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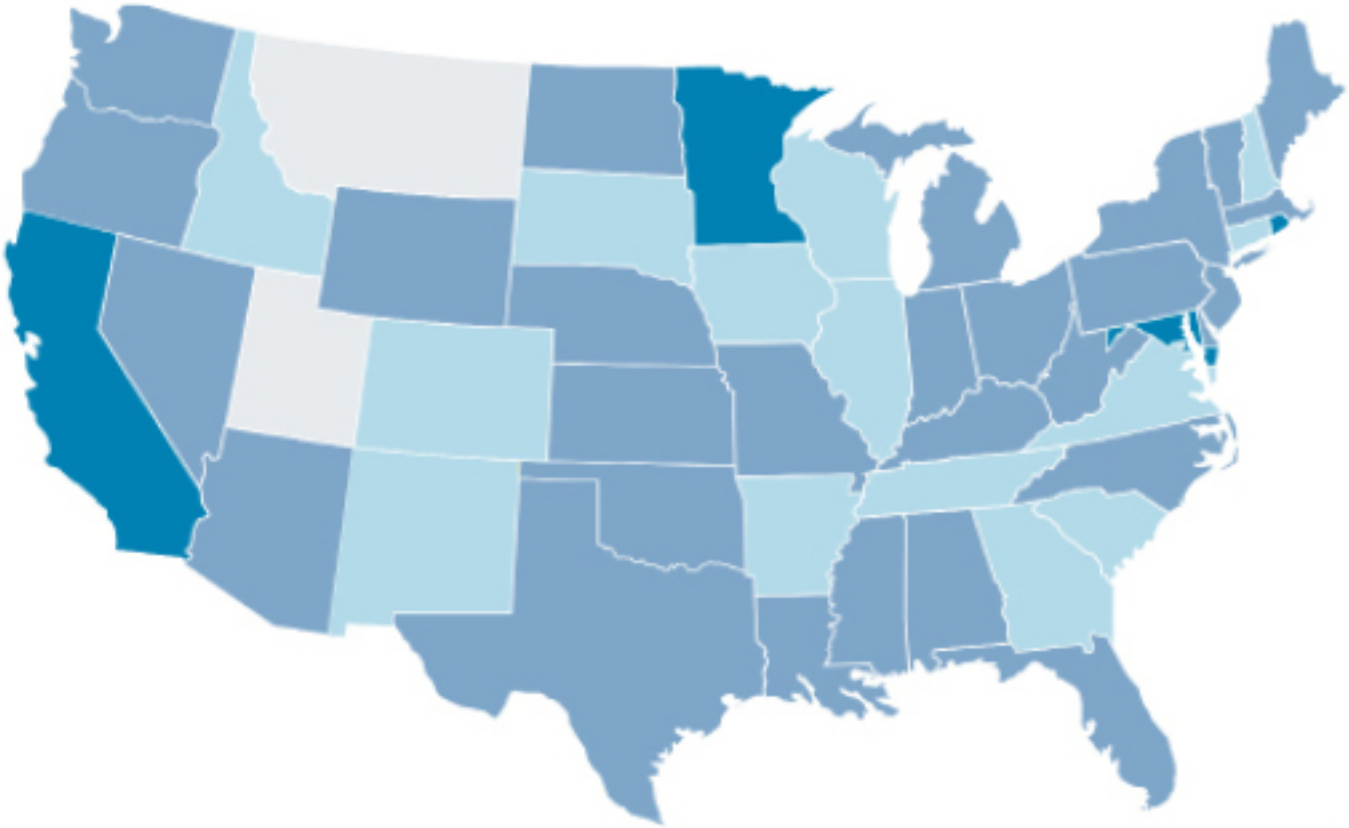
National- and State-Level Estimates of WIC Eligibility and WIC Program Reach in 2016



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National- and State-Level Estimates of WIC Eligibility and WIC Program Reach in 2016

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Executive Summary

The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) provides nutritious foods, nutrition education that includes breastfeeding promotion and support, and health and social service referrals to participants. Low-income and nutritionally at-risk pregnant and postpartum women, infants, and children up to age 5 are eligible for WIC. Eligible participants receive vouchers, checks, or electronic benefit transfer cards for prescribed foods and redeem them at authorized retail vendors at no charge.

To be eligible for WIC, an applicant must be categorically eligible as a pregnant, postpartum breastfeeding,[1] or postpartum non-breastfeeding[2] woman; an infant up to age 1; or a child up to age 5. Applicants must be at nutritional risk and have household income less than or equal to 185 percent of the Federal Poverty Guidelines issued annually by the U.S. Department of Health and Human Services (2016).[3] Applicants may also be adjunctively income-eligible for WIC if they participate in Medicaid, the Supplemental Nutrition Assistance Program, or Temporary Assistance for Needy Families. Applicants must live in the State in which they apply or meet the residency requirements established by an Indian Tribal Organization.

This report presents estimates of the number of individuals eligible for WIC benefits and the percentage of the eligible population participating in calendar year (CY) 2016. For the purposes of this report, WIC participants are defined as those individuals who were enrolled in WIC and claimed their benefits. Estimates are provided at the national, regional, and State levels, and include Puerto Rico and other U.S. territories. Estimates are also provided by participant category—i.e., infants, children, pregnant women, and postpartum breastfeeding and non-breastfeeding women—and by race and ethnicity.

A. Results

1. WIC Eligibility Estimates

In an average month in CY 2016, 13.9 million individuals were eligible for WIC (see table ES.1). Of those eligible to participate in WIC, almost two-thirds (64 percent) were children aged 1 to 4, 21 percent were women, and 16 percent were infants. WIC-eligible children were evenly distributed by year of age. Pregnant and postpartum women each represented about 10 percent of the eligible population.

The eligibility rate is the percentage of the total population in each participant category that is estimated to be eligible for WIC. In an average month in CY 2016, more than half of all infants and children aged 1 to 4 (54 and 55 percent, respectively) were eligible for WIC (see figure ES.1). Almost 48 percent of all pregnant women and 37 percent of all postpartum women were eligible.

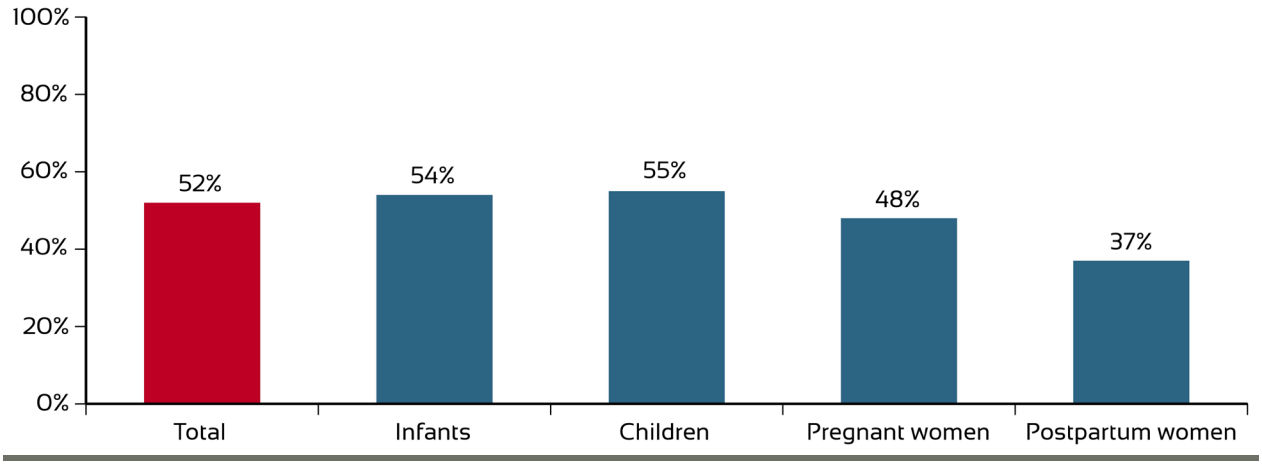
[1] Breastfeeding women up to 1 year postpartum
[2] Non-breastfeeding women up to 6 months postpartum
[3] These guidelines are based on household size. The 48 contiguous States, the District of Columbia, and the U.S. territories served by WIC have the same guidelines; Alaska and Hawaii have different guidelines.

Table ES.1. Estimated Average Monthly Number of Individuals Eligible for WIC by Participant Category: CY 2016

Participant Category	Number Eligible	Percent of Total Eligible	Total Population	Eligibility Rate (Percent)
Infants	2,159,041	15.5	3,966,090	54.4
Total children aged 1–4	8,907,712	63.9	16,193,444	55.0
Children aged 1	2,317,916	16.6	4,068,849	57.0
Children aged 2	2,222,568	16.0	4,080,801	54.5
Children aged 3	2,215,120	15.9	4,034,985	54.9
Children aged 4	2,152,108	15.4	4,008,809	53.7
Total women	2,867,042	20.6	6,913,589	41.5
Pregnant women	1,408,119	10.1	2,962,967	47.5
Total postpartum women	1,458,923	10.5	3,950,623	36.9
Breastfeeding women	949,592	6.8	2,241,095	42.4
Non-breastfeeding women	509,331	3.7	1,709,528	29.8
Total	**13,933,795**	**100.0**	**27,073,124**	**51.5**

Notes
The total population consists of individuals in the Nation, Puerto Rico, and the other U.S. territories served by WIC in each participant category.
The eligibility rate is the ratio of the total number of individuals eligible for WIC to the total population in each participant category.
Sources: NBER,[4] n.d.b; IPUMS-USA,[5] n.d.; U.S. Census Bureau, n.d.d

Figure ES.1. WIC Eligibility Rate by Participant Category: CY 2016



Sources: IPUMS-USA, n.d.; NBER, n.d.b; U.S. Census Bureau, n.d.d

2. Coverage Rates

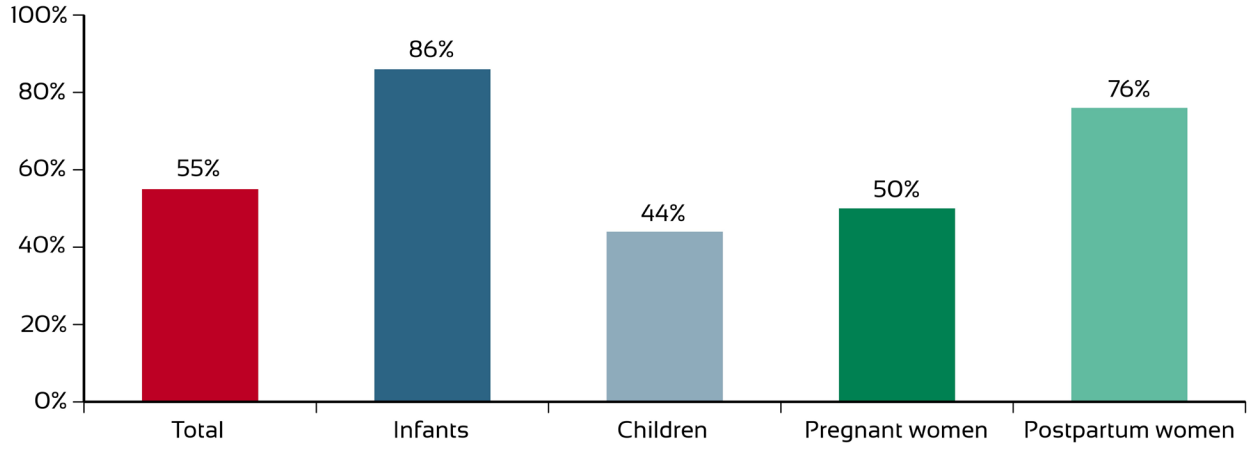
a. How many women, infants, and children eligible for WIC received WIC benefits in 2016?

Coverage rates are the percentage of women, infants, and children eligible for WIC who receive WIC benefits. Coverage rates are useful measures for understanding how well WIC reaches those who may

[4] National Bureau of Economic Research
[5] Integrated Public Use Microdata Series-USA

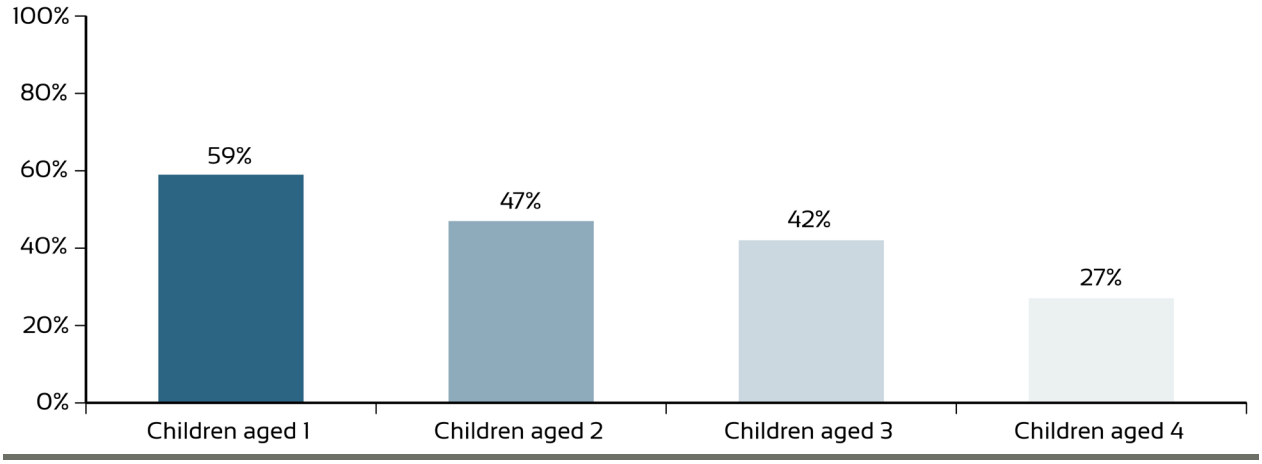
need the benefits provided by the program. Of the 13.9 million women, infants, and children eligible for WIC in an average month in CY 2016, 7.6 million received benefits, resulting in a national coverage rate of 55 percent. Coverage rates were highest for infants (86 percent) and lowest for children aged 1 to 4 (44 percent; see figure ES.2). Moreover, coverage rates for children decreased with age, from a high of 59 percent for 1-year-olds to a low of 27 percent for 4-year-olds (see figure ES.3).

Figure ES.2. WIC Coverage Rate by Participant Category: CY 2016



Sources: IPUMS-USA, n.d.; NBER, n.d.b; Thorn et al., 2018; U.S. Census Bureau, n.d.d; unpublished internal WIC administrative data

Figure ES.3. WIC Coverage Rate for Children by Year of Age: CY 2016



Sources: IPUMS-USA, n.d.; NBER, n.d.b; Thorn et al., 2018; U.S. Census Bureau, n.d.d; unpublished internal WIC administrative data

b. How did WIC coverage rates vary by race and ethnicity?

Coverage rates varied by race and ethnicity. Overall, rates were higher for Hispanics (67 percent) than for other race and ethnicity groups. Coverage rates were 43 percent for White-Only Non-Hispanics and 59 percent for Black-Only Non-Hispanics (see table ES.2). This pattern of coverage rates by race and ethnicity was similar for most participant categories, but for postpartum women, coverage rates were higher for Black-Only Non-Hispanics than for Hispanics. Among all race and ethnicity groups, coverage rates were highest for infants.

Table ES.2. WIC Coverage Rates (Percentage) by Race and Ethnicity: CY 2016

Participant Category	White-Only Non-Hispanic	Black-Only Non-Hispanic	Other Non-Hispanic	Hispanic	Total
Infants	65.4	100.0	79.3	100.0	85.9
Children aged 1–4	33.2	43.0	43.7	56.3	44.1
Pregnant women	42.9	58.0	36.5	59.7	50.3
Postpartum women	60.6	97.7	57.2	89.5	75.8
Total	**42.6**	**59.1**	**50.1**	**66.7**	**54.5**

Note
Estimated coverage rates exceed 100 percent for Black-Only Non-Hispanic and Hispanic infants. This is likely a result of sampling variability in the Current Population Survey Annual Social and Economic Supplement survey data used to estimate the number of infants eligible for WIC (denominator of the rate). The lower-bound range of the 95-percent confidence interval surrounding these rates is below 100 percent. See chapter 6 for more information on measures of statistical uncertainty for the eligibility estimates.
Sources: NBER, n.d.b; IPUMS-USDA, n.d.; U.S. Census Bureau, n.d.d; unpublished internal WIC administrative data

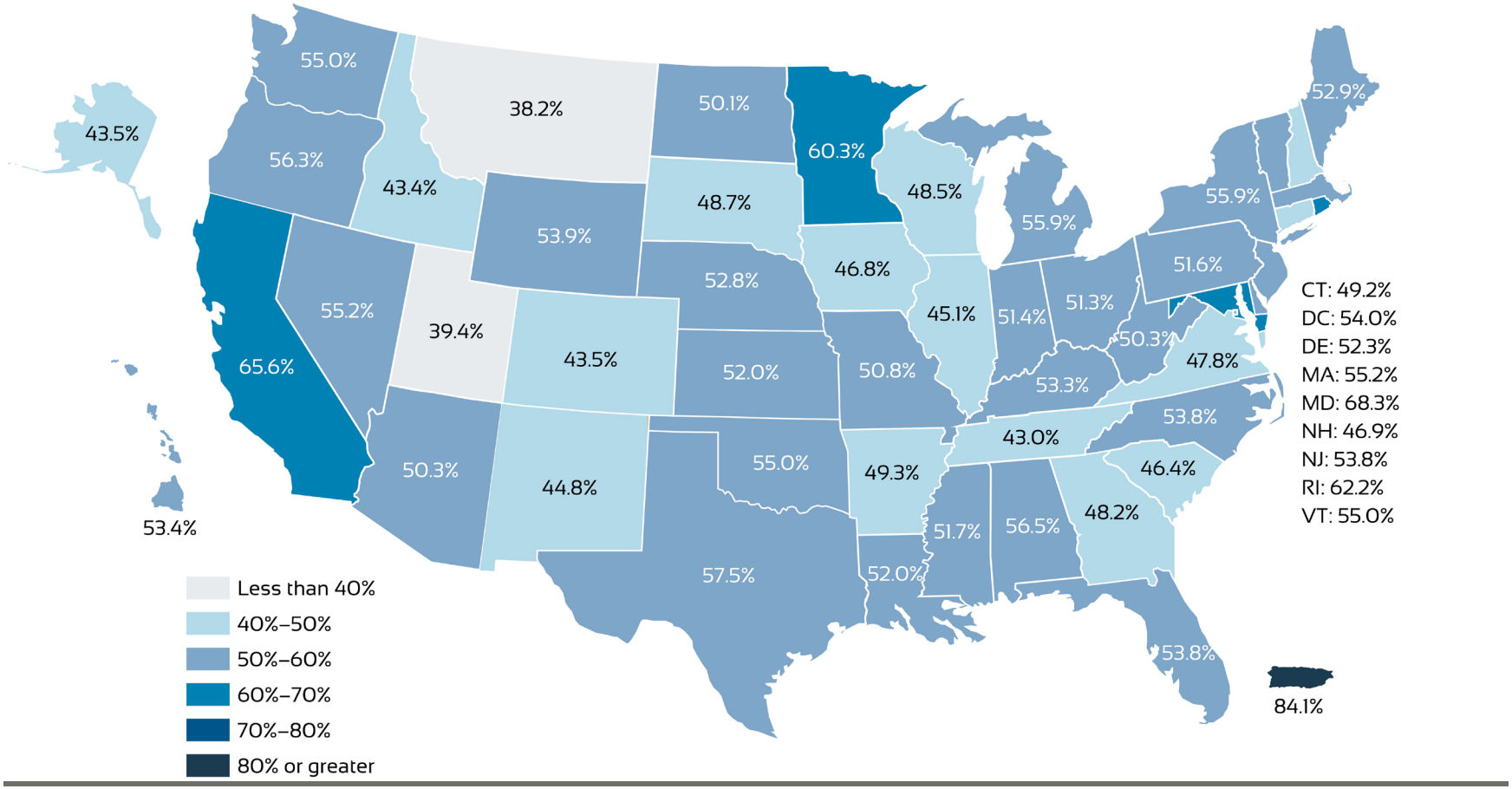
c. How did WIC coverage rates vary by State?

WIC coverage rates varied substantially by State, ranging from 39 percent to 68 percent, compared with the national average coverage rate of 55 percent. See tables 4.5 and 4.6 in chapter 4 for more detail on State coverage rates.

State rates by race and ethnicity were generally consistent with average State rates. For example, similar to national coverage rates, State-level coverage rates were higher for Hispanics than for White-Only Non-Hispanics in the vast majority of States (see table 4.7 in chapter 4).

Figure ES.4 provides a national map that illustrates the variations in coverage rates. States with the darkest shading had the highest rates of coverage in 2016, whereas States with the lightest shading had the lowest rates.

Figure ES.4. WIC Coverage Rate for Total Eligible Individuals by State: CY 2016
National Coverage Rate: 54.5 Percent



Sources: IPUMS-USA, n.d.; NBER, n.d.b; U.S. Census Bureau, n.d.d; unpublished internal WIC administrative data

B. Methodology

The 2016 national estimates presented in this report are based on a methodology developed in 2003 by the Committee on National Statistics of the National Research Council. The estimates are based on the 2017 Current Population Survey Annual Social and Economic Supplement (CPS-ASEC) data (National Bureau of Economic Research [NBER], n.d.b). The numbers of income-eligible and adjunctively income-eligible infants and children were first estimated using the CPS-ASEC data and then adjusted to account for differences between annual and monthly income and for nutritional risk. The number of infants eligible for WIC was then used as the starting point to estimate the numbers of WIC-eligible pregnant and postpartum women because the CPS-ASEC data did not identify pregnancy or breastfeeding status.

The State-level estimates are based on a methodology that apportions the national figures using data from the American Community Survey (ACS) and other sources. The 2016 State-level estimates are based on the 2016 ACS data (Integrated Public Use Microdata Series-USA [IPUMS-USA], n.d.). This report defines the WIC coverage rate as the ratio of the number of WIC participants to individuals eligible for WIC and provides estimates of these rates for the overall WIC population and by participant category. The source for the number of participants is WIC administrative data from FNS on the number of individuals who were enrolled in WIC and claimed their benefits in an average month of CY 2016.

Chapter 1. Introduction

The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) provides nutritious supplemental foods, nutrition education that includes breastfeeding promotion and support, and referrals to health and social services and other social services at no charge. WIC serves low-income and nutritionally at-risk pregnant and postpartum women; infants; and children up to age 5. Administered by the U.S. Department of Agriculture's (USDA) Food and Nutrition Service (FNS), WIC provides services through State and local agencies in all 50 States; the District of Columbia;[6] Puerto Rico and four additional U.S. territories (American Samoa, Guam, the Northern Mariana Islands, and the U.S. Virgin Islands); and 34 Indian Tribal Organizations (ITOs). Eligible participants receive vouchers, checks, or electronic benefit transfer cards for prescribed foods and redeem them at authorized retail vendors at no charge.

Part of the Nation's nutrition safety net for more than 40 years, WIC served more than 7 million women, infants, and children per month in fiscal year (FY) 2017. To be eligible for WIC, an applicant must be categorically eligible as a pregnant, postpartum breastfeeding,[7] or postpartum non-breastfeeding[8] woman; an infant up to age 1;[9] or a child up to age 5. Each applicant must also be income-eligible and at nutritional risk and live in the State to which the application is submitted.

WIC is a federally funded program, but the funding is discretionary. The number of eligible women, infants, and children that the program can serve depends on the amount of funding Congress provides for the program and how FNS allocates the funds to individual State agencies. Since approximately 1997, Congress has funded WIC at a level sufficient for the program to serve all eligible applicants. Annual WIC funding levels are based on the number of individuals eligible for WIC and the percentage of the eligible population likely to participate. FNS allocates funds to States based on a formula that takes into account both the previous year's funding and the estimated eligible population in each State. Accurately determining the number of individuals eligible for WIC and the number likely to participate enables FNS to better predict future funding needs, measure WIC program performance, and identify potentially unmet nutrition assistance needs.

This report presents estimates of the numbers of women, infants, and children eligible for WIC during an average month in calendar year (CY) 2016. It also provides the percentage of eligible individuals who participate in WIC overall and by participant category (i.e., "coverage rates") and the percentage of the total population of individuals who participate in WIC overall and by participant category (i.e., "participation rates"). For the purposes of this report, WIC participants are defined as those individuals who were enrolled in WIC and claimed their benefits. Estimates are provided at the national, regional, and State levels. Estimates are also provided by participant category—i.e., infants, children, pregnant women, and postpartum women—and by race and ethnicity.

Chapter 2 describes the data and methodology used to develop the 2016 WIC estimates. Chapter 3 presents the estimates of individuals eligible for WIC; chapter 4 provides the coverage rates; and chapter 5 presents the participation rates. Chapter 6 describes the measures of precision for the estimates. Additional detail and tables are provided in volume II of this report.

[6] Hereafter, this report includes the District of Columbia in references to States.
[7] Breastfeeding women up to 1 year postpartum
[8] Non-breastfeeding women up to 6 months postpartum
[9] An infant must be recertified as a child after the infant's first birthday.

Chapter 2. Methodology

This chapter describes the methodology used to produce the estimates of individuals eligible for WIC, coverage rates, and participation rates for 2016. To be eligible for WIC, an applicant must meet requirements for categorical and income or adjunctive eligibility, nutritional risk, and residency. Descriptions of these requirements follow:

- **Categorical Criteria.** A participant must be a pregnant, postpartum breastfeeding, or postpartum non-breastfeeding woman; an infant up to age 1; or a child up to age 5.
- **Income Eligibility Criteria.** A participant's income may not exceed 185 percent of the Federal Poverty Guidelines issued annually by the U.S. Department of Health and Human Services (HHS); these income guidelines are based on household size and the State or U.S. territory of residence.[10] Applicants must present proof of income such as recent paystubs or income tax returns.
- **Adjunctive Income Eligibility Criteria.** Individuals may be adjunctively income-eligible for WIC if they or certain household members can document participation in Medicaid, the Supplemental Nutrition Assistance Program (SNAP), or Temporary Assistance for Needy Families (TANF).[11]
- **Nutritional Risk.** A participant must be determined to be at nutritional risk based on a medical and/or nutritional assessment by a competent professional authority such as a physician, nurse, or nutritionist. The applicant must display at least one medical or dietary risk factor (such as anemia, an inadequate diet, or being underweight) that may lead to a poor health outcome.
- **Residency.** An applicant must apply for and receive benefits in the State or U.S. territory of residence.[12]

A. Overview of Methods

The estimation procedures used to develop the estimates for WIC eligibility presented in this report are based primarily on the methodology recommended by the Committee on National Statistics (CNSTAT) panel members. In a report issued in 2003, the panel recommended using Current Population Survey Annual Social and Economic Supplement (CPS-ASEC) data for the initial counts of eligible infants and children in all States (Ver Ploeg & Betson, 2003). The counts are refined through a series of adjustment factors designed to more closely reflect WIC procedures**.** The numbers of infants and children who are income-eligible or adjunctively income-eligible are first estimated and then adjusted to account for differences between annual and monthly income and for nutritional risk. The number of infants eligible for WIC is then used as the starting point to estimate WIC-eligible pregnant and postpartum women. Because CPS data do not include information on pregnancy or breastfeeding status, estimates of WIC-eligible women are based on adjusted counts of infants eligible for WIC rather than separate counts of CPS-ASEC data. For postpartum women, separate estimates are produced for breastfeeding and non-breastfeeding mothers because certification periods and benefits vary for these two groups.

[10] See USDA FNS (2015, 2016) for the Federal Poverty Guidelines used to calculate the WIC eligibility estimates presented in this report.
[11] WIC regulations also allow State agencies to extend automatic WIC income eligibility to applicants participating in other qualifying means-tested benefit programs with income eligibility thresholds below those for WIC (see Special Supplemental Nutrition Program for Women, Infants and Children, 2014).
[12] Applicants applying for benefits through an ITO must meet the residency requirements established by that ITO.

