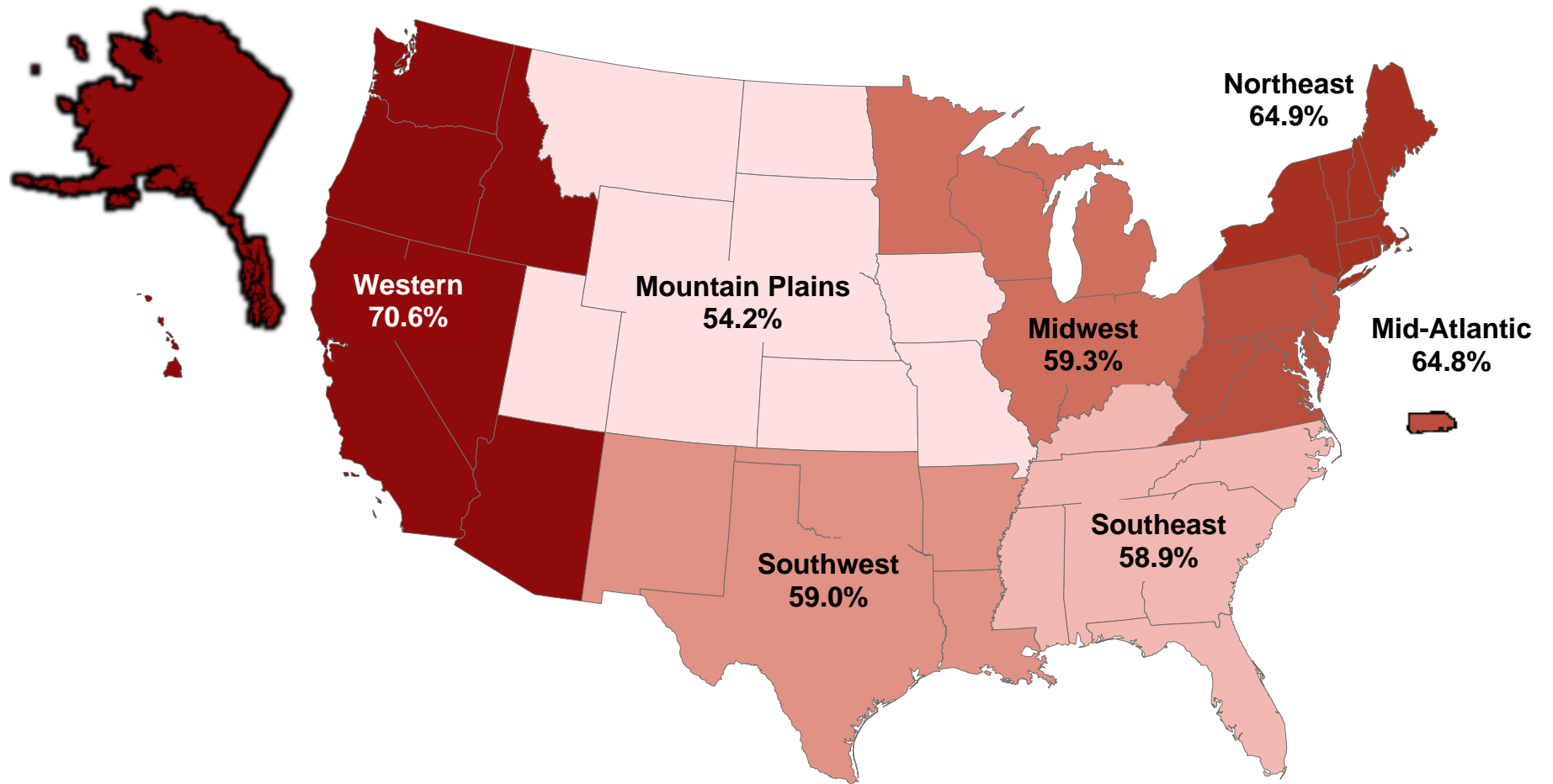
^a Estimates for the other island territories (territories other than Puerto Rico) are included in regional totals but not shown separately due to small sample constraints.

Table 15: WIC Eligibles by FNS Region and Participant Group, CY 2008 and CY 2009

	Infants	Children (age 1 to 4)	Pregnant Women	All Postpartum Women	Total
Eligibles, 2008					
Northeast	216,092	730,540	111,182	133,389	1,191,203
Mid-Atlantic	279,144	972,366	143,623	155,217	1,550,350
Southeast	547,598	1,816,805	281,745	309,117	2,955,264
Midwest	403,335	1,280,498	207,520	231,846	2,123,199
Southwest	433,386	1,422,837	222,982	243,474	2,322,679
Mountain Plains	201,425	640,013	103,635	118,605	1,063,678
Western	552,839	1,794,057	284,441	333,668	2,965,005
Total	2,633,819	8,657,117	1,355,127	1,525,315	14,171,378
Eligibles, 2009					
Northeast	218,049	793,064	112,188	125,924	1,249,226
Mid-Atlantic	296,202	1,045,813	152,399	167,224	1,661,638
Southeast	564,646	2,003,637	290,516	319,646	3,178,445
Midwest	407,540	1,427,199	209,684	233,124	2,277,547
Southwest	426,602	1,505,367	219,491	238,130	2,389,590
Mountain Plains	205,712	707,976	105,841	128,770	1,148,300
Western	554,933	1,986,162	285,519	343,234	3,169,847
Total	2,673,683	9,469,217	1,375,638	1,556,053	15,074,591
Percent Change, 2009 vs. 2008					
Northeast	0.9%	8.6%	0.9%	-5.6%	4.9%
Mid-Atlantic	6.1%	7.6%	6.1%	7.7%	7.2%
Southeast	3.1%	10.3%	3.1%	3.4%	7.6%
Midwest	1.0%	11.5%	1.0%	0.6%	7.3%
Southwest	-1.6%	5.8%	-1.6%	-2.2%	2.9%
Mountain Plains	2.1%	10.6%	2.1%	8.6%	8.0%
Western	0.4%	10.7%	0.4%	2.9%	6.9%
Total	1.5%	9.4%	1.5%	2.0%	6.4%

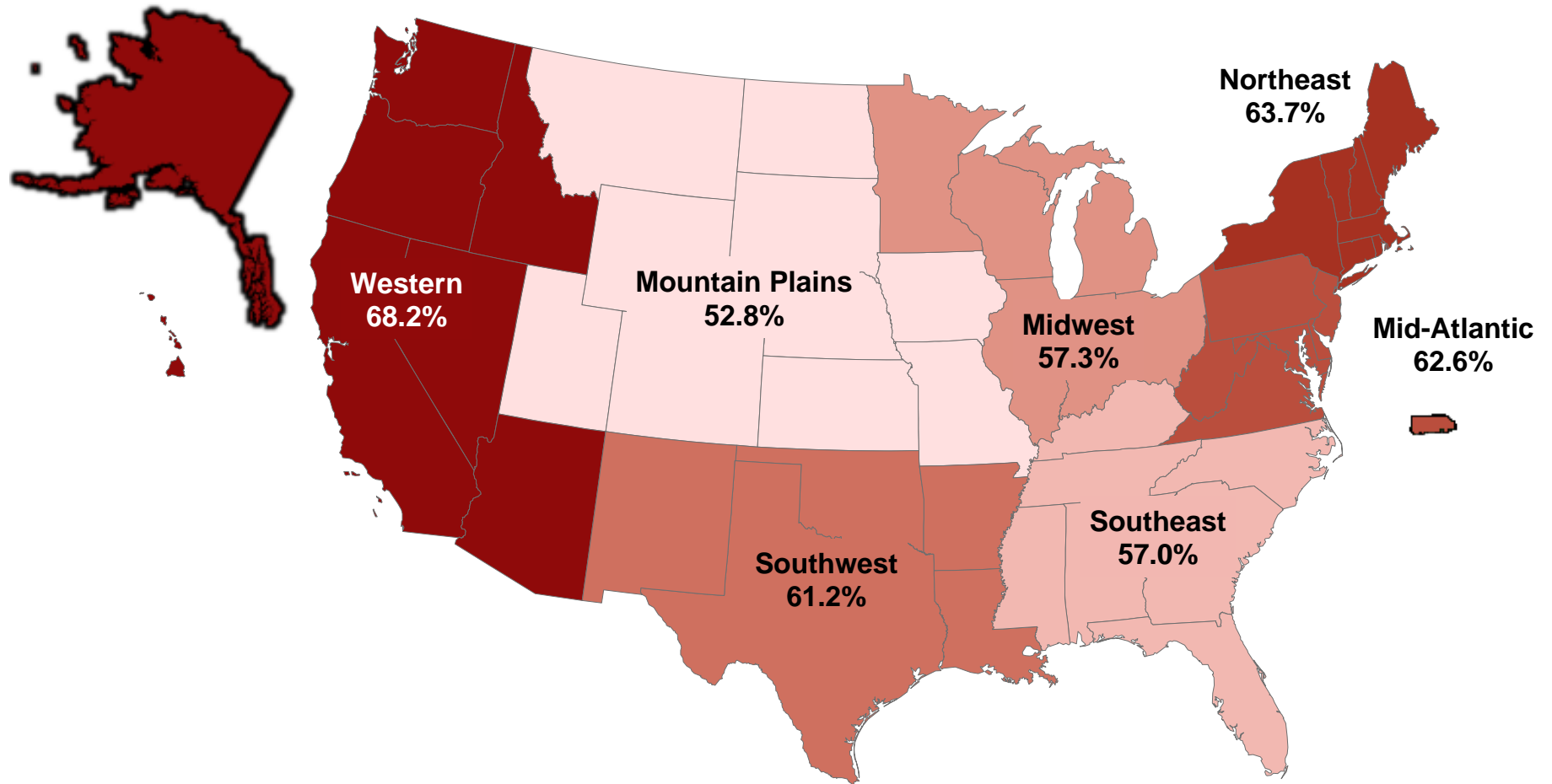
Source: 2009 CPS-ASEC, 2008 ACS, 2008 PRCS, Census International Data Base

Figure 1. WIC Coverage Rate for All Participants by FNS Region, CY 2008



Source: 2009 CPS-ASEC, 2008 ACS, 2008 PRCS, WIC Administrative Data

Figure 2. WIC Coverage Rate for All Participants by FNS Region, CY 2009



Source: 2010 CPS-ASEC, 2009 ACS, 2009 PRCS, WIC Administrative Data

Table 16: WIC Eligibles and Coverage Rates by FNS Region and Participant Group, CY 2008

