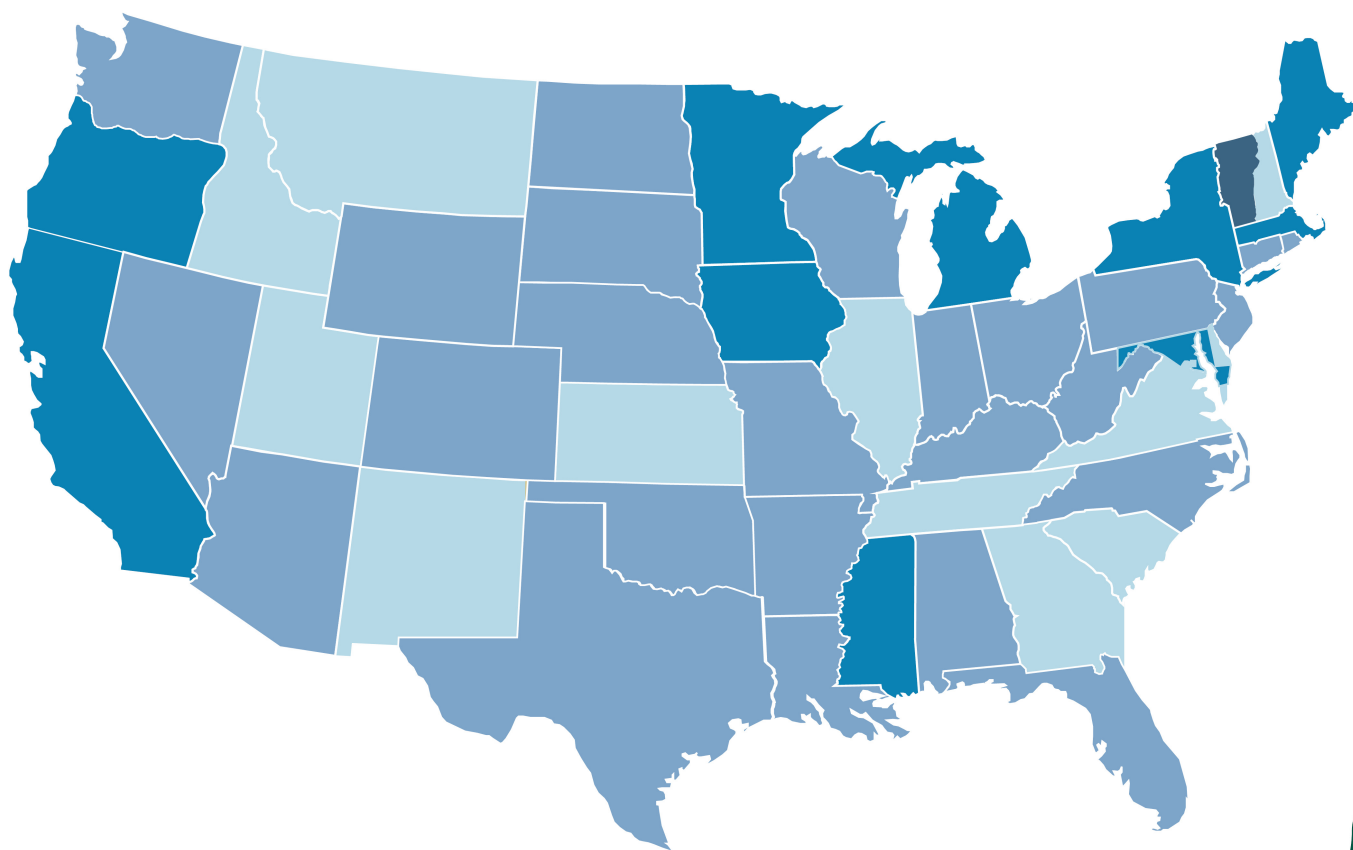




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Volume I

National- and State-Level Estimates of WIC Eligibility and WIC Program Reach in 2018 With Updated Estimates for 2016 and 2017



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National- and State-Level Estimates of WIC Eligibility and WIC Program Reach in 2018 With Updated Estimates for 2016 and 2017

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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-breastfeeding² woman; an infant up to age 1; or a child aged 1 to 4. 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 (2018).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.⁴ Applicants must live in the State in which they apply or meet the residency requirements established by an Indian Tribal Organization (ITO).

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) 2018. It also presents updated historical estimates for CY 2016 and CY 2017 to account for changes in the underlying data and produce a methodologically consistent series of estimates for CY 2016 through CY 2018.

For the purposes of this report, WIC participants are defined as those individuals who were enrolled in WIC and claimed their benefits in an average month in the calendar year. In 2018, WIC provided services in 90 State agencies: the 50 States; the District of Columbia; 5 U.S. territories (American Samoa, Guam, the Northern Mariana Islands, Puerto Rico, and the U.S. Virgin Islands); and 34 ITOs.⁵ Estimates are provided at the national, regional, and State levels, and include Puerto Rico and other U.S. territories.^{6,7} Estimates are also provided by participant category—i.e., infants, children, pregnant women, and postpartum women⁸—and by race and ethnicity.

¹ Breastfeeding women are categorically eligible up to 1 year postpartum.

² Non-breastfeeding women are categorically eligible up to 6 months postpartum.

³ These guidelines are based on family or 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.

⁴ 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). As in previous reports, the estimates presented do not account for automatic income eligibility.

⁵ On October 1, 2019, the number of ITOs participating in WIC changed from 34 to 33, decreasing the total number of State agencies to 89. For the period covered by this report, WIC provided services in 90 State agencies.

⁶ On October 1, 2019, the FNS regions were realigned. This report presents the FNS regions in effect during the period covered by this report. The FNS regions will be updated in future reports.

⁷ Data for those eligible for WIC through ITOs are included in the data for the State where the ITO is located.

⁸ Postpartum women category includes breastfeeding and non-breastfeeding women. This report contains tables and figures that combine breastfeeding and non-breastfeeding women under postpartum women.

A. Results

1. WIC Eligibility Estimates

In an average month in CY 2018, 11.9 million individuals were eligible for WIC (see table ES.1). Of those eligible to participate in WIC, almost two-thirds (66 percent) were children aged 1 to 4, 20 percent were women, and 15 percent were infants.⁹ Children eligible for WIC 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 who are estimated to be eligible for WIC. In an average month in CY 2018, 45 percent of all infants and 49 percent of all children were eligible for WIC (see figure ES.1). Forty percent of all pregnant women and 31 percent of all postpartum women were eligible.

Table ES.1. Estimated Average Monthly Number of Individuals Eligible for WIC by Participant Category: CY 2018

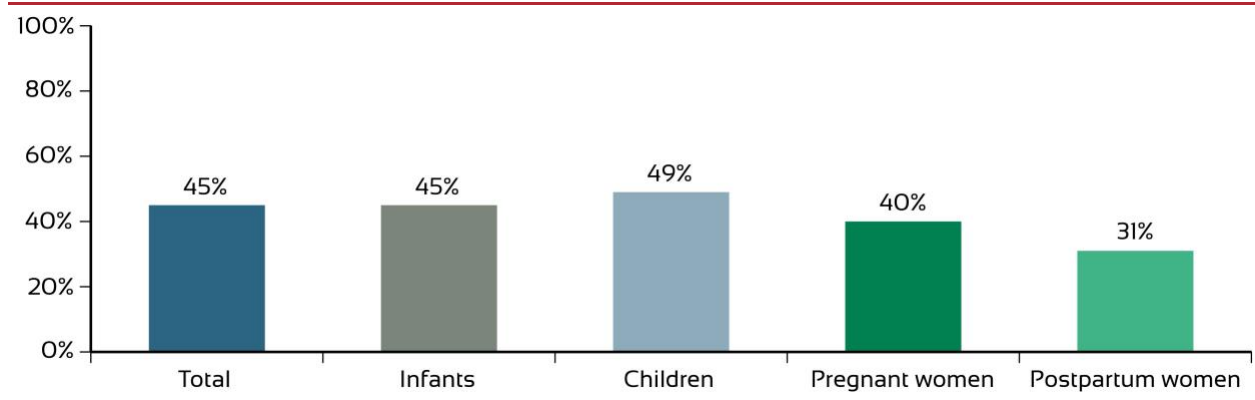
Participant Category	Number Eligible	Percent of Total Eligible	Total Population	Eligibility Rate
Infants	1,725,558	14.5	3,817,508	45.2
Children	7,827,066	65.9	16,063,431	48.7
1-year-old children	1,925,732	16.2	3,924,580	49.1
2-year-old children	1,931,721	16.3	3,974,744	48.6
3-year-old children	2,051,732	17.3	4,050,942	50.6
4-year-old children	1,917,881	16.2	4,113,165	46.6
Women	2,316,773	19.5	6,645,097	34.9
Pregnant women	1,138,061	9.6	2,847,899	40.0
Postpartum women	1,178,712	9.9	3,797,198	31.0
Breastfeeding women	781,683	6.6	2,222,934	35.2
Non-breastfeeding women	397,029	3.3	1,574,264	25.2
Total	11,869,397	100.0	26,526,035	44.7

Note: The total population consists of individuals in the 50 States, the District of Columbia, and 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: IPUMS-USA, n.d.; NBER, n.d.; U.S. Census Bureau, n.d.a

⁹ Percentages do not add to 100 because of rounding.