State-level estimates of individuals eligible for WIC are prepared using the same general procedures used to develop the national-level estimates, but they are based on American Community Survey (ACS) data instead of CPS-ASEC data. CPS-ASEC data are considered a better source for national-level estimates because they include more complete income and program participation data, but ACS data are preferred for State-level estimates because of the relatively large sample sizes for all States. To create a consistent set of national- and State-level estimates, each State's share of the total ACS-based estimates is calculated, and the national-level estimates are then allocated across States according to each State's share. As a result, the sum of the State-level estimates is the same as the national total. State-level estimates are also summed to produce regional-level estimates. Estimates for Puerto Rico and the four other U.S. territories WIC serves (American Samoa, Guam, the Northern Mariana Islands, and the U.S. Virgin Islands) are prepared using procedures similar to those used to generate the national estimates; however, those estimates are based on data from the Puerto Rico Community Survey (PRCS) and the U.S. Census Bureau International Data Base (IDB), respectively.

The following data sources were used for the 2016 estimates: (1) 2017 CPS-ASEC data (NBER, n.d.b); (2) 2016 ACS and PRCS data (IPUMS-USA, n.d.); and (3) 2016 IDB data (U.S. Census Bureau, n.d.d).

The step-by-step process for producing the 2016 national, State, and U.S. territory estimates of individuals eligible for WIC is explained in section B (for infants and children), section C (for pregnant women), and section D (for postpartum women). Section E explains the method used to calculate WIC coverage rates, and section F describes the method used to calculate participation rates. Section G highlights changes from the 2015 report.

Table 2.1 summarizes the steps, data sources, and adjustment factors used to estimate eligibility for WIC in 2016. Table 2.2 shows the derivation of the number of individuals eligible for WIC at each step of the process and the final total number of eligible individuals. Tables 2.1 and 2.2 are provided at the end of this chapter.

B. Determining the Number of Infants and Children Eligible for WIC

The first step in estimating the number of individuals eligible for WIC was to determine the number of infants and children eligible for WIC nationally, in each State, and in the U.S. territories WIC serves.[13] This section describes the process used to calculate these estimates.

1. National Estimates

a. Produce preliminary demographic counts of infants and children.

The first step in creating national estimates of infants and children eligible for WIC was to use 2017 CPS-ASEC data to produce preliminary demographic counts of the numbers of infants and children potentially served by WIC in CY 2016. These data were collected in spring 2017, and each household was asked to report income and program participation for the prior year (CY 2016).

[13] Data for those eligible for WIC through ITOs are included in the data for the State where the ITO is located.

b. Produce adjusted counts of infants and children.

The preliminary counts of infants and children were then adjusted to compensate for differences between the weighted counts of infants and children in the CPS-ASEC data and the U.S. Census Bureau population estimates. There were two possible reasons for these differences: the Census Bureau's weighting procedures for the CPS-ASEC data were not designed to meet population targets by year of age, and the population estimates could have changed after the point in the process when the CPS-ASEC data were weighted. The adjustment factors (see table 2.1) reflected national population estimates (U.S. Census Bureau, n.d.a) by age, race and ethnicity, and gender during a 4-year period relative to the weighted counts in the CPS-ASEC data for the same period.[14] The adjustment factors inflated or deflated the CPS-ASEC counts by subgroup to better reflect the Census Bureau estimate for that subgroup. The adjustment factors were used only when differences between the 4-year accumulations in the Census Bureau data and the 2016 population figures were in the same direction.

c. Determine the number of income-eligible infants and children.

The CPS-ASEC data with adjusted counts of infants and children were then used to estimate the number of infants and children in an economic unit with annual income less than or equal to 185 percent of the Federal Poverty Guidelines.[15,16] WIC regulations[17] specify that all the people living as one economic unit (that is, related or unrelated persons who contribute to the household income) are treated as one household for eligibility determination. The CPS-ASEC data did not explicitly indicate how household members share resources. For the purposes of estimating eligibility for WIC, the economic unit was defined as all persons in the CPS-ASEC household who were related by blood, marriage, or adoption, plus the unmarried partner of any member of the household and that partner's dependents.[18]

d. Determine the number of adjunctively income-eligible infants and children.

Individuals who participate in Medicaid, SNAP, or TANF may be adjunctively income-eligible for WIC. Therefore, the next step in the process was to count infants and children who appeared adjunctively income-eligible according to data from the CPS-ASEC survey. This survey collects information on enrollment in each of these programs during the prior year. To avoid double-counting infants and children who were both directly income-eligible (based on income thresholds) and adjunctively income-eligible (based on participation in Medicaid, SNAP, or TANF), only those adjunctively income-eligible infants and children in households whose annual income exceeded 185 percent of the Federal Poverty Guidelines were added to the number of income-eligible infants and children.

[14] The national-level weight adjustments were calculated separately by (1) age of infant or child (0, 1, 2, 3, or 4 years old); (2) race and ethnicity (White-Only Non-Hispanic, Black-Only Non-Hispanic, Other Non-Hispanic, or Hispanic); and (3) gender (female or male). Data for a 4-year period were used to minimize large year-to-year swings in the factors.

[15] See Special Supplemental Nutrition Program for Women, Infants and Children (WIC): Income Eligibility Guidelines (2015, 2016)

[16] HHS issues new Federal Poverty Guidelines each year at the beginning of July, but the reference period for annual income in CPS-ASEC data is for the calendar year; therefore, the poverty guidelines for 2 consecutive years were averaged to estimate income eligibility for WIC. For the 2016 estimates, the guidelines used to estimate WIC eligibility from July 2015 through June 2016 were averaged with the guidelines used from July 2016 through June 2017.

[17] For all references to WIC regulations in this report, see Special Supplemental Nutrition Program for Women, Infants and Children, 7 C.F.R. § 246 (2014).

[18] For example, if a CPS-ASEC household consisted of a woman who was living with her children, her unmarried partner, and the boyfriend's child from a prior relationship, all of those individuals would have been included in the economic unit for the purposes of calculating the WIC eligibility estimates in this report.

e. Adjust for fluctuations in monthly income and certification periods.

After determining the adjusted count of income-eligible or adjunctively income-eligible infants and children, adjustments were made to address (1) the differences between annual and monthly income and (2) the effects of 6- and 12-month certification periods.[19] The annual-to-monthly income adjustment accounted for how annual income data and program participation data could incorrectly estimate monthly eligibility.[20] The adjustment for certification periods accounted for how eligible infants were certified for a year, whereas some eligible children were certified for only 6 months and others for a year, depending on the State. After a participant's certification period ends, eligibility must again be demonstrated.[21] These adjustment factors—computed separately for infants and children by race and ethnicity and to reflect shorter certification periods for children in some States—were computed using data from the Survey of Income and Program Participation (SIPP), which allows month-by-month observation of family circumstances (see table 2.1; U.S. Census Bureau, n.d.f).[22] Appendix D describes in detail the method for calculating the annual-to-monthly adjustment factors applied to children based on State-specific adoptions of 12-month certification periods for WIC-eligible children.

f. Adjust for nutritional risk.

The final step in producing national estimates of infants and children eligible for WIC was to adjust for nutritional risk. Individuals eligible for WIC must be determined to be at nutritional risk regardless of their income. The estimates were adjusted to account for the fact that a small percentage of otherwise eligible infants and children may not have been determined to be at nutritional risk. The study used the same set of nutritional risk adjustment factors developed for the original CNSTAT panel report (Ver Ploeg & Betson, 2003).

2. State Estimates

The State-level estimates of infants and children eligible for WIC were calculated using the same methods used to generate the national-level estimates but with 2016 ACS data instead of 2017 CPS-ASEC data.[23] That is, the number of infants and children were first identified in each State, and the counts were then adjusted to reflect State population estimates (U.S. Census Bureau, n.d.b).[24] The number of infants and children in WIC units with annual income less than or equal to 185 percent of the Federal Poverty Guidelines was determined, and the number of adjunctively income-eligible infants and children were added to the count. The annual-to-monthly factors and the nutritional risk factors were

[19] The Healthy, Hunger-Free Kids Act of 2010 (Pub. L. 111–296) gave States the option of certifying WIC-eligible children every 12 months instead of every 6 months. Whether and when a State has adopted this option affects WIC eligibility for children.
[20] For example, family income may fluctuate during the year, which may result in an infant or child being eligible based on income in certain months rather than annual income, or based on annual income rather than income in certain months. Program participation in Medicaid, SNAP, and TANF may also fluctuate during the year.
[21] For example, an infant or child who appears ineligible based on annual income may have been eligible at the start of the year as a result of being certified in the prior year; conversely, a child who appears eligible based on annual income may have been eligible for only 6 months if the family income had increased by the time the child was recertified.
[22] Because the SIPP data needed to update these annual-to-monthly adjustments will not be available until 2019, the 2016 estimates were calculated using the same annual-to-monthly adjustments used for the 2015 estimates.
[23] Unlike the CPS-ASEC data, the ACS data provided information for each household member's relationship to the reference person (householder) rather than the members' relationships with each other. To gain a better understanding of relationships across all household members, which is important for determining WIC eligibility, the study team used the Minnesota Population Center's IPUMS data. IPUMS data provides users with educated conjectures about the relationships between household members not related to the reference person.
[24] For State estimates, the weight adjustments were calculated by year of age (within each State), not by gender or race and ethnicity.

then applied.[25] The ACS-based counts of infants and children eligible for WIC were then summed across the States, and each State's share of the ACS-based national-level estimate was determined (separately by year of age[26] of participant) and then applied to the CPS-based estimate.

3. Territory Estimates

Estimates of infants and children eligible for WIC in Puerto Rico are based on the 2016 PRCS data and were created with the same methods and adjustments used to develop the national-level estimates. Estimates for the other four U.S. territories served by WIC are based on the 2016 IDB data for those areas. The estimates underwent two adjustments: (1) 2010 decennial census data were used to estimate the percentage of the population that was income-eligible, and (2) the relationship between income eligibility and adjunctive income eligibility in the Nation and Puerto Rico in 2016 was used to estimate the additional number of infants and children eligible through adjunctive eligibility.

C. Determining the Number of Pregnant Women Eligible for WIC

The next step in estimating eligibility for WIC in 2016 was to ascertain the number of pregnant women eligible for WIC in the Nation, States, and five U.S. territories. Because the CPS-ASEC and ACS data do not include information about pregnancy, the final average monthly estimate of infants eligible for WIC was used as the starting point to estimate the number of pregnant women eligible for WIC. A series of adjustments was made to complete the estimate of pregnant women.

1. National Estimates

a. Adjust estimates for multiple births and infant deaths.

The number of pregnant women can differ from the number of infants because of (1) multiple births (which reduce the number of pregnant women compared with that of infants) and (2) fetal and infant deaths (which increase the number of pregnant women compared with that of infants). The 2016 estimates of eligible infants were adjusted slightly to account for these two differences (see table 2.1).

b. Adjust estimates for length of pregnancy and income during pregnancy.

The 2016 estimates were also adjusted to account for two factors: women are pregnant for 9 out of 12 months of the year,[27] and some mothers of infants eligible for WIC were not eligible during pregnancy (see table 2.1).[28]

c. Adjust for nutritional risk.

The final adjustment to derive the number of pregnant women was to account for the fact that a small percentage of otherwise eligible pregnant women may not have been determined to be at nutritional

[25] When the annual-to-monthly factors were applied at the State level, the two race and ethnicity factors were applied in each State. The factors for children varied by each State's implementation of 12-month certification.
[26] Age 0, 1, 2, 3, or 4
[27] The estimates calculate pregnant women as eligible from conception, which is consistent with Federal WIC eligibility guidelines.
[28] According to the recommendations of the CNSTAT panel, a woman would be more likely to be working during pregnancy than after birth, so family income would be higher for women during pregnancy. Therefore, with all else equal, women would be less likely during pregnancy versus after birth to have an income below the eligibility threshold.

risk. This adjustment was based on the same CNSTAT set of nutritional risk factors that was used to adjust the estimate for infants (see table 2.1).

2. State Estimates

Similar to how the national-level estimates of pregnant women eligible for WIC were derived, the State-level estimates were calculated by using the estimates of infants eligible for WIC as a starting point. The adjustments described earlier in this section were applied to the ACS-based infant eligibility estimates, which were then used to generate each State's share of the ACS-based total pregnant women eligible for WIC. Those shares were then applied to the national-level estimate of pregnant women eligible for WIC based on the CPS-ASEC data.

3. Territory Estimates

Estimates of pregnant women eligible for WIC in Puerto Rico and the other four U.S. territories were calculated with a method parallel to that used to estimate the number of WIC-eligible women in the Nation. The adjustments described earlier in this section were applied to the infant eligibility estimates for Puerto Rico and the other U.S. territories to derive the number of pregnant women eligible for WIC.

D. Determining the Number of Postpartum Women Eligible for WIC

The final step in estimating the number of WIC-eligible individuals in 2016 was to calculate the number of WIC-eligible postpartum breastfeeding and non-breastfeeding women in the Nation, States, and U.S. territories. Similar to the estimates of pregnant women eligible for WIC, estimates of postpartum women eligible for WIC were calculated using adjusted counts of infants eligible for WIC instead of separate counts from CPS-ASEC data. Breastfeeding status is key to estimating eligibility for WIC for postpartum women, and CPS-ASEC data do not identify breastfeeding status. A new mother may receive WIC benefits for 6 months if she is not breastfeeding and up to 12 months if she is breastfeeding. Therefore, information was needed on breastfeeding rates among WIC-eligible mothers during the first 6 months and second 6 months after giving birth and the rate at which breastfeeding mothers ceased breastfeeding during these two periods. These rates were applied to the count of postpartum women to estimate the numbers of postpartum breastfeeding and postpartum non-breastfeeding women for 2016.

1. National Estimates

Similar to how the study team calculated the estimates for pregnant women, the team made a series of adjustments to the final average monthly estimate of infants eligible for WIC to create the national-level estimate of postpartum women eligible for WIC. Descriptions of these adjustments follow.

a. Adjust estimates for multiple births and infant deaths.

The study team made the same small adjustment to the number of infants eligible for WIC to estimate postpartum women eligible for WIC as it did to estimate pregnant women eligible for WIC. To account for the combined effect of multiple births and fetal and infant deaths, the adjustment was applied to the count of infants eligible for WIC (see table 2.1).

b. Adjust estimates for breastfeeding status.

National breastfeeding rates were used to adjust for breastfeeding status by racial/ethnic group for the 2016 estimates. The breastfeeding rates were drawn from the most recent National Immunization Survey (NIS) conducted by the Centers for Disease Control and Prevention (CDC): the 2014 and 2015 surveys for the 2013 birth cohort.[29] CDC conducted special tabulations of the NIS data to provide breastfeeding rates for all mothers, WIC-participating mothers, and nonparticipating WIC-eligible mothers who gave birth in 2013. These data were collected at three points in time: during the mother's hospital stay after giving birth, at 6 months postpartum, and at 12 months postpartum. These data were also collected for four racial/ethnic groups: White-Only Non-Hispanic, Black-Only Non-Hispanic, Other Non-Hispanic, and Hispanic. This information was used to calculate adjustments to derive postpartum women eligible for WIC by breastfeeding status.

c. Adjust for nutritional risk.

All postpartum women were assumed to be at nutritional risk, so an adjustment factor of 1.0 was used (see table 2.1).

2. State Estimates

Adjustments similar to those applied to the CPS-ASEC data were applied to the ACS-based infant eligibility estimates to derive State-level estimates of WIC-eligible postpartum breastfeeding and non-breastfeeding women. The ACS-based estimates were then used to generate each State's share of total postpartum women eligible for WIC, and those shares were applied to the national-level estimate of postpartum women eligible for WIC based on the CPS-ASEC data.

The 2016 estimates were calculated using State-level NIS data on breastfeeding rates provided by CDC. The NIS-based breastfeeding rates were first used for the 2015 estimates. Prior estimates were created using data from the Abbott Laboratories' Infant Feeding Survey (IFS).[30] There were three key advantages to using the NIS-based breastfeeding rates rather than the IFS-based rates. The NIS rates (1) provided all the information needed to estimate breastfeeding status for postpartum women eligible for WIC without having to impute missing information; (2) allowed consistency in the measurement of breastfeeding and its duration between the State-level and national estimates; and (3) were based on a known and reliable weighting methods and sample sizes. In contrast, the IFS data could be used to create estimates only for WIC-participating mothers, which then had to be adjusted to impute rates for WIC-eligible mothers. National-level estimates of postpartum women were not affected by the change in data, but State-level estimates were.

3. Territory Estimates

National breastfeeding rates were used to estimate the numbers of breastfeeding and non-breastfeeding postpartum women eligible for WIC in Puerto Rico and the other U.S. territories served by WIC.

[29] Unpublished internal CDC data
[30] Unpublished special tabulations of IFS data provided by FNS

E. Computing Coverage Rates

This report defines WIC coverage rate as the ratio of the number of WIC participants to individuals eligible for WIC. The source for the number of participants was WIC administrative data from FNS[31] on the number of individuals who were enrolled in WIC *and* claimed their benefits in an average month of CY 2016.[32] FNS provides these administrative counts of WIC program participants for each of five WIC participant categories: infants, children (ages 1–4), pregnant women, postpartum breastfeeding women, and postpartum non-breastfeeding women.[33] The coverage rates were calculated based on the ratio of the 2016 number of WIC participants (numerator) to the 2016 estimates of individuals eligible for WIC (denominator).

The administrative data on WIC participant counts used for this study did not provide the number of participating children by year of age (age 1, 2, 3, or 4) and did not count participants by race and ethnicity. However, these data were available in the 2016 report on WIC participant and program characteristics (WIC PC2016 report; Thorn et al., 2018). Therefore, the study team was able to apply the distribution of WIC-enrolled individuals across these participant categories to the total number of WIC participants to estimate coverage rates by year of age for children and by race and ethnicity.[34]

National coverage rate estimates for 2016 were derived for infants, children by year of age, and pregnant and postpartum breastfeeding and non-breastfeeding women, as well as by race and ethnicity (see chapter 3). State coverage rate estimates for 2016 were derived for all participant categories except for postpartum women. State coverage rates for postpartum women were not broken out by breastfeeding and non-breastfeeding women because of sample size restrictions (see chapter 6 for measures of precision).

F. Computing Participation Rates Among the Total Population

This report defines WIC participation rates as the ratio of the number of WIC participants (overall and by participant category) to the number of individuals in the demographic population targeted by WIC (overall and by participant category). The participation rates provide information on the percentage of all infants, children, pregnant women, and postpartum women who received WIC benefits in 2016.

National participation rate estimates for 2016 were derived for infants, children by year of age, pregnant women, and postpartum breastfeeding and non-breastfeeding women (see chapter 3).

G. Changes From Previous Year's Report

This section describes changes from the previous year's report on national- and State-level estimates of individuals eligible for WIC (Trippe et al., 2018) and additional analyses conducted for this report.

[31] All WIC administrative data referenced in this report is unpublished internal FNS data.
[32] A small number of individuals who were enrolled in WIC during a given month may not have participated (claimed their benefits) from their State agencies that month.
[33] Unpublished special tabulations of calendar year WIC administrative data
[34] For example, to estimate the number of WIC participants who were 2 years old, WIC PC2016 data were used to estimate the percentage of WIC-enrolled children with those characteristics; that proportion was then applied to the number of WIC-participating children according to WIC administrative data.

Implemented replicate-weight method for calculating standard errors. Standard errors for the prior 2015 and 2014 WIC estimates were calculated using a generalized variance approach. The generalized variance function is a simple model that expresses the variance of estimates as a function of the expected value of the survey estimate. The generalized variance parameters provide a method to obtain approximate standard errors for many key characteristics, but the replicate weight process provides more accurate estimates of standard errors (U.S. Census Bureau, n.d.a).

The study team implemented the more precise replicate-weight method to calculate standard errors for the 2016 estimates for this year's report. The method involves creating replicate estimates based on the 160 replicate weights for the CPS-based estimates (U.S. Census Bureau, n.d.b) and 80 replicate weights for the ACS-based estimates (IPUMS-USA, n.d.). These replicate estimates are used in a function relating each replicate estimate to the true estimate, resulting in a more accurate calculation of the standard error for each unique estimate. See appendix E of volume II for more details on the replicate-weight method used for calculating standard errors.

Added indicators of statistical significance to tables that compare current and previous year estimates. For the 2016 estimates report, the study team added indicators for statistical significance to tables comparing results for current and previous year estimates (see tables 3.6 and 4.8). Including the indicators in the tables more clearly communicates whether the changes in values between the 2 years were true changes or a result of sampling variability. Asterisks are used to indicate when changes between 2 years of estimates (i.e., from 2015 to 2016) are statistically significant at the 95-percent confidence level.[35] Standard errors were also used to calculate margins of error to indicate the estimated upper and lower bounds of the estimates.

Added information on the military status of household members of infants and children eligible for WIC, and added regional coverage rates for children by year of age. The study team added information on the military status of household members of infants and children eligible for WIC to table 3.2. This information was added to improve understanding of the military status of WIC-eligible households. The table provides information on the percentage of infants and children eligible for WIC living in households with an individual aged 17 or older who (1) ever served on active duty in the U.S. military and (2) was serving in the U.S. military and residing in civilian housing on or off a military base in 2016.[36]

The study team also added regional coverage rates for children by year of age (age 1, 2, 3, or 4) to table 4.6 of the 2016 estimates report.

Derived estimates of State-level postpartum women eligible for WIC using only CDC NIS breastfeeding data, not IFS data. Because of the substantial advantages (discussed in section D.2 of this chapter)[37] of using CDC NIS data versus Abbott Laboratories' IFS data for State-level estimates of breastfeeding status for postpartum women eligible for WIC, the study team produced the 2016 estimates using only NIS data. For the 2015 estimates report, the study team used NIS data to produce the estimates but also created a set of alternative estimates using IFS data for comparison (see appendix E of Trippe et al., 2018).

[35] Differences in estimates from one year to another are statistically significant if the margin of error for the difference between the two estimates is larger than the difference. The margin of error is calculated as the standard error of the difference multiplied by 1.96 (i.e., the 95-percent significance level).

[36] This measure of infants and children living in households with an individual aged 17 or older serving in the U.S. military does not include, for example, families residing in non-civilian housing or in another country.

[37] These advantages are also detailed in the 2015 estimates report (Trippe et al., 2018).

Assessed changes to the new, reengineered SIPP and effects on variables and programs used to update annual-to-monthly adjustment factors. The study team compared the 2014 SIPP Panel (the reengineered SIPP) with prior SIPP panels to determine the variables needed to update the annual-to-monthly adjustment factors. The team also updated and tested the SAS programs to account for the changes in the 2014 SIPP Panel. The team made these assessments in preparation for updating the factors once the needed years of SIPP data were released. Updating the factors requires 3 calendar years of SIPP data.[38] To date, the Census Bureau has released only 1 of the 3 needed calendar years of data (Wave 1) from the 2014 panel. Once Waves 2 and 3 are released, the team will be able to update the factors determined in this work. The team anticipates it will likely be more than 1 year before the needed waves of SIPP data are released, which would mean the next update of the annual-to-monthly factors would be for the 2018 estimates. The 2016 WIC estimates were calculated using the same factors as were used for the 2015 WIC estimates.

Assessed whether recent data on multiple births and infant deaths show changes overall and by race and ethnicity. The study team assessed the impact of updated measures of multiple births and infant deaths overall and by race and ethnicity on the factor used to estimate eligible pregnant and postpartum women. The team replicated prior calculations using updated vital statistics data. The results indicate that the estimated adjustment factors for 2002 through 2015 changed very little over time but show a consistent pattern of differences by race and ethnicity. Based on these findings, the team recommends reestimating and applying the factors by separate race and ethnicity categories for next year's (2017) estimates.

[38] To estimate factors for a calendar year, SIPP data are needed for the calendar year, the 11 months prior to the calendar year, and March of the following year.