	Infants	Children (age 1 to 4)	Pregnant Women	All Postpartum Women	Total
Eligibles					
Northeast	216,092	730,540	111,182	133,389	1,191,203
Mid-Atlantic	279,144	972,366	143,623	155,217	1,550,350
Southeast	547,598	1,816,805	281,745	309,117	2,955,264
Midwest	403,335	1,280,498	207,520	231,846	2,123,199
Southwest	433,386	1,422,837	222,982	243,474	2,322,679
Mountain Plains	201,425	640,013	103,635	118,605	1,063,678
Western	552,839	1,794,057	284,441	333,668	2,965,005
Total	2,633,819	8,657,117	1,355,127	1,525,315	14,171,378
Participants					
Northeast	192,506	388,129	79,760	112,843	773,238
Mid-Atlantic	246,883	520,595	101,537	135,992	1,005,008
Southeast	465,717	839,725	185,829	250,839	1,742,111
Midwest	336,391	621,196	136,656	164,293	1,258,537
Southwest	352,223	679,316	150,632	189,299	1,371,470
Mountain Plains	146,972	286,582	57,795	85,309	576,659
Western	487,366	1,092,945	214,708	297,088	2,092,107
Total	2,228,058	4,428,489	926,919	1,235,664	8,819,130
Coverage Rates					
Northeast	89.1%	53.1%	71.7%	84.6%	64.9%
Mid-Atlantic	88.4%	53.5%	70.7%	87.6%	64.8%
Southeast	85.0%	46.2%	66.0%	81.1%	58.9%
Midwest	83.4%	48.5%	65.9%	70.9%	59.3%
Southwest	81.3%	47.7%	67.6%	77.7%	59.0%
Mountain Plains	73.0%	44.8%	55.8%	71.9%	54.2%
Western	88.2%	60.9%	75.5%	89.0%	70.6%
Total	84.6%	51.2%	68.4%	81.0%	62.2%

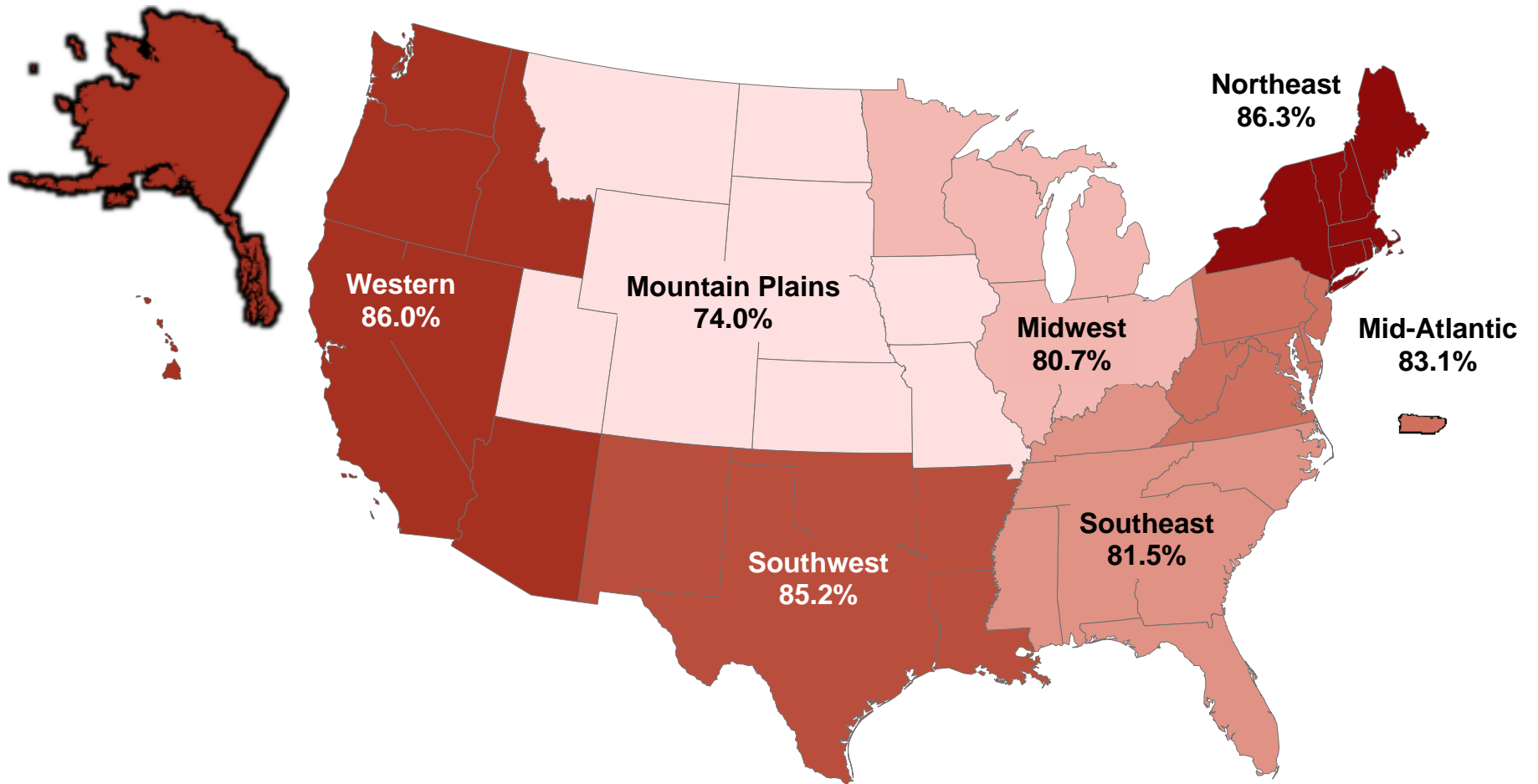
Source: 2009 CPS-ASEC, 2008 ACS, 2008 PRCS, Census International Data Base, WIC Administrative Data

Table 17: WIC Eligibles and Coverage Rates by FNS Region and Participant Group, CY 2009

	Infants	Children (age 1 to 4)	Pregnant Women	All Postpartum Women	Total
Eligibles					
Northeast	218,049	793,064	112,188	125,924	1,249,226
Mid-Atlantic	296,202	1,045,813	152,399	167,224	1,661,638
Southeast	564,646	2,003,637	290,516	319,646	3,178,445
Midwest	407,540	1,427,199	209,684	233,124	2,277,547
Southwest	426,602	1,505,367	219,491	238,130	2,389,590
Mountain Plains	205,712	707,976	105,841	128,770	1,148,300
Western	554,933	1,986,162	285,519	343,234	3,169,847
Total	2,673,683	9,469,217	1,375,638	1,556,053	15,074,591
Participants					
Northeast	188,229	416,516	79,796	111,521	796,063
Mid-Atlantic	246,282	556,006	103,551	134,836	1,040,674
Southeast	460,468	917,303	187,953	247,303	1,813,027
Midwest	329,250	673,806	140,752	162,031	1,305,839
Southwest	363,530	739,239	157,684	202,312	1,462,765
Mountain Plains	152,127	307,926	61,765	83,930	605,749
Western	477,672	1,178,197	211,914	293,747	2,161,530
Total	2,217,557	4,788,994	943,415	1,235,679	9,185,646
Coverage Rates					
Northeast	86.3%	52.5%	71.1%	88.6%	63.7%
Mid-Atlantic	83.1%	53.2%	67.9%	80.6%	62.6%
Southeast	81.5%	45.8%	64.7%	77.4%	57.0%
Midwest	80.8%	47.2%	67.1%	69.5%	57.3%
Southwest	85.2%	49.1%	71.8%	85.0%	61.2%
Mountain Plains	74.0%	43.5%	58.4%	65.2%	52.8%
Western	86.1%	59.3%	74.2%	85.6%	68.2%
Total	82.9%	50.6%	68.6%	79.4%	60.9%

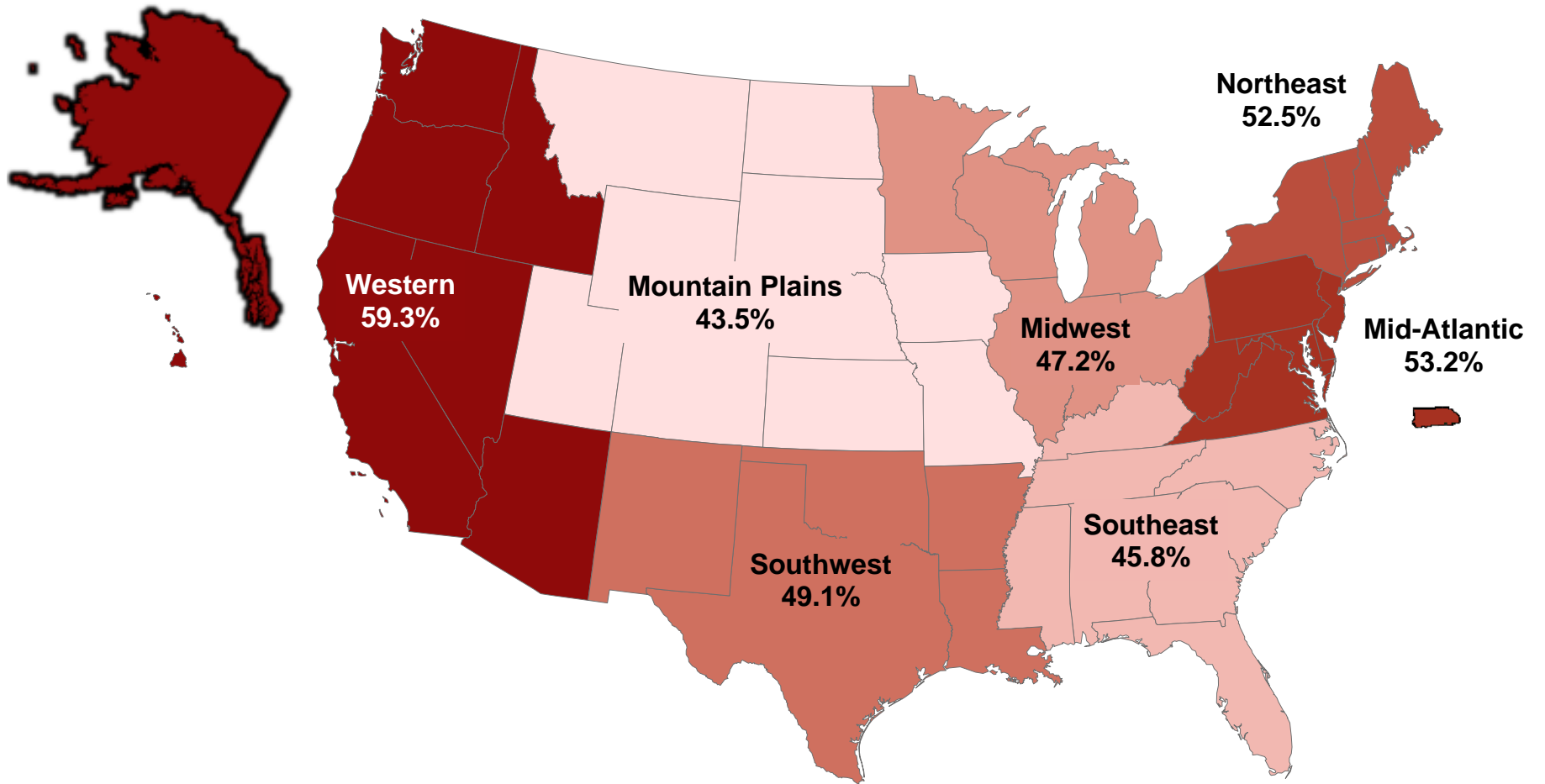
Source: 2010 CPS-ASEC, 2009 ACS, 2009 PRCS, Census International Data Base, WIC Administrative Data