Figure ES.1. WIC Eligibility Rate by Participant Category: CY 2018



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

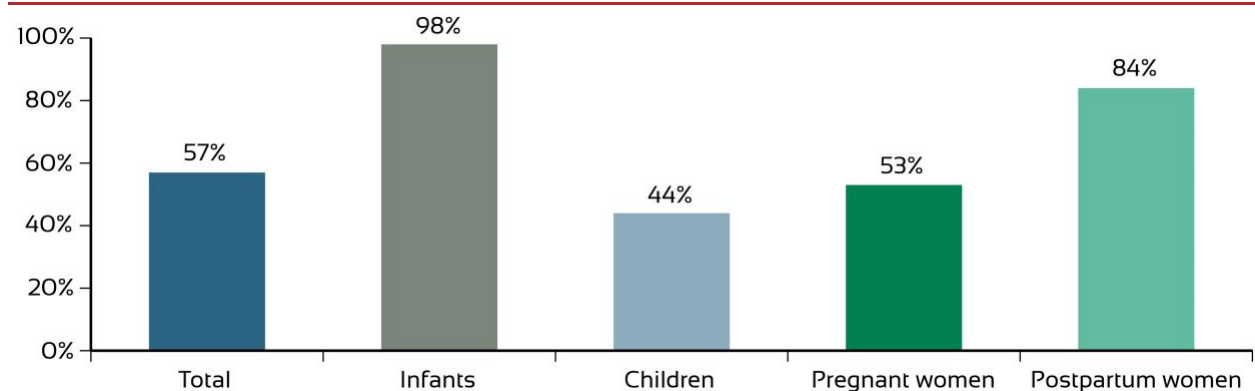
2. Coverage Rates

The coverage rates are the percentages 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 benefit from the program.

a. WIC coverage rates varied by participant category

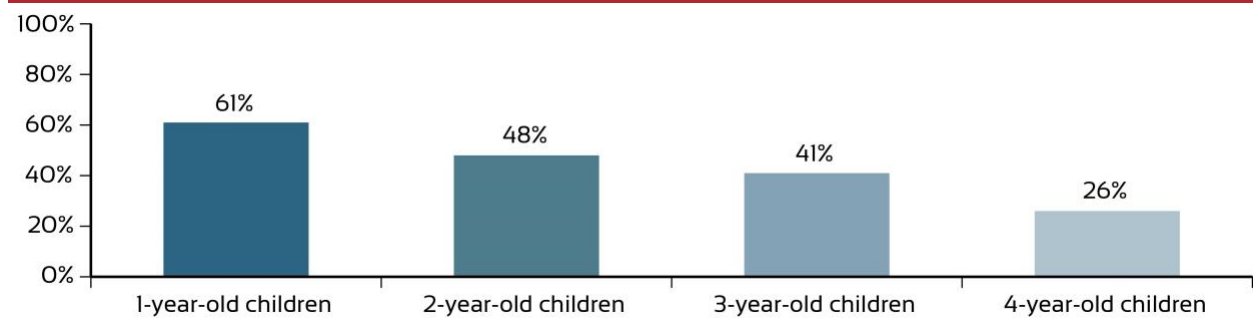
Of the 11.9 million women, infants, and children eligible for WIC in an average month in CY 2018, more than half (6.7 million) received benefits, resulting in a national coverage rate of 57 percent. Across all participant categories, coverage rates were highest for infants (98 percent) and lowest for children (44 percent; see figure ES.2). Moreover, coverage rates for children decreased with age, from a high of 61 percent for 1-year-olds to a low of 26 percent for 4-year-olds (see figure ES.3).

Figure ES.2. WIC Coverage Rate by Participant Category: CY 2018



Sources: IPUMS-USA, n.d.; NBER, n.d.; Kline et al., 2020; U.S. Census Bureau, n.d.a; unpublished internal WIC administrative data

Figure ES.3. WIC Coverage Rates for Children by Year of Age: CY 2018



Sources: IPUMS-USA, n.d.; NBER, n.d.; Kline et al., 2020; U.S. Census Bureau, n.d.a; unpublished internal WIC administrative data

b. WIC coverage rates varied by race and ethnicity

The overall coverage rate was highest for Hispanic/Latino individuals (63 percent) compared with other race and ethnicity groups. Coverage rates were 49 percent for non-Hispanic White-only individuals and 59 percent for all other non-Hispanic, non-White individuals (see table ES.2). Although coverage rates across all participant categories were highest for Hispanic/Latino individuals, this was largely because of the high rate of participation among children. Coverage rates were highest for Hispanic/Latino children (53 percent) and lowest for non-Hispanic White-only children (35 percent). Within all race and ethnicity groups, coverage rates were highest for infants.

Table ES.2. WIC Coverage Rate by Race and Ethnicity: CY 2018

Participant Category	Non-Hispanic White-Only	Non-Hispanic Black-Only and Other ^a	Hispanic/Latino	Total
Infants	89.8*	†	96.1	97.9
Children	35.2*	44.0	53.0*	44.2
Pregnant women	56.3	51.3	52.3	53.3
Postpartum women	81.1	88.0	84.7	84.4
Total	49.1*	58.6*	62.7*	56.9

Note: Estimates for U.S. territories other than Puerto Rico are not included in the calculation of the coverage rates in this table because information on race and ethnicity was not available for the other U.S. territories in the data.

* indicates a statistically significant difference at the 95-percent confidence level between the coverage rate for a participant category's race/ethnicity and the national coverage rate for that category. The statistical significance testing was conducted based on the Current Population Survey Annual Social and Economic Supplement data, which included data only for States. It did not include data for Puerto Rico or the other U.S. territories served by WIC.

† indicates an unreliable coverage rate over 100 percent with a 95-percent confidence interval that does not contain a value below 100 percent. See chapter 6 in volume I for more information on measures of statistical uncertainty for the eligibility estimates.

^a The "Non-Hispanic Black-Only and Other" category includes non-Hispanic Black-only individuals and non-Hispanic individuals who did not self-identify as Black only or White only. These categories were combined because of sample size concerns.

Sources: IPUMS-USA, n.d.; NBER, n.d.; Kline et al., 2020; U.S. Census Bureau, n.d.a; unpublished internal WIC administrative data

c. WIC coverage rates varied by State

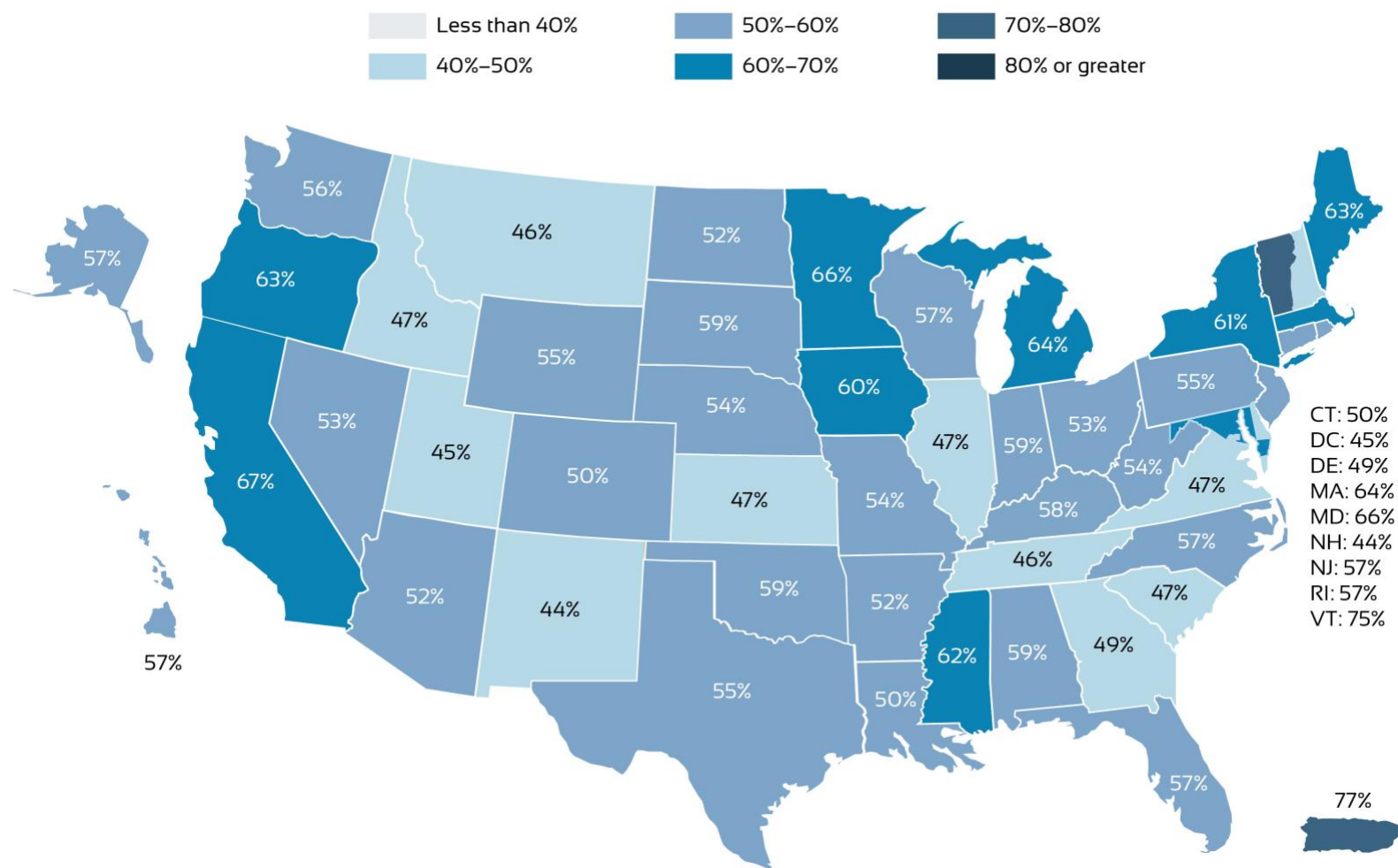
WIC coverage rates varied substantially by State, ranging from 44 percent to 75 percent, compared with the national average coverage rate of 57 percent. Puerto Rico had a higher coverage rate (77 percent) than any State. See tables 4.5 and 4.6 in chapter 4 for more detail on State coverage rates.

Coverage rates by race and ethnicity varied across States. In 23 States and the District of Columbia, the coverage rate for Hispanic/Latino individuals was higher than the rate for non-Hispanic White-only individuals and all other non-Hispanic individuals (see table 4.7 in chapter 4). However, in the other 27 States, the coverage rate for Hispanic/Latino individuals was lower than the rate for at least one of the other groups.

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 CY 2018, whereas States with the lightest shading had the lowest rates.