Table 2.1. Steps, Data Sources, Methods, and Adjustment Factors Used for 2016 Estimates of WIC Eligibility

<table>
<tr><th>Step</th><th>Data Source(s)</th><th colspan="2">Methods and Adjustment Factors</th></tr>
<tr><td colspan="4">Infants and Children</td></tr>
<tr><td>Demographic eligibility</td><td>• 2017 CPS-ASEC (National estimates)
• 2016 ACS (State estimates)
• 2016 PRCS (Puerto Rico estimates)
• 2016 IDB (Other U.S. territories estimates)</td><td colspan="2">Identify individuals aged 0, 1, 2, 3, and 4 in each survey.</td></tr>
<tr><td>Weight adjustment</td><td>• National estimates
– 2016 “vintage” postcensal population estimates from U.S. Census Bureau; March CPS-ASEC data for 2014, 2015, 2016 and 2017
• State and Puerto Rico estimates
– 2016 “vintage” postcensal population estimates from U.S. Census Bureau for July 2016</td><td colspan="2">Adjust sampling weights to account for undercount or overcount in CPS estimates relative to U.S. Census Bureau estimates by year of age, gender, and four race/ethnic categories (White-Only Non-Hispanic, Black-Only Non-Hispanic, Other Non-Hispanic, and Hispanic).</td></tr>
<tr><td></td><td></td><td>Adjustment Factors for Females</td><td>Adjustment Factors for Males</td></tr>
<tr><td></td><td></td><td>• Infants
– White-Only Non-Hispanic: 1.016
– Black-Only Non-Hispanic: 1.106
– Other Non-Hispanic: 1.099
– Hispanic: 1.000
• Children aged 1
– White-Only Non-Hispanic: 1.004
– Black-Only Non-Hispanic: 0.911
– Other Non-Hispanic: 0.901
– Hispanic: 0.979
• Children aged 2
– White-Only Non-Hispanic: 1.009
– Black-Only Non-Hispanic: 0.975
– Other Non-Hispanic: 0.920
– Hispanic: 1.012
• Children aged 3
– White-Only Non-Hispanic: 1.014
– Black-Only Non-Hispanic: 0.984
– Other Non-Hispanic: 0.972
– Hispanic: 1.000
• Children aged 4
– White-Only Non-Hispanic: 1.012
– Black-Only Non-Hispanic: 1.000
– Other Non-Hispanic: 1.000
– Hispanic: 1.012</td><td>• Infants
– White-Only Non-Hispanic: 1.011
– Black-Only Non-Hispanic: 1.138
– Other Non-Hispanic: 1.000
– Hispanic: 1.013
• Children aged 1
– White-Only Non-Hispanic: 1.002
– Black-Only Non-Hispanic: 0.880
– Other Non-Hispanic: 0.973
– Hispanic: 1.000
• Children aged 2
– White-Only Non-Hispanic: 1.003
– Black-Only Non-Hispanic: 1.010
– Other Non-Hispanic: 1.000
– Hispanic: 1.000
• Children aged 3
– White-Only Non-Hispanic: 1.002
– Black-Only Non-Hispanic: 1.066
– Other Non-Hispanic: 0.954
– Hispanic: 1.000
• Children aged 4
– White-Only Non-Hispanic: 1.002
– Black-Only Non-Hispanic: 0.949
– Other Non-Hispanic: 1.000
– Hispanic: 1.000</td></tr>
</table>

Step	Data Source(s)	Methods and Adjustment Factors
Income eligibility	• 2017 CPS-ASEC (National estimates) • 2016 ACS (State estimates) • 2016 PRCS (Puerto Rico estimates) • 2016 IDB (Other U.S. territories estimates) • Blended FY 2015 and FY 2016 Federal Poverty Guidelines	Count as eligible if prior year's annual income was ≤ 185 percent of the Federal Poverty Guidelines.
Adjunctive eligibility	• 2017 CPS-ASEC • 2016 ACS • 2016 PRCS	Add in as eligible those infants and children in families who reported participating in Medicaid, SNAP, or TANF at any point during the prior calendar year.
Adjust for fluctuations in monthly income and certification periods	Average of factors for 2010, 2011, and 2012 as computed from 2008 SIPP panel	Adjust estimates to account for impact of monthly fluctuations in income and program participation and for impact of 6- and 12-month certification periods.[a] • Infants adjustment factor (used for estimates from PRCS and IDB data): 1.14 • Infants adjustment factors by race and ethnicity (used for estimates from CPS-ASEC and ACS data) – White-Only Non-Hispanic: 1.20 – All others: 1.07 • Children adjustment factor assuming 12-month certification periods (used for estimates from PRCS and IDB data): 1.05 • Children adjustment factors by race and ethnicity (used for estimates from CPS-ASEC data) – White-Only Non-Hispanic: 1.09 – All others: 1.03
Adjust for nutritional risk	CNSTAT panel	Multiply infant and child estimates by factor to account for otherwise eligible infants and children who might not be at nutritional risk. • Adjustment factors – Infants: 0.97 – Children: 0.99

Step	Data Source(s)	Methods and Adjustment Factors
Pregnant and Postpartum Women		
Starting point	Infants as estimated using methods outlined earlier in table	Use as a starting point the final average monthly eligibility estimate for infants.
Adjust for multiple births and infant deaths	Data on multiple births and infant and fetal deaths from 2004 Vital Statistics data; March 2004 U.S. Census Bureau estimates for count of infants	Multiply by factor to account for impact of multiple births and infant deaths (so the number of pregnant women/mothers is not exactly equal to the number of infants). Adjustment factor: 0.9961
For pregnant women: Adjust for length of pregnancy and income during pregnancy	2001, 2004, and 2008 panels of SIPP data	Multiply by combined factor to account for (1) 9 months of pregnancy (0.75 factor) and (2) lower likelihood of financial eligibility during pregnancy versus after birth (0.9 factor). Combined adjustment factor: 0.675
For postpartum women: Adjust for breastfeeding status	CDC NIS breastfeeding rates computed for 2014 birth cohort (NIS survey years 2015 and 2016)	Multiply by factors to estimate average monthly women eligible for WIC as breastfeeding women (0 < 12 months postpartum) or non-breastfeeding women (< 6 months postpartum). Separate State-level breastfeeding adjustments are used for the ACS data. • Breastfeeding (used for estimates from PRCS and IDB data): 0.442 • Breastfeeding by race and ethnicity (used for estimates from CPS-ASEC) – White-Only Non-Hispanic: 0.442 – Black-Only Non-Hispanic: 0.369 – Other Non-Hispanic: 0.432 – Hispanic: 0.483 • Non-breastfeeding (used for estimates from PRCS and IDB data): 0.236 • Non-breastfeeding by race and ethnicity (used for estimates from CPS-ASEC) – White-Only Non-Hispanic: 0.239 – Black-Only Non-Hispanic: 0.273 – Other Non-Hispanic: 0.245 – Hispanic: 0.212
Adjust for nutritional risk	CNSTAT panel	Multiply pregnant and postpartum women estimates by factor to account for some otherwise eligible women who may not have been at nutritional risk. The estimates assume all postpartum women were at nutritional risk. ***Adjustment factors:*** Pregnant women: 0.97; Postpartum women: 1.0

Notes
[a] An adjustment factor for the total number of children (1.04) was also calculated but not used for any adjustment. The separate adjustment factors by race and ethnicity were used for the estimates. The data sources listed in this table are as follows, in order of mention: for 2017 CPS-ASEC data, see NBER, n.d.b; for 2016 ACS and PRCS data, see IPUMS-USA, n.d.; for 2016 IDB data, see U.S. Census Bureau, n.d.d; for March 2014, 2015, 2016, 2017 CPS-ASEC data, see NBER, n.d.b; for July 2016 postcensal population estimate data, see U.S. Census Bureau, n.d.b, n.d.e; for 2015/2016 and 2016/2017 Federal Poverty Guidelines data, see Special Supplemental Nutrition Program for Women, Infants and Children (WIC): Income Eligibility Guidelines, 2015, 2016; for 2004 Vital Statistics data, see National Center for Health Statistics, 2004; for 2001, 2004, 2008 SIPP panel data, see U.S. Census Bureau, n.d.f; for CNSTAT panel data, see Ver Ploeg & Betson, 2003. CDC NIS breastfeeding rates are based on unpublished internal CDC data.
Adjustment factors shown in this table were used to produce estimates of eligible individuals. When applicable, the same adjustment factors were used to produce estimates of the total population; as a result of differences in breastfeeding rates, adjustment factors differed for WIC-eligible mothers and the total population of mothers.

Table 2.2. Step-by-Step Adjustments Applied to CPS-ASEC Data To Derive the Average Monthly Number of Individuals Eligible for WIC by Participant Category: CY 2016

Step	Infants	Children Aged 1	Children Aged 2	Children Aged 3	Children Aged 4	Total Children Aged 1–4	Pregnant Women	Postpartum Breastfeeding Women	Postpartum Non-Breastfeeding Women	Total
Total number of infants/ children in CPS-ASEC data	**3,822,275**	**4,134,828**	**4,049,690**	**3,983,712**	**3,963,021**	**16,131,250**	**–**	**–**	**–**	**19,953,525**
Number after adjustment for CPS undercount/overcount	3,929,453	4,031,551	4,042,036	3,995,077	3,967,384	16,036,048	–	–	–	19,965,501
Number with annual income ≤ 185 percent of the Federal Poverty Guidelines	1,282,473	1,541,140	1,468,036	1,499,215	1,405,818	5,914,209	–	–	–	7,196,682
Number adjunctively eligible and with annual income > 185 percent of the Federal Poverty Guidelines[a]	674,832	653,447	633,283	595,390	624,960	2,507,080	–	–	–	3,181,912
Through SNAP	149,963	125,285	154,008	136,952	119,769	536,013	–	–	–	685,976
Through TANF	6,591	8,496	2,017	8,116	4,638	23,266	–	–	–	29,857
Through Medicaid	518,278	519,667	477,258	450,323	500,553	1,947,801	–	–	–	2,466,079
Total number income and adjunctively eligible	1,957,305	2,194,587	2,101,319	2,094,605	2,030,778	8,421,289	–	–	–	10,378,594
Number after adjustment for monthly income and certification periods	2,192,433	2,307,461	2,210,106	2,203,396	2,136,532	8,857,494	–	–	–	11,049,927
Total number eligible: Number after adjustment for nutritional risk (infants and children)	2,126,660	2,284,386	2,188,005	2,181,362	2,115,167	8,768,919	–	–	–	10,895,579
Starting point for estimates of women is number of fully eligible infants	**–**	**–**	**–**	**–**	**–**	**–**	**2,126,660**	**2,126,660**	**2,126,660**	**6,379,980**
Number after adjustment for length of pregnancy and income of woman during pregnancy	–	–	–	–	–	–	1,435,495	–	–	1,435,495

Step	Infants	Children Aged 1	Children Aged 2	Children Aged 3	Children Aged 4	Total Children Aged 1–4	Pregnant Women	Postpartum Breastfeeding Women	Postpartum Non-Breastfeeding Women	Total
Number after adjustment for multiple births and infant deaths	–	–	–	–	–	–	1,429,897	2,118,366	2,118,366	5,666,629
Number after adjustment for breastfeeding	–	–	–	–	–	–	–	935,335	501,719	1,437,054
Total number eligible: Number after adjustment for nutritional risk (pregnant and postpartum women)	–	–	–	–	–	–	1,387,000	935,335	501,719	2,824,054
Total number eligible in the Nation, excluding U.S. territories served by WIC	2,126,660	2,284,386	2,188,005	2,181,362	2,115,167	8,768,919	1,387,000	935,335	501,719	13,719,633
Total number eligible in all U.S. territories served by WIC[b]	32,381	33,530	34,563	33,758	36,941	138,793	21,119	14,257	7,612	214,162
Total number eligible in the Nation, including U.S. territories served by WIC	**2,159,041**	**2,317,916**	**2,222,568**	**2,215,120**	**2,152,108**	**8,907,712**	**1,408,119**	**949,592**	**509,331**	**13,933,795**

Notes

[a] Adjunctive eligibility was counted by the first program that qualified the person for WIC, in this order: SNAP, TANF, and Medicaid.

[b] See appendix B in volume II of this report for the derivation of WIC eligibility in U.S. territories.

"–" denotes blank cells.

Sources: NBER, n.d.b; IPUMS-USA, n.d.; U.S. Census Bureau, n.d.d; Thorn et al., 2018

Chapter 3. Estimates of WIC Eligibility for CY 2016

This chapter presents estimates of WIC eligibility in CY 2016. Section A presents national-level estimates by participant group and describes the characteristics of infants and children eligible for WIC. Section B examines the changes in the numbers of individuals eligible for WIC overall and by participant category from CY 2015 to CY 2016. Section C presents regional- and State-level estimates, and section D describes long-term trends in eligibility for WIC.

A. National-Level Estimates of Individuals Eligible for WIC

In an average month in CY 2016, 13.9 million individuals were eligible for WIC in all States and the U.S. territories served by WIC (see table 3.1). Of those eligible for WIC, almost two-thirds (64 percent) were children (ages 1–4), 16 percent were infants, and 21 percent were women (see figure 3.1). WIC-eligible children were evenly distributed by year of age; the distribution for each age ranged from 15 to 17 percent. Of individuals eligible for WIC, pregnant and postpartum women each represented about 10 percent of the population, and postpartum breastfeeding women represented a larger proportion than postpartum non-breastfeeding women (7 percent versus 4 percent).

The eligibility rate is the percentage of the total population in each participant category who are estimated to be eligible for WIC. In an average month in CY 2016, more than half of all infants (54 percent) and children aged 1 to 4 (55 percent) were eligible for WIC (see figure 3.2 and table 3.1). Almost 48 percent of all pregnant women and 37 percent of all postpartum women were eligible.

Table 3.1. Estimated Average Monthly Number of Individuals Eligible for WIC by Participant Category: CY 2016

Participant Category	Number Eligible	Percent of Total Eligible	Total Population[a]	Eligibility Rate[b] (Percent)
Infants	2,159,041	15.5	3,966,090	54.4
Total children aged 1–4	8,907,712	63.9	16,193,444	55.0
Children aged 1	2,317,916	16.6	4,068,849	57.0
Children aged 2	2,222,568	16.0	4,080,801	54.5
Children aged 3	2,215,120	15.9	4,034,985	54.9
Children aged 4	2,152,108	15.4	4,008,809	53.7
Total women	2,867,042	20.6	6,913,589	41.5
Pregnant women	1,408,119	10.1	2,962,967	47.5
Total postpartum women	1,458,923	10.5	3,950,623	36.9
Breastfeeding women	949,592	6.8	2,241,095	42.4
Non-breastfeeding women	509,331	3.7	1,709,528	29.8
Total	**13,933,795**	**100.0**	**27,073,124**	**51.5**

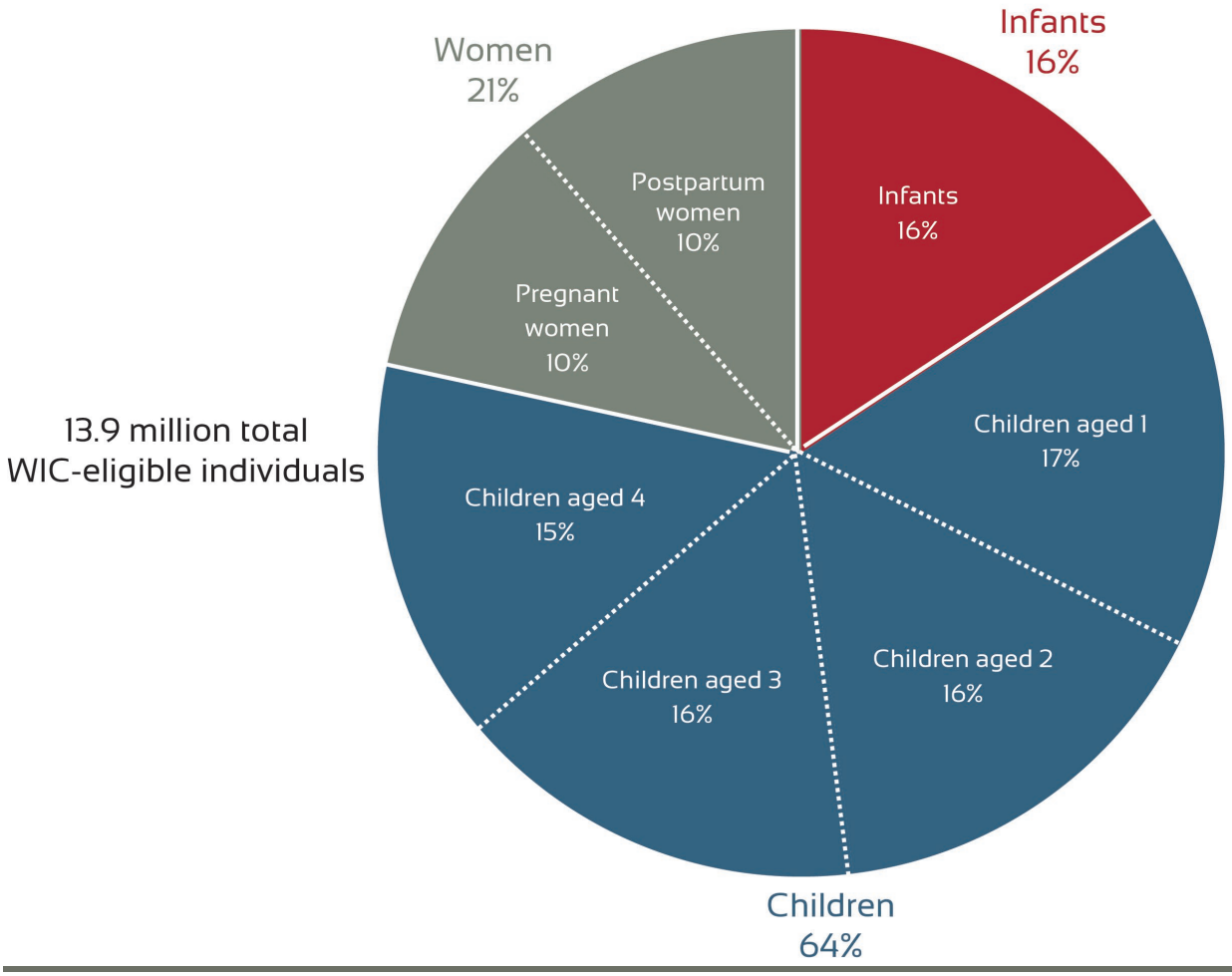
Notes

[a] The total population consists of individuals in the Nation, Puerto Rico, and the other U.S. territories served by WIC in each participant category.

[b] The eligibility rate is the ratio of total individuals eligible for WIC to the total population in each participant category.

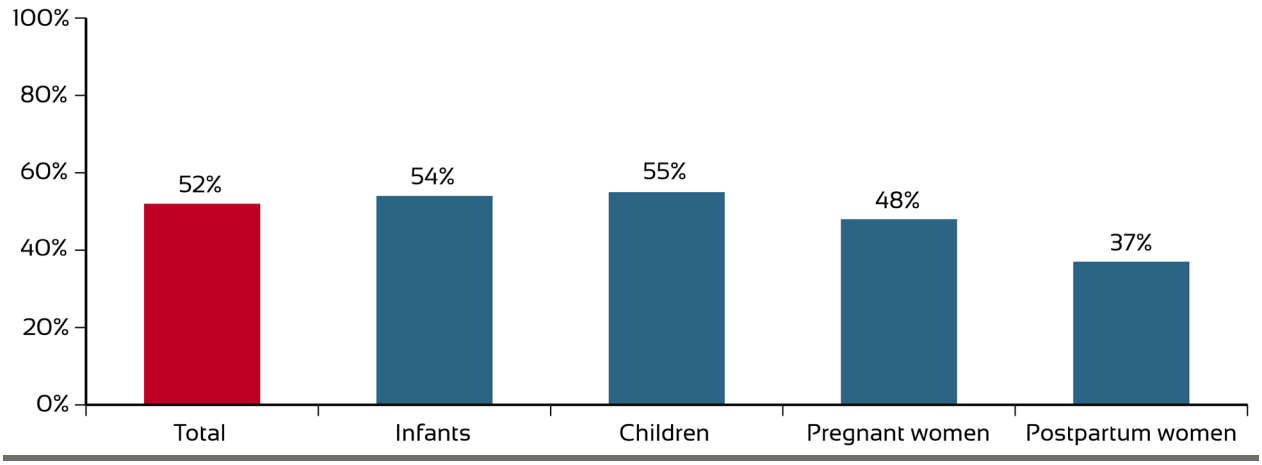
Sources: NBER, n.d.b; IPUMS-USA, n.d.; U.S. Census Bureau, n.d.d

Figure 3.1. Distribution of Individuals Eligible for WIC: CY 2016



Note
Percentages may not add to 100, and subtotals may not add to totals, because of rounding.
Sources: NBER, n.d.b; IPUMS-USA, n.d.; U.S. Census Bureau, n.d.d

Figure 3.2. WIC Eligibility Rate by Participant Category: CY 2016



Sources: NBER, n.d.b; IPUMS-USA, n.d.; U.S. Census Bureau, n.d.d

1. Characteristics of Infants and Children Eligible for WIC

The CPS-ASEC data (NBER, n.d.b) were used to examine the characteristics of the infants and children identified as eligible for WIC in CY 2016 (see table 3.2).[39] About half of infants and children eligible for WIC were male, and half were female; about two-thirds were White (68 percent), 20 percent were Black, and the remaining (12 percent) were another race or multiple races. One-third of eligible infants and children were Hispanic (33 percent), and a majority lived in two-parent households (59 percent; see figure 3.3). About 6 percent of eligible infants and children were living with a household member (aged 17 or older) who ever served in the U.S. military, and 1 percent were living with a household member who was serving in the U.S. military in 2016 (in civilian housing on or off a military base). Most infants and children eligible for WIC lived with families receiving Medicaid (80 percent) and/or SNAP (41 percent). The characteristics of infants eligible for WIC and WIC-eligible children were generally similar, but infants were more likely than children to live in two-parent households (64 percent versus 58 percent) and less likely to live with working parents (70 percent versus 75 percent).

The CPS-ASEC data were also used to examine the characteristics of infants and children who appeared to be solely adjunctively income-eligible (in households with annual income that exceeded 185 percent of the Federal Poverty Guidelines but participating in Medicaid, SNAP, or TANF) compared with those directly income-eligible for WIC (in households with income less than or equal to the Federal Poverty Guidelines whether or not participating in Medicaid, SNAP, or TANF.[40] For example, almost all infants and children who were solely adjunctively income-eligible received Medicaid (95 percent), and more than three-quarters (78 percent) received Medicaid but not SNAP or TANF. In comparison, 74 percent of directly income-eligible infants and children received Medicaid, and only 29 percent received Medicaid but not SNAP or TANF. Those who were solely adjunctively income-eligible were more likely to live in two-parent families (70 percent versus 54 percent) and live with one or more working parents (87 percent versus 68 percent) than those who were directly income-eligible.

[39] Table 3.2 presents characteristics of infants and children eligible for WIC based on the CPS-ASEC data using weights that were adjusted for the undercount/overcount in CPS estimates, monthly income, certification periods, and nutritional risks of these individuals. Because WIC eligibility estimates for women were derived by applying proportional adjustments to the infant eligibility estimates rather than by directly observing individual cases in the survey data, comparable characteristics could not be computed for WIC-eligible women.

[40] Although 31 percent of infants and 26 percent of children eligible for WIC were in households with annual income that exceeded 200 percent of the Federal Poverty Guidelines, among WIC *participants,* this percentage was much lower (1.2 percent of total participants were in households with annual income that exceeded 200 percent of the Federal Poverty Guidelines in 2016; Thorn et al., 2018). There are various reasons that a small percentage of participants had income that exceeded the poverty guidelines. One reason is that State Medicaid income thresholds for infants and children are equal to or greater than 250 percent of the Federal Poverty Guidelines for many States and equal to or greater than 300 percent of those for other States (Heberlein, Brooks, Artiga, & Stephens, 2013). Moreover, the programs that confer adjunctive eligibility use income disregards and do not necessarily count the income of all members of the economic unit as defined by WIC.

Table 3.2. Distribution of the Average Monthly Numbers of Infants, Children, and Infants and Children Eligible for WIC (Percentage) by Demographic and Income Characteristics and Adjunctive Eligibility: CY 2016

Characteristics	WIC-Eligible Infants			WIC-Eligible Children Aged 1–4			Infants and Children Eligible for WIC Aged 0–4		
	Family Income ≤ 185% FPG[a]	Adjunctively Eligible >185% FPG[b]	Total	Family Income ≤ 185% FPG[a]	Adjunctively Eligible >185% FPG[b]	Total	Family Income ≤ 185% FPG[a]	Adjunctively Eligible >185% FPG[b]	Total
Total	**1,387,649**	**739,011**	**2,126,660**	**6,145,962**	**2,622,957**	**8,768,919**	**7,533,611**	**3,361,968**	**10,895,579**
Gender	–	–	–	–	–	–	–	–	–
Male	45.2	51.1	47.2	49.5	48.5	49.2	48.7	49.0	48.8
Female	54.8	48.9	52.8	50.5	51.5	50.8	51.3	51.0	51.2
Race	–	–	–	–	–	–	–	–	–
White	66.9	74.7	69.6	64.6	72.6	67.0	65.0	73.1	67.5
Black	20.1	15.2	18.4	23.7	14.4	20.9	23.0	14.6	20.4
Other	13.0	10.1	12.0	11.8	13.0	12.1	12.0	12.3	12.1
Ethnicity	–	–	–	–	–	–	–	–	–
Hispanic	32.5	30.2	31.7	34.7	31.7	33.8	34.3	31.4	33.4
Non-Hispanic	67.5	69.8	68.3	65.3	68.3	66.2	65.7	68.6	66.6
Living arrangement	–	–	–	–	–	–	–	–	–
Two-parent family	59.0	74.4	64.3	53.1	69.2	57.9	54.2	70.3	59.2
Single-parent family	36.0	23.0	31.5	40.9	26.7	36.6	40.0	25.9	35.6
No-parent family	5.0	2.6	4.2	6.0	4.1	5.5	5.9	3.8	5.2
Related non-parent caretaker	2.7	2.6	2.7	3.7	4.1	3.9	3.5	3.8	3.6
Unrelated non-parent caretaker	2.3	0.0	1.5	2.3	0.0	1.6	2.3	0.0	1.6
Military status of household members	–	–	–	–	–	–	–	–	–
Ever served in U.S. military	5.0	10.0	6.7	4.6	9.7	6.1	4.7	9.7	6.3
Serving in U.S. military in 2016[c]	1.7	1.8	1.7	1.2	0.8	1.1	1.3	1.0	1.2

Characteristics	WIC-Eligible Infants			WIC-Eligible Children Aged 1–4			Infants and Children Eligible for WIC Aged 0–4		
	Family Income ≤ 185% FPG[a]	Adjunctively Eligible >185% FPG[b]	Total	Family Income ≤ 185% FPG[a]	Adjunctively Eligible >185% FPG[b]	Total	Family Income ≤ 185% FPG[a]	Adjunctively Eligible >185% FPG[b]	Total
Number of people in household	–	–	–	–	–	–	–	–	–
2	7.1	2.6	5.5	6.0	2.2	4.8	6.2	2.3	5.0
3	20.2	30.4	23.7	18.5	22.4	19.7	18.8	24.1	20.4
4	28.0	26.3	27.4	26.4	30.8	27.7	26.7	29.8	27.7
5	18.4	17.4	18.1	21.9	21.8	21.9	21.2	20.9	21.1
6 or more	26.3	23.3	25.3	27.2	22.9	25.9	27.1	23.0	25.8
Number with working parent(s)	62.9	84.6	70.4	69.1	87.9	74.7	67.9	87.2	73.9
Annual family income relative to FPG[b]	–	–	–	–	–	–	–	–	–
No income	6.3	0.0	4.1	6.5	0.0	4.6	6.5	0.0	4.5
Up to 50% FPG	15.9	0.0	10.4	16.2	0.0	11.4	16.1	0.0	11.2
More than 50% up to 100% FPG	24.4	0.0	15.9	27.0	0.0	18.9	26.5	0.0	18.3
More than 100% up to 130% FPG	19.7	0.0	12.9	19.4	0.0	13.6	19.4	0.0	13.4
More than 130% up to 150% FPG	13.1	0.0	8.5	11.0	0.0	7.7	11.4	0.0	7.9
More than 150% up to 185% FPG	20.6	0.0	13.4	19.9	0.0	14.0	20.1	0.0	13.9
More than 185% up to 200% FPG	0.0	9.6	3.3	0.0	12.2	3.6	0.0	11.6	3.6
More than 200% FPG[d]	0.0	90.4	31.4	0.0	87.8	26.3	0.0	88.4	27.3

Characteristics	WIC-Eligible Infants			WIC-Eligible Children Aged 1–4			Infants and Children Eligible for WIC Aged 0–4		
	Family Income ≤ 185% FPG[a]	Adjunctively Eligible >185% FPG[b]	Total	Family Income ≤ 185% FPG[a]	Adjunctively Eligible >185% FPG[b]	Total	Family Income ≤ 185% FPG[a]	Adjunctively Eligible >185% FPG[b]	Total
Receipt of other benefits	–	–	–	–	–	–	–	–	–
No benefit receipt	17.1	0.0	11.2	21.5	0.0	15.1	20.7	0.0	14.3
Medicaid, SNAP, and TANF	6.8	1.2	4.8	5.8	1.3	4.4	5.9	1.3	4.5
SNAP and TANF only	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Medicaid and SNAP only	38.2	15.2	30.2	37.9	15.4	31.2	38.0	15.3	31.0
Medicaid and TANF only	0.3	1.0	0.5	0.2	0.9	0.4	0.2	0.9	0.4
SNAP only	6.1	5.4	5.9	5.7	4.7	5.4	5.8	4.8	5.5
TANF only	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Medicaid only	31.6	77.1	47.4	28.8	77.8	43.5	29.3	77.6	44.2

Notes

[a] The WIC economic unit is defined as all persons in the CPS-ASEC household who are related by blood, marriage, or adoption, plus the unmarried partner of any family member as well as that partner's dependents. Infants and children in economic units with annual income less than or equal to 185 percent of the Federal Poverty Guidelines (FPG) for the unit's size are income-eligible for WIC.

[b] Adjunctively income-eligible infants and children were in economic units that reported participating in Medicaid, SNAP, or TANF during the prior year and had annual income exceeding 185 percent of the FPG for the unit's size.

[c] The military status of household members who were currently serving in the U.S. military was included only if they resided in civilian housing on or off a military base.

[d] Although 31 percent of infants and 26 percent of children eligible for WIC were in households with annual income that exceeded 200 percent of the FPG, among WIC *participants,* this percentage was much lower: 1.2 percent of total participants were in households with annual income that exceeded 200 percent of the FPG in 2016 (Thorn et al., 2018). The table shows the mutually exclusive count of infants and children who were directly income-eligible for WIC (family income ≤ 185 percent of FPG) and those who appeared to be *solely* adjunctively income-eligible (family income > 185 percent of FPG and receiving SNAP, TANF, or Medicaid) based on annualized income.