Figure 3. WIC Coverage Rate for Infants by FNS Region, CY 2009



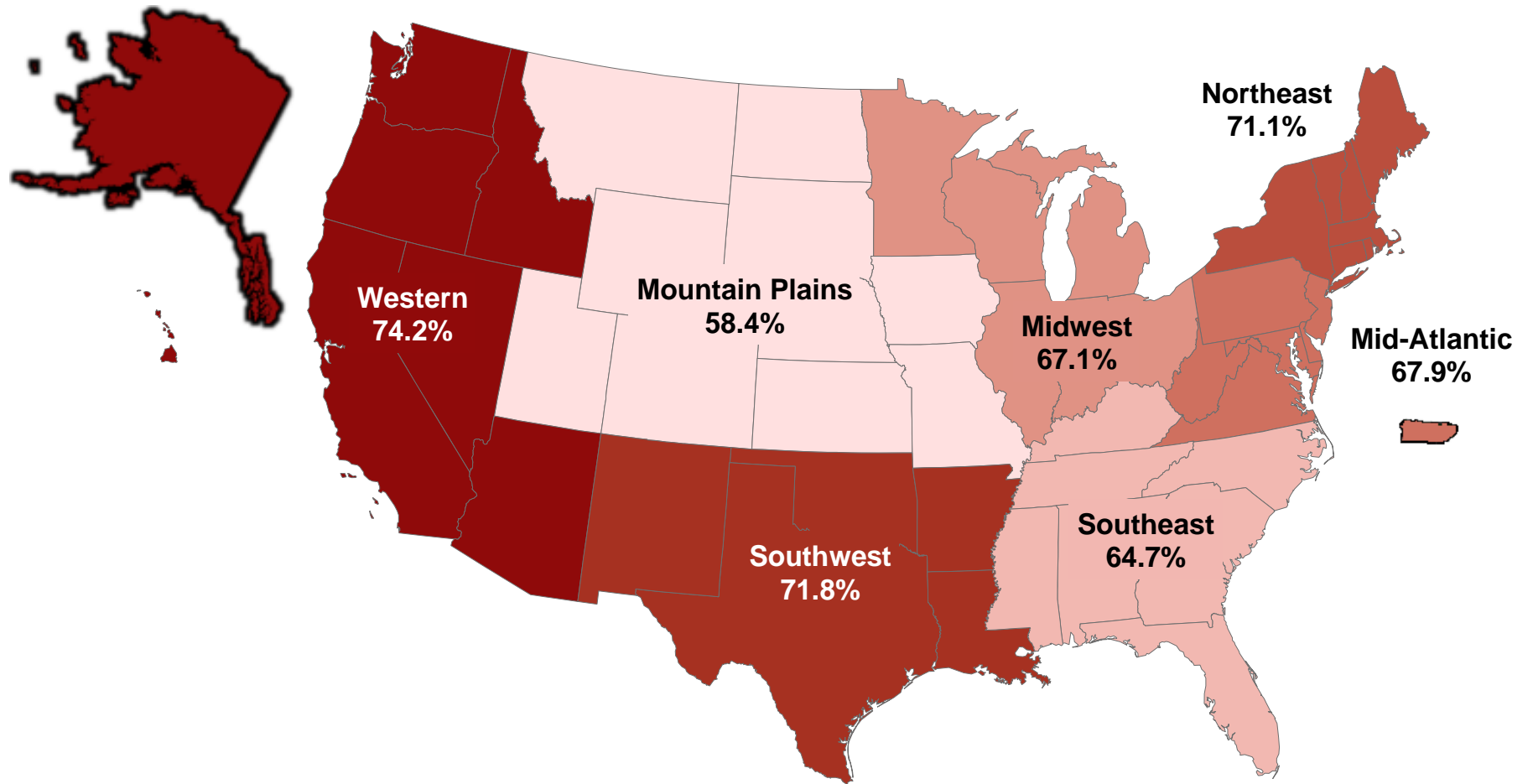
Source: 2010 CPS-ASEC, 2009 ACS, 2009 PRCS, WIC Administrative Data

Figure 4. WIC Coverage Rate for Children by FNS Region, CY 2009



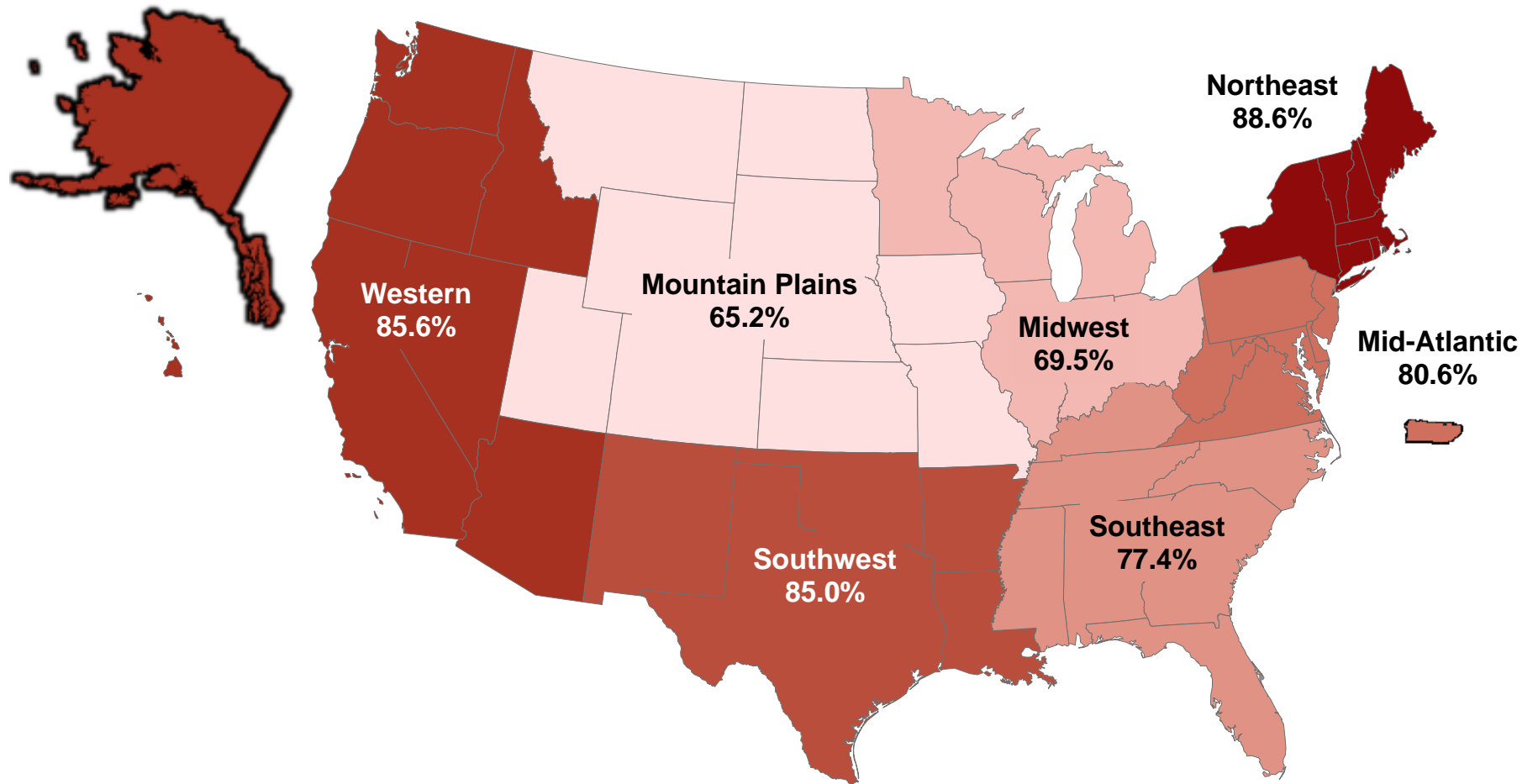
Source: 2010 CPS-ASEC, 2009 ACS, 2009 PRCS, WIC Administrative Data

Figure 5. WIC Coverage Rate for Pregnant Women by FNS Region, CY 2009



Source: 2010 CPS-ASEC, 2009 ACS, 2009 PRCS, WIC Administrative Data

Figure 6. WIC Coverage Rate for All Postpartum Women by FNS Region, CY 2009



Source: 2010 CPS-ASEC, 2009 ACS, 2009 PRCS, WIC Administrative Data

State coverage rate estimates show substantial variation (Table 18 and Figure 7 for 2008, and Table 19 and Figure 8 for 2009). In 2008, the State coverage rates range from 46 percent in Utah to 81 percent in Minnesota. In 2009, the range is from 46 percent in Montana to 79 percent in Puerto Rico. Focusing on the four States with the largest numbers of WIC eligibles, California's coverage rate is well above the national average in both years (77 percent in 2008 and 74 percent in 2009, compared to the national averages of 62 percent and 61 percent); the coverage rates in Texas and Florida are close to the national average; and the coverage rate in New York is slightly above the national average (66 percent in 2008 and 65 percent in 2009). The State maps (Figures 8 and 9) show a contiguous area of low WIC participation rates from Montana in the north through Idaho to Utah, Colorado, New Mexico, and Arizona. The high overall rate in the Western region is due to high rates in the States on the west coast, with Idaho and Nevada having lower than average coverage rates. The Northeast also shows a mix of States with higher than average rates (Vermont, New York, and Massachusetts) and States with lower than average rates (Maine and Connecticut). (Maps of coverage rates for all years back to 2000 are shown in Appendix H.)