Figure ES.4. WIC Coverage Rate for Total Eligible Individuals by State: CY 2018

National Coverage Rate: 56.9 Percent



CY = calendar year

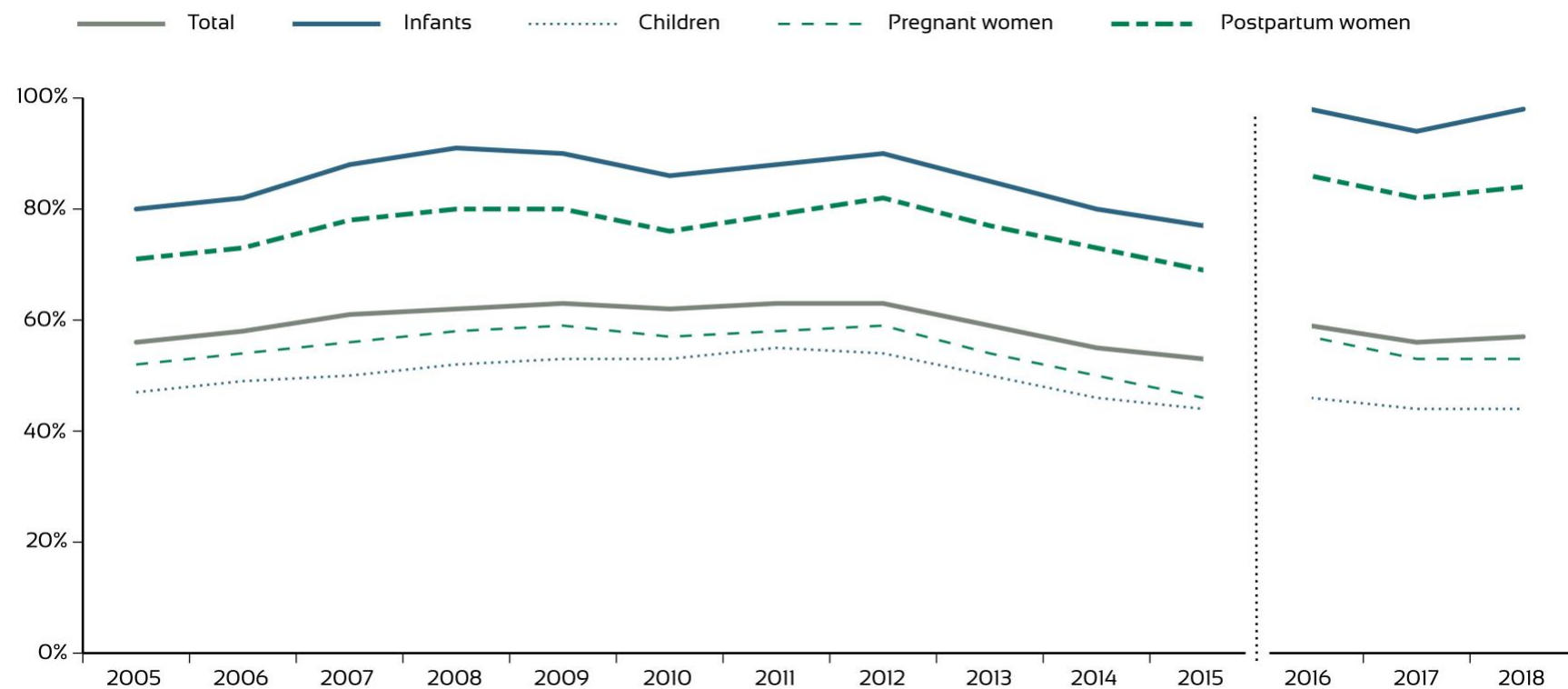
Sources: IPUMS-USA, n.d.; NBER, n.d.; U.S. Census Bureau, n.d.a; unpublished internal WIC administrative data

d. WIC coverage rates varied over time

The estimates for CY 2016–CY 2018 presented in this report differ methodologically from earlier estimates because of changes to the underlying data sources (see chapter 2 for more information). Comparisons between the CY 2016–CY 2018 estimates and prior estimates should be interpreted with caution. However, general trends in WIC coverage rates can be assessed. For example, total WIC coverage rates increased from CY 2005 to CY 2011 before steadily declining through CY 2015 (see the line for “Total” in figure ES.5). Rates fell between CY 2016 and CY 2017 and increased slightly between CY 2017 and CY 2018.

The relative magnitude of coverage rates by participant category has remained consistent from CY 2005 to CY 2018. Across all years, coverage rates were highest for infants, followed by those for postpartum women and pregnant women. Coverage rates for children were consistently the lowest.

Figure ES.5. Trends in WIC Coverage Rates by Participant Category: CY 2005–CY 2018



Note: Estimates for 2016–2018 differ methodologically from earlier estimates because of changes to the underlying data sources. Comparisons between the 2016–2018 estimates and prior estimates should be interpreted with caution. See chapter 2 in volume I for more information.

Sources: IPUMS-USA, n.d.; NBER, n.d.; Thorn et al., 2018; Kline et al., 2020; U.S. Census Bureau, n.d.a; unpublished internal WIC administrative data

B. Methodology

The CY 2018 national estimates presented in this report are based on a methodology developed by the Committee on National Statistics of the National Research Council (Ver Ploeg & Betson, 2003). The primary data source used to develop the national estimates of the eligible populations is the 2019 Current Population Survey Annual Social and Economic Supplement (CPS-ASEC) (National Bureau of Economic Research [NBER], n.d.).¹⁰ The U.S. Census Bureau used new data processing procedures for the 2019 CPS-ASEC (used to produce the 2018 estimates), which affected the estimate of the number of infants and children eligible for WIC and made comparisons between CY 2018 and prior year estimates inconsistent (see chapter 2 for more information). As a result, the CY 2016 and CY 2017 estimates were updated to incorporate the new CPS-ASEC processing changes and present a consistent 3-year series of estimates for CY 2016 through CY 2018 (see volume II for detailed information on the revised estimates). Comparisons between the CY 2016–CY 2018 estimates presented in this report and prior estimates should be interpreted with caution.

To produce national-level estimates, 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 nutritional risk. The number of infants eligible for WIC was then used as the starting point to estimate the numbers of pregnant and postpartum women eligible for WIC because the CPS-ASEC data do 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). The 2018 State-level estimates are based on the 2018 ACS data (Integrated Public Use Microdata Series-USA [IPUMS-USA], n.d.). 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) were 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 and the U.S. Census Bureau International Data Base, respectively.

¹⁰ The 2019 CPS-ASEC survey asks about income and program participation during CY 2018.

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. WIC serves low-income and nutritionally at-risk pregnant and postpartum women, infants, and children up to age 5. WIC is administered by the U.S. Department of Agriculture's (USDA) Food and Nutrition Service (FNS). In 2018, WIC provided services through State and local agencies in all 50 States; the District of Columbia;¹¹ 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).¹² 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 6.7 million women, infants, and children in an average month in calendar year (CY) 2018. To be eligible for WIC, an applicant must be categorically eligible as a pregnant, postpartum breastfeeding,¹³ or postpartum non-breastfeeding¹⁴ woman; an infant up to age 1;¹⁵ or a child aged 1 to 4. Each applicant must also be income-eligible and at nutritional risk and live in the State where 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 based on a formula that considers both the previous year's funding and the estimated eligible population in each State and U.S. territory. Accurately estimating the number of individuals eligible for WIC and the number likely to participate enables FNS to better predict future funding needs, measure WIC 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 2018 and updated historical estimates for 2016 and 2017. It also provides the percentages of eligible individuals who participated in WIC overall and by participant category (i.e., "coverage rates") and the percentages of the total population of individuals who participated 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 in an average month in 2018. Estimates are provided at the national, regional, and State levels.¹⁶ Estimates are also provided by participant category—i.e., infants, children, pregnant women, and postpartum women¹⁷—and by race and ethnicity.

¹¹ Hereafter, this report includes the District of Columbia in references to States.

¹² On October 1, 2019, the number of ITOs participating in WIC changed from 34 to 33, decreasing the total number of State agencies to 89. For the period covered by this report, WIC provided services in 90 State agencies.

¹³ Breastfeeding women are categorically eligible up to 1 year postpartum.

¹⁴ Non-breastfeeding women are categorically eligible up to 6 months postpartum.

¹⁵ An infant must be recertified as a child after the infant's first birthday.

¹⁶ On October 1, 2019, the FNS regions were realigned. This report presents the FNS regions in effect during the period covered by this report. The FNS regions will be updated in future reports.

¹⁷ Postpartum women category includes breastfeeding and non-breastfeeding women. This report contains tables and figures that combine breastfeeding and non-breastfeeding women under postpartum women.

Chapter 2 describes the data and methodology used to develop the 2018 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, including detailed information on the revised estimates for 2016 and 2017.

Chapter 2. Methodology

This chapter describes the methodology used to produce estimates of individuals eligible for WIC, coverage rates, and participation rates for 2018.¹⁸ To be eligible for WIC, an applicant must meet requirements for categorical and income or adjunctive income eligibility, nutritional risk, and residency. Descriptions of these requirements follow:

- ▶ **Categorical Eligibility.** A participant must be a pregnant, postpartum breastfeeding, or postpartum non-breastfeeding woman; an infant up to age 1 (the first birthday); or a child up to age 5 (the fifth birthday).
- ▶ **Income Eligibility.** 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.¹⁹ Applicants must present proof of income such as recent paystubs or income tax returns.
- ▶ **Adjunctive Income Eligibility.** 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).²⁰
- ▶ **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.²¹

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 eligibility requirements. 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 pregnant and postpartum women eligible for WIC. Because CPS-ASEC data do not include information on pregnancy or breastfeeding status, estimates of women eligible for WIC are based on adjusted counts of infants eligible for WIC rather than separate counts of CPS-ASEC data. For postpartum women, separate estimates are

¹⁸ The eligibility estimates are intended to represent average monthly figures—the numbers of women, infants, and children eligible for WIC in an average month of a calendar year—to be consistent with average monthly data on program participation.

¹⁹ See HHS (2017, 2018) for the Federal Poverty Guidelines used to calculate the 2018 WIC eligibility estimates presented in this report. These guidelines are based on family or 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.