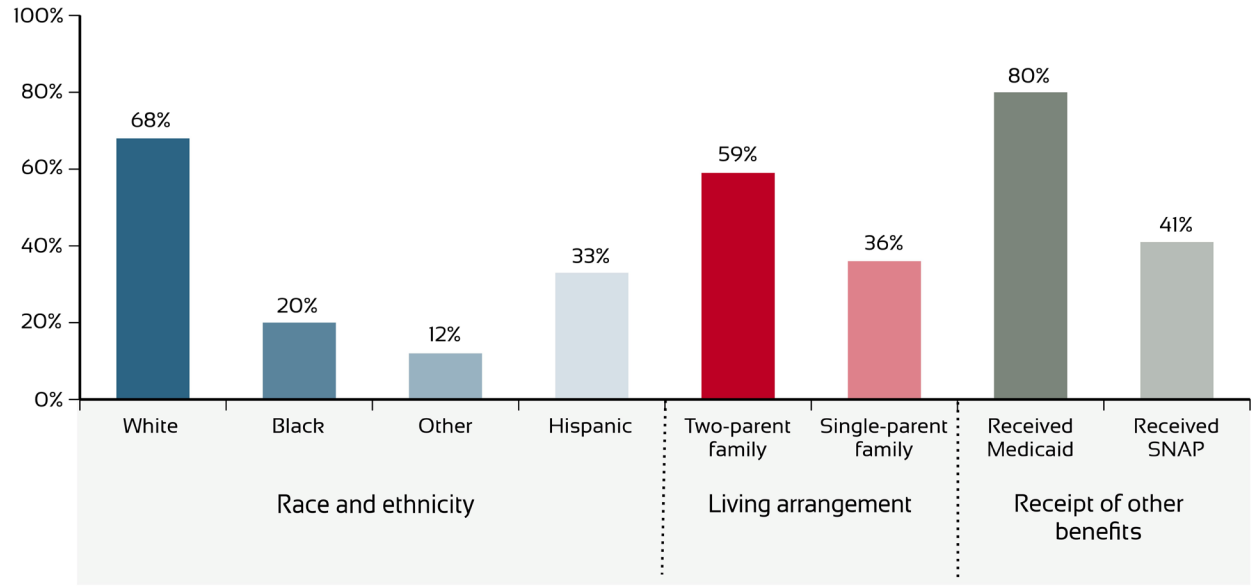
This table does not include estimates for Puerto Rico or the other U.S. territories.

"–" denotes blank cells.

In this table, FPG = Federal Poverty Guidelines

Source: NBER, n.d.b

Figure 3.3. Characteristics of Infants and Children Eligible for WIC



Note
The race and ethnicity categories are not mutually exclusive because the race categories include both Hispanics and non-Hispanics.
Sources: NBER, n.d.b, IPUMS-USA, n.d.

B. Regional- and State-Level Estimates of Individuals Eligible for WIC

The number of individuals eligible for WIC varied across regions and States because of differences in total populations, demographic characteristics, income levels, and State policy choices (see appendix B for a list of States and U.S. territories by region). In CY 2016, the Southeast and Western regions had the largest percentage of eligible individuals (22 and 21 percent, respectively; see table 3.3). In contrast, the Northeast and Mountain Plains regions had the smallest percentage of eligible individuals (9 percent and 7 percent, respectively). The distribution of eligibility for WIC shows similar regional variations by participant category.

WIC CY 2016 eligibility rates, which indicate the percentage of the total population in each participant category that was eligible for WIC, were highest in the Southeast and Southwest regions (58 and 56 percent, respectively) and lowest in the Mountain Plains and Mid-Atlantic regions (45 and 46 percent, respectively) as shown in table 3.4. Eligibility rates by participant category show similar variations by region (see table 3.4).

By State, California had the largest share of individuals eligible for WIC (13 percent), reflecting its large population (see table 3.5). The States with the four largest eligible populations (California, Florida, New York, and Texas) had 35 percent of the total U.S. population eligible for WIC in CY 2016.

Table 3.3. Distribution of Individuals Eligible for WIC (Percentage) by FNS Region and Participant Category: CY 2016

FNS Region	Infants	Children Aged 1–4	Pregnant Women	Postpartum Women	Total
Northeast	8.9	8.8	8.9	9.3	8.9
Mid-Atlantic	10.9	11.2	10.9	10.8	11.0
Southeast	21.7	21.6	21.7	20.8	21.5
Midwest	14.7	14.7	14.7	14.2	14.6
Southwest	16.1	15.7	16.1	15.3	15.8
Mountain Plains	7.7	7.2	7.7	7.9	7.4
Western	20.1	20.8	20.1	21.6	20.7
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Sources: IPUMS-USA, n.d.; NBER, n.d.b; U.S. Census Bureau, n.d.d

Table 3.4. WIC Eligibility Rates (Percentage) by FNS Region and Participant Category: CY 2016

Eligibility Rate	Infants	Children Aged 1–4	Pregnant Women	All Postpartum Women	Total
Northeast	51.0	51.1	44.5	35.9	48.1
Mid-Atlantic	48.6	49.6	42.4	32.9	46.2
Southeast	61.8	61.6	54.0	40.5	57.7
Midwest	51.4	51.4	44.9	34.0	48.2
Southwest	59.7	59.6	52.1	38.9	55.8
Mountain Plains	49.3	47.2	43.0	34.0	45.1
Western	53.3	56.7	46.6	38.5	52.4
Total	**54.4**	**55.0**	**47.5**	**36.9**	**51.5**

Sources: IPUMS-USA, n.d.; NBER, n.d.b; U.S. Census Bureau, n.d.d

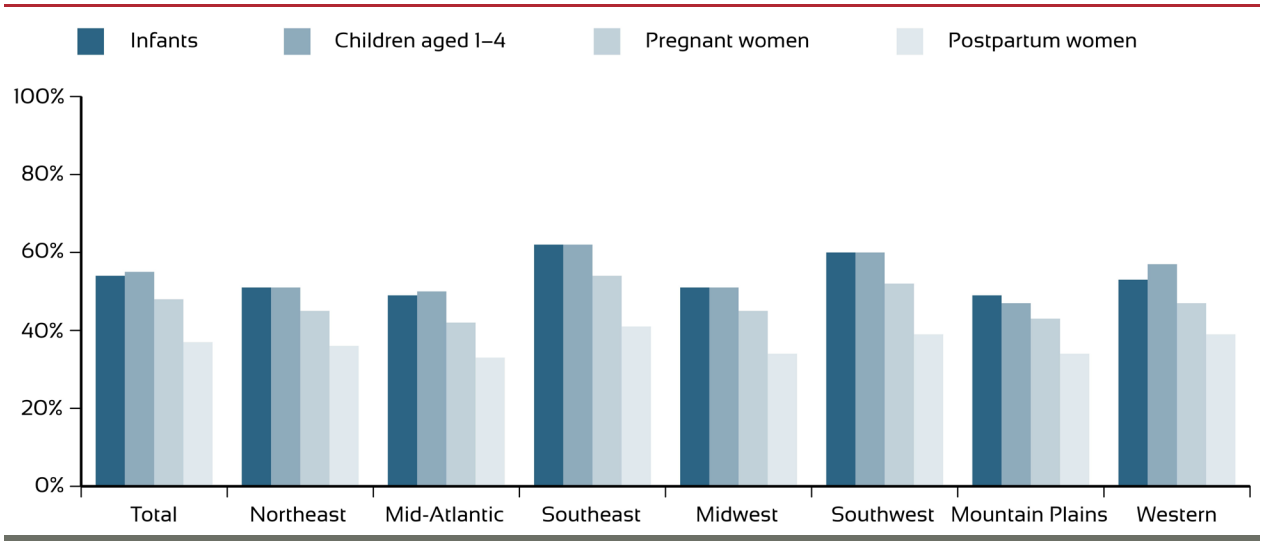
Table 3.5. Distribution of WIC-Eligible Population (Percentage) by State and FNS Region: CY 2016

State[a]	Percent Share of National Estimate of WIC-Eligible Population
Alabama	1.6
Alaska	0.3
Arizona	2.3
Arkansas	1.2
California	12.6
Colorado	1.4
Connecticut	0.7
Delaware	0.2
District of Columbia	0.2
Florida	6.4
Georgia	3.7
Hawaii	0.4
Idaho	0.6
Illinois	3.5
Indiana	2.0
Iowa	0.9
Kansas	0.8
Kentucky	1.5
Louisiana	1.7
Maine	0.3
Maryland	1.5
Massachusetts	1.5
Michigan	3.0
Minnesota	1.4
Mississippi	1.2
Missouri	1.8
Montana	0.3
Nebraska	0.5
Nevada	0.9
New Hampshire	0.2
New Jersey	2.0
New Mexico	0.8
New York	5.8
North Carolina	3.2
North Dakota	0.2
Ohio	3.2
Oklahoma	1.4
Oregon	1.2
Pennsylvania	3.2
Puerto Rico	1.3
Rhode Island	0.2

State[a]	Percent Share of National Estimate of WIC-Eligible Population
South Carolina	1.6
South Dakota	0.3
Tennessee	2.4
Texas	10.6
Utah	1.0
Vermont	0.2
Virginia	1.9
Washington	2.2
West Virginia	0.6
Wisconsin	1.5
Wyoming	0.1
FNS Region[b]	
Northeast	8.9
Mid-Atlantic	11.0
Southeast	21.5
Midwest	14.6
Southwest	15.8
Mountain Plains	7.4
Western	20.7
Total	**100.0**

Notes
[a] State and regional eligibility estimates include individuals in ITOs who were eligible for WIC.
[b] Estimates for U.S. territories other than Puerto Rico are included in regional totals but not shown separately because of constraints related to small sample size.
Sources: IPUMS-USA, n.d.; NBER, n.d.b; U.S. Census Bureau, n.d.d

Figure 3.4. WIC Eligibility Rates by FNS Region and Participant Category: CY 2016



Sources: IPUMS-USA, n.d.; NBER, n.d.b; U.S. Census Bureau, n.d.d

C. Changes in the Numbers of Individuals Eligible for WIC: CY 2015–CY 2016

The estimated total number of individuals eligible for WIC decreased between CY 2015 and CY 2016, from 15.0 million to 13.9 million, a decrease of 7 percent (see table 3.6).[41] The estimated number of eligible infants decreased by almost 14 percent,[42] but the number of eligible children fell by only 4 percent. The relatively large drop in the number of low-income infants was likely a single-year anomaly that was a result of the small sample sizes in the underlying CPS-ASEC data. Senior staff at the Census Bureau indicated that the CPS-ASEC sample size was too small to make reliable inferences about populations by year of age. The study team will examine the change in the number of low-income infants in 2017 (based on the 2018 CPS-ASEC data) and will conduct further analyses if the decrease appears to be more than a 1-year anomaly.

Further evidence that the large decrease in the number of low-income infants in the CPS-ASEC data was likely an anomaly is that a similarly large decrease was not seen for this population in the ACS data, which has a much larger sample size than CPS-ASEC data. The number of infants in families with incomes less than or equal to 185 percent of the poverty threshold in the ACS fell by only 6 percent from 2015 to 2016, compared with a drop of 23 percent according to the CPS-ASEC data.

Because the estimated number of eligible infants was used as the starting point for estimating the number of eligible pregnant and postpartum women, the decrease in the number of eligible infants resulted in a decrease in the number of eligible women. The number of eligible pregnant women decreased 14 percent (equal to the percentage decrease in eligible infants), and the number of eligible postpartum women decreased by 12 percent.[43] The number of eligible breastfeeding women decreased by 8 percent, but the number of eligible non-breastfeeding women decreased by 18 percent.

The percentage changes in the WIC-eligible population shown in table 3.6 can also be viewed as the combined change in the total population for each participant category and the eligibility rate for each category. For infants, the 14-percent decrease in the total number eligible can be attributed almost entirely to a decline in the eligibility rate among infants (the total population of infants decreased by only slightly less than 1 percent, but the eligibility rate among those infants decreased by 13 percent). The decrease in the eligibility rate appears to have been driven largely by a decrease in income eligibility. The number of income-eligible infants decreased by 22 percent and the number of adjunctively-eligible infants rose by 9 percent between CY 2015 and CY 2016 (see appendix table A.8 in volume II of this report).

[41] The unrounded decrease was 7.49 percent, which was rounded to 7 percent.
[42] The net decrease in the number of infants eligible for WIC was the result of a decrease in the number of income-eligible infants concurrent with an increase in the number of adjunctively income-eligible infants.
[43] The decrease in the number of eligible postpartum women was affected by both the number of eligible infants and the increase in breastfeeding rates between 2015 and 2016.

Table 3.6. Changes in the Total Population, Total WIC Eligibility, and WIC Eligibility Rates by Participant Category: CY 2015–CY 2016

Participant Category	Total Population		Percent Change	Total WIC Eligible		Percent Change	WIC Eligibility Rate		Percent Change
	2015	2016		2015	2016		2015	2016	
Infants	3,998,800	3,966,090	-0.8	2,506,686	2,159,041	-13.9*	62.7	54.4	-13.2*
Total children aged 1–4	16,142,707	16,193,444	0.3	9,268,848	8,907,712	-3.9*	57.4	55.0	-4.2*
Children aged 1	4,044,481	4,068,849	0.6	2,274,986	2,317,916	1.9	56.2	57.0	1.3
Children aged 2	4,034,206	4,080,801	1.2	2,321,950	2,222,568	-4.3	57.6	54.5	-5.4*
Children aged 3	4,031,844	4,034,985	0.1	2,340,558	2,215,120	-5.4*	58.1	54.9	-5.4*
Children aged 4	4,032,176	4,008,809	-0.6	2,331,355	2,152,108	-7.7*	57.8	53.7	-7.2*
Pregnant women	2,987,403	2,962,967	-0.8	1,634,852	1,408,119	-13.9*	54.7	47.5	-13.2*
All postpartum women	3,983,205	3,950,623	-0.8	1,652,116	1,458,923	-11.7*	41.5	36.9	-11.0*
Breastfeeding women	2,147,025	2,241,095	4.4*	1,034,333	949,592	-8.2*	48.2	42.4	-12.0*
Non-breastfeeding women	1,836,179	1,709,528	-6.9*	617,783	509,331	-17.6*	33.6	29.8	-11.4*
Total	**27,112,115**	**27,073,124**	**-0.1**	**15,062,503**	**13,933,795**	**-7.5***	**55.6**	**51.5**	**-7.4***

Note

* Indicates a statistically significant difference between the 2015 and 2016 estimates of individuals eligible for WIC or WIC eligibility rate at the 95 percent confidence level. The statistical significance testing was conducted on the 2015–2016 change in WIC eligibility based on the CPS-ASEC data, which included data only for States. It did not include data for Puerto Rico or the other U.S. territories served by WIC.

Sources: NBER, n.d.b; IPUMS-USA, n.d.; U.S. Census Bureau, n.d.d

D. Long-Term Trends in WIC Eligibility Estimates: CY 2005–CY 2016

The total number of individuals eligible for WIC fluctuated from 2005 to 2016: it fell from 14.2 million in 2005 to 13.8 million in 2007, increased to 14.8 million in 2010 (during the Great Recession), declined following the recession to 14.0 million, increased to 15.1 million in 2015, and then decreased to 13.9 million in 2016. During this 11-year period, the total number of individuals eligible for WIC decreased slightly, from 14.2 million to 13.9 million (about 2 percent; see table 3.7)

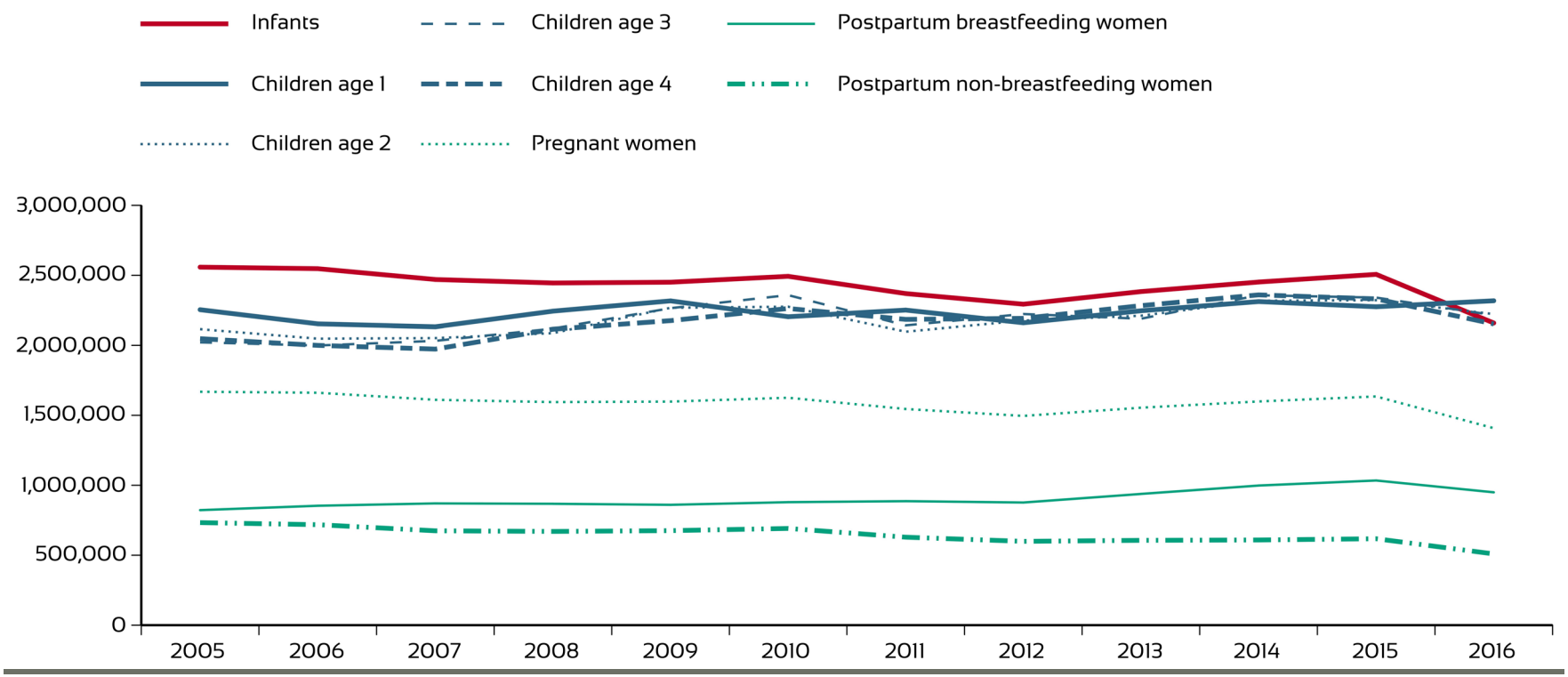
As table 3.7 shows, the relative share of the eligible population by participant category remained the same over time: total children consistently made up the largest proportion, followed by infants, pregnant women, postpartum breastfeeding women, and postpartum non-breastfeeding women. As figure 3.5 shows, the number of eligible children by year of age remained stable over time.

Table 3.7. Estimated Average Monthly WIC Eligibility by Year and Participant Category: CY 2005–CY 2016

Year	Infants	Total Children Aged 1–4	Pregnant Women	Postpartum Breastfeeding Women	Postpartum Non-Breastfeeding Women	Total
2005	2,558,198	8,438,791	1,668,448	822,301	732,981	14,220,719
2006	2,547,352	8,199,817	1,661,374	853,615	718,203	13,980,361
2007	2,469,895	8,189,923	1,610,857	870,455	674,522	13,815,652
2008	2,444,907	8,565,160	1,594,559	867,826	670,086	14,142,538
2009	2,450,486	9,025,535	1,598,198	860,220	675,687	14,610,126
2010	2,492,692	9,100,231	1,625,725	879,159	691,372	14,789,179
2011	2,369,335	8,675,795	1,545,272	886,444	628,865	14,105,711
2012	2,293,360	8,752,082	1,495,721	876,592	599,108	14,016,863
2013	2,383,446	8,929,390	1,554,475	938,157	606,333	14,411,801
2014	2,451,750	9,347,672	1,599,023	998,025	608,838	15,005,308
2015	2,506,686	9,268,848	1,634,852	1,034,333	617,783	15,062,503
2016	2,159,041	8,907,712	1,408,119	949,592	509,331	13,933,795

Sources: IPUMS-USA, n.d.; NBER, n.d.b; U.S. Census Bureau, n.d.d

Figure 3.5. Trends in WIC Eligibility by Participant Category: CY 2005–CY 2016



Sources: IPUMS-USA, n.d.; NBER, n.d.b; U.S. Census Bureau, n.d.d

Chapter 4. WIC Coverage Rates for CY 2016

This chapter presents CY 2016 estimates of the number of WIC participants as a percentage of the number of women, infants, and children eligible for WIC (known as coverage rates). The coverage rates were calculated as the average monthly numbers of WIC participants divided by the average monthly numbers of individuals eligible for WIC during the 12 months of CY 2016. WIC coverage rates are useful for understanding how well WIC reaches those who are eligible for the benefits provided by the program.

Section A presents 2016 national WIC coverage rates by participant category and by race and ethnicity. Section B examines changes in coverage rates from CY 2015 to CY 2016. Section C presents regional- and State-level coverage rates, and section D discusses long-term trends.

A. National-Level WIC Coverage Rates

Of the 13.9 million individuals eligible for WIC in an average month in CY 2016, 7.6 million participated, resulting in a 55-percent national coverage rate (see table 4.1). Coverage rates were highest for postpartum non-breastfeeding women (100 percent) and lowest for children aged 1 to 4 (44 percent; see figure 4.1). Moreover, coverage rates for children decreased with age; rates were highest for 1-year-olds (59 percent) and lowest for 4-year-olds (27 percent; see figure 4.2). Coverage rates were higher for postpartum women (76 percent) than pregnant women (50 percent).[44]

Overall coverage rates were highest for Hispanics (67 percent) and lowest for White-Only Non-Hispanics (43 percent; see table 4.2). The coverage rate for Black-Only Non-Hispanics was 59 percent. This pattern of coverage rates by race and ethnicity was similar for most participant categories, but for infants and postpartum women, coverage rates were higher for Black-Only Non-Hispanics than Hispanics (see figure 4.3).

Table 4.1. WIC National-Level Coverage Rates by Participant Category: CY 2016

Participant Category	Number Eligible	Number Participating	Coverage Rate (Percent)
Infants	2,159,041	1,853,735	85.9
Total children aged 1–4	8,907,712	3,926,307	44.1
Children aged 1[a]	2,317,916	1,371,604	59.2
Children aged 2[a]	2,222,568	1,052,609	47.4
Children aged 3[a]	2,215,120	931,748	42.1
Children aged 4[a]	2,152,108	570,345	26.5
Pregnant women	1,408,119	707,748	50.3

[44] As noted in the methodology section, pregnant women's eligibility for WIC in this analysis is defined as beginning at conception, which is consistent with Federal WIC eligibility guidelines. However, not all women realized they were pregnant during the first several weeks of pregnancy and, therefore, were not enrolled in WIC at conception. This would contribute to a lower coverage rate among pregnant women relative to infants or postpartum women.

Participant Category	Number Eligible	Number Participating	Coverage Rate (Percent)
Postpartum women	1,458,923	1,106,191	75.8
Breastfeeding women	949,592	590,430	62.2
Non-breastfeeding women	509,331	515,761	100.0
Total	**13,933,795**	**7,593,981**	**54.5**

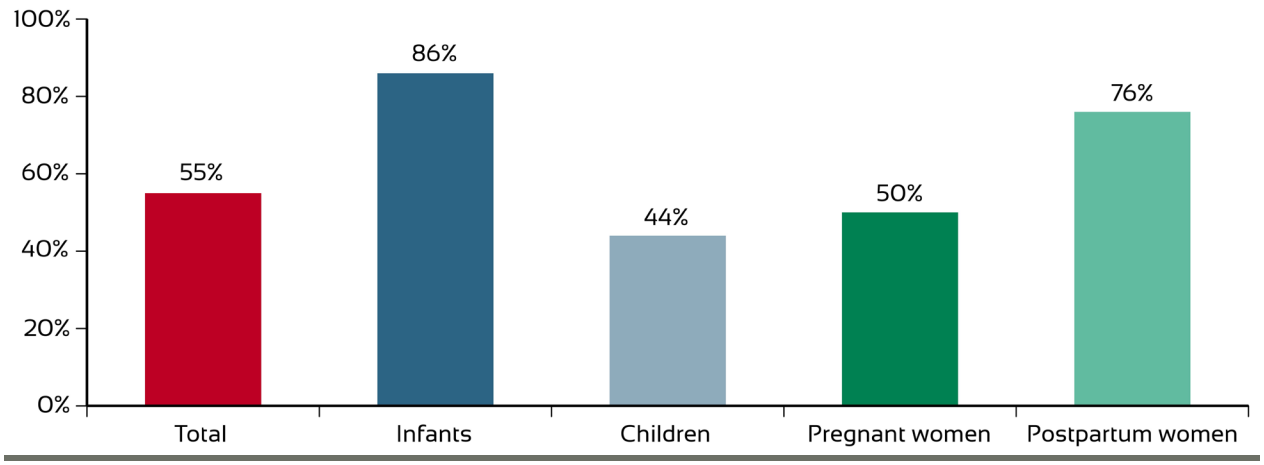
Notes

[a] WIC administrative data on participating children by year of age were not available. The numbers of participating children by year of age in this table are based on the distribution among children enrolled in WIC according to WIC PC2016 data.

The estimated coverage rate exceeds 100 percent for postpartum non-breastfeeding women. This is likely a result of sampling variability in the CPS-ASEC survey data used to estimate the number of WIC-eligible non-breastfeeding women (denominator of the rate). The lower-bound range of the 95-percent confidence interval surrounding this rate is below 100 percent. See chapter 6 for more information on measures of statistical uncertainty for the eligibility estimates.

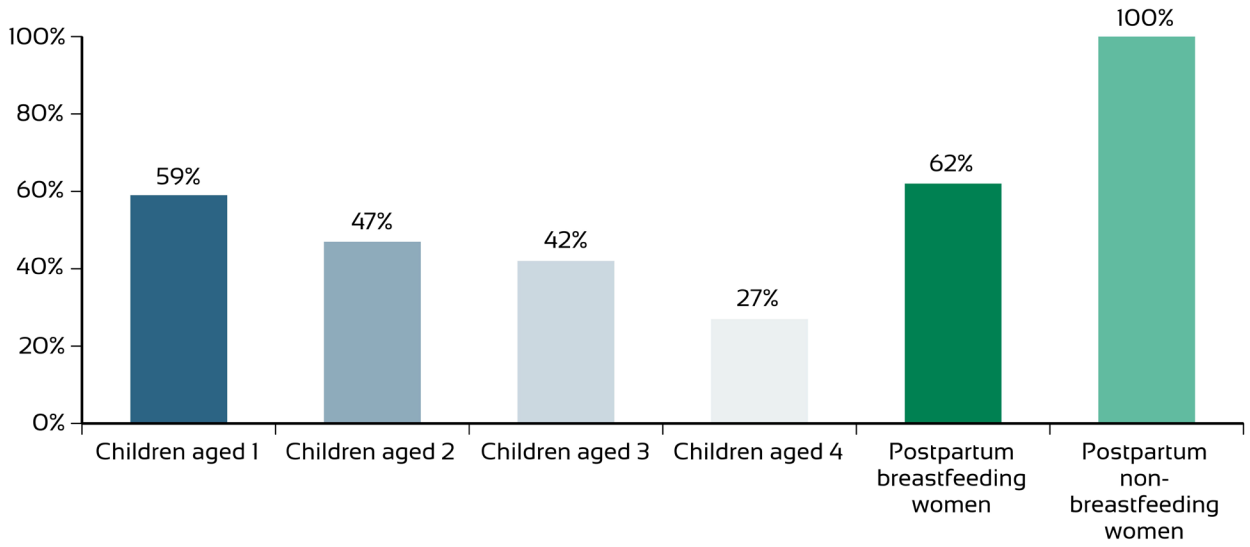
Sources: IPUMS-USA, n.d.; NBER, n.d.b; Thorn et al., 2018; U.S. Census Bureau, n.d.d; unpublished internal WIC administrative data

Figure 4.1. WIC Coverage Rate by Participant Category: CY 2016



Sources: IPUMS-USA, n.d.; NBER, n.d.b; Thorn et al., 2018; U.S. Census Bureau, n.d.d; unpublished internal WIC administrative data

Figure 4.2. WIC Coverage Rates for Children by Year of Age and Postpartum Women by Breastfeeding Status: CY 2016



Notes

The estimated coverage rate exceeds 100 percent for postpartum non-breastfeeding women. This is likely a result of sampling variability in the CPS-ASEC survey data used to estimate the number of WIC-eligible non-breastfeeding women (denominator of the rate). The lower-bound range of the 95-percent confidence interval surrounding this rate is below 100 percent. See chapter 6 for more information on measures of statistical uncertainty for the eligibility estimates.