Table 18: WIC Eligibles and Coverage Rates by State and FNS Region, CY 2008

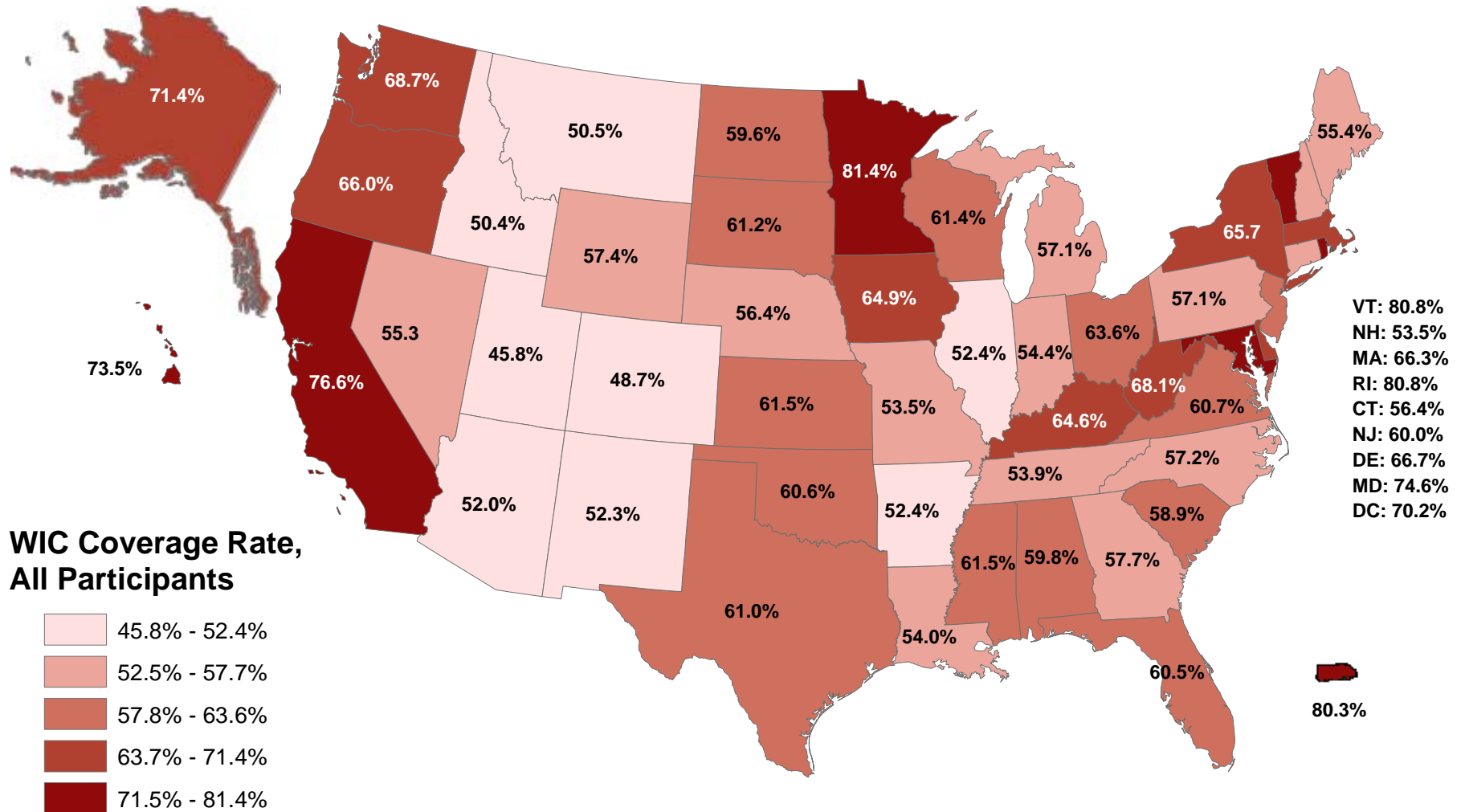
	Eligibles	Participants	Coverage Rate		Eligibles	Participants	Coverage Rate
State							
Alabama	228,701	136,766	59.8%	New York	766,852	503,708	65.7%
Alaska	35,332	25,232	71.4%	North Carolina	465,366	266,001	57.2%
Arizona	385,799	200,710	52.0%	North Dakota	24,976	14,888	59.6%
Arkansas	173,586	90,981	52.4%	Ohio	465,263	295,947	63.6%
California	1,850,739	1,417,767	76.6%	Oklahoma	205,320	124,421	60.6%
Colorado	207,630	101,213	48.7%	Oregon	166,021	109,638	66.0%
Connecticut	101,592	57,269	56.4%	Pennsylvania	445,205	254,131	57.1%
Delaware	34,058	22,719	66.7%	Puerto Rico	248,499	199,478	80.3%
D.C.	23,929	16,798	70.2%	Rhode Island	32,172	26,006	80.8%
Florida	786,020	475,794	60.5%	South Carolina	221,137	130,295	58.9%
Georgia	542,517	313,300	57.7%	South Dakota	37,162	22,743	61.2%
Hawaii	47,300	34,744	73.5%	Tennessee	318,208	171,396	53.9%
Idaho	85,501	43,120	50.4%	Texas	1,545,998	943,421	61.0%
Illinois	571,071	299,045	52.4%	Utah	147,837	67,697	45.8%
Indiana	293,784	159,704	54.4%	Vermont	20,972	16,955	80.8%
Iowa	112,653	73,094	64.9%	Virginia	253,242	153,642	60.7%
Kansas	120,500	74,060	61.5%	Washington	263,060	180,733	68.7%
Kentucky	213,495	137,913	64.6%	West Virginia	76,953	52,371	68.1%
Louisiana	265,721	143,613	54.0%	Wisconsin	200,544	123,140	61.4%
Maine	46,949	26,025	55.4%	Wyoming	22,168	12,715	57.4%
Maryland	185,883	138,685	74.6%				
Massachusetts	189,030	125,268	66.3%	FNS Region^a			
Michigan	417,369	238,166	57.1%	Northeast	1,191,203	773,239	64.9%
Minnesota	175,168	142,534	81.4%	Mid-Atlantic	1,550,350	1,005,008	64.8%
Mississippi	179,821	110,647	61.5%	Southeast	2,955,264	1,742,111	58.9%
Missouri	271,487	145,323	53.5%	Midwest	2,123,199	1,258,537	59.3%
Montana	39,833	20,105	50.5%	Southwest	2,322,679	1,371,470	59.0%
Nebraska	79,433	44,822	56.4%	Mountain Plains	1,063,678	576,659	54.2%
Nevada	114,107	63,067	55.3%	Western	2,965,005	2,092,107	70.6%
New Hampshire	33,635	18,008	53.5%				
New Jersey	269,266	161,684	60.0%	Total	14,171,378	8,819,130	62.2%
New Mexico	132,054	69,034	52.3%				

Source: 2009 CPS-ASEC, 2008 ACS, 2008 PRCS, Census International Data Base, WIC Administrative Data

Notes:

^a Estimates for the other island territories (territories other than Puerto Rico) are included in regional totals but not shown separately due to small sample constraints.