²⁰ 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). As in previous reports, the estimates presented do not account for automatic income eligibility.

²¹ Applicants applying for benefits through an ITO must meet the residency requirements established by that ITO.

produced for breastfeeding and non-breastfeeding mothers because certification periods and benefits vary for these two groups.

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 2018 estimates: (1) 2019 CPS-ASEC data (National Bureau of Economic Research [NBER], n.d.), which asks about income and program participation during 2018; (2) 2018 ACS and PRCS data (Integrated Public Use Microdata Series-USA [IPUMS-USA], n.d.); and (3) 2018 IDB data (U.S. Census Bureau, n.d.a).

Because of processing changes to the 2019 CPS-ASEC used to produce the 2018 estimates, the 2018 WIC eligibility estimates are not completely consistent with estimates based on data using the earlier processing system. To create a clearer picture of recent trends in WIC eligibility, the historical 2016 and 2017 estimates were updated using alternate versions of the 2017 and 2018 CPS-ASEC files the U.S. Census Bureau had created to test the new processing procedures. The 2016 and 2017 estimates in this report will not match previously published estimates.²² See section G in chapter 2 for a summary of the processing changes and revised 2016 and 2017 estimates, and volume II for detailed information on the revised estimates.

The step-by-step process for producing the 2018 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 describes the method used to calculate WIC coverage rates, and section F explains the method used to calculate participation rates. Section G highlights changes from the 2017 report, including revisions to the 2016 and 2017 estimates to produce a consistent three-year series.

Table 2.1 summarizes the steps, data sources, and adjustment factors used to estimate eligibility for WIC in 2018. 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.

²² The 2005–2015 estimates presented in this report match previous published estimates.

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.²³ 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 the national estimates of infants and children eligible for WIC was to use 2019 CPS-ASEC data to produce preliminary demographic counts of the numbers of infants and children potentially served by WIC in 2018. These data were collected in spring 2019, and each household was asked to report income and program participation for the prior year (2018).

b. Produce adjusted counts of infants and children

The preliminary counts of infants and children from the CPS-ASEC were then adjusted to compensate for the differences between the weighted counts of infants and children in the CPS-ASEC data and the U.S. Census Bureau population estimates. There are two possible reasons for these differences: the U.S. 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, 2019b) 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.²⁴ The adjustment factors inflated or deflated the CPS-ASEC counts for each subgroup to better reflect the Census Bureau estimate for that subgroup. The adjustment factors were used only when the direction of the difference between the March 2018 Census Bureau population estimate and the CPS weighted count was the same as for the 4-year accumulations (i.e., if the Census Bureau figure was either greater or smaller in both cases). If the direction of the difference was not the same for a particular group, no adjustment was performed (i.e., the weight adjustment factor was 1.0).

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.^{25,26} WIC regulations²⁷ specify that all individuals living as one economic unit (that is, related or unrelated individuals who contribute to the household income) are treated as one unit for eligibility determination. The CPS-ASEC data do not explicitly indicate how household members (people living in the same dwelling) share resources. For the purposes of estimating eligibility for WIC,

²³ Data for those eligible for WIC through ITOs are included in the data for the State where the ITO is located.

²⁴ 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 (non-Hispanic White-only, non-Hispanic Black-only, non-Hispanic other, or Hispanic/Latino); and (3) gender (female or male). Data for a 4-year period were used to minimize large year-to-year swings in the factors.

²⁵ See Special Supplemental Nutrition Program for Women, Infants and Children (WIC): Income Eligibility Guidelines (2017, 2018).

²⁶ HHS issues new Federal Poverty Guidelines near the start of each calendar year, but the WIC program begins using each year's new guidelines in July; therefore, the poverty guidelines for 2 consecutive years were averaged to estimate income eligibility for WIC. For the 2018 estimates, the guidelines used to estimate WIC eligibility from July 2017 through June 2018 (the guidelines released in early 2017) were averaged with the guidelines used by the WIC program for July 2018 through June 2019 (the guidelines released in early 2018).

²⁷ 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).

the economic unit was defined as all individuals 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.²⁸

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.²⁹ 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 economic units whose annual income exceeded 185 percent of the Federal Poverty Guidelines were added to the number of income-eligible infants and children.

Because of the 2019 CPS-ASEC processing procedures, fewer infants and children are estimated as adjunctively income-eligible for WIC through Medicaid only (i.e., not eligible for WIC through income, SNAP, or TANF) than would have been the case under the prior processing system (see section G in chapter 2 for additional information on the new CPS-ASEC processing procedures).

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.³⁰ The annual-to-monthly income adjustment accounted for how annual income data and program participation data could incorrectly estimate monthly eligibility.³¹ 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.³² After a participant's certification period ends, eligibility must again be confirmed. These adjustment factors—computed separately for infants and children by race and ethnicity and to reflect shorter certification periods for children in some States³³—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.c). Appendix D in volume II 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 children eligible for WIC.

²⁸ 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 those individuals would have been included in the economic unit for the purposes of calculating the WIC eligibility estimates in this report.

²⁹ Medicaid enrollment is unavailable for 0- to 3-month-old infants in the prior year (e.g., 2018 in the 2019 CPS-ASEC).

³⁰ The Healthy, Hunger-Free Kids Act of 2010 (Pub. L. 111–296) gave States the option of certifying children eligible for WIC every 12 months instead of every 6 months. Whether and when a State has adopted this option affects WIC eligibility for children.

³¹ 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 even though the family's annual income is above 185 percent of the poverty guidelines, or the family's annual income may suggest eligibility while the family's income is below 185 percent of poverty in part of the year. Program participation in Medicaid, SNAP, and TANF may also fluctuate during the year.

³² For example, an infant or child may appear ineligible based on annual income but could have been eligible because they were certified in the prior year. Conversely, a child may appear eligible based on annual income, but the family income could have increased by the time the child needed to be recertified.

³³ Forty-three States and the District of Columbia implemented the 12-month certification policy for children prior to 2018. In 2018, New Jersey implemented the 12-month certification policy, and Arkansas, Kentucky, Louisiana, Nebraska, Ohio, and West Virginia maintained a 6-month certification policy for 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 2018 ACS data instead of 2019 CPS-ASEC data.³⁴ 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, 2019c).³⁵ 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 then applied.³⁶ 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 age³⁷ 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 2018 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 2018 IDB data for those areas. Starting from the numbers of infants and children in the U.S. territories in the IDB data, two adjustments were applied: (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 States and Puerto Rico in 2018 was used to estimate the additional number of infants and children eligible through adjunctive income eligibility in the other four U.S. territories.³⁸

C. Determining the Number of Pregnant Women Eligible for WIC

The next step in estimating eligibility for WIC in 2018 was to determine the number of pregnant women eligible for WIC in the States and U.S. territories served by WIC. Because the CPS-ASEC and ACS data do

³⁴ 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 Minnesota Population Center's IPUMS data was used. IPUMS data provides users with educated conjectures about the relationships between household members not related to the reference person.

³⁵ For State estimates, the weight adjustments were calculated by year of age (within each State), not by gender or race and ethnicity.

³⁶ When the annual-to-monthly factors were applied at the State level, two race and ethnicity factors were applied in each State: one for Non-Hispanic White-only children and one for children who were either non-White or Hispanic/Latino. The factors for children varied by each State's implementation of 12-month certification.

³⁷ Age 0, 1, 2, 3, or 4

³⁸ The relationship between adjunctive income eligibility and income eligibility in Puerto Rico and the mainland in 2018 was used to estimate the additional number of infants and children who would gain eligibility through participation in other safety net programs. These procedures resulted in an estimate of 82 percent of infants and 85 percent of children eligible for WIC in the other island territories because of annual income or program participation.

not include information about pregnancy,³⁹ 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 adjustment factor is calculated using National Vital Statistics data on births, infant deaths, and fetal deaths for four race and ethnicity groups: non-Hispanic White-only, non-Hispanic Black-only, non-Hispanic other, and Hispanic/Latino (see table 2.1).

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

The 2018 estimates were also adjusted to reflect that the length of a typical pregnancy is 9 months⁴⁰ and that some mothers of eligible infants were not eligible during pregnancy (see table 2.1).⁴¹

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 (0.97) of otherwise eligible pregnant women may not have been determined to be at nutritional 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 women eligible for WIC in the States. 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.

³⁹ Pregnancies can be inferred when the pregnancy has resulted in a birth but cannot be observed for women who are pregnant at the time of the survey.

⁴⁰ The estimates calculate pregnant women as eligible from conception, which is consistent with Federal WIC eligibility guidelines.

⁴¹ The CNSTAT panel recommended adjusting the eligibility estimates to incorporate the fact that women are more likely to be working during pregnancy than after birth, resulting in higher family income, on average, 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.

D. Determining the Number of Postpartum Women Eligible for WIC

The final step in estimating the number of individuals eligible for WIC in 2018 was to calculate the number of postpartum breastfeeding and non-breastfeeding women eligible for WIC in the Nation, States, and U.S. territories. Similar to how the estimates of pregnant women eligible for WIC were derived, the 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 WIC eligibility 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 mothers eligible for WIC 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 2018.

1. National Estimates

The national estimates of postpartum women were calculated similarly to the estimates of pregnant women. A series of adjustments were made 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

Adjustments similar to those made to estimate pregnant women eligible for WIC were made to estimate postpartum 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 race and ethnicity for the 2018 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 2017 and 2018 surveys for the 2016 birth cohort.⁴² CDC conducted special tabulations of the NIS data to provide breastfeeding rates for all mothers, WIC-participating mothers, and nonparticipating mothers eligible for WIC who gave birth in 2016. 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 and ethnic categories: non-Hispanic White-only, non-Hispanic Black-only, non-Hispanic other, and Hispanic/Latino. 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).

⁴² Unpublished internal CDC data

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 postpartum breastfeeding and non-breastfeeding women eligible for WIC. State-level NIS data on breastfeeding rates was provided by CDC to produce the 2018 estimates.⁴³ 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.

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.