Sources: IPUMS-USA, n.d.; NBER, n.d.b; Thorn et al., 2018; U.S. Census Bureau, n.d.d; unpublished internal WIC administrative data

Table 4.2. WIC Eligibility, Participants, and Coverage Rates by Participant Category and by Race and Ethnicity: CY 2016

Participant Category	White-Only Non-Hispanic	Black-Only Non-Hispanic	Other Non-Hispanic	Hispanic	All Races
Number Eligible					
Infants	878,522	363,486	210,351	701,031	2,153,390
Children aged 1–4	3,302,134	1,684,186	817,874	3,082,399	8,886,593
Pregnant women	572,969	237,064	137,191	457,210	1,404,434
Postpartum women	595,940	232,448	141,853	484,866	1,455,106
Total	**5,349,564**	**2,517,185**	**1,307,269**	**4,725,506**	**13,899,523**
Number Participating					
Infants	574,657	398,615	166,806	709,360	1,849,438
Children aged 1–4	1,097,137	723,936	357,032	1,736,356	3,914,462
Pregnant women	245,790	137,394	50,040	273,039	706,264
Postpartum women	361,110	227,197	81,101	434,001	1,103,410
Total	**2,278,695**	**1,487,143**	**654,979**	**3,152,757**	**7,573,574**
Coverage Rate (Percent)					
Infants	65.4	100.0	79.3	100.0	85.9
Children aged 1–4	33.2	43.0	43.7	56.3	44.1
Pregnant women	42.9	58.0	36.5	59.7	50.3
Postpartum women	60.6	97.7	57.2	89.5	75.8
Total	**42.6**	**59.1**	**50.1**	**66.7**	**54.5**

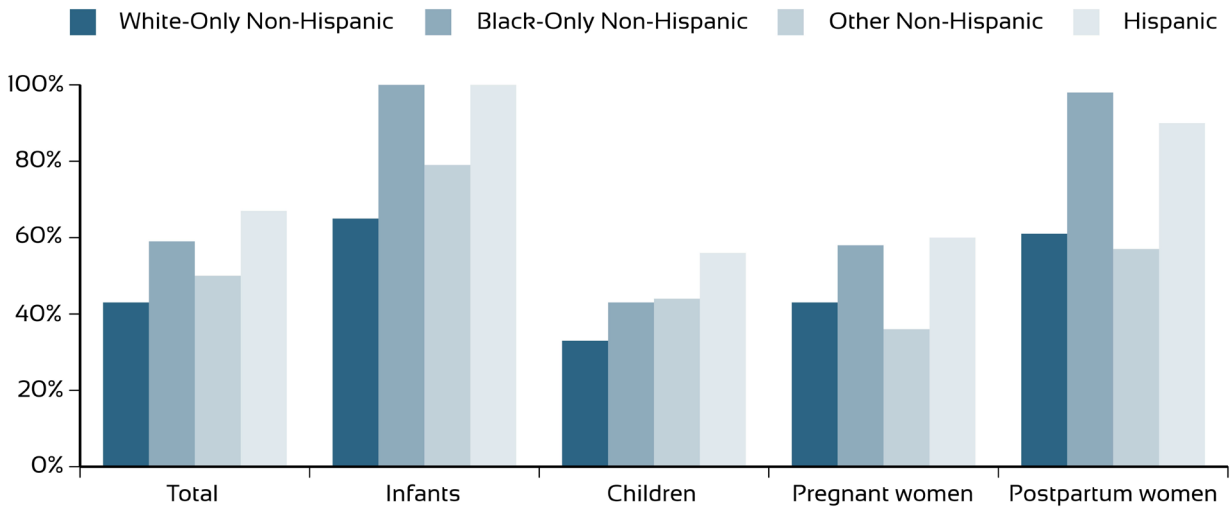
Notes

Estimates for U.S. territories other than Puerto Rico are not included in totals because the IDB data did not include information on race and ethnicity. Estimates for Puerto Rico are included in totals.

Estimated coverage rates exceed 100 percent for Black-Only Non-Hispanic and Hispanic infants. This is likely a result of sampling variability in the CPS-ASEC survey data used to estimate the number of infants eligible for WIC (denominator of the rate). The lower-bound range of the 95-percent confidence intervals surrounding these rates is below 100 percent. See chapter 6 for more information on measures of statistical uncertainty for the eligibility estimates.

Sources: IPUMS-USA, n.d.; NBER, n.d.b; Thorn et al., 2018; unpublished internal WIC administrative data

Figure 4.3. WIC Coverage Rates by Race and Ethnicity and by Participant Category: CY 2016



Sources: NBER, n.d.b; IPUMS-USA, n.d.; U.S. Census Bureau, n.d.d; unpublished internal WIC administrative data

B. Regional- and State-Level WIC Coverage Rates

WIC coverage rates varied somewhat by region and more substantially by State (see appendix B for a list of States and U.S. territories by region). When comparing total coverage rates across regions, the Western region had the highest rate (61 percent), and the Mountain Plains region had the lowest rate (47 percent) in comparison with the 55-percent national rate (see table 4.3).

In general, when comparing coverage rates by participant category, regional rates were similar to national rates, with some exceptions. For example, coverage rates for infants were highest across most regions; however, in the Southwest, coverage rates for postpartum women were highest. Rates for children were lowest across all regions, which also mirrored national rates.

Regional and national coverage rates were similar with respect to race and ethnicity (see table 4.4). For example, rates were highest for Hispanics across all regions except for the Midwest, where rates were higher for Black-Only Non-Hispanics.

A comparison of coverage rates by State in CY 2016 found substantial variation. Rates ranged from a high of 68 percent in Maryland to a low of 39 percent in Utah compared with the national average coverage rate of 55 percent (see table 4.5 and figure 4.4). Eleven States and one U.S. territory had coverage rates greater than 55 percent (Alabama, California, Maryland, Massachusetts, Michigan, Minnesota, Nevada, New York, Oregon, Puerto Rico, Rhode Island, and Texas), and seven States had coverage rates less than 45 percent (Alaska, Colorado, Idaho, Montana, New Mexico, Tennessee, and Utah).

State coverage rates by participant categories were generally consistent with State coverage rates overall but differed in some cases. For example, in States such as California, Maryland, and Rhode Island, coverage rates were consistently higher than national rates across all categories (see table 4.6 and figures 4.5 through 4.8). Similarly, in States such as Alaska, Colorado, Idaho, Montana, Tennessee, and Utah, coverage rates were consistently lower than national rates across all categories. However, some States had higher or lower coverage rates compared with average coverage rates for some categories. For example, compared with the national average, coverage rates in Pennsylvania were higher for infants and pregnant women (by 2 to 7 percentage points) but lower for children and postpartum women (by 4 to 10 percentage points) than the national average for these categories. In Michigan, compared with the national average, coverage rates were higher for infants, children, and pregnant women (by 2 to 4 percentage points) but lower for postpartum women (by 11 percentage points).

State rates by race and ethnicity were also generally consistent with average State rates for these subgroups.[45] For example, similar to national coverage rates, State-level coverage rates were higher for Hispanics than for White-Only Non-Hispanics in every State except for South Dakota, Vermont, and West Virginia (see table 4.7 and figures 4.9 through 4.11).

Some of the variations in State coverage rates by participant category and race and ethnicity may be because of sampling variability or limitations in data resulting from small sample sizes; caution should be used when examining State-level estimates. For example, table 4.6 shows that for some States with small populations, such as North Dakota and Vermont, coverage rates were higher for 1-year-olds than infants. It is unlikely that any State truly had higher coverage rates for 1-year-olds than infants. This demonstrates the limits of small sample sizes for States, especially those with small populations. See chapter 6 for more information on measures of statistical uncertainty for the estimates.

[45] Because of small sample sizes, estimates for Black-Only Non-Hispanic and Other Non-Hispanic subgroups were combined.

Table 4.3. WIC Eligibility, Participants, and Coverage Rates by FNS Region and Participant Category: CY 2016

FNS Region	Infants	Children Aged 1–4	Pregnant Women	All Postpartum Women	Total
Number Eligible					
Northeast	193,078	785,648	125,925	136,194	1,240,844
Mid-Atlantic	234,319	993,438	152,822	158,016	1,538,596
Southeast	469,018	1,923,067	305,892	303,590	3,001,566
Midwest	316,849	1,306,013	206,648	207,707	2,037,216
Southwest	346,977	1,402,260	226,297	223,406	2,198,940
Mountain Plains	165,844	644,758	108,163	114,867	1,033,631
Western	432,957	1,852,529	282,373	315,142	2,883,001
Total	**2,159,041**	**8,907,712**	**1,408,119**	**1,458,923**	**13,933,795**
Number Participating					
Northeast	157,503	368,421	61,040	96,725	683,690
Mid-Atlantic	211,689	470,990	83,364	116,403	882,447
Southeast	390,961	763,961	149,600	231,146	1,535,667
Midwest	282,019	522,341	99,854	141,169	1,045,383
Southwest	312,523	585,269	117,807	202,043	1,217,641
Mountain Plains	122,204	246,375	44,907	72,086	485,571
Western	376,836	968,950	151,176	246,620	1,743,582
Total	**1,853,735**	**3,926,307**	**707,748**	**1,106,191**	**7,593,981**
Coverage Rate (Percent)					
Northeast	81.6	46.9	48.5	71.0	55.1
Mid-Atlantic	90.3	47.4	54.5	73.7	57.4
Southeast	83.4	39.7	48.9	76.1	51.2
Midwest	89.0	40.0	48.3	68.0	51.3
Southwest	90.1	41.7	52.1	90.4	55.4
Mountain Plains	73.7	38.2	41.5	62.8	47.0
Western	87.0	52.3	53.5	78.3	60.5
Total	**85.9**	**44.1**	**50.3**	**75.8**	**54.5**

Sources: IPUMS-USA, n.d.; NBER, n.d.b; U.S. Census Bureau, n.d.d; unpublished internal WIC administrative data

Table 4.4. WIC Eligibility, Participants, and Coverage Rates by FNS Region and by Race and Ethnicity Category: CY 2016

FNS Region	White-Only Non-Hispanic	Black-Only Non-Hispanic	Other Non-Hispanic	Hispanic	All Races
Number Eligible					
Northeast	499,285	212,004	137,140	392,415	1,240,844
Mid-Atlantic	578,083	330,926	116,394	505,819	1,531,221
Southeast	1,254,727	917,164	216,287	613,389	3,001,566
Midwest	1,062,998	425,814	194,742	353,662	2,037,216
Southwest	601,960	364,801	169,019	1,063,160	2,198,940
Mountain Plains	604,632	95,372	107,036	226,591	1,033,631
Western	747,880	171,103	366,651	1,570,470	2,856,104
Total	**5,349,564**	**2,517,185**	**1,307,269**	**4,725,506**	**13,899,523**
Number Participating					
Northeast	214,060	135,693	78,777	255,160	683,690
Mid-Atlantic	247,831	207,577	51,110	371,842	878,360
Southeast	547,633	521,410	81,326	385,298	1,535,667
Midwest	478,347	254,097	105,320	207,619	1,045,383
Southwest	244,752	208,939	72,896	691,055	1,217,641
Mountain Plains	243,687	55,315	53,484	133,085	485,571
Western	302,385	104,111	212,066	1,108,699	1,727,261
Total	**2,278,695**	**1,487,143**	**654,979**	**3,152,757**	**7,573,574**
Coverage Rate (Percent)					
Northeast	42.9	64.0	57.4	65.0	55.1
Mid-Atlantic	42.9	62.7	43.9	73.5	57.4
Southeast	43.6	56.9	37.6	62.8	51.2
Midwest	45.0	59.7	54.1	58.7	51.3
Southwest	40.7	57.3	43.1	65.0	55.4
Mountain Plains	40.3	58.0	50.0	58.7	47.0
Western	40.4	60.8	57.8	70.6	60.5
Total	**42.6**	**59.1**	**50.1**	**66.7**	**54.5**

Notes

Estimates for U.S. territories other than Puerto Rico are not included in regional totals because the IDB data did not include information on race and ethnicity. Estimates for Puerto Rico are included in regional totals.

Sources: IPUMS-USA, n.d.; NBER, n.d.b; Thorn et al., 2018; unpublished internal WIC administrative data

Table 4.5. WIC Eligibility, Participants, and Coverage Rates by State and FNS Region: CY 2016

State[a]	Number Eligible	Number Participating	Coverage Rate (Percent)
Alabama	226,565	128,074	56.5
Alaska	43,626	18,961	43.5
Arizona	319,905	160,911	50.3
Arkansas	161,219	79,436	49.3
California	1,756,442	1,151,406	65.6
Colorado	197,505	85,912	43.5
Connecticut	98,891	48,688	49.2
Delaware	33,905	17,722	52.3
District of Columbia	26,439	14,285	54.0
Florida	886,846	477,553	53.8
Georgia	519,109	250,204	48.2
Hawaii	55,569	29,662	53.4
Idaho	88,551	38,451	43.4
Illinois	492,054	221,821	45.1
Indiana	285,090	146,401	51.4
Iowa	131,077	61,293	46.8
Kansas	111,192	57,836	52.0
Kentucky	207,541	110,610	53.3
Louisiana	241,154	125,356	52.0
Maine	38,733	20,485	52.9
Maryland	202,145	138,117	68.3
Massachusetts	207,255	114,368	55.2
Michigan	414,846	231,991	55.9
Minnesota	190,548	114,907	60.3
Mississippi	162,315	83,973	51.7
Missouri	246,818	125,399	50.8
Montana	47,704	18,216	38.2
Nebraska	72,331	38,210	52.8
Nevada	126,079	69,550	55.2
New Hampshire	29,508	13,841	46.9
New Jersey	285,123	153,406	53.8
New Mexico	114,603	51,355	44.8
New York	811,495	453,753	55.9
North Carolina	441,863	237,905	53.8
North Dakota	25,859	12,966	50.1
Ohio	450,501	231,315	51.3
Oklahoma	200,425	110,155	55.0
Oregon	162,750	91,694	56.3
Pennsylvania	452,683	233,531	51.6
Puerto Rico	179,890	151,371	84.1

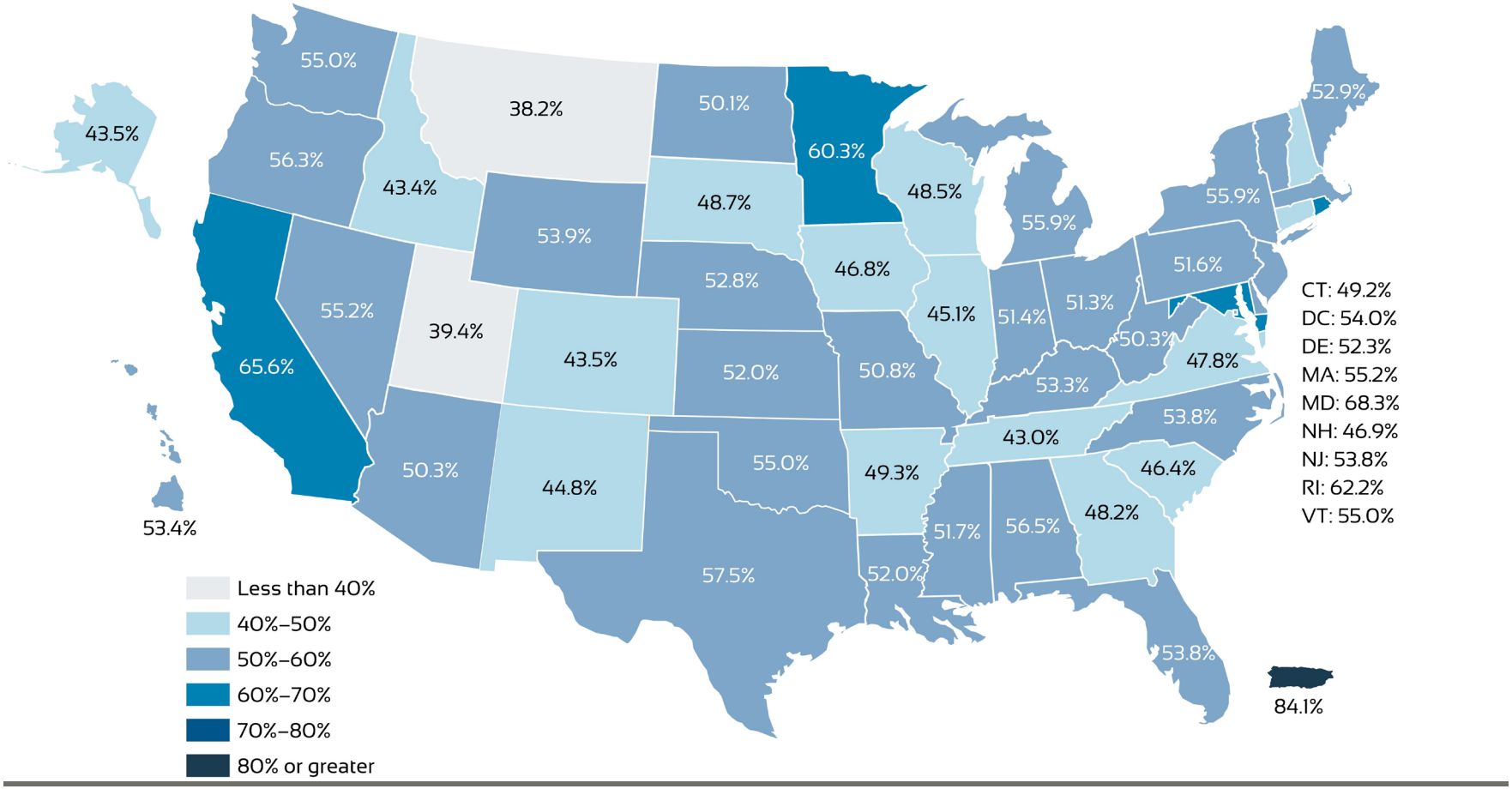
State[a]	Number Eligible	Number Participating	Coverage Rate (Percent)
Rhode Island	32,490	20,202	62.2
South Carolina	226,362	105,084	46.4
South Dakota	38,918	18,962	48.7
Tennessee	330,965	142,264	43.0
Texas	1,481,540	851,340	57.5
Utah	142,377	56,073	39.4
Vermont	22,472	12,353	55.0
Virginia	271,453	129,875	47.8
Washington	303,182	166,628	55.0
West Virginia	79,584	40,054	50.3
Wisconsin	204,177	98,949	48.5
Wyoming	19,850	10,705	53.9
FNS Region			
Northeast	1,240,844	683,690	55.1
Mid-Atlantic	1,538,596	882,447	57.4
Southeast	3,001,566	1,535,667	51.2
Midwest	2,037,216	1,045,383	51.3
Southwest	2,198,940	1,217,641	55.4
Mountain Plains	1,033,631	485,571	47.0
Western	2,883,001	1,743,582	60.5
Total	**13,933,795**	**7,593,981**	**54.5**

Notes

[a] State and regional eligibility estimates and participant data include individuals in ITOs who were eligible for WIC. Estimates for U.S. territories other than Puerto Rico are included in regional totals but not shown separately because of constraints related to small sample size. Estimates for Puerto Rico are shown separately.

Sources: IPUMS-USA, n.d.; NBER, n.d.b; U.S. Census Bureau, n.d.d; unpublished internal WIC administrative data

Figure 4.4. WIC Coverage Rate for Total Eligible Individuals by State: CY 2016
National Coverage Rate: 54.5 Percent



Sources: IPUMS-USA, n.d.; NBER, n.d.b.; U.S. Census Bureau, n.d.d; unpublished internal WIC administrative data

Table 4.6. WIC Coverage Rates (Percentage) by State and Participant Category: CY 2016

State[a,b]	Infants	Children Aged 1	Children Aged 2	Children Aged 3	Children Aged 4	All Children Aged 1–4	Pregnant Women	Postpartum Women	Total
Alabama	93.2	57.8	47.7	37.8	28.5	43.1	63.6	75.8	56.5
Alaska	56.8	56.7	38.5	36.1	27.7	40.0	37.8	45.9	43.5
Arizona	85.9	54.8	42.4	37.5	21.9	39.6	41.6	75.2	50.3
Arkansas	87.8	53.8	33.3	31.2	20.1	35.0	53.6	73.6	49.3
California	92.6	68.3	59.9	55.8	44.7	57.2	59.2	83.8	65.6
Colorado	69.2	54.4	37.5	29.9	18.9	34.6	40.2	62.0	43.5
Connecticut	89.9	58.4	35.2	36.1	23.4	38.1	58.4	57.3	49.2
Delaware	94.0	55.5	41.2	44.9	16.5	39.7	53.9	66.8	52.3
District of Columbia	100.0	56.4	43.9	26.0	13.6	34.7	51.9	100.0	54.0
Florida	84.7	60.5	48.7	37.6	23.2	42.9	50.6	77.6	53.8
Georgia	68.7	51.7	44.5	38.3	22.7	39.6	33.5	85.1	48.2
Hawaii	81.2	52.8	46.4	40.1	37.5	44.3	46.1	71.7	53.4
Idaho	63.4	54.8	42.2	33.4	17.1	37.3	37.1	53.7	43.4
Illinois	84.7	42.3	35.4	31.8	21.6	33.0	45.7	64.1	45.1
Indiana	85.6	57.8	51.9	35.6	16.0	40.5	44.5	75.7	51.4
Iowa	64.9	62.9	45.2	34.3	21.6	41.2	34.2	59.5	46.8
Kansas	89.9	60.2	55.1	37.7	16.6	40.7	53.0	71.9	52.0
Kentucky	89.4	56.2	44.2	37.4	28.8	41.8	54.7	68.4	53.3
Louisiana	97.5	51.0	37.3	31.6	21.6	35.9	55.3	83.3	52.0
Maine	92.6	54.4	51.2	36.4	28.9	42.4	51.8	73.5	52.9
Maryland	100.0	64.9	65.2	51.7	29.8	53.2	73.9	98.5	68.3
Massachusetts	81.6	65.7	53.5	48.1	24.3	47.4	50.6	69.2	55.2
Michigan	87.8	61.9	50.5	50.5	21.1	46.7	54.5	65.1	55.9
Minnesota	84.1	63.9	56.0	54.9	36.1	53.2	48.9	75.9	60.3
Mississippi	92.8	48.3	38.6	39.0	23.0	37.9	48.8	76.4	51.7
Missouri	87.2	55.5	43.0	32.3	21.5	38.4	50.6	70.1	50.8
Montana	64.5	37.0	31.1	27.6	22.1	30.2	37.1	51.3	38.2
Nebraska	85.8	57.5	42.1	40.9	31.2	43.2	45.2	73.0	52.8
Nevada	94.3	55.0	43.5	38.3	35.6	43.3	47.1	85.1	55.2
New Hampshire	73.8	48.6	48.2	37.9	21.7	39.7	42.0	57.3	46.9

State[a,b]	Infants	Children Aged 1	Children Aged 2	Children Aged 3	Children Aged 4	All Children Aged 1–4	Pregnant Women	Postpartum Women	Total
New Jersey	76.2	64.1	47.1	41.4	33.6	46.7	44.2	69.9	53.8
New Mexico	72.5	50.1	38.3	31.8	19.5	35.4	41.3	66.9	44.8
New York	80.6	66.7	49.6	45.8	28.6	47.9	47.0	73.7	55.9
North Carolina	86.9	52.8	49.5	41.4	24.0	42.4	51.3	78.9	53.8
North Dakota	70.7	79.9	61.4	32.0	22.0	44.8	38.5	58.0	50.1
Ohio	100.0	45.8	37.8	33.1	24.9	35.7	51.4	67.0	51.3
Oklahoma	94.1	49.8	52.8	38.7	27.0	42.2	61.9	74.6	55.0
Oregon	77.6	58.3	52.6	51.8	36.3	49.9	49.3	68.3	56.3
Pennsylvania	93.2	58.8	43.5	38.1	20.9	40.1	51.9	65.7	51.6
Rhode Island	100.0	66.6	55.5	58.2	27.2	51.2	59.1	75.7	62.2
South Carolina	89.4	51.3	30.7	29.4	12.1	31.9	51.9	76.0	46.4
South Dakota	65.2	61.2	47.9	42.8	25.7	45.2	33.4	55.9	48.7
Tennessee	78.1	41.1	32.8	31.7	14.7	30.4	49.1	60.1	43.0
Texas	89.9	64.8	45.6	41.9	20.4	43.9	50.9	97.0	57.5
Utah	53.9	45.2	39.1	32.6	20.8	34.8	30.1	49.8	39.4
Vermont	54.5	76.2	67.3	58.2	43.4	61.2	33.7	51.8	55.0
Virginia	81.6	46.6	42.3	34.2	22.5	36.7	46.4	64.8	47.8
Washington	73.8	59.8	48.7	50.3	36.6	48.9	49.4	67.9	55.0
West Virginia	77.8	55.0	45.6	38.5	24.6	40.6	46.0	69.0	50.3
Wisconsin	75.5	61.4	38.9	39.9	22.4	40.5	39.5	66.2	48.5
Wyoming	86.9	65.0	50.7	43.5	21.7	43.2	46.0	75.8	53.9

State[a,b]	Infants	Children Aged 1	Children Aged 2	Children Aged 3	Children Aged 4	All Children Aged 1–4	Pregnant Women	Postpartum Women	Total
FNS Region									
Northeast	81.6	65.2	49.3	45.2	27.5	46.9	48.5	71.0	55.1
Mid-Atlantic	90.3	66.0	52.0	45.8	25.5	47.4	54.5	73.7	57.4
Southeast	83.4	53.8	43.8	37.1	22.3	39.7	48.9	76.1	51.2
Midwest	89.0	53.1	43.4	39.4	22.7	40.0	48.3	68.0	51.3
Southwest	90.1	60.3	43.9	39.1	21.1	41.7	52.1	90.4	55.4
Mountain Plains	73.7	55.2	43.0	33.6	21.1	38.2	41.5	62.8	47.0
Western	87.0	63.9	54.5	50.9	39.4	52.3	53.5	78.3	60.5
Total	**85.9**	**59.2**	**47.4**	**42.1**	**26.5**	**44.1**	**50.3**	**75.8**	**54.5**

Notes

[a] State and regional eligibility estimates and participant data include individuals in ITOs who were eligible for WIC.