Figure 7. WIC Coverage Rate for All Participants by State, CY 2008



Source: 2009 CPS-ASEC, 2008 ACS, 2008 PRCS, WIC Administrative Data

Table 19: WIC Eligibles and Coverage Rates by State and FNS Region, CY 2009

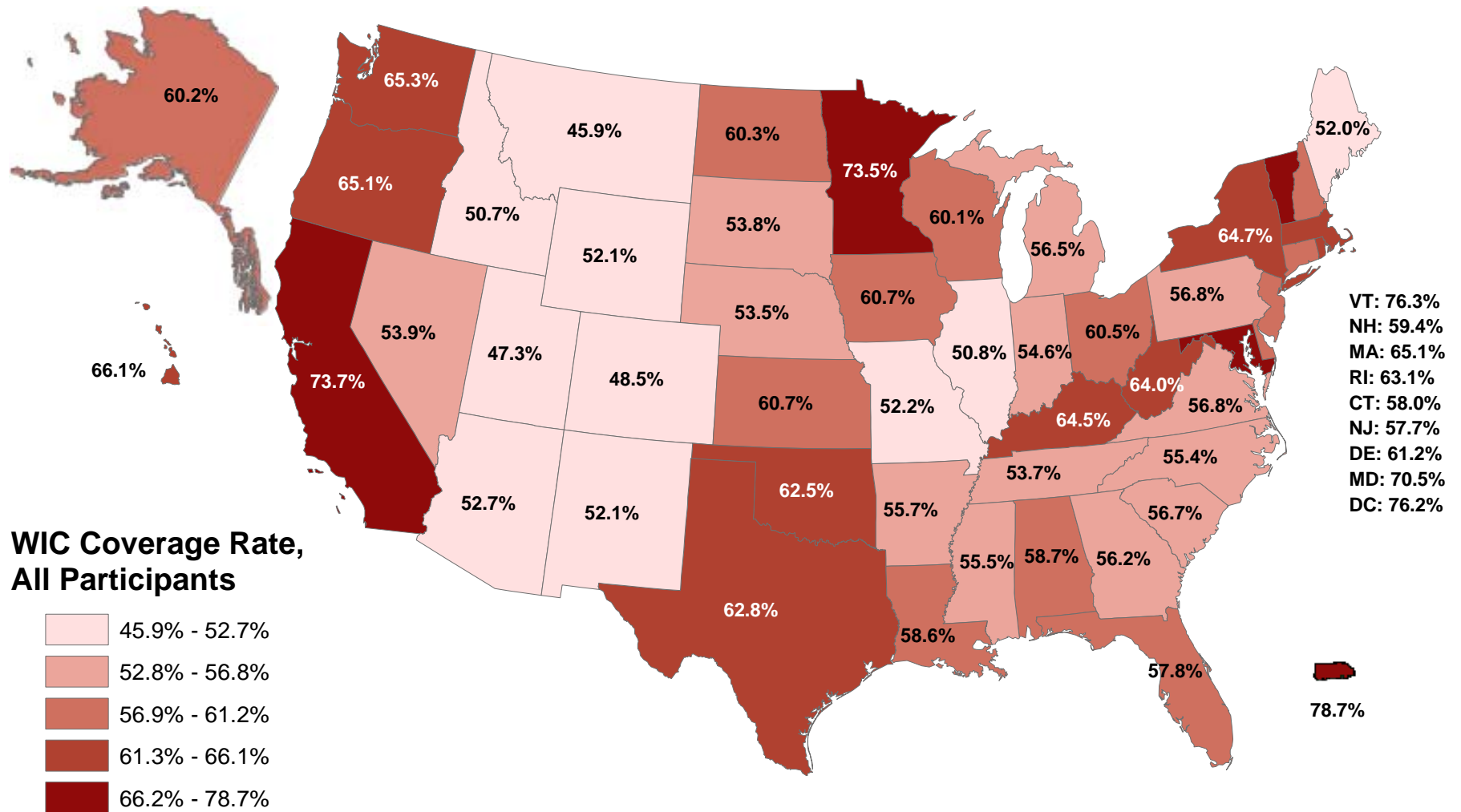
	Eligibles	Participants	Coverage Rate		Eligibles	Participants	Coverage Rate
State							
Alabama	242,073	142,032	58.7%	New York	802,166	519,245	64.7%
Alaska	43,655	26,263	60.2%	North Carolina	496,195	275,104	55.4%
Arizona	399,065	210,149	52.7%	North Dakota	24,164	14,561	60.3%
Arkansas	171,518	95,535	55.7%	Ohio	503,679	304,666	60.5%
California	1,958,304	1,443,369	73.7%	Oklahoma	211,057	131,974	62.5%
Colorado	225,507	109,430	48.5%	Oregon	175,123	114,016	65.1%
Connecticut	103,954	60,255	58.0%	Pennsylvania	461,912	262,250	56.8%
Delaware	39,702	24,302	61.2%	Puerto Rico	251,200	197,627	78.7%
D.C.	22,937	17,479	76.2%	Rhode Island	40,460	25,515	63.1%
Florida	887,895	513,390	57.8%	South Carolina	237,687	134,697	56.7%
Georgia	570,651	320,910	56.2%	South Dakota	42,606	22,908	53.8%
Hawaii	55,526	36,696	66.1%	Tennessee	325,065	174,555	53.7%
Idaho	92,381	46,831	50.7%	Texas	1,615,861	1,014,666	62.8%
Illinois	612,800	311,063	50.8%	Utah	156,235	73,827	47.3%
Indiana	316,309	172,706	54.6%	Vermont	22,841	17,436	76.3%
Iowa	125,527	76,247	60.7%	Virginia	284,171	161,503	56.8%
Kansas	128,008	77,654	60.7%	Washington	299,950	195,804	65.3%
Kentucky	220,553	142,249	64.5%	West Virginia	82,845	53,047	64.0%
Louisiana	258,907	151,678	58.6%	Wisconsin	214,103	128,737	60.1%
Maine	51,620	26,851	52.0%	Wyoming	26,166	13,639	52.1%
Maryland	210,180	148,143	70.5%				
Massachusetts	197,147	128,314	65.1%	FNS Region^a			
Michigan	439,128	247,942	56.5%	Northeast	1,249,226	796,063	63.7%
Minnesota	191,528	140,725	73.5%	Mid-Atlantic	1,661,638	1,040,674	62.6%
Mississippi	198,326	110,091	55.5%	Southeast	3,178,445	1,813,027	57.0%
Missouri	289,435	151,037	52.2%	Midwest	2,277,547	1,305,839	57.3%
Montana	45,204	20,746	45.9%	Southwest	2,389,590	1,462,765	61.2%
Nebraska	85,448	45,699	53.5%	Mountain Plains	1,148,300	605,749	52.8%
Nevada	128,810	69,432	53.9%	Western	3,169,847	2,161,530	68.2%
New Hampshire	31,037	18,447	59.4%				
New Jersey	295,254	170,424	57.7%	Total	15,074,591	9,185,646	60.9%
New Mexico	132,247	68,912	52.1%				

Source: 2010 CPS-ASEC, 2009 ACS, 2009 PRCS, Census International Data Base, WIC Administrative Data

Notes:

^a Estimates for the other island territories (territories other than Puerto Rico) are included in regional totals but not shown separately due to small sample constraints.

Figure 8. WIC Coverage Rate for All Participants by State, CY 2009



Source: 2010 CPS-ASEC, 2009 ACS, 2009 PRCS, WIC Administrative Data

Standard Errors: 2008 and 2009.

For the first time, standard errors of estimates have been produced for the updated national estimates, as well as for the new State and regional estimates.²³ (The methods are described in detail in Appendix E.) The national-level estimates are all derived from the CPS-ASEC using the generalized variance estimates described in the annual P-60 report entitled “Income, Poverty and Insurance Coverage in the United States.”²⁴ The standard errors for the State-level estimates were derived also using a generalized variance model described in the annual ACS report on the one year accuracy of the data.²⁵ The standard errors for the first time provide a means to place a confidence interval around the estimates and highlight the estimates with the greatest level of uncertainty.

The coefficients of variation for the 2008 and 2009 national eligibility estimates for infants and pregnant women are the highest at 4.5 percent. (See the Total rows in Tables 20 and 21, respectively.) While the coefficient of variation for postpartum women is slightly lower at 3.2 percent, the relative error for the estimate for all children drops to 2.5 percent, reflecting the larger sample size for this estimation group. The greatest precision of eligibility estimates is for the total of all WIC eligibles (1.9 percent).

At the State level, the precision of the estimates is generally lower than at the national level (see Tables 22 and 23). Given the large range of coefficient of variation (2.6 percent for Texas to 16.6 percent for the District of Columbia), caution should be exercised when using the State estimates, especially for smaller States. At the regional level, however, the relative precision of the estimates is quite high.

²³ Our estimates of WIC eligibility in the other island territories are not based upon samples but Census Bureau estimates of the population by age and are not subject to sampling variability. While non-sampling error can still be present in the other island estimates just as they are for the other jurisdictions, standard errors for the other island territories cannot be computed because of the non-sample based methodology used in the estimation.

²⁴ These reports can be found at <http://www.census.gov/prod/www/abs/p60.html>.

²⁵ These reports can be found at http://www.census.gov/acs/www/data_documentation/documentation_main/.

Table 20: WIC Eligibles and Standard Errors by FNS Region and Participant Group, CY 2008^a

	Infants	Children (age 1 to 4)	Pregnant Women	All Postpartum Women	Total
Eligibles					
Northeast	216,092	730,540	111,182	133,389	1,191,203
Mid-Atlantic	233,820	805,444	120,303	128,969	1,288,535
Southeast	547,598	1,816,805	281,745	309,117	2,955,264
Midwest	403,335	1,280,498	207,520	231,846	2,123,199
Southwest	433,386	1,422,837	222,982	243,474	2,322,679
Mountain Plains	201,425	640,013	103,635	118,605	1,063,678
Western	549,722	1,783,436	282,838	331,863	2,947,859
Total	2,585,378	8,479,572	1,330,204	1,497,262	13,892,417
Standard Error					
Northeast	16,753	29,849	8,620	7,345	37,692
Mid-Atlantic	17,624	31,824	9,067	7,249	39,682
Southeast	31,826	56,671	16,375	13,177	71,418
Midwest	25,482	43,784	13,111	10,561	55,950
Southwest	26,821	47,248	13,800	11,001	59,704
Mountain Plains	16,022	27,411	8,244	6,681	35,037
Western	31,918	55,880	16,422	13,636	71,282
Total	116,343	208,554	59,860	48,265	264,397
Coefficient of Variation					
Northeast	7.8%	4.1%	7.8%	5.5%	3.2%
Mid-Atlantic	7.5%	4.0%	7.5%	5.6%	3.1%
Southeast	5.8%	3.1%	5.8%	4.3%	2.4%
Midwest	6.3%	3.4%	6.3%	4.6%	2.6%
Southwest	6.2%	3.3%	6.2%	4.5%	2.6%
Mountain Plains	8.0%	4.3%	8.0%	5.6%	3.3%
Western	5.8%	3.1%	5.8%	4.1%	2.4%
Total	4.5%	2.5%	4.5%	3.2%	1.9%

Source: 2009 CPS-ASEC, 2008 ACS

Notes:

^a Estimates for the territories, including Puerto Rico, are not included in regional totals or standard errors.

Table 21: WIC Eligibles Standard Errors by FNS Region and Participant Group, CY 2009^a

	Infants	Children (age 1 to 4)	Pregnant Women	All Postpartum Women	Total
Eligibles					
Northeast	218,049	793,064	112,188	125,924	1,249,226
Mid-Atlantic	249,081	879,964	128,155	139,801	1,397,001
Southeast	564,646	2,003,637	290,516	319,646	3,178,445
Midwest	407,540	1,427,199	209,684	233,124	2,277,547
Southwest	426,602	1,505,367	219,491	238,130	2,389,590
Mountain Plains	205,712	707,976	105,841	128,770	1,148,300
Western	551,740	1,975,822	283,876	341,376	3,152,814
Total	2,623,370	9,293,030	1,349,751	1,526,771	14,792,922
Standard Error					
Northeast	16,683	31,044	8,584	6,887	38,509
Mid-Atlantic	18,184	33,234	9,356	7,568	41,436
Southeast	32,296	59,584	16,616	13,381	74,251
Midwest	25,443	46,374	13,091	10,420	58,037
Southwest	26,288	48,191	13,525	10,700	60,083
Mountain Plains	16,075	28,855	8,271	7,122	36,473
Western	31,740	58,955	16,331	13,913	73,796
Total	117,216	218,215	60,309	48,728	272,793
Coefficient of Variation					
Northeast	7.7%	3.9%	7.7%	5.5%	3.1%
Mid-Atlantic	7.3%	3.8%	7.3%	5.4%	3.0%
Southeast	5.7%	3.0%	5.7%	4.2%	2.3%
Midwest	6.2%	3.2%	6.2%	4.5%	2.5%
Southwest	6.2%	3.2%	6.2%	4.5%	2.5%
Mountain Plains	7.8%	4.1%	7.8%	5.5%	3.2%
Western	5.8%	3.0%	5.8%	4.1%	2.3%
Total	4.5%	2.3%	4.5%	3.2%	1.8%

Source: 2010 CPS-ASEC, 2009 ACS

Notes:

^a Estimates for the territories, including Puerto Rico, are not included in regional totals or standard errors.