E. Computing Coverage Rates

This report defines the 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 FNS⁴⁴ on the number of individuals who were enrolled in WIC *and* claimed their benefits in an average month of 2018.⁴⁵ FNS provides these administrative counts of WIC program participants for each of the five WIC participant categories: infants, children, pregnant women, postpartum breastfeeding women, and postpartum non-breastfeeding women. The coverage rates were calculated based on the ratio of WIC participants (numerator) in an average month in 2018 to the estimates of individuals eligible for WIC (denominator) in an average month in 2018.

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 2018 report on WIC participant and program characteristics (WIC PC2018 report; Kline et al., 2020). Therefore, the distribution of WIC-enrolled individuals across these participant categories was applied to the total number of WIC participants to estimate coverage rates by year of age for children and by race and ethnicity.⁴⁶ This implicitly assumes that the likelihood that an enrolled person's benefits are not claimed does not vary by race or ethnicity or by a child's age.

National coverage rate estimates for 2018 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 rates were also derived for infants, children by year of age, and pregnant and postpartum women, as well as by race and ethnicity. 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).

⁴³ The three most recent birth cohorts were pooled to produce a 3-year average rate for each State to reduce year-to-year variation because of small sample sizes in some States.

⁴⁴ All WIC administrative data referenced in this report is unpublished internal FNS data.

⁴⁵ 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).

⁴⁶ For example, to estimate the number of WIC participants who were 2 years old, WIC PC2018 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.

Each coverage rate is estimated independently based on the number of participating individuals in WIC compared with the number of individuals eligible for WIC in that category. To create a consistent set of estimates, the total number of eligible individuals is the same regardless of how they are stratified by subgroup. As a result, coverage rates over 100 percent can occur when estimates are stratified but do not change the calculation of overall rates. This report contains some coverage rate estimates over 100 percent, meaning that the number of individuals estimated to be eligible in a particular subgroup was smaller than the number of participants. In large part, it is likely the result of sampling variability in the CPS-ASEC survey data used to estimate the number of eligible individuals (denominator of the rate). However, changes to the CPS-ASEC data used to produce the 2018 estimates and revise the 2016 and 2017 estimates may also contribute to rates over 100 percent (see section G in chapter 2 for a summary of changes to the CPS-ASEC). Chapter 6 contains more information on measures of statistical uncertainty for the eligibility estimates. Rates over 100 percent are indicated in the notes of each table and figure.

F. Computing Participation Rates

This report defines the WIC participation rate 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 2018.

National participation rate estimates for 2018 were derived for infants, children by year of age, pregnant women, and postpartum breastfeeding and non-breastfeeding women (see chapter 5).

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 (Farson Gray et al., 2019) and additional enhancements conducted for this report.

1. New CPS-ASEC Survey Processing Procedures

The U.S. Census Bureau makes periodic improvements to the CPS-ASEC data. For the 2019 CPS-ASEC, the U.S. Census Bureau used new data processing procedures that included more accurate information on health insurance coverage and household income. These new processing procedures had a substantial impact on the 2018 estimates of WIC eligibility, particularly for (1) estimating the number of infants eligible for WIC and (2) estimating the number of infants and children adjunctively income-eligible for WIC via Medicaid only.

Under the prior CPS-ASEC processing procedures, health insurance coverage was imputed for a subset of infants born during the interview year. The CNSTAT panel recommended counting all infants at the time of the interview for the purposes of estimating the number of infants eligible for WIC in the prior year, even though some had not yet been born in the prior year (and compensating for the fact that some infants born during the prior year were 1 year old by the time of the interview) (Ver Ploeg & Betson, 2003). For example, an infant born between January and March of the interview year (e.g., 2016) could be shown as participating in Medicaid in the prior year (e.g., 2015), even though the infant had not yet been born, based on U.S. Census Bureau imputations. However, the new CPS-ASEC processing procedures removed infants born during the interview year from the universe of variables that describe

health insurance coverage during the survey year. As a result, information on health insurance coverage for 0- to 3-month-old infants is unavailable in the CPS-ASEC data for 2018.

This change in the CPS-ASEC processing procedures created a data limitation for estimating the number of eligible infants. Infants aged between 0 and 3 months can no longer be estimated as adjunctively income-eligible for WIC via Medicaid only.⁴⁷ Because of this limitation, future estimates of WIC eligibility will explore options for imputing Medicaid eligibility for 0- to 3-month-old infants in the CPS-ASEC to create a more complete estimate of eligible infants.

The new CPS-ASEC processing procedures also updated methods for using the information in the survey to develop the health insurance variables in the public-use data, including an improved process for imputing missing data. The U.S. Census Bureau analyses show that while the new processing system estimates a greater proportion of people being covered by some form of health insurance, it produces lower estimates of Medicaid coverage because of a reduction in the number of individuals with coverage from multiple sources (Berchick & Jackson, 2019). Therefore, the WIC eligibility estimates for 2018 show fewer infants and children estimated as adjunctively income-eligible for WIC through Medicaid only (i.e., not eligible for WIC through income, SNAP, or TANF) than would have been the case under the prior processing system.

2. Revised 2016 and 2017 Estimates of WIC Eligibility

As part of earlier testing of the 2019 CPS-ASEC processing system changes, the U.S. Census Bureau created alternate “research” versions of the 2017 and 2018 CPS-ASEC files. For this report, those files were used to revise the eligibility estimates for 2016 and 2017, creating a consistent set of eligibility estimates for the past 3 years. The revised 2016 and 2017 estimates used the same general methodologies used in prior years and the 2018 estimates. However, the revised estimates incorporate (1) the new CPS-ASEC processing procedures and (2) updated adjustment factors. Specifically, the revised estimates use more recent Census Bureau Vintage population estimates to account for an undercount or overcount in CPS-based estimates, updated annual-to-monthly and pregnancy income adjustment factors using the 2014 reengineered SIPP, and CDC breastfeeding data from the most recent (i.e., 2016) birth cohort.⁴⁸

Overall, the number of individuals estimated to be eligible for WIC decreased by 1.0 million in 2016 and 1.2 million in 2017 compared with the published estimates; decreases were consistent across participant categories.⁴⁹ The number of infants estimated to be eligible for WIC decreased by nearly 270,000 in 2016 and 346,000 in 2017. The number of children estimated to be eligible decreased by 449,000 in 2016 and 435,000 in 2017. The number of women estimated to be eligible decreased by 328,000 in 2016 and 458,000 in 2017. Volume II contains detailed information on the revised 2016 and 2017 estimates.

Comparisons between the 2016–2018 estimates and prior estimates in this report should be interpreted with caution. For the 2005–2015 estimates presented in this report, the prior CPS-ASEC processing procedures were used.⁵⁰

⁴⁷ To the extent that the number of infants eligible for WIC is underestimated because of changes to the CPS-ASEC, the number of pregnant and postpartum women eligible for WIC in 2018 may be lower than the true number of pregnant women eligible for WIC in 2018.

⁴⁸ The number of decimals used for adjustment factors also differs between the originally published and revised 2016 and 2017 estimates. Consistent with the 2018 estimates, all adjustment factors for the revised 2016 and 2017 estimates were rounded to 4 decimal places.

⁴⁹ See Trippe et al., 2019 for more information on the historical 2016 estimates and Farson Gray et al., 2019 for the 2017 estimates.

⁵⁰ The 2005–2015 estimates presented in this report match previous published estimates.

3. Updated Annual-to-Monthly Adjustment Factors and Pregnancy Income Adjustment Factor Using the 2014 SIPP Panel

The annual-to-monthly adjustment factors and the pregnancy income adjustment factor were updated using the 2014 SIPP panel. The 2005 through 2015 estimates presented in this report used data from the 2001, 2004, and 2008 SIPP panels to calculate the annual-to-monthly adjustment factors and the pregnancy income adjustment factor (see Johnson et al., 2017 for a detailed explanation of how these adjustment factors were calculated). For the 2016–2018 estimates presented in this report, the 2014 SIPP panel was used to update both factors using the most recent years of SIPP data available. Similar to the changes in the CPS-ASEC, the 2014 SIPP used new processing procedures related to health insurance coverage for infants. Specifically, beginning with the 2014 SIPP panel, health insurance coverage for infants was not captured if an infant had a different health insurance coverage type from a household member during the same period of months. That is, health insurance coverage was only collected if an infant had the same health insurance coverage as another household member during the same period. As a result, health insurance information was imputed for infants with missing health insurance coverage (U.S. Census Bureau, 2016), which may contribute to lower eligibility estimates for infants. Appendix E in volume II provides more information on the updates to factors using the 2014 SIPP panel.

4. Added Indicators of Statistical Significance in Tables That Compare Estimates of Race and Ethnicity by State and Participant Category

In the 2018 report, indicators of statistical significance were added to tables and figures comparing estimates of coverage rates by race and ethnicity by State (e.g., table 4.7) and by participant category (e.g., table ES.2 and figure 4.3). Asterisks are used to indicate when estimates are statistically significant at the 95-percent confidence level.⁵¹ The statistical significance testing was conducted 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.

⁵¹ In the 2016 and 2017 estimates reports, indicators of statistical significance were added to report tables. In the 2016 estimates report, indicators of statistical significance were added to tables that compared results for current year and previous year estimates (see tables 3.6 and 4.8 in Trippe et al., 2019). In the 2017 estimates report, indicators of statistical significance were added to tables with State coverage or participation rates to indicate whether a State's rate was statistically different from the overall national rate (see tables 4.5 and 5.2 in Farson Gray et al., 2019).