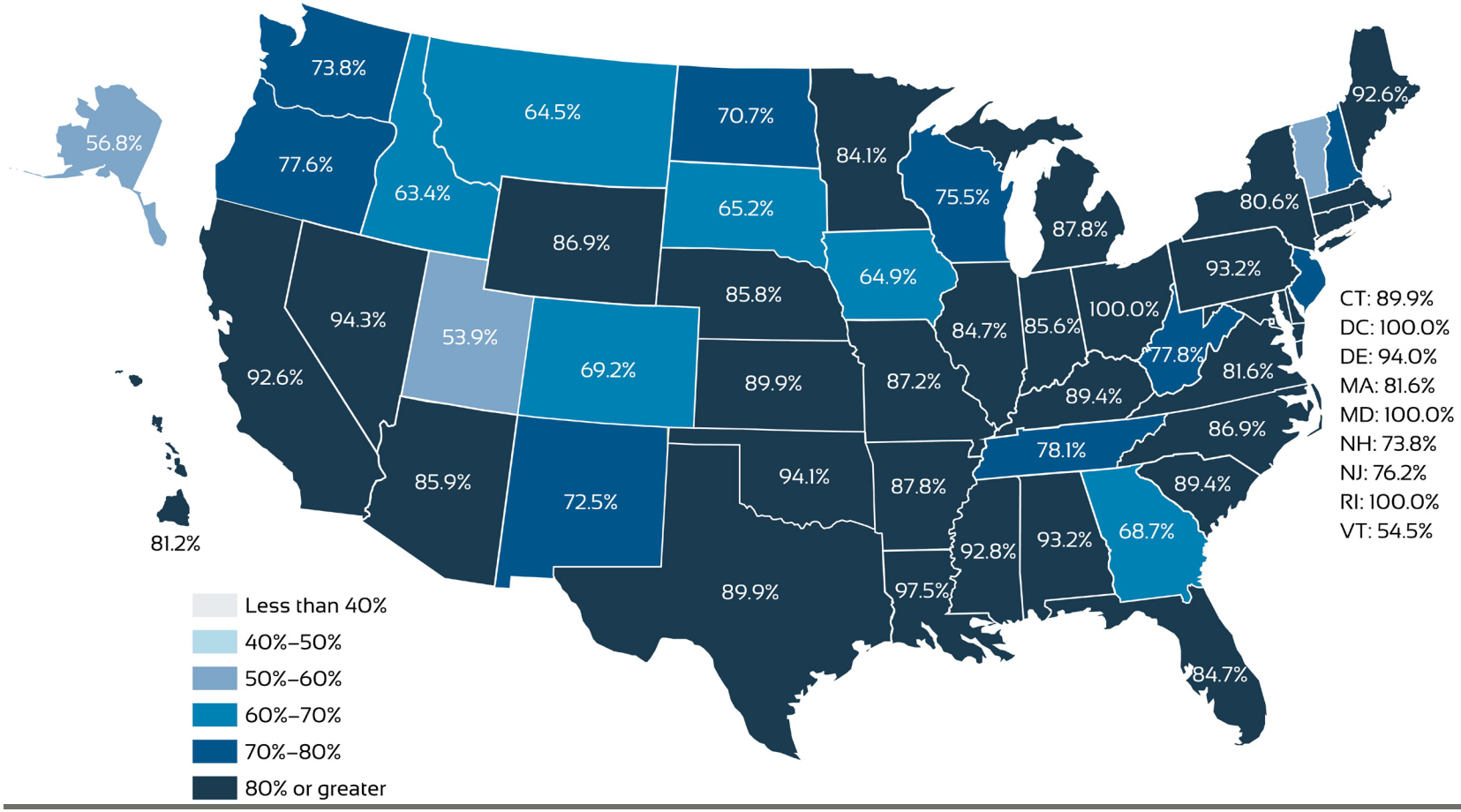
[b] Estimates of State-level coverage rates by year of age for children and other participant categories should be viewed with caution because of the small sample sizes for many States. See chapter 6 for more details on statistical uncertainty for these estimates.

[c] Estimates for Puerto Rico and other U.S. territories are included in the total but are not shown separately because of small sample sizes.

The estimated coverage rates exceed 100 percent for infants in the District of Columbia, Maryland, Ohio, and Rhode Island, and for postpartum women in the District of Columbia. This is likely a result of sampling variability in the CPS-ASEC survey data used to estimate the number of eligible individuals in those States (denominator of the rate). The lower-bound range of the 95-percent confidence interval surrounding these rates is below 100 percent. See chapter 6 for more information on measures of statistical uncertainty for the eligibility estimates.

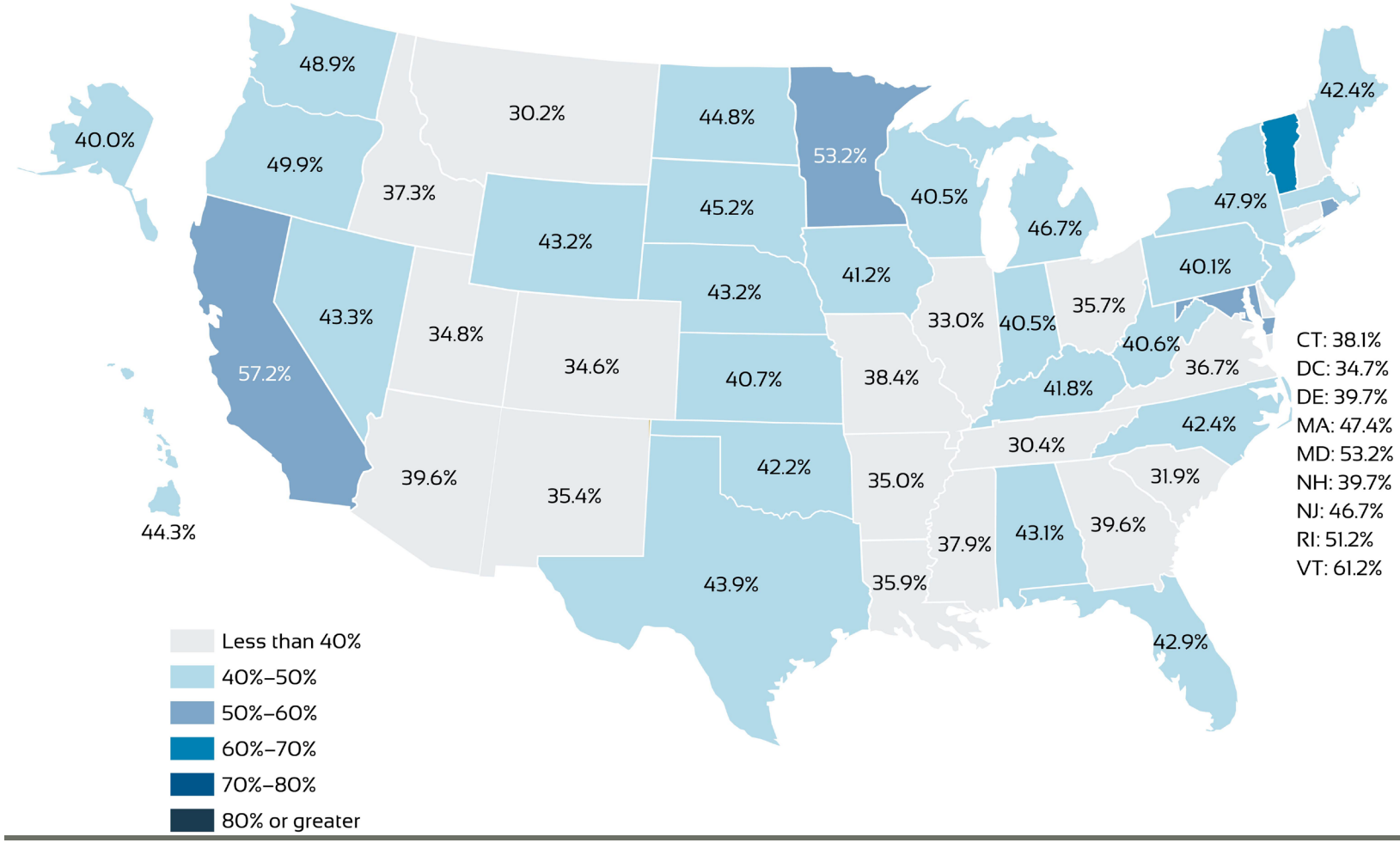
Sources: IPUMS-USA, n.d.; NBER, n.d.b; U.S. Census Bureau, n.d.d; Thorn et al., 2018; unpublished internal WIC administrative data

Figure 4.5. WIC Coverage Rate for Infants by State: CY 2016
National Coverage Rate for Infants: 85.9 Percent



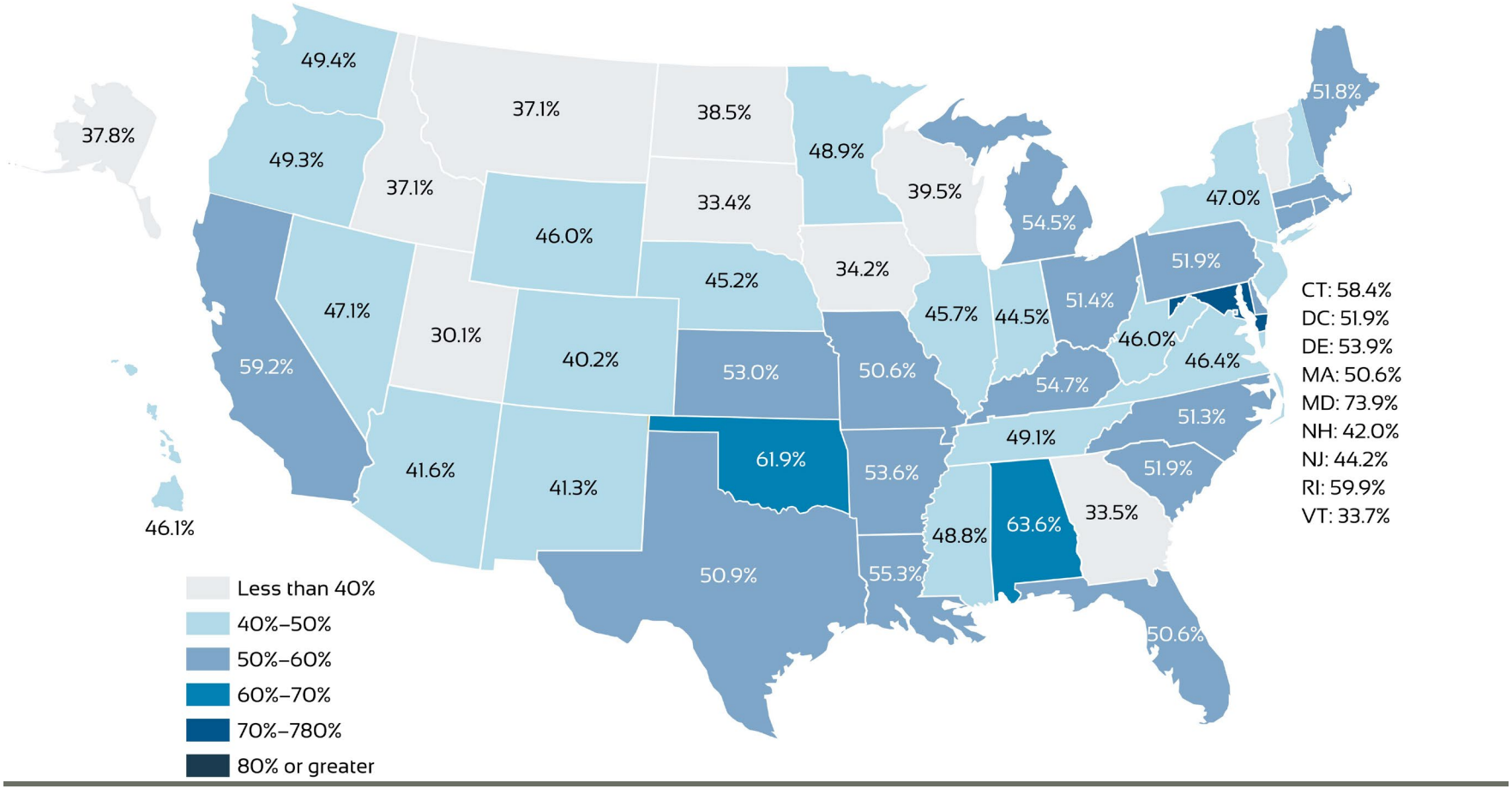
Notes
The estimated coverage rates exceed 100 percent for infants in the District of Columbia, Maryland, Ohio, and Rhode Island. This is likely a result of sampling variability in the CPS-ASEC survey data used to estimate the number of eligible individuals in those States (denominator of the rate). The lower-bound range of the 95-percent confidence interval surrounding these rates is below 100 percent. See chapter 6 for more information on measures of statistical uncertainty for the eligibility estimates.
Sources: IPUMS-USA, n.d.; NBER, n.d.b; U.S. Census Bureau, n.d.d; unpublished internal WIC administrative data

Figure 4.6. WIC Coverage Rate for Children (Aged 1–4) by State: CY 2016
National Coverage Rate for Children: 44.1 Percent



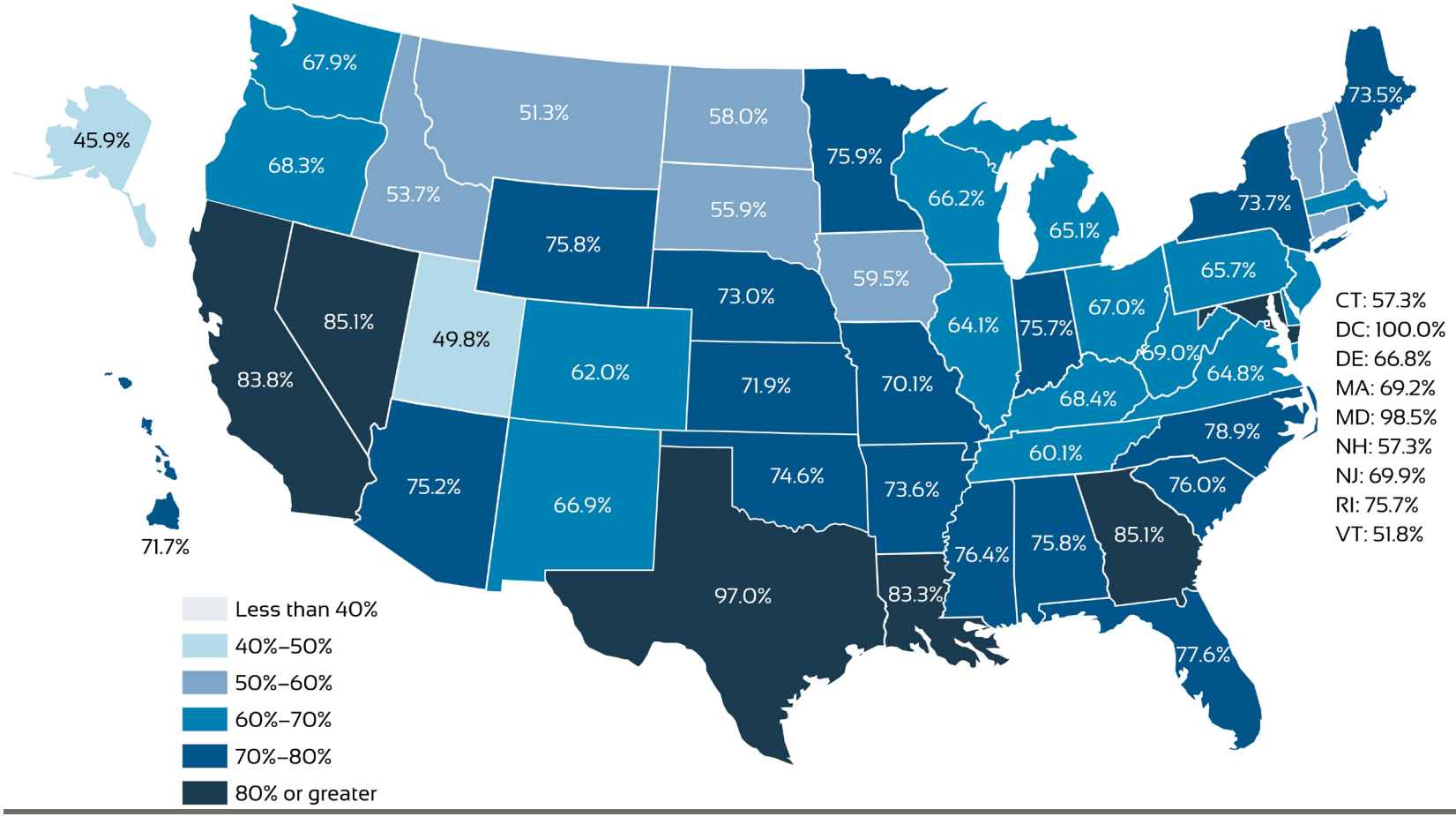
Sources: IPUMS-USA, n.d.; NBER, n.d.b; U.S. Census Bureau, n.d.d; unpublished internal WIC administrative data

Figure 4.7. WIC Coverage Rate for Pregnant Women by State: CY 2016
National Coverage Rate for Pregnant Women: 50.3 Percent



Sources: IPUMS-USA, n.d.; NBER, n.d.b; U.S. Census Bureau, n.d.d; unpublished internal WIC administrative data

Figure 4.8. WIC Coverage Rate for Postpartum Women by State: CY 2016
National Coverage Rate for Postpartum Women: 75.8 Percent



Note
The estimated coverage rate exceeds 100 percent for postpartum women in the District of Columbia. This is likely a result of sampling variability in the CPS-ASEC survey data used to estimate the number of eligible individuals in those States (denominator of the rate). The lower-bound range of the 95-percent confidence interval surrounding this rate is below 100 percent. See chapter 6 for more information on measures of statistical uncertainty for the eligibility estimates.
Sources: IPUMS-USA, n.d.; NBER, n.d.b; U.S. Census Bureau, n.d.d; unpublished internal WIC administrative data

Table 4.7. State-Level WIC Coverage Rates (Percentage) by Race and Ethnicity: CY 2016

State	All Races	White-Only Non-Hispanic	Black-Only and Other Non-Hispanic[a]	Hispanic
Alabama	56.5	50.2	60.3	67.5
Alaska	43.5	32.9	55.0	35.0
Arizona	50.3	40.7	60.8	51.7
Arkansas	49.3	47.0	48.2	61.2
California	65.6	35.2	59.1	75.4
Colorado	43.5	34.3	39.5	53.7
Connecticut	49.2	33.7	48.7	61.6
Delaware	52.3	43.0	54.3	61.4
District of Columbia	54.0	31.5	51.0	70.0
Florida	53.8	38.8	58.9	63.9
Georgia	48.2	40.3	51.2	55.6
Hawaii	53.4	43.5	62.7	37.5
Idaho	43.4	38.6	54.8	53.4
Illinois	45.1	38.6	45.2	51.7
Indiana	51.4	46.6	57.5	61.4
Iowa	46.8	40.7	57.6	60.9
Kansas	52.0	44.9	51.8	66.1
Kentucky	53.3	54.3	51.5	48.9
Louisiana	52.0	46.1	55.4	57.6
Maine	52.9	51.3	57.7	75.5
Maryland	68.3	47.7	72.1	81.5
Massachusetts	55.2	43.0	54.3	71.3
Michigan	55.9	49.9	62.9	66.0
Minnesota	60.3	44.7	76.1	86.0
Mississippi	51.7	47.7	52.3	76.7
Missouri	50.8	48.7	54.4	55.2
Montana	38.2	31.5	64.7	45.2
Nebraska	52.8	35.8	73.5	81.9
Nevada	55.2	55.4	47.5	59.3
New Hampshire	46.9	43.4	40.0	100.0
New Jersey	53.8	36.0	52.2	67.9
New Mexico	44.8	32.8	40.1	49.2
New York	55.9	41.8	64.6	63.4
North Carolina	53.8	45.2	52.6	71.8
North Dakota	50.1	36.6	77.6	52.8
Ohio	51.3	47.2	57.9	55.3
Oklahoma	55.0	48.0	57.8	65.2
Oregon	56.3	52.2	49.4	67.3
Pennsylvania	51.6	42.6	62.5	63.4

State	All Races	White-Only Non-Hispanic	Black-Only and Other Non-Hispanic[a]	Hispanic
Rhode Island	62.2	50.4	59.8	75.2
South Carolina	46.4	39.2	50.9	56.3
South Dakota	48.7	38.5	66.8	38.3
Tennessee	43.0	42.1	40.4	54.2
Texas	57.5	35.5	52.0	66.6
Utah	39.4	32.6	35.3	56.9
Vermont	55.0	53.7	100.0	22.5
Virginia	47.8	41.3	48.0	60.4
Washington	55.0	42.1	64.9	69.1
West Virginia	50.3	52.2	38.9	50.8
Wisconsin	48.5	37.2	59.3	65.5
Wyoming	53.9	50.1	41.0	83.5
Total	**54.5**	**42.6**	**56.0**	**66.7**

Notes

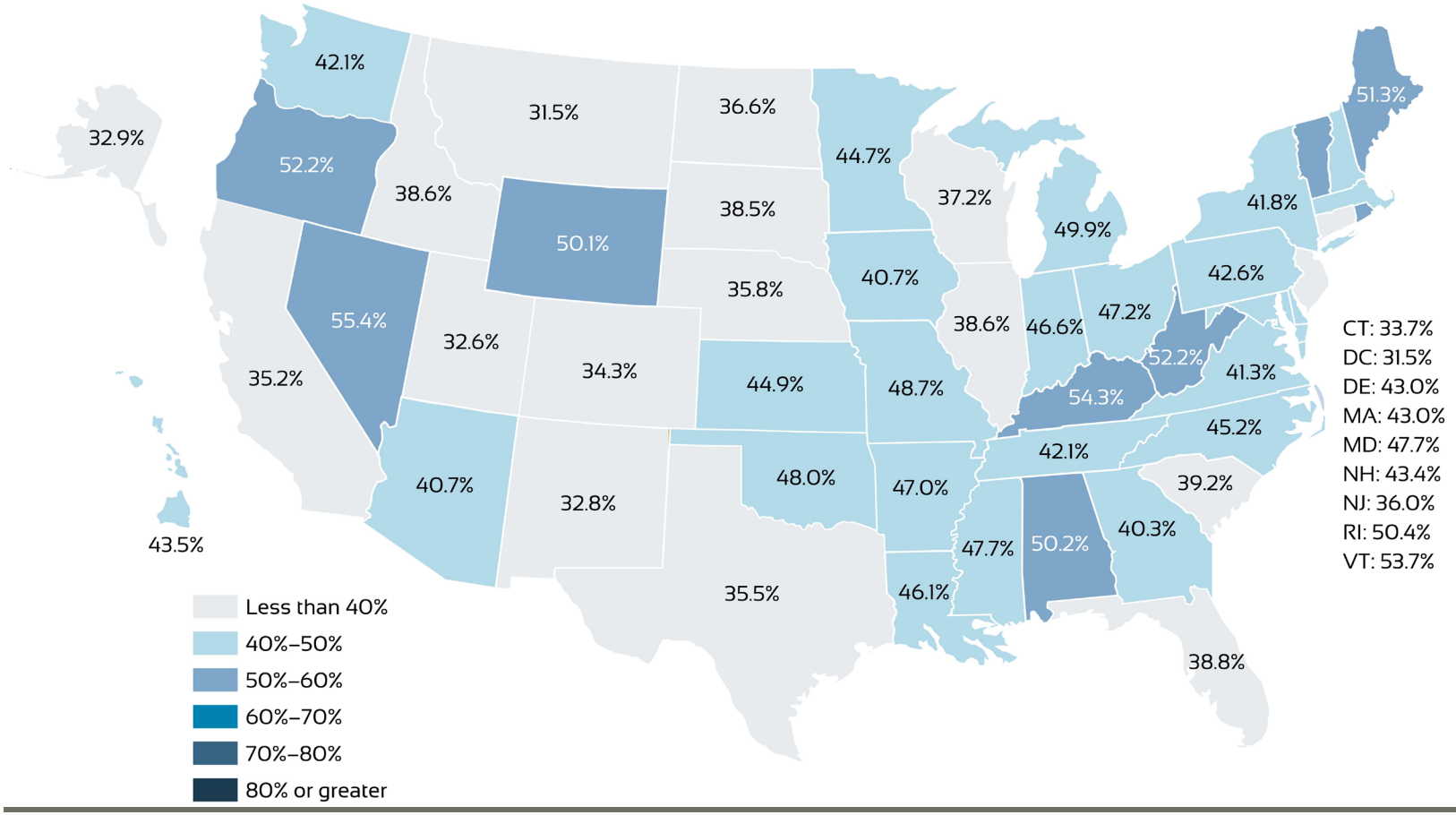
[a] The Black-Only Non-Hispanic and Other Non-Hispanic categories were combined because of sample size concerns.

Estimates for Puerto Rico are included in the totals but not shown separately because of small sample sizes. Estimates for U.S. territories other than Puerto Rico are not included in the totals because the IDB data did not include information on race and ethnicity.

The estimated coverage rates in New Hampshire for Hispanic individuals and in Vermont for Black-Only and Other Non-Hispanic individuals exceed 100 percent. This is likely a result of sampling variability in the CPS survey data used to estimate the number of eligible individuals in those States (denominator of the rate). The lower-bound range of the 95-percent confidence interval surrounding these rates is below 100 percent. See chapter 6 for more information on measures of statistical uncertainty for the eligibility estimates.