Table 22: WIC Eligibles Standard Errors by State and FNS Region, CY 2008

	Eligibles	Standard Error	Coefficient of Variation		Eligibles	Standard Error	Coefficient of Variation
State							
Alabama	228,701	12,663	5.5%	New York	766,852	25,485	3.3%
Alaska	35,332	4,790	13.6%	North Carolina	465,366	18,883	4.1%
Arizona	385,799	16,880	4.4%	North Dakota	24,976	3,963	15.9%
Arkansas	173,586	10,910	6.3%	Ohio	465,263	18,914	4.1%
California	1,850,739	46,054	2.5%	Oklahoma	205,320	11,946	5.8%
Colorado	207,630	11,995	5.8%	Oregon	166,021	10,594	6.4%
Connecticut	101,592	8,222	8.1%	Pennsylvania	445,205	18,471	4.1%
Delaware	34,058	4,658	13.7%	Puerto Rico ^a	248,499	13,199	5.3%
D.C.	23,929	3,961	16.6%	Rhode Island	32,172	4,509	14.0%
Florida	786,020	25,927	3.3%	South Carolina	221,137	12,418	5.6%
Georgia	542,517	20,719	3.8%	South Dakota	37,162	4,850	13.1%
Hawaii	47,300	5,553	11.7%	Tennessee	318,208	15,165	4.8%
Idaho	85,501	7,513	8.8%	Texas	1,545,998	40,736	2.6%
Illinois	571,071	21,237	3.7%	Utah	147,837	9,937	6.7%
Indiana	293,784	14,476	4.9%	Vermont	20,972	3,684	17.6%
Iowa	112,653	8,674	7.7%	Virginia	253,242	13,456	5.3%
Kansas	120,500	8,945	7.4%	Washington	263,060	13,584	5.2%
Kentucky	213,495	12,203	5.7%	West Virginia	76,953	7,179	9.3%
Louisiana	265,721	13,733	5.2%	Wisconsin	200,544	11,782	5.9%
Maine	46,949	5,536	11.8%	Wyoming	22,168	3,745	16.9%
Maryland	185,883	11,329	6.1%				
Massachusetts	189,030	11,374	6.0%	FNS Region^a			
Michigan	417,369	17,694	4.2%	Northeast	1,191,203	37,692	3.2%
Minnesota	175,168	10,853	6.2%	Mid-Atlantic	1,288,535	39,682	3.1%
Mississippi	179,821	11,205	6.2%	Southeast	2,955,264	71,418	2.4%
Missouri	271,487	13,918	5.1%	Midwest	2,123,199	55,950	2.6%
Montana	39,833	5,048	12.7%	Southwest	2,322,679	59,704	2.6%
Nebraska	79,433	7,153	9.0%	Mountain Plains	1,063,678	35,037	3.3%
Nevada	114,107	8,754	7.7%	Western	2,947,859	71,282	2.4%
New Hampshire	33,635	4,682	13.9%				
New Jersey	269,266	13,839	5.1%	Total (50 States	13,892,417	264,397	1.9%
New Mexico	132,054	9,363	7.1%	and D.C.)^a			

Source: 2009 CPS-ASEC, 2008 ACS, 2008 PRCS

Notes:

a Estimates for the territories, including Puerto Rico, are not included in regional totals or regional standard errors.

Table 23: WIC Eligibles Standard Errors by State and FNS Region, CY 2009

	Eligibles	Standard Error	Coefficient of Variation		Eligibles	Standard Error	Coefficient of Variation
State							
Alabama	242,073	13,106	5.4%	New York	802,166	26,145	3.3%
Alaska	43,655	5,275	12.1%	North Carolina	496,195	19,581	3.9%
Arizona	399,065	17,241	4.3%	North Dakota	24,164	3,953	16.4%
Arkansas	171,518	10,848	6.3%	Ohio	503,679	19,722	3.9%
California	1,958,304	47,491	2.4%	Oklahoma	211,057	12,066	5.7%
Colorado	225,507	12,488	5.5%	Oregon	175,123	10,931	6.2%
Connecticut	103,954	8,336	8.0%	Pennsylvania	461,912	18,826	4.1%
Delaware	39,702	5,091	12.8%	Puerto Rico ^a	251,200	13,274	5.3%
D.C.	22,937	3,899	17.0%	Rhode Island	40,460	5,112	12.6%
Florida	887,895	27,815	3.1%	South Carolina	237,687	12,949	5.4%
Georgia	570,651	21,265	3.7%	South Dakota	42,606	5,210	12.2%
Hawaii	55,526	6,021	10.8%	Tennessee	325,065	15,374	4.7%
Idaho	92,381	7,812	8.5%	Texas	1,615,861	41,594	2.6%
Illinois	612,800	22,086	3.6%	Utah	156,235	10,264	6.6%
Indiana	316,309	15,103	4.8%	Vermont	22,841	3,838	16.8%
Iowa	125,527	9,176	7.3%	Virginia	284,171	14,196	5.0%
Kansas	128,008	9,271	7.2%	Washington	299,950	14,629	4.9%
Kentucky	220,553	12,406	5.6%	West Virginia	82,845	7,425	9.0%
Louisiana	258,907	13,570	5.2%	Wisconsin	214,103	12,154	5.7%
Maine	51,620	5,795	11.2%	Wyoming	26,166	4,113	15.7%
Maryland	210,180	12,106	5.8%				
Massachusetts	197,147	11,678	5.9%	FNS Region^a			
Michigan	439,128	18,292	4.2%	Northeast	1,249,226	38,509	3.1%
Minnesota	191,528	11,453	6.0%	Mid-Atlantic	1,397,001	41,436	3.0%
Mississippi	198,326	11,699	5.9%	Southeast	3,178,445	74,251	2.3%
Missouri	289,435	14,382	5.0%	Midwest	2,277,547	58,037	2.5%
Montana	45,204	5,406	12.0%	Southwest	2,389,590	60,083	2.5%
Nebraska	85,448	7,462	8.7%	Mountain Plains	1,148,300	36,473	3.2%
Nevada	128,810	9,307	7.2%	Western	3,152,814	73,796	2.3%
New Hampshire	31,037	4,533	14.6%				
New Jersey	295,254	14,524	4.9%	Total (50 States	14,792,922	272,793	1.8%
New Mexico	132,247	9,433	7.1%	and D.C.)^a			

Source: 2010 CPS-ASEC, 2009 ACS, 2009 PRCS

Notes:

a Estimates for the territories, including Puerto Rico, are not included in regional totals or regional standard errors.

Validating the Results.

While we would like to know the accuracy of our estimates, this cannot be known with certainty since it is impossible to observe eligibility. However, it is important that the estimates are reasonable. At a minimum, we would like our estimates have some face validity. One comparison that may produce confidence in the eligibility estimates is to examine whether the FNS participation estimates ever exceed the eligibility estimates by State or region. While it is quite possible that some ineligible individuals do participate, there also are eligible individuals who fail to enroll in the program or who have been inappropriately denied benefits. Thus, occurrences where the number of participants exceeds the estimated count of eligibles lead to concerns about the estimation methods.

Both the FNS estimates of participation and the estimates of eligibility are likely to be subject to measurement error and potential bias. However, the eligibility estimate is based upon a sample and hence is subject to sampling variability, while the FNS participation estimates are not subject to sampling variability. Consequently, even if the participation estimate exceeds the eligibility estimate, we cannot conclude there is something fundamentally wrong with the methodology because of the potential effect of sampling variability. A different sample could lead to a different conclusion about the relationship between participation and eligibility.

At the level of detail shown in this report, there are no cases where estimated eligibility falls short of FNS participation figures. However, State-level estimates for postpartum breastfeeding women are in some cases smaller than FNS estimates of postpartum breastfeeding women receiving WIC benefits. The analysis raises questions about assumptions and estimates used to implement the current methodology to allocate postpartum mothers to the breastfeeding and non-breastfeeding categories (discussed further in Appendix F).

Regional and State Estimates: 2000 through 2007.

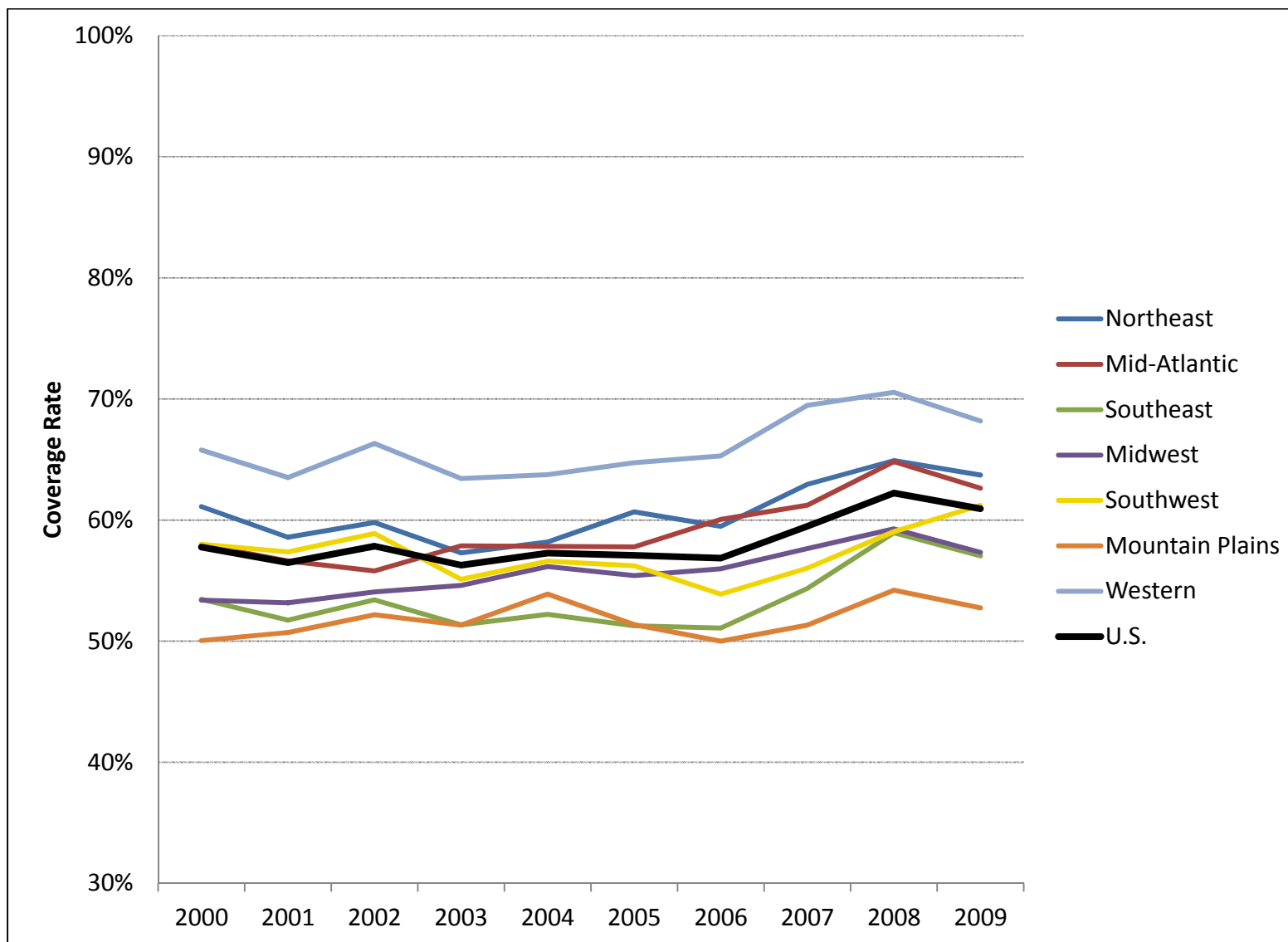
The regional and State estimates for 2000 through 2007 flow from the earlier annual estimates using shares estimated from ACS data.²⁶ State shares calculated from the ACS are applied to the CPS-ASEC estimates, and new methods are used for estimating eligibility in Puerto Rico and territories. While the estimates generally followed the methodology created for use in 2008 and 2009, the lack of data in the ACS on participation in Medicaid prior to 2008 required a new adjustment. The ACS is first used to estimate annual income eligibility and adjunctive eligibility based upon participation in SNAP and TANF. In order to capture adjunctive eligibility due to Medicaid, we assume that the additional number of eligible infants and children is a constant proportion of the number enrolled in Medicaid relative to the estimated