Table 2.1. Steps, Data Sources, Methods, and Adjustment Factors Used for CY 2018 Estimates of WIC Eligibility

Step	Data Source(s)	Methods and Adjustment Factors	
		Infants and Children	
Demographic eligibility	2019 CPS-ASEC, National estimates 2018 ACS, State estimates 2018 PRCS, Puerto Rico estimates 2018 IDB, Other island territories estimates	Identify individuals aged 0, 1, 2, 3, and 4 in each survey.	
Weight adjustment	- National estimates - Postcensal population estimates from Census Bureau and March CPS-ASEC for 2016, 2017, 2018, and 2019 - State and Puerto Rico estimates - Postcensal population estimates from U.S. Census Bureau for July 2018	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 (Non-Hispanic White-Only, Non-Hispanic Black-Only, Non-Hispanic Other, and Hispanic/Latino).	
		Adjustment Factors for Females	Adjustment Factors for Males
		- Infants - Non-Hispanic White-Only: 1.0048 - Non-Hispanic Black-Only: 1.1528 - Non-Hispanic Other: 1.1241 - Hispanic/Latino: 1.0172 1-year-old children - Non-Hispanic White-Only: 1.0059 - Non-Hispanic Black-Only: 0.8310 - Non-Hispanic Other: 0.8763 - Hispanic/Latino: 0.9749 2-year-old children - Non-Hispanic White-Only: 1.0118 - Non-Hispanic Black-Only: 1.0000 - Non-Hispanic Other: 1.0000 - Hispanic/Latino: 0.9986 3-year-old children - Non-Hispanic White-Only: 1.0093 - Non-Hispanic Black-Only: 1.0000 - Non-Hispanic Other: 0.9702 - Hispanic/Latino: 0.9992 4-year-old children - Non-Hispanic White-Only: 1.0128 - Non-Hispanic Black-Only: 0.9987 - Non-Hispanic Other: 0.9338 - Hispanic/Latino: 1.0000	- Infants - Non-Hispanic White-Only: 1.0040 - Non-Hispanic Black-Only: 1.1110 - Non-Hispanic Other: 1.0000 - Hispanic/Latino: 1.0000 1-year-old children - Non-Hispanic White-Only: 1.0055 - Non-Hispanic Black-Only: 0.9065 - Non-Hispanic Other: 0.9361 - Hispanic/Latino: 1.0000 2-year-old children - Non-Hispanic White-Only: 1.0034 - Non-Hispanic Black-Only: 1.0000 - Non-Hispanic Other: 0.9650 - Hispanic/Latino: 1.0000 3-year-old children - Non-Hispanic White-Only: 1.0081 - Non-Hispanic Black-Only: 1.0598 - Non-Hispanic Other: 0.9774 - Hispanic/Latino: 0.9977 4-year-old children - Non-Hispanic White-Only: 1.0053 - Non-Hispanic Black-Only: 0.9593 - Non-Hispanic Other: 1.0000 - Hispanic/Latino: 1.0061

Step	Data Source(s)	Methods and Adjustment Factors
Income eligibility	2019 CPS-ASEC, National estimates 2018 ACS, State estimates 2018 PRCS, Puerto Rico estimates 2018 IDB, Other island territories estimates - Blended 2017 and 2018 FPGs	Count as eligible if prior year's annual income was $\leq$ 185 percent of the Federal Poverty Guidelines.
Adjunctive income eligibility	2019 CPS-ASEC 2018 ACS 2018 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 2014 and 2015, as computed from 2014 Survey of Income and Program Participation 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): 1.0593 - Infants adjustment factors by race and ethnicity (used for estimates from CPS-ASEC and ACS data) - Non-Hispanic White-Only: 1.1110 - All others: 1.0141 - Children adjustment factor assuming 12-month certification periods (used for estimates from PRCS and IDB data): 1.0681 - Children adjustment factors by race and ethnicity (used for estimates from CPS-ASEC data) - Non-Hispanic White-Only: 1.1112 - All others: 1.0321
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: 0.9700 - Children: 0.9900
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	Average of 3 years of CDC National Vital Statistics data (i.e., 2015-2017 Births: Final Data, 2014-2016 Period Linked Birth – Infant Death Data Files, and 2014 – 2016 Fetal Death Data Files)	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 factors - Non-Hispanic White-Only: 0.9911 - Non-Hispanic Black-Only: 1.0019 - Non-Hispanic Other: 0.9944 - Hispanic/Latino: 0.9977

Step	Data Source(s)	Methods and Adjustment Factors
For pregnant women: Adjust for length of pregnancy and income during pregnancy	2004, 2008, and 2014 panels of Survey of Income and Program Participation 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 (0.91 factor). Combined adjustment factor: 0.6825
For postpartum women: Adjust for breastfeeding status	CDC NIS breastfeeding rates computed for 2016 birth cohort (NIS survey years 2017 and 2018)	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): 0.4549 ■ Breastfeeding by race and ethnicity (used for estimates from CPS-ASEC) — Non-Hispanic White-Only: 0.4731 — Non-Hispanic Black-Only: 0.4123 — Non-Hispanic Other: 0.4294 — Hispanic/Latino: 0.4684 ■ Non-breastfeeding (used for estimates from PRCS and IDB data): 0.2308 ■ Non-breastfeeding by race and ethnicity (used for estimates from CPS-ASEC) — Non-Hispanic White-Only: 0.2239 — Non-Hispanic Black-Only: 0.2536 — Non-Hispanic Other: 0.2443 — Hispanic/Latino: 0.2213
Adjust for nutritional risk	CNSTAT panel	Multiply estimates for pregnant and postpartum women 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

Note: CDC NIS breastfeeding rates are based on unpublished internal CDC data. March 2017 and 2018 CPS-ASEC data referenced in this table are research files, which apply the revised processing system first implemented for the March 2019 CPS-ASEC data to survey data originally collected and processed using the legacy system (see chapter 2 in volume I for more information). 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 mothers eligible for WIC and the total population of mothers.

ACS = American Community Survey; CDC = Centers for Disease Control and Prevention; CNSTAT = Committee on National Statistics; CPS-ASEC = Current Population Survey Annual Social and Economic Supplement; IDB = International Data Base; NIS = National Immunization Survey; PRCS = Puerto Rico Community Survey

^a An adjustment factor for the total number of children (1.0644) was also calculated but not used for any adjustment. The separate adjustment factors by race and ethnicity were used for the estimates.

Sources: The data sources listed in this table are as follows, in order of mention: for 2019 CPS-ASEC data, see NBER, n.d.; for 2018 ACS and PRCS data, see IPUMS-USA, n.d.; for 2018 IDB data, see U.S. Census Bureau, n.d.a; for March 2016, 2017, 2018, 2019 CPS-ASEC data, see NBER, n.d., U.S. Census, 2019a, 2020; for July 2018 postcensal population estimate data, see U.S. Census Bureau, 2019b, 2019c; for WIC income eligibility criteria, see 7 C.F.R. § 246; for 2017 Federal Poverty Guidelines, see HHS, 2017; for 2018 Federal Poverty Guidelines, see HHS, 2018; for 2014–2017 National Vital Statistics data, see National Center for Health Statistics, n.d.; for 2004, 2008, and 2014 Survey of Income and Program Participation panel data, see U.S. Census Bureau, n.d.c; for the Committee on National Statistics panel data, see Ver Ploeg & Betson, 2003.

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 2018

Step	Infants	1-Year-Old Children	2-Year-Old Children	3-Year-Old Children	4-Year-Old Children	All Children	Pregnant Women	Postpartum Breastfeeding Women	Postpartum Non-Breastfeeding Women	Total
Total number of infants/children in CPS-ASEC data	3,688,675	4,023,616	3,937,976	3,998,954	4,086,310	16,046,856	–	–	–	19,735,530
Number after adjustment for CPS undercount/overcount	3,788,582	3,895,521	3,943,069	4,017,559	4,078,046	15,934,195	–	–	–	19,722,777
Number with annual income <= 185 percent of the FPG	1,272,760	1,321,789	1,338,091	1,440,680	1,318,955	5,419,515	–	–	–	6,692,275
Number adjunctively income-eligible and with annual income > 185 percent of the FPG ^a	406,189	490,506	478,975	487,848	481,028	1,938,358	–	–	–	2,344,547
Through SNAP	134,196	129,449	141,136	143,570	134,185	548,341	–	–	–	682,537
Through TANF	5,023	4,158	5,685	4,330	4,170	18,344	–	–	–	23,367
Through Medicaid	266,970	356,898	332,153	339,948	342,674	1,371,673	–	–	–	1,638,643
Total number income and adjunctively income-eligible	1,678,949	1,812,294	1,817,066	1,928,528	1,799,984	7,357,873	–	–	–	9,036,822
Number after adjustment for monthly income and certification periods	1,753,036	1,918,968	1,922,705	2,042,391	1,905,579	7,789,642	–	–	–	9,542,678
Total number eligible: Number after adjustment for nutritional risk (infants and children)	1,700,445	1,899,778	1,903,478	2,021,967	1,886,523	7,711,746	–	–	–	9,412,191
Starting point for estimates of women is number of eligible infants	–	–	–	–	–	–	1,700,445	1,700,445	1,700,445	5,101,336
Number after adjustment for length of pregnancy and income of woman during pregnancy	–	–	–	–	–	–	1,160,554	–	–	1,160,554

Step	Infants	1-Year-Old Children	2-Year-Old Children	3-Year-Old Children	4-Year-Old Children	All Children	Pregnant Women	Postpartum Breastfeeding Women	Postpartum Non-Breastfeeding Women	Total
Number after adjustment for multiple births and infant deaths	–	–	–	–	–	–	1,156,171	1,694,023	1,694,023	4,544,217
Number after adjustment for breastfeeding	–	–	–	–	–	–	–	770,293	391,251	1,161,544
Total number eligible: Number after adjustment for nutritional risk (pregnant and postpartum women)	–	–	–	–	–	–	1,121,486	770,293	391,251	2,283,030
Total number eligible in the 50 States and the District of Columbia, excluding the U.S. territories served by WIC	1,700,445	1,899,778	1,903,478	2,021,967	1,886,523	7,711,746	1,121,486	770,293	391,251	11,695,221
Total number eligible in all U.S. territories served by WIC ^b	25,113	25,954	28,243	29,765	31,358	115,320	16,575	11,389	5,779	174,176
Total number eligible in the 50 States, the District of Columbia, and Puerto Rico and the other U.S. territories served by WIC	1,725,558	1,925,732	1,931,721	2,051,732	1,917,881	7,827,066	1,138,061	781,683	397,029	11,869,397

CPS = Current Population Survey; CPS-ASEC = CPS Annual Social and Economic Supplement; SNAP = Supplemental Nutrition Assistance Program; TANF = Temporary Assistance for Needy Families

^a Adjunctive income eligibility was counted by the first program that qualified the individual for WIC, in this order: SNAP, TANF, and Medicaid.