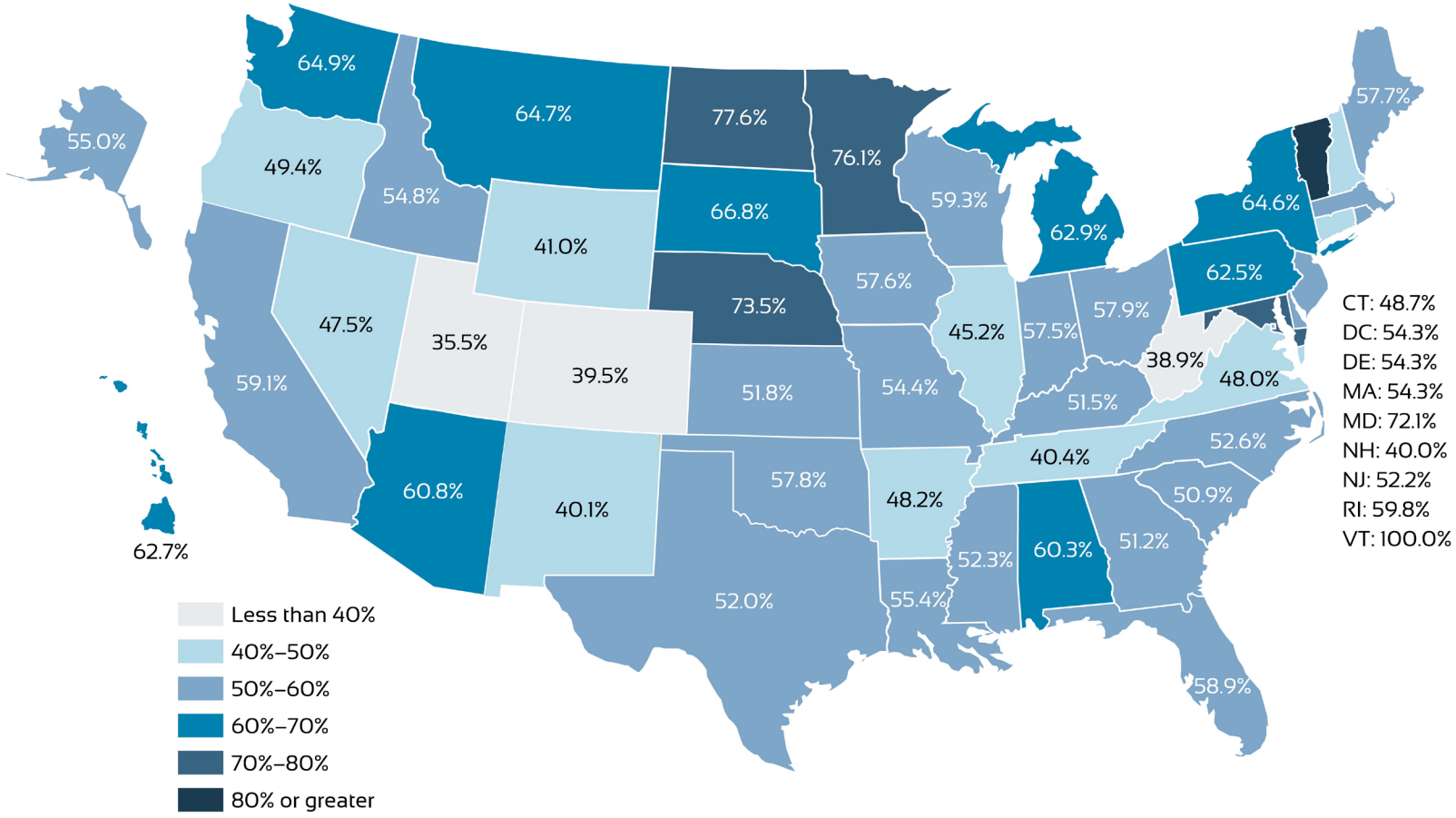
Sources: IPUMS-USA, n.d.; NBER, n.d.b; Thorn et al., 2018; unpublished internal WIC administrative data

Figure 4.9. WIC Coverage Rate for White-Only Non-Hispanic Individuals by State: CY 2016
National Coverage Rate for White-Only Non-Hispanic Individuals: 42.6 Percent



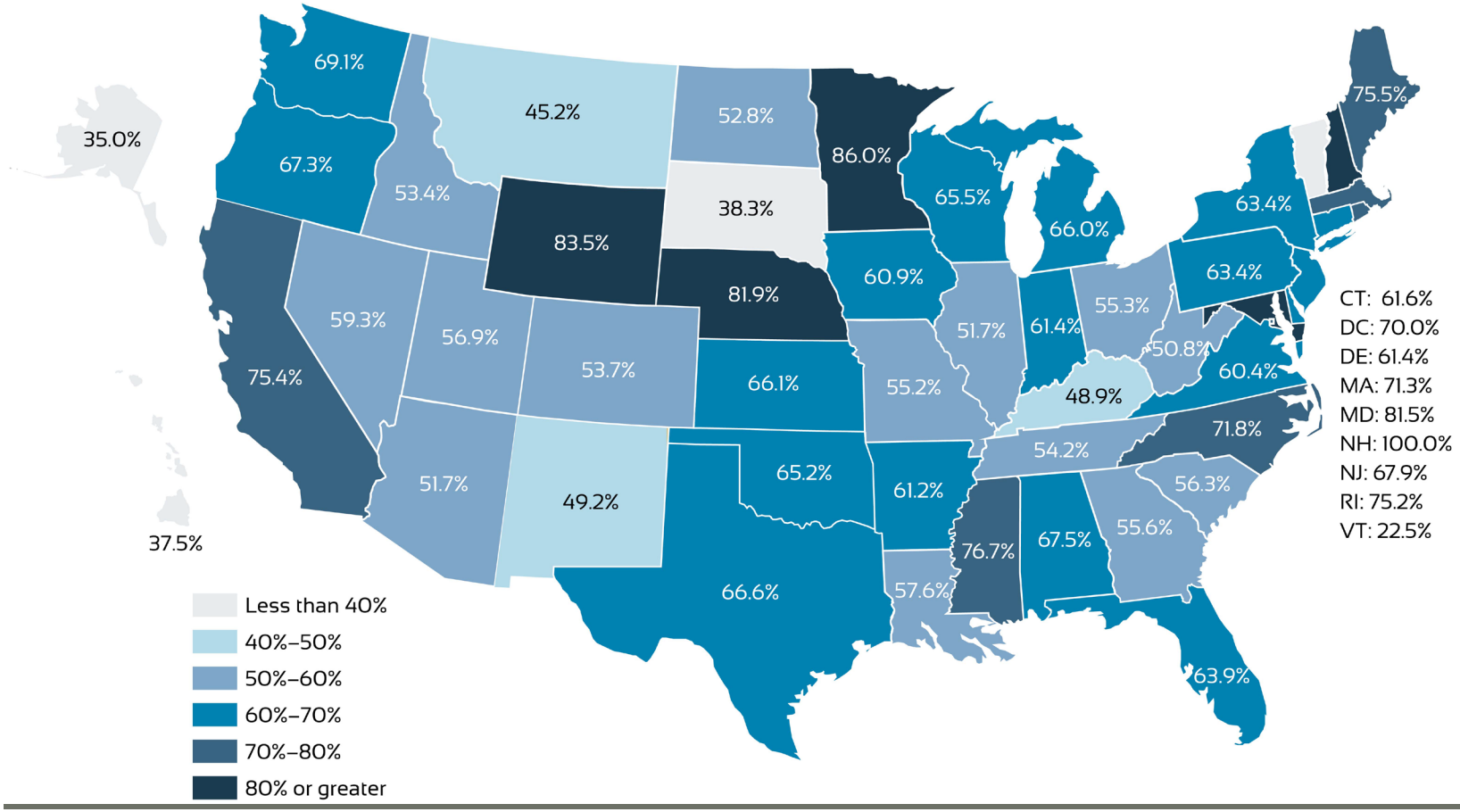
Sources: IPUMS-USA, n.d.; NBER, n.d.b; Thorn et al., 2018; unpublished internal WIC administrative data

Figure 4.10. WIC Coverage Rate for Black-Only and Other Non-Hispanic Individuals by State: CY 2016
National Coverage Rate for Black-Only and Other Non-Hispanic Individuals: 56.0 Percent



Notes
The estimated coverage rate exceeds 100 percent for Black-Only and Other Non-Hispanic individuals in Vermont. This is likely a result of sampling variability in the CPS-ASEC survey data used to estimate the number of eligible individuals in those States (denominator of the rate). The lower-bound range of the 95-percent confidence interval surrounding this rate is below 100 percent. See chapter 6 for more information on measures of statistical uncertainty for the eligibility estimates.
The Black-Only Non-Hispanic and Other Non-Hispanic categories were combined because of sample size concerns.
Sources: IPUMS-USA, n.d.; NBER, n.d.b; Thorn et al., 2018; unpublished internal WIC administrative data

Figure 4.11. WIC Coverage Rate for Hispanic Individuals by State: CY 2016
National Coverage Rate for Hispanic Individuals: 66.7 Percent



Note
The estimated coverage rate in New Hampshire for Hispanic individuals exceeds 100 percent. This is likely a result of sampling variability in the CPS survey data used to estimate the number of eligible individuals in those States (denominator of the rate). The lower-bound range of the 95-percent confidence interval surrounding this rate is below 100 percent. See chapter 6 for more information on measures of statistical uncertainty for the eligibility estimates.
Sources: IPUMS-USA, n.d.; NBER, n.d.b; Thorn et al., 2018; unpublished internal WIC administrative data

C. Changes in WIC Coverage Rates: CY 2015–CY 2016

The national WIC coverage rate increased by 2 percentage points (from 53 percent to 55 percent) between CY 2015 and CY 2016. The rate increased because the number of individuals eligible for WIC fell by more than the number of individuals who were participating in WIC. The number of individuals eligible for WIC declined by 7 percent between CY 2015 and CY 2016, but the number of participants decreased by only 4 percent (see table 4.8).[46]

Coverage rates increased the most for infants (9 percentage points), followed by postpartum women (7 percentage points overall; 11 points for non-breastfeeding and 5 points for breastfeeding postpartum women), and pregnant women (4 percentage points; see figure 4.12). The increase in coverage rates was mainly a result of a large decrease in the percentage of infants eligible for WIC (by 14 percent), that occurred concurrently with a smaller decrease in the percentage of infants participating (4 percent).[47] As noted on p. 27, these changes in the coverage rate for infants and women are likely the result of a one-year anomaly in the underlying CPS-ASEC data. Although the changes are statistically significant, another year of estimates is needed before we can conclude that there is truly a new trend in WIC eligibility and coverage rates among infants and women. There was a very small change in coverage rates for children between CY 2015 and CY 2016 (less than 1 percentage point), which was not statistically significant.[48] Overall coverage rates increased in all regions from 2015 to 2016 as shown in table 4.9. The rise in rates ranged from less than 1 percentage point in the Western region to 3 percentage points in the Mountain Plains region compared with the overall 2-percentage point increase across the Nation.

[46]The unrounded decrease is 7.49 percent, which rounds to 7 percent.
[47] As described in chapter 3, the number of eligible infants is used as the starting point for estimating the number of eligible pregnant and postpartum women. Therefore, the decrease in the number of eligible infants resulted in a decrease in the number of eligible women.
[48] The statistical significance testing was applied to the 2015–2016 change in WIC eligibility based on the CPS-ASEC data, which contained data for the 50 States and the District of Columbia.

Table 4.8. Change in WIC Coverage Rate by Participant Category: CY 2015–CY 2016

Participant Category	Total Eligible		Percent Change	Total Participants		Percent Change	Coverage Rate (Percent)		Difference
	2015	2016		2015	2016		2015	2016	
Infants	2,506,686	2,159,041	-13.9*	1,927,670	1,853,735	-3.8	76.9	85.9	9.0*
Total children aged 1–4	9,268,848	8,907,712	-3.9*	4,111,154	3,926,307	-4.5	44.4	44.1	-0.3
Pregnant women	1,634,852	1,408,119	-13.9*	758,250	707,748	-6.7	46.4	50.3	3.9*
All postpartum women	1,652,116	1,458,923	-11.7*	1,142,685	1,106,191	-3.2	69.2	75.8	6.7*
Postpartum breastfeeding women	1,034,333	949,592	-8.2*	593,604	590,430	-0.5	57.4	62.2	4.8*
Postpartum non-breastfeeding women	617,783	509,331	-17.6*	549,081	515,761	-6.1	88.9	100.0	11.1*
Total	**15,062,503**	**13,933,795**	**-7.5***	**7,939,758**	**7,593,981**	**-4.4**	**52.7**	**54.5**	**1.8***

Notes

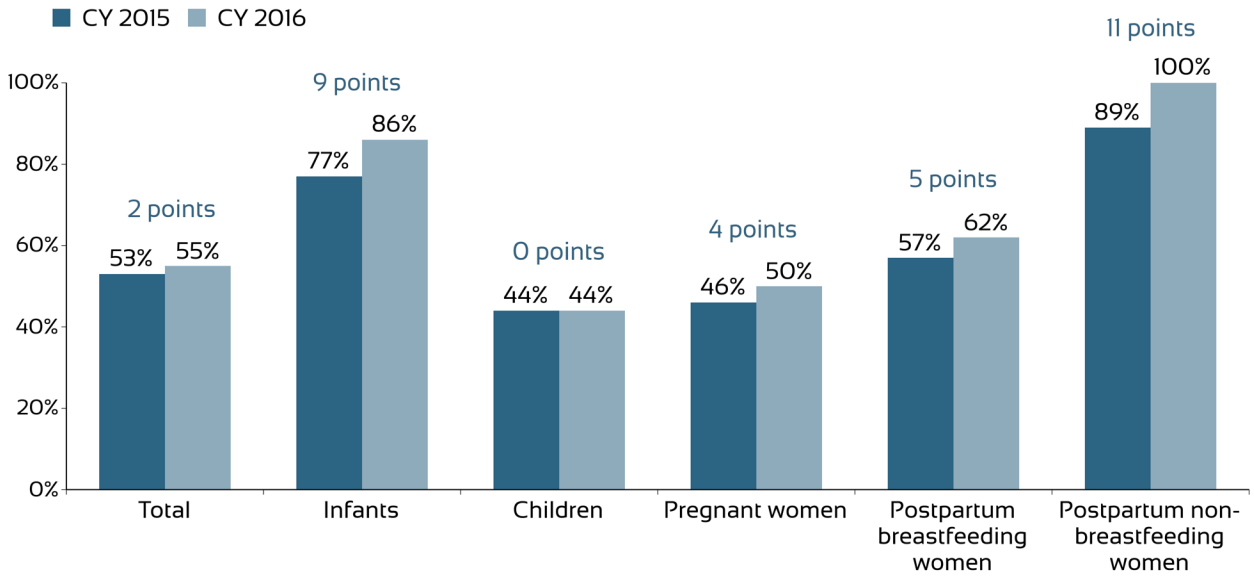
* Indicates a statistically significant difference between the estimate of individuals eligible for WIC in 2015 and 2016 at the 95-percent confidence level.

The estimated coverage rate for postpartum non-breastfeeding women exceeds 100 percent. This is likely a result of sampling variability in the CPS survey data used to estimate the number of postpartum women (denominator of the rate). The lower-bound range of the 95-percent confidence interval surrounding these rates is below 100 percent. See chapter 6 for more information on measures of statistical uncertainty for the estimates.

The number of total WIC participants by category is not subject to statistical uncertainty because it is based on WIC administrative data, which is a census of WIC participants receiving benefits; no sampling is involved.

Sources: NBER, n.d.b; IPUMS-USA, n.d.; .U.S. Census Bureau, n.d.d; unpublished internal WIC administrative data

Figure 4.12. Change in WIC Coverage Rate by Participant Category: CY 2015–CY 2016



Sources: NBER, n.d.b; IPUMS-USA, n.d.; U.S. Census Bureau, n.d.d; unpublished internal WIC administrative data

Table 4.9. WIC Coverage Rates by FNS Region and Participant Category: CY 2015 and CY 2016

FNS Region	Infants	Children Aged 1–4	Pregnant Women	All Postpartum Women	Total
Coverage Rate 2016 (Percent)					
Northeast	81.6	46.9	48.5	71.0	55.1
Mid-Atlantic	90.3	47.4	54.5	73.7	57.4
Southeast	83.4	39.7	48.9	76.1	51.2
Midwest	89.0	40.0	48.3	68.0	51.3
Southwest	90.1	41.7	52.1	90.4	55.4
Mountain Plains	73.7	38.2	41.5	62.8	47.0
Western	87.0	52.3	53.5	78.3	60.5
Total	**85.9**	**44.1**	**50.3**	**75.8**	**54.5**
Coverage Rate 2015 (Percent)					
Northeast	74.9	46.1	45.1	64.6	52.8
Mid-Atlantic	79.0	47.2	49.4	65.0	54.6
Southeast	76.2	40.1	45.0	70.8	50.0
Midwest	77.0	40.3	44.2	63.1	49.2
Southwest	80.3	41.5	48.1	81.9	53.1
Mountain Plains	64.5	36.4	37.3	55.6	43.5
Western	79.5	54.4	50.5	71.9	60.1
Total	**76.9**	**44.4**	**46.4**	**69.2**	**52.7**
Change in Coverage Rate for 2016 Versus 2015 (Difference)					
Northeast	6.7	0.8	3.3	6.5	2.3
Mid-Atlantic	11.4	0.2	5.1	8.7	2.7
Southeast	7.1	-0.3	3.9	5.3	1.2

FNS Region	Infants	Children Aged 1–4	Pregnant Women	All Postpartum Women	Total
Midwest	12.0	-0.3	4.1	4.9	2.1
Southwest	9.8	0.2	4.0	8.6	2.3
Mountain Plains	9.2	1.8	4.2	7.2	3.5
Western	7.6	-2.1	3.0	6.4	0.4
Total	**9.0**	**-0.3**	**3.9**	**6.7**	**1.8**

Sources: IPUMS-USA, n.d.; NBER, n.d.b; U.S. Census Bureau, n.d.d; unpublished internal WIC administrative data

D. Long-Term Trends in WIC Coverage Rates: CY 2005–CY 2016

WIC coverage rates increased from 57 percent in 2005 to a high of 64 percent in 2011, declined to 53 percent in 2015, and then increased in 2016 to 55 percent. The decline in rates from 2011 to 2015 resulted from an increase in eligible individuals (from 14.1 million in 2011 to 15.1 million in 2015) concurrent with a decrease in participation (from 9.0 million in 2011 to 7.9 million in 2015). The increase in rates from 2015 to 2016 was a result of a decrease in eligible individuals (from 15.1 million to 13.9 million) and a smaller decrease in participation (from 7.9 million to 7.6 million; see table 4.10).

The relative magnitude of coverage rates by participant category was consistent from 2005 to 2016 (see table 4.11). For example, throughout that period, coverage rates were consistently highest for infants, followed by postpartum women and pregnant women (see figure 4.13). Coverage rates for children were consistently the lowest. However, if rates for children are divided by year of age, coverage rates for children aged 1 were consistently highest (and higher than total coverage rates), followed by children aged 2 and 3; children aged 4 had the lowest coverage rates (see figure 4.14).

Figure 4.15 shows the overall coverage rates by region from CY 2005 through CY 2016. The Western region consistently had the highest coverage rates during this period (primarily because of the high rates in California), and the Mountain Plains region had the lowest coverage rates. See appendix C in volume II of this report for trends in coverage rates by region from 2005 through 2016 for each participant category.

Table 4.10. WIC Coverage Rates: CY 2005–CY 2016

Year	Number Eligible	Number Participating	Coverage Rate (Percent)
2005	14,220,718	8,030,466	56.5
2006	13,980,361	8,125,552	58.1
2007	13,815,651	8,375,991	60.6
2008	14,142,538	8,819,130	62.4
2009	14,610,125	9,185,532	62.9
2010	14,789,179	9,109,192	61.6
2011	14,105,710	8,950,226	63.5
2012	14,016,864	8,862,323	63.2
2013	14,411,800	8,546,724	59.3
2014	15,005,308	8,227,771	54.8
2015	15,062,503	7,939,758	52.7
2016	13,933,795	7,593,981	54.5

Sources: IPUMS-USA, n.d.; NBER, n.d.b; U.S. Census Bureau, n.d.d; unpublished internal WIC administrative data

Table 4.11. WIC Coverage Rates (Percentage) by Participant Category: CY 2005–CY 2016

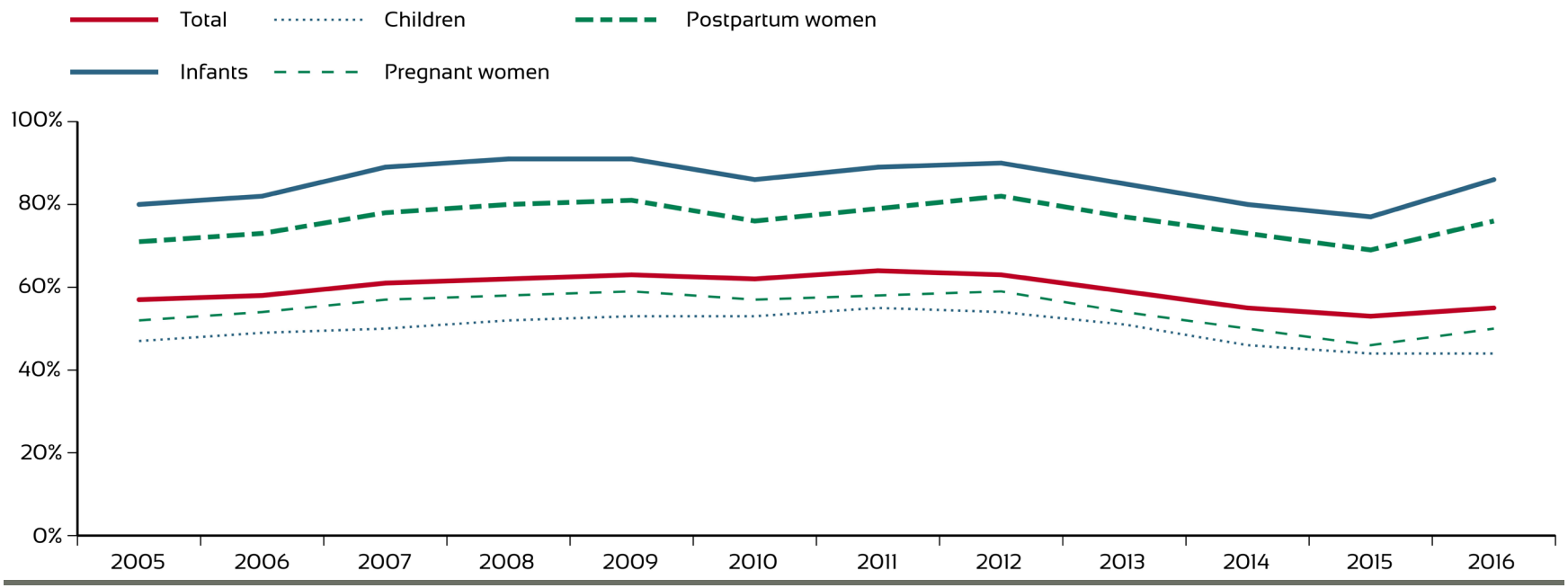
Year	All	Infants	Children Aged 1	Children Aged 2	Children Aged 3	Children Aged 4	All Children Aged 1–4	Pregnant Women	Postpartum Breastfeeding Women	Postpartum Non-Breastfeeding Women	Total Postpartum Women
2005	56.5	80.3	62.0	49.0	45.1	32.0	47.4	52.4	61.4	81.3	70.8
2006	58.1	82.2	65.8	50.2	44.5	32.7	48.6	54.1	62.1	85.8	72.9
2007	60.6	88.5	67.9	51.3	44.7	33.9	49.8	56.5	64.1	95.3	77.7
2008	62.4	91.1	72.0	54.2	46.0	33.4	51.7	58.1	67.2	97.4	80.3
2009	62.9	90.5	75.4	54.0	46.5	35.2	53.1	59.0	68.4	95.8	80.5
2010	61.6	86.3	76.5	55.7	46.8	34.5	53.2	56.8	64.4	91.4	76.3
2011	63.5	88.5	73.6	59.5	50.7	35.1	54.8	57.9	65.1	99.4	79.3
2012	63.2	89.8	76.1	54.9	49.5	35.5	53.9	59.0	67.5	100.0	81.6
2013	59.3	84.6	70.0	51.6	48.0	32.6	50.5	54.0	63.3	97.2	76.6
2014	54.8	80.0	68.2	48.1	42.2	25.9	46.0	50.2	59.5	94.1	72.6
2015	52.7	76.9	62.8	47.0	41.8	26.3	44.4	46.4	57.4	88.9	69.2
2016	54.5	85.9	59.2	47.4	42.1	26.5	44.1	50.3	62.2	100.0	75.8

Note

The estimated coverage rates for postpartum non-breastfeeding rates exceed 100 percent in 2012 and 2016. This is likely a result of sampling variability in the CPS survey data used to estimate the number of postpartum women in those States (denominator of the rate). The lower-bound range of the 95-percent confidence interval surrounding these rates is below 100 percent. See chapter 6 for more information on measures of statistical uncertainty for the eligibility estimates.

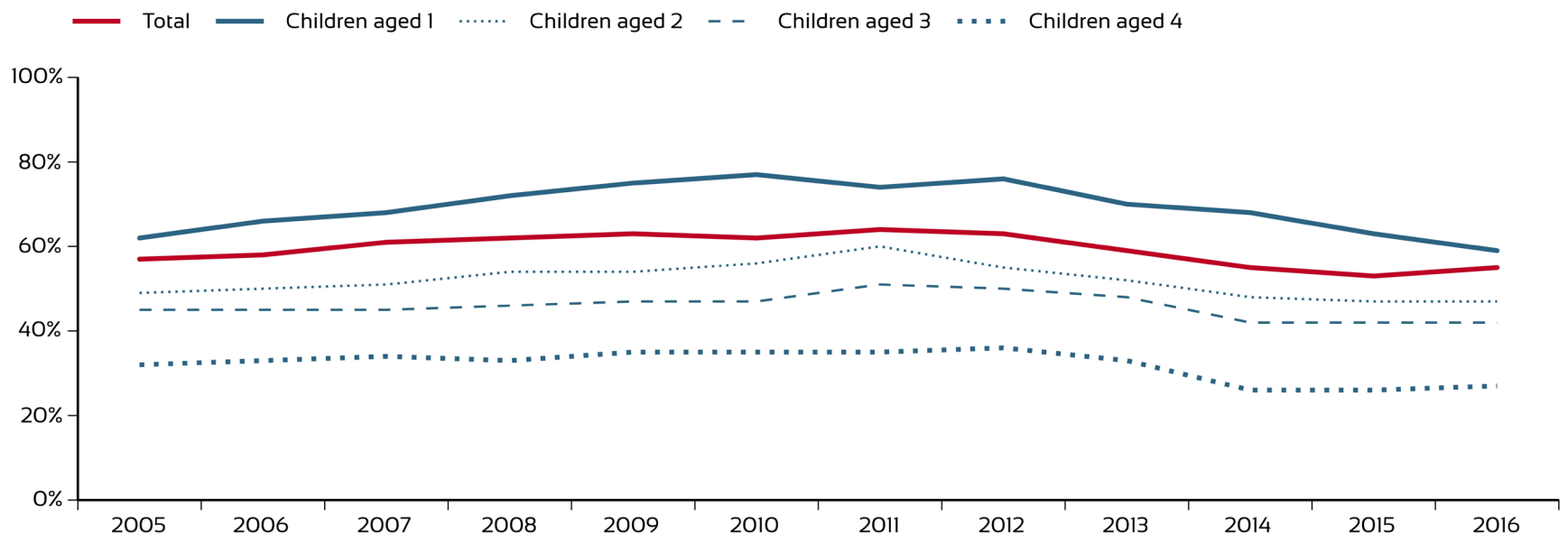
Sources: IPUMS-USA, n.d.; NBER, n.d.b; Thorn et al., 2018; U.S. Census Bureau, n.d.d; unpublished internal WIC administrative data

Figure 4.13. Trends in WIC Coverage Rates by Participant Category: CY 2005–CY 2016



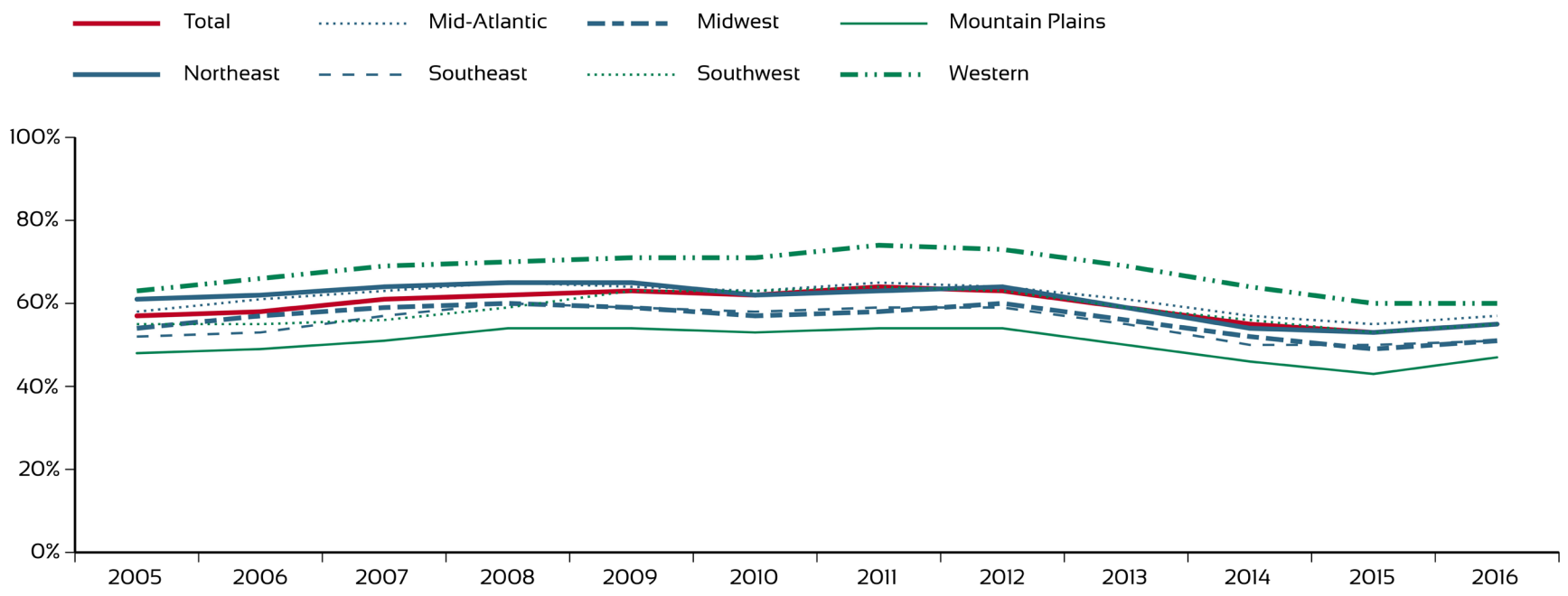
Sources: IPUMS-USA, n.d.; NBER, n.d.b; Thorn et al., 2018; U.S. Census Bureau, n.d.d; unpublished internal WIC administrative data

Figure 4.14. Trends in WIC Coverage Rates for Children by Year of Age: CY 2005–CY 2016



Sources: IPUMS-USA, n.d.; NBER, n.d.b; Thorn et al., 2018; U.S. Census Bureau, n.d.d; unpublished internal WIC administrative data

Figure 4.15. Trends in WIC Coverage Rates by FNS Region: CY 2005–CY 2016



Sources: IPUMS-USA, n.d.; NBER, n.d.b; Thorn et al., 2018; U.S. Census Bureau, n.d.d; unpublished internal WIC administrative data

Chapter 5. WIC Participation Rates for CY 2016

This chapter presents CY 2016 estimates of the numbers of WIC participants as a percentage of the total population of infants, children, and pregnant or postpartum women (known as participation rates). In contrast to coverage rates, participation rates are calculated as the ratio of the number of WIC participants to the number of individuals in the population, regardless of income level, adjunctive eligibility, or nutritional risk. Participation rates are useful in understanding the overall reach of WIC across the population as a whole.