²⁶ Estimates by single year of age were not previously published for the national WIC eligibility estimates based on the CPS-ASEC data. In order to obtain estimates of the total number of children by single year of age, the national estimates for total for children (age 1 to 4 combined) were distributed by single year of age based on ACS tabulations of the population by age for each calendar year.

number of infants and children eligible on the basis of income or participation in TANF and SNAP. Using the ACS data from 2008 and 2009, we developed an estimate of the State-specific constant proportional adjustment that accounts for the lack of Medicaid data on the ACS in the years 2000 through 2007. Appendix D.1 further explains this adjuster and presents the details of the time series of State estimates.

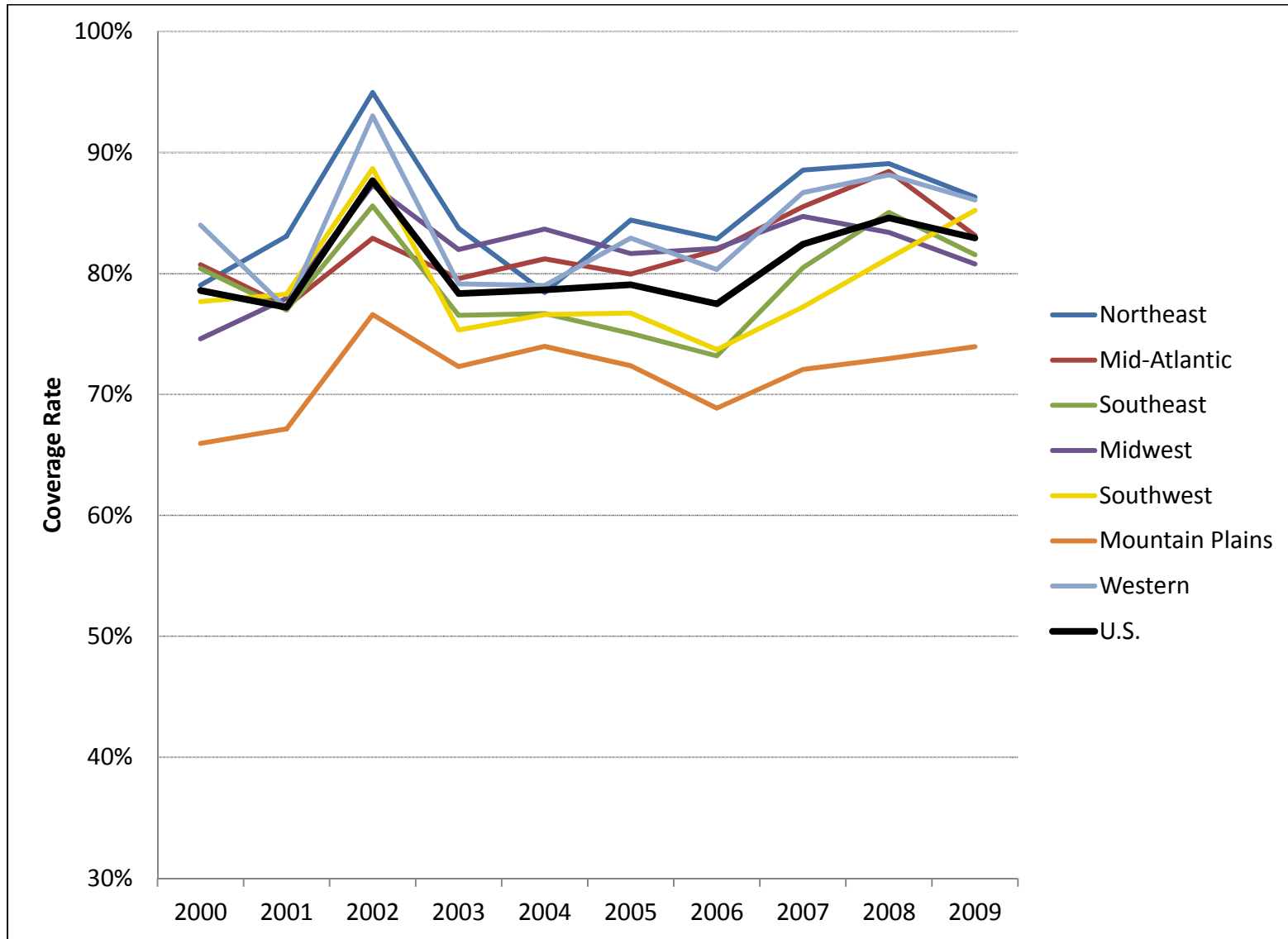
The State- and regional-level eligibility estimates back to 2000 allow analysis of coverage rates at a sub-national level over that time period. Considering all WIC subgroups together (Figure 9), the coverage rates in the Western region have been consistently higher than in any other region across the entire period from 2000 to 2009, while the coverage rates in the Mountain Plains have been consistently lower than in other regions. Coverage rates have risen slightly since the middle part of the decade in some regions. The regional-level coverage rates for infants across the decade (Figure 10) show a spike in the rate in 2002; this is due to a drop in the national-level infant eligibility estimate for that year (2.2 million for 2002, relative to 2.5 million in both 2001 and 2003). The infant coverage rate estimates show a slight upward trend from the middle to the end of the decade, with a particularly marked increase for the Southwest. The Mountain Plains region has the lowest coverage rate for infants in all of the years in the series. The Western region stands out for children, with higher coverage rates than any other region in all years of the decade (Figure 11). Coverage rates for pregnant women show the impact of the low infant eligibility estimate in 2002 (figure 12). There is also some indication that coverage rates for pregnant women in the Northeast were higher in the earlier part of the decade than currently. Coverage rates for postpartum women show an increasing trend in most regions (Figure 13).

Figure 9. All Participants Coverage Rate by FNS Region, 2000–2009



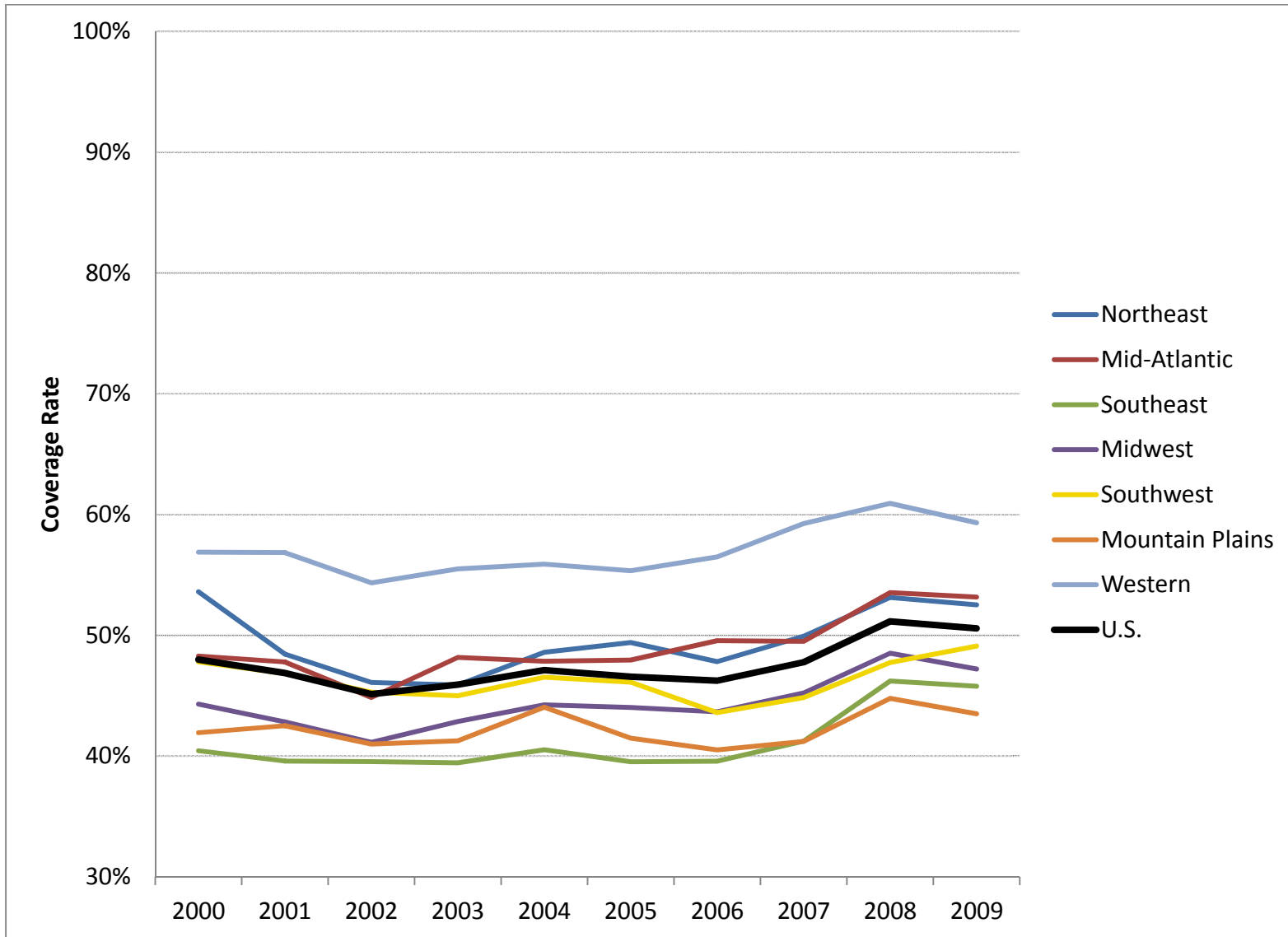
Source: CPS-ASEC, ACS, PRCS, Census International Data Base, WIC Administrative Data