^b See appendix B in volume II for the derivation of WIC eligibility in U.S. territories.

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Sources: IPUMS-USA, n.d.; NBER, n.d.; U.S. Census Bureau, n.d.a; Kline et al., 2020

Chapter 3. Estimates of WIC Eligibility for CY 2018

This chapter presents estimates of WIC eligibility in 2018. Section A presents national-level estimates by participant category and describes the characteristics of infants and children eligible for WIC. Section B presents regional- and State-level estimates. Section C examines the changes in the numbers of individuals eligible for WIC overall and by participant category from 2016 to 2018. Section D discusses general trends in WIC eligibility from 2005 to 2018.⁵²

A. National-Level Estimates of Individuals Eligible for WIC

In an average month in 2018, 11.9 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 (66 percent) were children, 15 percent were infants, and 20 percent were women (see figure 3.1).⁵³ Children eligible for WIC were evenly distributed by year of age; the distribution for each age ranged from 16 to 17 percent. Of individuals eligible for WIC, pregnant and postpartum women each represented 10 percent of the population. Postpartum breastfeeding women represented a larger proportion than postpartum non-breastfeeding women (7 versus 3 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 2018, 45 percent of all infants and 49 percent of all children were eligible for WIC (see figure 3.2 and table 3.1). Forty percent of all pregnant women and 31 percent of all postpartum women were eligible. The eligibility rate is lower for non-breastfeeding women (25 percent) than for breastfeeding women (35 percent) in part because non-breastfeeding women are only eligible for the first 6 months.

Table 3.1. Estimated Average Monthly Number of Individuals Eligible for WIC by Participant Category: CY 2018

Participant Category	Number Eligible	Percent of Total Eligible	Total Population	Eligibility Rate
Infants	1,725,558	14.5	3,817,508	45.2
Children	7,827,066	65.9	16,063,431	48.7
1-year-old children	1,925,732	16.2	3,924,580	49.1
2-year-old children	1,931,721	16.3	3,974,744	48.6
3-year-old children	2,051,732	17.3	4,050,942	50.6
4-year-old children	1,917,881	16.2	4,113,165	46.6
Women	2,316,773	19.5	6,645,097	34.9
Pregnant women	1,138,061	9.6	2,847,899	40.0
Postpartum women	1,178,712	9.9	3,797,198	31.0
Breastfeeding women	781,683	6.6	2,222,934	35.2
Non-breastfeeding women	397,029	3.3	1,574,264	25.2
Total	11,869,397	100.0	26,526,035	44.7

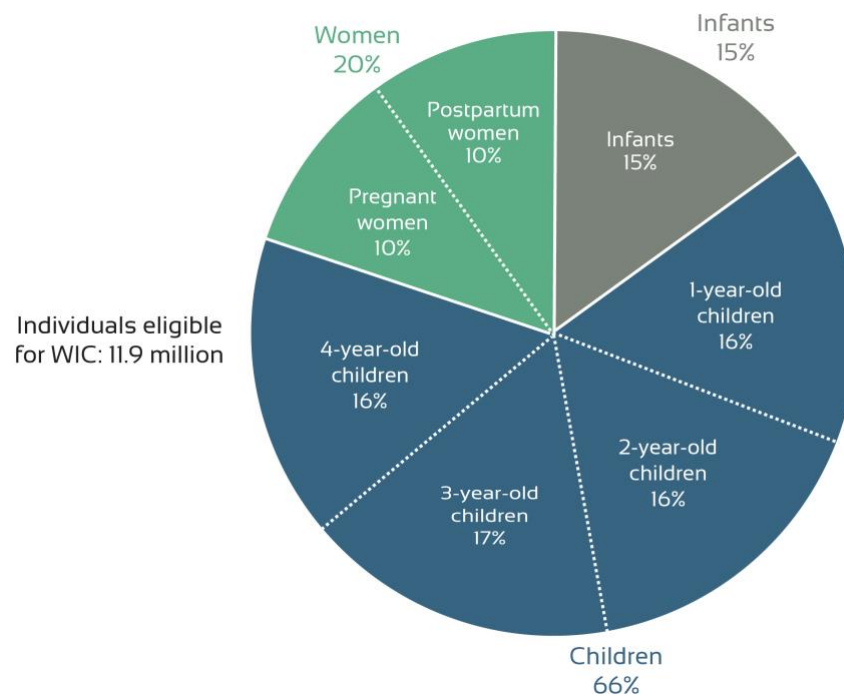
Note: The total population consists of individuals in the 50 States, the District of Columbia, and Puerto Rico and the other U.S. territories served by WIC in each participant category. The eligibility rate is the ratio of the total number of individuals eligible for WIC to the total population in each participant category.

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

⁵² Estimates for 2016–2018 differ methodologically from earlier estimates because of changes to the underlying data sources. Comparisons between the 2016–2018 estimates and prior estimates should be interpreted with caution. See chapter 2 for more information.

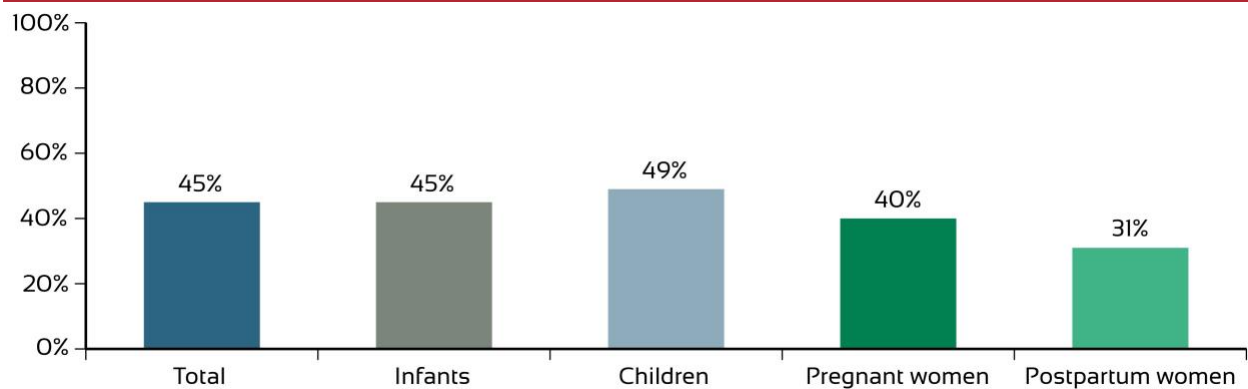
⁵³ Percentages do not add to 100 because of rounding.

Figure 3.1. Distribution of Individuals Eligible for WIC: CY 2018



Note: Percentages do not add to 100 because of rounding.
 Sources: IPUMS-USA, n.d.; NBER, n.d.; U.S. Census Bureau, n.d.a

Figure 3.2. WIC Eligibility Rate by Participant Category: CY 2018



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

1. Characteristics of Infants and Children Eligible for WIC

The CPS-ASEC data (NBER, n.d.) were used to examine the characteristics of the infants and children identified as eligible for WIC in 2018 (see table 3.2).⁵⁴ Two-thirds of infants and children eligible for WIC were White (67 percent), 22 percent were Black, and 12 percent were another race or multiple races.⁵⁵ More than one-third of eligible infants and children were Hispanic/Latino (36 percent), and a majority lived with two-parents (57 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 2 percent were living with a household member who was serving in the U.S. military in 2018. Most infants and children eligible for WIC lived with families receiving Medicaid (73 percent, see figure 3.3). The characteristics of infants eligible for WIC and children eligible for WIC were generally similar (see table 3.2), but infants were more likely than children to live in two-parent households (61 percent versus 56 percent) and less likely to live with working parents (67 percent versus 74 percent). Infants eligible for WIC were also more likely to live in households with no benefit receipt (23 percent versus 17 percent) and less likely to live in households with Medicaid receipt only (36 percent versus 42 percent).⁵⁶

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 that participated in Medicaid, SNAP, or TANF) compared with those income-eligible for WIC (in households with annual income less than or equal to 185 percent of the Federal Poverty Guidelines regardless of whether they participated in Medicaid, SNAP, or TANF).⁵⁷ For example, 70 percent of infants and children who were solely adjunctively income-eligible received Medicaid but not SNAP or TANF (see table 3.2). In comparison, 30 percent of directly income-eligible infants and children received Medicaid but not SNAP or TANF. Those who were solely adjunctively income-eligible were more likely to live in two-parent families (66 percent versus 54 percent) and live with one or more working parents (86 percent versus 68 percent) than those who were directly income-eligible.

⁵⁴ 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 women eligible for WIC.

⁵⁵ Percentages do not add to 100 because of rounding.

⁵⁶ See chapter 2 for more information on estimates of WIC eligibility via Medicaid only for infants.