Section A presents 2016 national WIC participation rates by participant category, and section B presents State-level participation rates.

A. National-Level WIC Participation Rates

Almost half (47 percent) of all infants in the Nation and U.S. territories and about a quarter (24 percent) of all children aged 1–4 received WIC benefits (see table 5.1). Similar to WIC coverage rates, participation rates for children were highest among 1-year-olds (34 percent) and lowest for 4-year-olds (14 percent). Slightly more postpartum women (28 percent) than pregnant women (24 percent) received WIC benefits.

Table 5.1. WIC National-Level Participation Rates by Participant Category: CY 2016

Participant Category	Number of Participants	Total Population	Participation Rate (Percent)
Infants	1,853,735	3,966,090	46.7
Total children aged 1–4	3,926,307	16,193,444	24.2
Children aged 1[a]	1,371,604	4,068,849	33.7
Children aged 2[a]	1,052,609	4,080,801	25.8
Children aged 3[a]	931,748	4,034,985	23.1
Children aged 4[a]	570,345	4,008,809	14.2
Pregnant women	707,748	2,962,967	23.9
Postpartum women	1,106,191	3,950,623	28.0
Breastfeeding women	590,430	2,241,095	26.3
Non-breastfeeding women	515,761	1,709,528	30.2
Total	**7,593,981**	**27,073,124**	**28.0**

Note

[a] WIC administrative data on participating children by year of age were not available. The number of participating children by year of age in this table are based on the distribution of children who were enrolled in WIC in 2016 according to WIC PC2016 data.

Sources: NBER, n.d.b; Thorn et al., 2018; U.S. Census Bureau, n.d.d; unpublished internal WIC administrative data

B. State- and Regional-Level WIC Participation Rates

Participation rates varied considerably among States. Rates ranged from a low of 16 percent in New Hampshire to a high of 34 percent in California in comparison with the national average of 28 percent

(see table 5.2). Six States had participation rates of less than 20 percent (Colorado, Connecticut, New Hampshire, North Dakota, Utah, and Virginia), and seven States had participation rates of 31 percent or greater (Alabama, Arkansas, California, Florida, Mississippi, Oklahoma, and Texas).[49]

Table 5.2. WIC Participation Rates by State and FNS Region: CY 2016

State[a]	Number of Participants	Total Population	Participation Rate (Percent)
Alabama	128,074	395,081	32.4
Alaska	18,961	72,254	26.2
Arizona	160,911	590,917	27.2
Arkansas	79,436	254,853	31.2
California	1,151,406	3,357,279	34.3
Colorado	85,912	455,029	18.9
Connecticut	48,688	248,264	19.6
Delaware	17,722	73,830	24.0
District of Columbia	14,285	60,722	23.5
Florida	477,553	1,522,535	31.4
Georgia	250,204	895,182	28.0
Hawaii	29,662	120,016	24.7
Idaho	38,451	154,878	24.8
Illinois	221,821	1,041,455	21.3
Indiana	146,401	563,290	26.0
Iowa	61,293	266,078	23.0
Kansas	57,836	258,325	22.4
Kentucky	110,610	367,754	30.1
Louisiana	125,356	421,637	29.7
Maine	20,485	86,772	23.6
Maryland	138,117	496,802	27.8
Massachusetts	114,368	485,126	23.6
Michigan	231,991	770,086	30.1
Minnesota	114,907	472,060	24.3
Mississippi	83,973	256,187	32.8
Missouri	125,399	501,334	25.0
Montana	18,216	84,250	21.6
Nebraska	38,210	178,888	21.4
Nevada	69,550	249,018	27.9
New Hampshire	13,841	85,410	16.2
New Jersey	153,406	699,425	21.9
New Mexico	51,355	172,644	29.7
New York	453,753	1,559,867	29.1
North Carolina	237,905	818,130	29.1
North Dakota	12,966	74,798	17.3

[49] Puerto Rico, which is an outlier with respect to State-level WIC participation as a percentage of total population, had a participation rate of 71 percent.

State[a]	Number of Participants	Total Population	Participation Rate (Percent)
Ohio	231,315	932,983	24.8
Oklahoma	110,155	355,030	31.0
Oregon	91,694	315,891	29.0
Pennsylvania	233,531	952,320	24.5
Puerto Rico	151,371	214,022	70.7
Rhode Island	20,202	73,368	27.5
South Carolina	105,084	395,540	26.6
South Dakota	18,962	81,657	23.2
Tennessee	142,264	548,342	25.9
Texas	851,340	2,736,282	31.1
Utah	56,073	341,297	16.4
Vermont	12,353	40,881	30.2
Virginia	129,875	687,283	18.9
Washington	166,628	611,469	27.3
West Virginia	40,054	132,962	30.1
Wisconsin	98,949	449,079	22.0
Wyoming	10,705	50,666	21.1
FNS Region[b]			
Northeast	683,690	2,579,688	26.5
Mid-Atlantic	882,447	3,326,806	26.5
Southeast	1,535,667	5,198,750	29.5
Midwest	1,045,383	4,228,954	24.7
Southwest	1,217,641	3,940,446	30.9
Mountain Plains	485,571	2,292,322	21.2
Western	1,743,582	5,506,157	31.7
Total	**7,593,981**	**27,073,124**	**28.0**

Note

[a] State and regional eligibility estimates and participant data include individuals in ITOs who were eligible for WIC and/or receiving WIC.

Sources: IPUMS-USA, n.d.; NBER, n.d.b; U.S. Census Bureau, n.d.d; unpublished internal WIC administrative data

Chapter 6. Measures of Precision for the Estimates of Eligibility

Coverage and participation estimates were calculated, in part, using data from several large-scale, complex, nationally representative surveys, including the CPS-ASEC (NBER, n.d.b) and the ACS (IPUMS-USA, n.d.). Several sources of error can cause sample estimates to differ from the corresponding true population values. These sources of error are commonly classified into two major categories: sampling errors and non-sampling errors. To compensate for sampling error, weights were constructed and prepared following data collection to inflate the respondents' data to represent the entire universe.

To measure that uncertainty, standard errors were produced for the 2016 national-, regional-, and State-level estimates of eligibility for WIC.[50] The standard errors for the national-level estimates were derived using the replicate weight methodology described in appendix E. The standard errors for the State-level estimates were also derived using the replicate weight methodology. Tables 6.1 and 6.2 present these standard errors as well as the coefficients of variation. This measure is the ratio of the standard error to the eligibility estimate. Because the coefficient of variation is expressed in percentage terms, it allows easier comparisons of the relative precision of various estimates.

The coefficients of variation for the 2016 national eligibility estimates were higher for infants, pregnant women, and postpartum women (3.2 percent for each) than for children (1.2 percent), reflecting the larger sample size for children (see table 6.1).

Table 6.1. Standard Errors and Coefficients of Variation for Estimated Number of Individuals Eligible for WIC by FNS Region and Participant Category: CY 2016

Region	Infants	Children Aged 1–4	Pregnant Women	All Postpartum Women	Total
			Number Eligible[a]		
Northeast	193,078	785,648	125,925	136,194	1,240,844
Mid-Atlantic	206,376	871,212	134,598	139,145	1,351,331
Southeast	469,018	1,923,067	305,892	303,590	3,001,566
Midwest	316,849	1,306,013	206,648	207,707	2,037,216
Southwest	346,977	1,402,260	226,297	223,406	2,198,940
Mountain Plains	165,844	644,758	108,163	114,867	1,033,631
Western	428,519	1,835,962	279,478	312,145	2,856,104
Total	**2,126,660**	**8,768,919**	**1,387,000**	**1,437,054**	**13,719,633**

[50] Estimates of WIC eligibility for U.S. territories other than Puerto Rico are based not upon samples but rather on U.S. Census Bureau estimates of the population by age (U.S. Census Bureau, n.d.d). These estimates were not subject to sampling variability.

Region	Infants	Children Aged 1–4	Pregnant Women	All Postpartum Women	Total
Standard Error[a]					
Northeast	9,796	15,675	6,389	6,863	24,477
Mid-Atlantic	10,020	17,837	6,535	6,743	29,602
Southeast	19,129	28,944	12,476	12,401	52,595
Midwest	13,930	21,835	9,085	9,110	35,873
Southwest	13,949	23,205	9,098	8,987	39,394
Mountain Plains	9,060	16,393	5,909	6,283	25,916
Western	16,826	27,799	10,974	12,084	48,441
Total	**68,762**	**101,446**	**44,847**	**46,204**	**199,585**
Coefficient of Variation[b] (Percent)					
Northeast	5.1	2.0	5.1	5.0	2.0
Mid-Atlantic	4.9	2.0	4.9	4.8	2.2
Southeast	4.1	1.5	4.1	4.1	1.8
Midwest	4.4	1.7	4.4	4.4	1.8
Southwest	4.0	1.7	4.0	4.0	1.8
Mountain Plains	5.5	2.5	5.5	5.5	2.5
Western	3.9	1.5	3.9	3.9	1.7
Total	**3.2**	**1.2**	**3.2**	**3.2**	**1.5**

Notes

[a] Estimates for Puerto Rico and the other U.S. territories are not included in regional totals or standard errors.

[b] The coefficient of variation is defined as the ratio of the standard error to the eligibility estimate.

Sources: IPUMS-USA, n.d.; NBER, n.d.a, n.d.b

At the State level, the precision of the estimates was considerably lower than at the national level, except for the four largest States (California, Florida, New York, and Texas). For the States, the coefficient of variation ranged from 13.0 percent in North Dakota to 1.7 percent in California and Texas. Given the large range of the coefficients of variation, caution should be exercised when using the State estimates, especially for small States. At the regional level, however, the relative precision of the estimates was quite high.

Table 6.2. Standard Errors for Estimated Number of Individuals Eligible for WIC by State and FNS Region: CY 2016

State[a]	Number Eligible	Standard Error	Coefficient of Variation[b] (Percent)
Alabama	226,565	7,409	3.3
Alaska	43,626	3,443	7.9
Arizona	319,905	7,952	2.5
Arkansas	161,219	5,139	3.2
California	1,756,442	30,048	1.7
Colorado	197,505	6,645	3.4
Connecticut	98,891	4,073	4.1
Delaware	33,905	2,863	8.4
District of Columbia	26,439	1,840	7.0
Florida	886,846	16,530	1.9
Georgia	519,109	12,006	2.3

State[a]	Number Eligible	Standard Error	Coefficient of Variation[b] (Percent)
Hawaii	55,569	2,770	5.0
Idaho	88,551	3,892	4.4
Illinois	492,054	10,940	2.2
Indiana	285,090	8,081	2.8
Iowa	131,077	6,617	5.0
Kansas	111,192	4,643	4.2
Kentucky	207,541	6,550	3.2
Louisiana	241,154	6,419	2.7
Maine	38,733	3,453	8.9
Maryland	202,145	7,650	3.8
Massachusetts	207,255	6,489	3.1
Michigan	414,846	9,618	2.3
Minnesota	190,548	6,755	3.5
Mississippi	162,315	4,554	2.8
Missouri	246,818	7,892	3.2
Montana	47,704	3,217	6.7
Nebraska	72,331	3,767	5.2
Nevada	126,079	5,391	4.3
New Hampshire	29,508	2,623	8.9
New Jersey	285,123	8,280	2.9
New Mexico	114,603	3,933	3.4
New York	811,495	16,087	2.0
North Carolina	441,863	9,942	2.2
North Dakota	25,859	3,358	13.0
Ohio	450,501	10,560	2.3
Oklahoma	200,425	6,044	3.0
Oregon	162,750	5,674	3.5
Pennsylvania	452,683	11,123	2.5
Puerto Rico	179,890	4,328	2.4
Rhode Island	32,490	2,513	7.7
South Carolina	226,362	5,834	2.6
South Dakota	38,918	3,325	8.5
Tennessee	330,965	8,496	2.6
Texas	1,481,540	25,701	1.7
Utah	142,377	6,802	4.8
Vermont	22,472	2,590	11.5
Virginia	271,453	8,646	3.2
Washington	303,182	8,224	2.7
West Virginia	79,584	3,861	4.9
Wisconsin	204,177	6,916	3.4
Wyoming	19,850	2,481	12.5

State[a]	Number Eligible	Standard Error	Coefficient of Variation[b] (Percent)
FNS Region[c]			
Northeast	1,240,844	24,477	2.0
Mid-Atlantic	1,351,331	29,602	2.2
Southeast	3,001,566	52,595	1.8
Midwest	2,037,216	35,873	1.8
Southwest	2,198,940	39,394	1.8
Mountain Plains	1,033,631	25,916	2.5
Western	2,856,104	48,441	1.7
Total	**13,719,633**	**199,585**	**1.5**

Notes
[a] State and regional eligibility estimates include individuals in ITOs who were eligible for WIC.
[b] The coefficient of variation is defined as the ratio of the standard deviation to the eligibility estimate.
[c] Estimates for Puerto Rico and the other U.S. territories are not included in regional totals or standard errors.
Sources: IPUMS-USA, n.d.; NBER, n.d.a, n.d.b

The coefficients of variation were even larger for the estimates of the coverage rates for participant categories by State (see table 6.3). The coefficients of variation for infant coverage rates ranged from 3.9 percent (California) to 24.8 percent (North Dakota). Similarly, the coefficients of variation for White-Only Non-Hispanics ranged from 3.4 percent (Texas) to 53.0 percent (the District of Columbia; see table 6.4). Therefore, it is particularly important to use caution when examining State coverage rates by participant category and race and ethnicity, especially for small States.

The statistics can be used to estimate a confidence interval around the estimates of eligibility for WIC and coverage rates. For example, there is a 95-percent likelihood that the actual number of individuals eligible for WIC in 2016 (overall, by participant category, by region, or by State) is at minimum equal to the estimate obtained through the methods used to calculate the estimates (the "point estimate") minus 1.96 times the standard error and that it is at most equal to the point estimate plus 1.96 times the standard error. As an illustration of the computation, consider the overall estimates of WIC eligibility for the Northeast (see table 6.1). The point estimate is that there were 1,240,844 people eligible for WIC in the Northeast in the average month of 2016. The standard error of that estimate is 24,477. There is a 95-percent likelihood that the true number falls within the range from (1,240,844 minus (1.96 × 24,477)) to (1,240,844 plus (1.96 × 24,477)), or from 1,119,869 to 1,288,819.

A similar method can be used to estimate a confidence interval around the estimates of WIC coverage rates. For example, there is a 95-percent likelihood that the actual coverage rates shown in table 4.6 are equal to the point estimates shown plus or minus 1.96 times the standard error.[51] As an illustration, consider the WIC coverage rate for individuals in Kansas (see table 4.6). The point estimate for the coverage rate in Kansas is 52.0 percent. The standard error of that estimate (2.2) is calculated from the

[51] The standard error of the rate can be calculated as the product of the coverage rate and the coefficient of variation of the point estimate.

coefficient of variation (.52 x .042; see table 6.3). There is a 95-perent likelihood that the true coverage rate falls within the following range:

52.0 ± (1.96 * 2.2)

= 52.0 ± 4.3

95% confidence interval = (47.7%, 56.3%)

The confidence interval can also be directly estimated using the margin of error (MOE). The MOE is a measure of an estimate's variability and is calculated as the product of the significance level and standard error. The larger the MOE in relation to the size of the estimate, the less reliable the estimate. This number, when added to and subtracted from the estimate, forms the 95-percent confidence interval. MOEs for a 95-percent confidence interval can be interpreted to mean there is a 95-percent chance that the true value—that is, the true coverage rate—falls within the estimated bounds determined by the MOE. In the Kansas example, the 95-percent confidence interval around the coverage rate is 52.0 percent minus/plus the MOE, which is 4.3. Thus, there is a 95-percent likelihood that the true coverage rate for Kansas falls between 52.0 minus/plus 4.3, or between 47.7 and 56.3 percent. Volume II of this report includes tables showing MOEs for all State-level coverage rates; see table B.10 for State-level coverage rates by participant categories and table B.11 for State-level coverage rates by race and ethnicity categories.

Some sources of error—such as unusable responses to vague or sensitive questions (e.g., whether they fully report the kinds of benefits they receive); non-responses; and errors in coding, scoring, and processing the data—are called "non-sampling errors" and occur in cases when there is a complete enumeration of a target population. Non-response to the survey is one of the most common sources of non-sampling error because a characteristic being estimated may differ, on average, between respondents and non-respondents. Systematic errors are reduced by the survey methodology used, including careful wording of questionnaire items and well-designed procedures for data collection and data management. However, there are no formulas for assessing these types of non-sampling errors. Additional sources of error could include mismatches between concepts used for eligibility and those used for participation information, such as slight differences in definitions of WIC units or types of income.

Table 6.3. Coefficients of Variation of WIC Coverage Rates (Percentage) by State and Participant Category: CY 2016

State	Infants	Children Aged 1	Children Aged 2	Children Aged 3	Children Aged 4	All Children Aged 1–4	Pregnant Women	Postpartum Women	Total
Alabama	8.6	7.8	7.8	6.1	7.2	2.7	8.6	8.6	3.3
Alaska	16.8	14.0	19.4	20.8	19.6	7.2	16.8	16.9	7.9
Arizona	6.7	6.2	5.6	6.0	5.8	2.5	6.7	6.7	2.5
Arkansas	8.0	9.6	7.7	8.4	8.5	3.3	8.0	8.0	3.2
California	3.9	3.0	3.2	3.2	3.2	1.5	3.9	3.9	1.7
Colorado	8.2	7.5	8.2	7.4	7.7	3.7	8.2	8.2	3.4
Connecticut	11.1	13.2	9.7	10.5	9.2	4.3	11.1	11.0	4.1
Delaware	19.0	23.6	17.0	22.7	17.1	7.9	19.0	19.1	8.4
District of Columbia	21.8	21.2	19.3	17.9	16.6	6.9	21.8	21.9	7.0
Florida	4.6	3.8	4.2	3.8	4.3	1.6	4.6	4.6	1.9
Georgia	5.6	5.0	5.2	5.0	5.6	2.3	5.6	5.6	2.3
Hawaii	11.3	13.9	12.4	13.1	14.0	6.0	11.3	11.3	5.0
Idaho	10.9	11.3	9.8	9.9	9.3	4.0	10.9	10.9	4.4
Illinois	5.5	4.8	5.1	5.4	4.9	2.2	5.5	5.5	2.2
Indiana	6.6	5.9	6.1	6.3	5.0	2.9	6.6	6.6	2.8
Iowa	10.2	10.7	10.1	11.1	10.1	5.1	10.2	10.2	5.0
Kansas	8.4	9.7	9.7	11.0	8.8	4.5	8.4	8.3	4.2
Kentucky	7.7	7.2	7.6	6.8	7.3	3.3	7.7	7.7	3.2
Louisiana	6.3	6.4	8.0	8.1	6.4	2.6	6.3	6.3	2.7
Maine	23.4	15.4	17.8	14.3	16.7	7.1	23.4	23.5	8.9
Maryland	9.0	7.3	8.0	7.6	7.1	3.6	9.0	9.0	3.8
Massachusetts	7.9	6.7	8.0	6.6	7.5	3.4	7.9	7.9	3.1
Michigan	5.9	5.9	4.9	5.1	6.0	2.3	5.9	5.9	2.3
Minnesota	8.1	8.3	9.4	7.2	7.3	3.8	8.1	8.1	3.5
Mississippi	7.3	7.5	8.3	8.0	9.1	3.2	7.3	7.2	2.8
Missouri	7.1	7.3	7.1	5.9	7.0	3.1	7.1	7.1	3.2
Montana	17.2	14.3	12.4	15.4	14.2	7.4	17.2	17.2	6.7
Nebraska	12.3	12.1	11.0	11.6	11.9	5.4	12.3	12.3	5.2

State	Infants	Children Aged 1	Children Aged 2	Children Aged 3	Children Aged 4	All Children Aged 1–4	Pregnant Women	Postpartum Women	Total
Nevada	10.6	9.2	8.3	7.6	8.3	3.7	10.6	10.6	4.3
New Hampshire	18.8	18.8	15.8	19.0	17.2	9.0	18.8	18.8	8.9
New Jersey	6.6	6.1	5.7	6.5	6.3	2.7	6.6	6.5	2.9
New Mexico	10.0	8.7	9.4	9.6	10.4	3.6	10.0	10.0	3.4
New York	4.7	4.2	4.9	4.4	4.0	1.9	4.7	4.6	2.0
North Carolina	5.8	5.0	4.6	5.1	4.8	2.0	5.8	5.8	2.2
North Dakota	24.8	18.3	18.9	28.4	17.7	11.5	24.8	24.9	13.0
Ohio	5.8	4.6	5.5	5.8	5.3	2.2	5.8	5.8	2.3
Oklahoma	7.5	6.6	7.4	6.9	6.9	3.1	7.5	7.5	3.0
Oregon	8.3	8.3	8.0	8.5	7.9	3.2	8.3	8.2	3.5
Pennsylvania	6.1	5.4	6.6	5.6	5.6	2.4	6.1	6.1	2.5
Rhode Island	18.4	20.0	20.6	21.3	16.6	9.2	18.4	18.4	7.7
South Carolina	7.4	7.3	7.1	7.5	6.8	2.8	7.4	7.4	2.6
South Dakota	16.4	14.7	15.6	17.2	14.7	7.9	16.4	16.4	8.5
Tennessee	6.4	6.1	5.4	5.7	6.4	2.5	6.4	6.4	2.6
Texas	4.0	3.4	3.7	3.9	3.3	1.5	4.0	4.0	1.7
Utah	10.1	9.9	8.7	8.3	8.4	4.6	10.1	10.1	4.8
Vermont	22.8	25.4	22.0	19.9	23.2	9.5	22.8	22.8	11.5
Virginia	7.5	6.8	7.3	6.5	6.8	2.8	7.5	7.5	3.2
Washington	6.8	6.6	5.8	6.2	6.4	2.4	6.8	6.8	2.7
West Virginia	11.1	11.9	12.0	10.9	11.6	4.6	11.1	11.0	4.9
Wisconsin	7.6	8.3	7.5	8.3	8.9	3.7	7.6	7.6	3.4
Wyoming	24.6	20.3	24.5	23.2	20.8	10.9	24.6	24.5	12.5
Total[a]	**3.2**	**2.3**	**2.6**	**2.5**	**2.4**	**1.2**	**3.2**	**3.2**	**1.5**

Notes

[a] Estimates for Puerto Rico and the other U.S. territories are not included in the totals.

The coefficient of variation is defined as the ratio of the standard error of the coverage rate to the point estimate of the coverage rate.

Sources: IPUMS-USA, n.d.; NBER, n.d.a, n.d.b; Thorn et al., 2018; unpublished internal WIC administrative data

Table 6.4. Coefficients of Variation of WIC Coverage Rates (Percentage) by State and by Race and Ethnicity: CY 2016

State	White-Only Non-Hispanic	Black-Only and Other Non-Hispanic[a]	Hispanic	Total
Alabama	5.0	4.6	11.8	3.3
Alaska	17.2	9.3	26.5	7.9
Arizona	4.7	5.9	3.4	2.5
Arkansas	4.5	5.1	8.0	3.2
California	3.9	3.6	2.1	1.7
Colorado	5.4	8.0	4.8	3.4
Connecticut	8.8	9.5	6.4	4.1
Delaware	18.3	11.5	15.7	8.4
District of Columbia	53.0	7.5	22.5	7.0
Florida	3.5	3.4	2.5	1.9
Georgia	4.2	3.5	4.4	2.3
Hawaii	16.2	7.4	9.9	5.0
Idaho	5.8	20.3	9.5	4.4
Illinois	3.8	4.1	3.5	2.2
Indiana	4.3	5.5	5.4	2.8
Iowa	6.6	10.5	12.9	5.0
Kansas	6.1	9.9	6.0	4.2
Kentucky	3.8	6.6	11.8	3.2
Louisiana	5.4	3.9	8.4	2.7
Maine	10.1	17.7	49.6	8.9
Maryland	7.0	5.4	6.2	3.8
Massachusetts	5.8	6.2	4.8	3.1
Michigan	3.7	4.2	6.0	2.3
Minnesota	5.0	6.6	11.1	3.5
Mississippi	5.8	3.8	11.7	2.8
Missouri	4.0	6.1	8.1	3.2
Montana	8.1	11.4	29.6	6.7
Nebraska	7.1	12.8	9.2	5.2
Nevada	11.0	7.2	5.3	4.3
New Hampshire	10.5	26.6	36.4	8.9
New Jersey	5.0	5.5	3.9	2.9
New Mexico	11.6	6.7	4.1	3.4
New York	3.6	3.7	3.2	2.0
North Carolina	4.0	3.7	3.8	2.2
North Dakota	18.6	14.2	38.9	13.0
Ohio	3.5	4.0	7.3	2.3
Oklahoma	5.4	5.0	6.2	3.0

State	White-Only Non-Hispanic	Black-Only and Other Non-Hispanic[a]	Hispanic	Total
Oregon	5.2	9.5	4.8	3.5
Pennsylvania	3.6	5.2	5.1	2.5
Rhode Island	15.0	14.4	11.2	7.7
South Carolina	5.0	4.2	7.3	2.6
South Dakota	11.6	9.9	22.8	8.5
Tennessee	3.9	4.5	6.2	2.6
Texas	3.4	3.6	2.2	1.7
Utah	6.3	12.9	8.0	4.8
Vermont	12.0	32.1	57.6	11.5
Virginia	5.2	4.7	5.8	3.2
Washington	4.3	5.4	3.6	2.7
West Virginia	5.2	15.4	29.1	4.9
Wisconsin	4.9	7.0	8.0	3.4
Wyoming	14.2	36.6	31.1	12.5
Total[b]	**2.4**	**2.7**	**1.9**	**1.5**

Notes

[a] The Black-Only Non-Hispanic and Other Non-Hispanic categories were combined because of sample size concerns.

[b] Estimates for Puerto Rico and the other U.S. territories are not included in the totals.

The coefficient of variation is defined as the ratio of the standard error of the coverage rate to the point estimate of the coverage rate.

Sources: IPUMS-USA, n.d.; NBER, n.d.a, n.d.b; Thorn et al., 2018; unpublished internal WIC administrative data

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