Figure 10. Infants Coverage Rate by FNS Region, 2000–2009



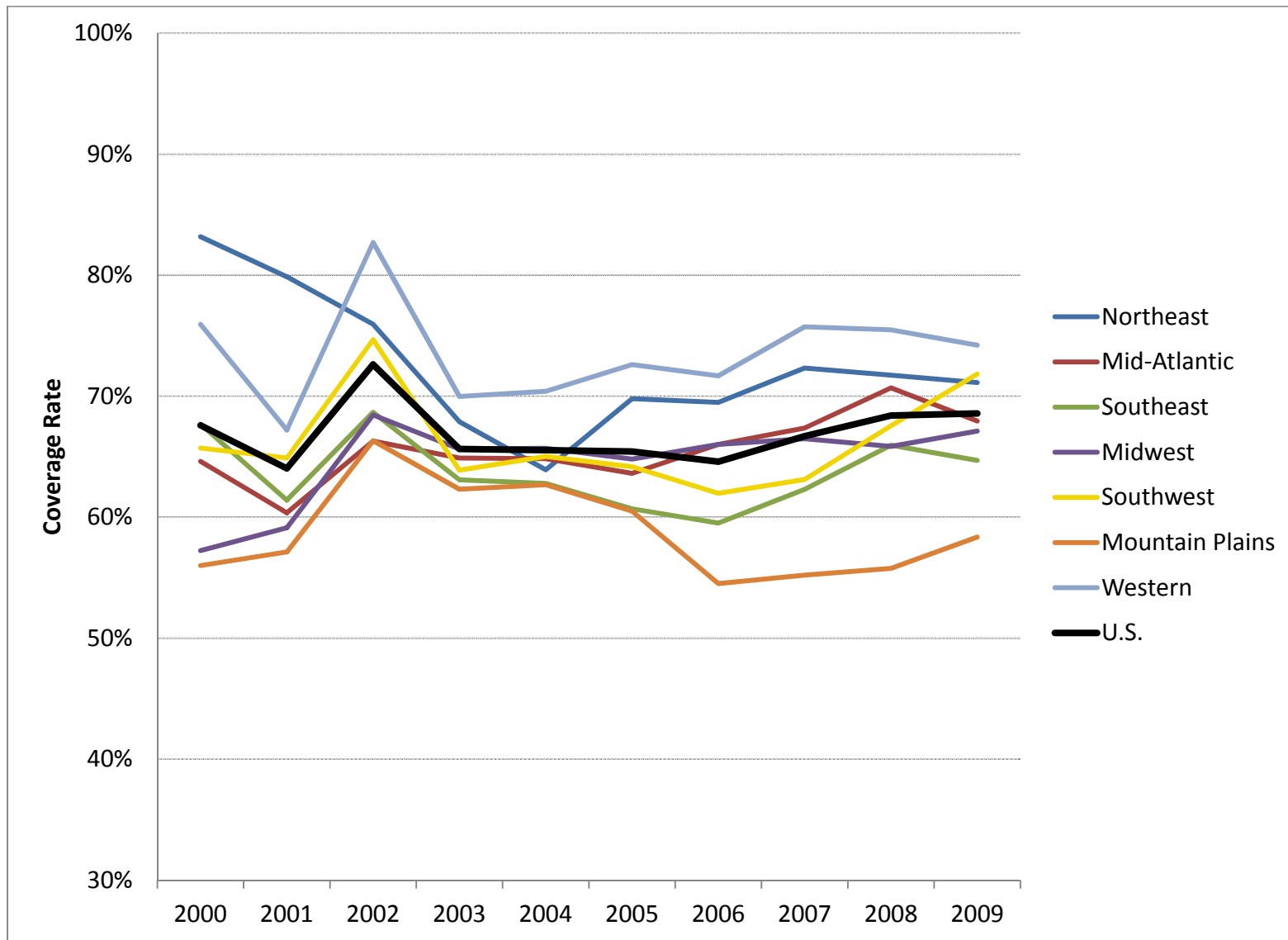
Source: CPS-ASEC, ACS, PRCS, Census International Data Base, WIC Administrative Data

Figure 11. Children Coverage Rate by FNS Region, 2000–2009



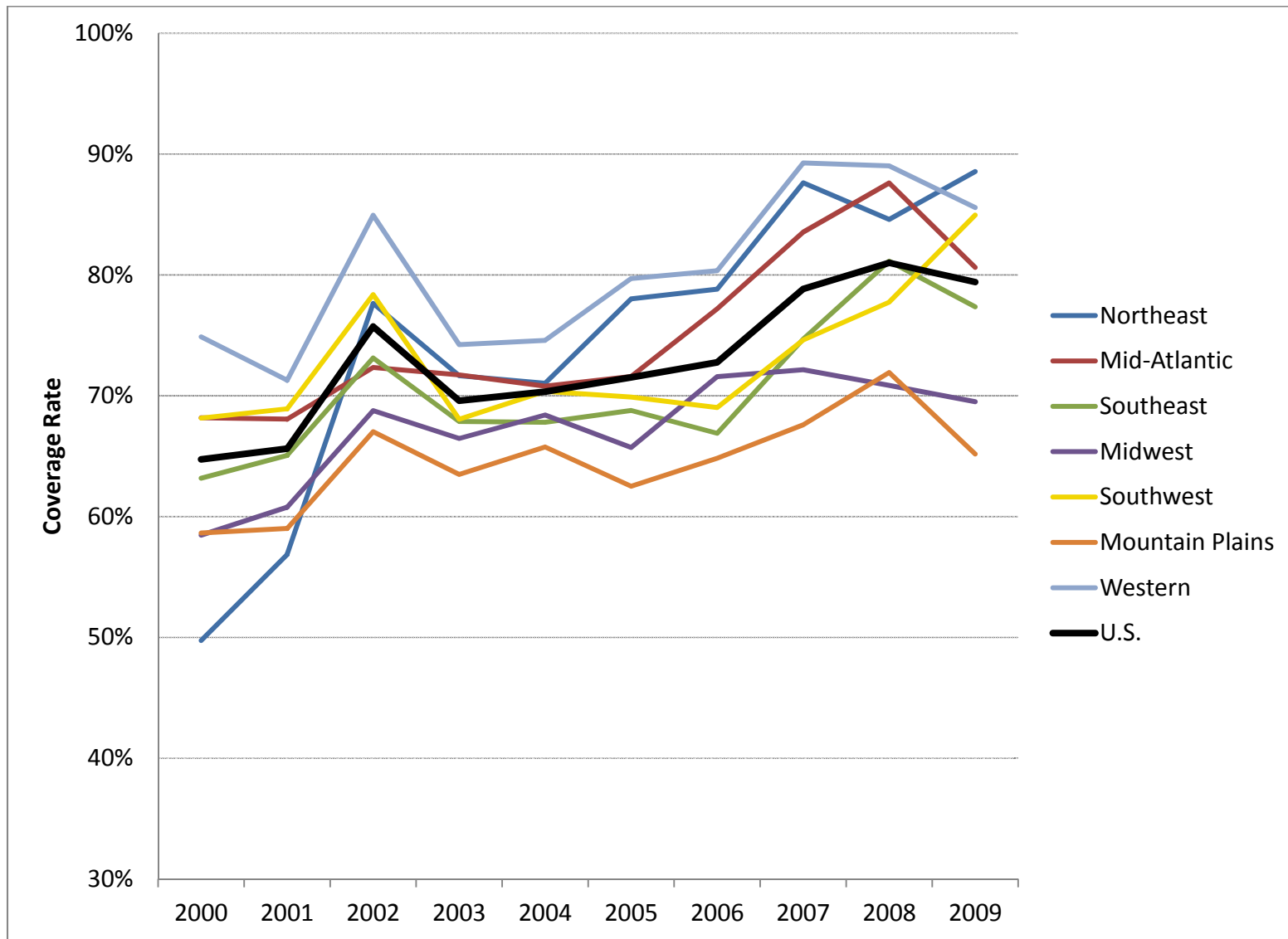
Source: CPS-ASEC, ACS, PRCS, Census International Data Base, WIC Administrative Data

Figure 12. Pregnant Women Coverage Rate by FNS Region, 2000–2009



Source: CPS-ASEC, ACS, PRCS, Census International Data Base, WIC Administrative Data

Figure 13. Postpartum Women Coverage Rate by FNS Region, 2000–2009



Source: CPS-ASEC, ACS, PRCS, Census International Data Base, WIC Administrative Data

Summary and Recommendations

Under this contract, national estimates for WIC eligibility were updated for 2008 and completed for 2009 based on the 2009 and 2010 CPS-ASEC data, respectively. The national estimates include eligibility for children by single years of age and use new, direct methods for estimating WIC eligibility in the territories. State-level estimates for 2000 through 2009 also were produced. These estimates use the 2008 and 2009 ACS data that provide large samples for each State. For the first time, standard errors are provided for the national, State and Puerto Rico estimates. The standard errors show that some caution must be taken in using the State-level estimates, especially for small States. Validation of the estimates that compares eligibility to actual participation also raises questions about the stability of the breastfeeding rates derived from Ross Laboratories.

The analyses lead us to suggest several avenues for further refinement:

- The annual-to-monthly adjustments based on SIPP data through 2006 suggest significant changes in either intra-year income volatility, adjunctive eligibility, or both. We recommend re-estimation of these adjusters based on calendar year 2009 from the SIPP 2008 panel and regular, future re-estimation to account for economic and program policy changes. The estimation should detail each aspect of the analysis so that the effect of income volatility can be separated from that of adjunctive eligibility through TANF, SNAP, and Medicaid.
- Basic breastfeeding rate data and subsequent adjustments developed from the NHANES and SIPP require further investigation. Trade-offs between using the RLMS and the NIS data should be considered. The best data for estimating national and State-level breastfeeding rates should be adopted for future estimates. Adjustments for postpartum mothers' income and adjunctive eligibility and breastfeeding cessation should be re-estimated using the latest SIPP data.
- Other recommendations pertain to improving the estimates of WIC eligibility in Puerto Rico and island territories. Lacking other data, these estimates applied national adjusters for annual-to-monthly income and breastfeeding rates to Puerto-Rico and the island territories. Puerto Rico might have more specific data that could be used.
- WIC eligibility estimates for the other island territories rely on the 2000 Census data for income and adjunctive eligibility. These estimates could be updated using Census 2010 data expected to be released for these territories in 2013.

We provide numerous appendices for readers seeking details on the various new procedures and analyses completed. All computer code and spread sheets producing the estimates are provided to FNS.

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