⁵⁷ Although 26 percent of infants and children eligible for WIC were in households with annual income that exceeded 185 percent of the Federal Poverty Guidelines, among WIC participants, this percentage was much lower (2.7 percent of total participants in 2018; Kline et al., 2020). 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 income 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 Income Eligibility: CY 2018

Characteristics	Infants Eligible for WIC			Children Eligible for WIC			Infants and Children Eligible for WIC		
	Family Income ≤ 185% FPG ^a	Adjunctively Income- Eligible > 185% FPG ^b	Total	Family Income ≤ 185% FPG ^a	Adjunctively Income- Eligible > 185% FPG ^b	Total	Family Income ≤ 185% FPG ^a	Adjunctively Income- Eligible > 185% FPG ^b	Total
Total	1,285,196	415,249	1,700,445	5,665,619	2,046,126	7,711,746	6,950,816	2,461,375	9,412,191
Gender	—	—	—	—	—	—	—	—	—
Male	49.9	54.7	51.1	52.2	48.7	51.2	51.7	49.7	51.2
Female	50.1	45.3	48.9	47.8	51.3	48.8	48.3	50.3	48.8
Race	—	—	—	—	—	—	—	—	—
White	64.1	76.2	67.1	64.2	72.8	66.5	64.2	73.4	66.6
Black	25.8	17.2	23.7	23.1	16.3	21.3	23.6	16.5	21.7
Other	10.1	6.6	9.2	12.7	10.8	12.2	12.2	10.1	11.7
Ethnicity	—	—	—	—	—	—	—	—	—
Hispanic/Latino	38.4	36.2	37.9	37.4	31.6	35.8	37.6	32.4	36.2
Non-Hispanic/Latino	61.6	63.8	62.1	62.6	68.4	64.2	62.4	67.6	63.8
Living arrangement	—	—	—	—	—	—	—	—	—
Two-parent family	58.2	68.7	60.7	52.9	65.3	56.2	53.9	65.9	57.0
Single-parent family	34.1	26.7	32.3	40.9	29.2	37.8	39.7	28.8	36.8
No-parent family	7.7	4.6	7.0	6.2	5.5	6.0	6.4	5.4	6.2
Related non-parent caretaker	2.7	4.6	3.2	3.6	5.5	4.1	3.4	5.4	3.9
Unrelated non-parent caretaker	5.0	0.0	3.8	2.5	0.0	1.9	3.0	0.0	2.2
Military status of household members	—	—	—	—	—	—	—	—	—
Ever served in U.S. military	5.4	11.5	6.9	4.7	9.7	6.0	4.8	10.0	6.2
Serving in U.S. military in 2018 ^c	2.7	3.7	2.9	1.8	0.2	1.4	1.9	0.8	1.7

Characteristics	Infants Eligible for WIC			Children Eligible for WIC			Infants and Children Eligible for WIC		
	Family Income ≤ 185% FPG ^a	Adjunctively Income- Eligible > 185% FPG ^b	Total	Family Income ≤ 185% FPG ^a	Adjunctively Income- Eligible > 185% FPG ^b	Total	Family Income ≤ 185% FPG ^a	Adjunctively Income- Eligible > 185% FPG ^b	Total
Number of individuals in household	–	–	–	–	–	–	–	–	–
2	4.6	2.3	4.1	5.9	2.4	4.9	5.6	2.4	4.8
3	19.2	28.0	21.3	18.1	16.6	17.7	18.3	18.5	18.4
4	27.3	28.9	27.7	28.9	31.7	29.6	28.6	31.2	29.3
5	25.9	18.5	24.1	21.6	21.4	21.5	22.4	20.9	22.0
6 or more	23.1	22.4	22.9	25.5	28.0	26.2	25.1	27.0	25.6
Percent with working parent(s)	62.4	79.5	66.6	69.8	86.7	74.3	68.4	85.5	72.9
Annual family income relative to FPG ^b	–	–	–	–	–	–	–	–	–
No income	7.8	0.0	5.9	6.4	0.0	4.7	6.6	0.0	4.9
Up to 50% FPG	13.5	0.0	10.2	14.0	0.0	10.3	13.9	0.0	10.3
More than 50% up to 100% FPG	26.7	0.0	20.2	27.1	0.0	19.9	27.0	0.0	20.0
More than 100% up to 130% FPG	19.4	0.0	14.6	18.2	0.0	13.4	18.4	0.0	13.6
More than 130% up to 150% FPG	10.7	0.0	8.1	12.5	0.0	9.2	12.2	0.0	9.0
More than 150% up to 185% FPG	21.9	0.0	16.5	21.7	0.0	16.0	21.8	0.0	16.1
More than 185% up to 200% FPG	0.0	12.6	3.1	0.0	12.1	3.2	0.0	12.2	3.2
More than 200% FPG ^d	0.0	87.4	21.4	0.0	87.9	23.3	0.0	87.8	23.0

Characteristics	Infants Eligible for WIC			Children Eligible for WIC			Infants and Children Eligible for WIC		
	Family Income ≤ 185% FPG ^a	Adjunctively Income- Eligible > 185% FPG ^b	Total	Family Income ≤ 185% FPG ^a	Adjunctively Income- Eligible > 185% FPG ^b	Total	Family Income ≤ 185% FPG ^a	Adjunctively Income- Eligible > 185% FPG ^b	Total
Receipt of other benefits	–	–	–	–	–	–	–	–	–
No benefit receipt	30.3	0.0	22.9	23.3	0.0	17.1	24.6	0.0	18.1
Medicaid, SNAP, and TANF	3.1	1.1	2.6	4.6	1.2	3.7	4.3	1.2	3.5
SNAP and TANF only	1.8	0.0	1.4	0.2	0.0	0.1	0.5	0.0	0.3
Medicaid and SNAP only	27.3	17.7	24.9	33.1	17.4	29.0	32.1	17.4	28.2
Medicaid and TANF only	0.2	1.2	0.4	0.6	1.0	0.7	0.5	1.0	0.6
SNAP only	11.6	14.2	12.3	7.1	9.6	7.7	7.9	10.3	8.6
TANF only	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Medicaid only	25.7	65.9	35.5	31.2	70.9	41.7	30.2	70.1	40.6

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

CPS-ASEC = Current Population Survey Annual Social and Economic Supplement; CY = calendar year; FPG = Federal Poverty Guidelines; SNAP = Supplemental Nutrition Assistance Program; TANF = Temporary Assistance for Needy Families

^a The WIC economic unit is defined as all individuals 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 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.

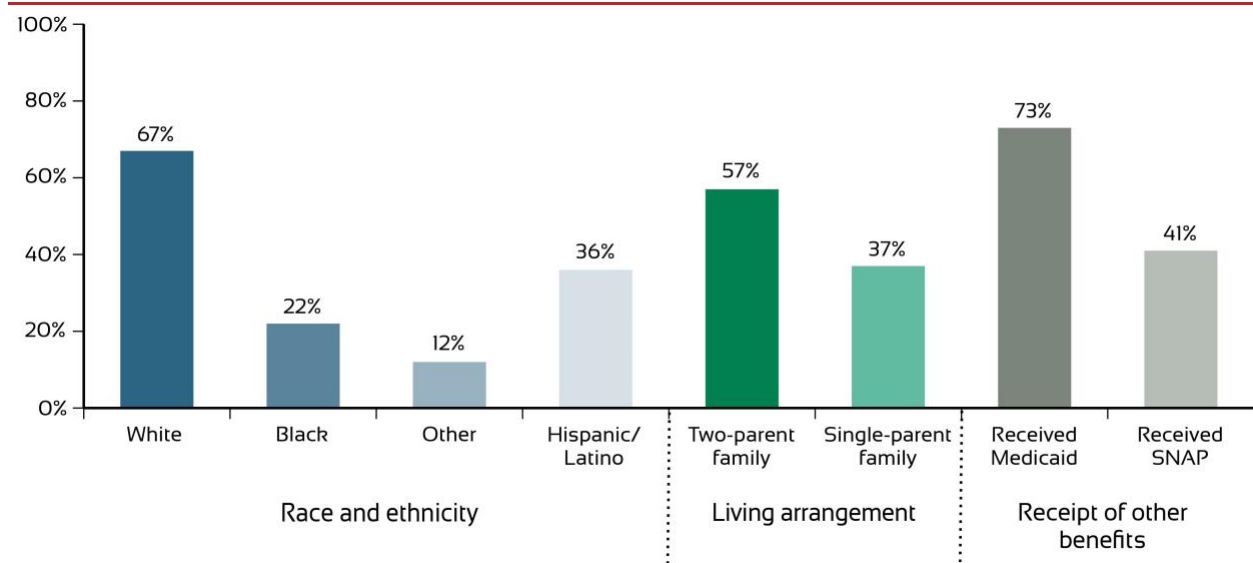
^c The military status of household members who were currently serving in the U.S. military was included on the CPS-ASEC only if they resided in civilian housing on or off a military base.

^d Although 26.2 percent of infants and children eligible for WIC were in households with annual income that exceeded 185 percent of the Federal Poverty Guidelines, among WIC participants, this percentage was much lower (2.7 percent of total participants in 2018; Kline et al., 2020). 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.

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Source: NBER, n.d.

Figure 3.3. Characteristics of Infants and Children Eligible for WIC: CY 2018



Note: The race and ethnicity categories are not mutually exclusive because the race categories include both Hispanic/Latino and non-Hispanic/Latino. This figure does not include estimates for Puerto Rico or the other U.S. territories.

CY = calendar year

Sources: IPUMS-USA, n.d.; NBER, 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 in volume II for a list of States and U.S. territories by region). In 2018, the Southeast and Western regions had the greatest percentage of eligible individuals (22 and 21 percent, respectively; see table 3.3) out of the total population eligible for WIC. In contrast, the Mountain Plains and Northeast regions had the smallest percentage of eligible individuals (7 and 9 percent, respectively). The distribution of eligibility for WIC shows similar regional variations by participant category.

Table 3.3. Distribution of Individuals Eligible for WIC (Percentage) by FNS Region and Participant Category: CY 2018

FNS Region	Infants	Children	Pregnant Women	Postpartum Women	Total
Northeast	8.7	8.7	8.7	8.9	8.7
Mid-Atlantic	11.1	11.3	11.1	11.2	11.2
Southeast	21.5	21.8	21.5	20.8	21.6
Midwest	14.1	14.3	14.1	13.8	14.2
Southwest	16.8	16.3	16.8	16.3	16.4
Mountain Plains	7.1	7.3	7.1	7.3	7.2
Western	20.7	20.4	20.7	21.6	20.6
Total	100.0	100.0	100.0	100.0	100.0

CY = calendar year; FNS = Food and Nutrition Service

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

WIC eligibility rates, which indicate the percentage of the total population in each participant category who are estimated to be eligible for WIC, were highest in the Southeast and Southwest regions (50 percent) and lowest in the Mountain Plains region (38 percent) as shown in table 3.4. Eligibility rates by participant category show similar variations by region (see figure 3.4).

By State, California had the largest share of individuals eligible for WIC (13 percent of the national estimate), reflecting its large population (see table 3.5). The States with the four largest eligible populations (California, Florida, New York, and Texas) had 36 percent of the total U.S. population eligible for WIC in 2018.

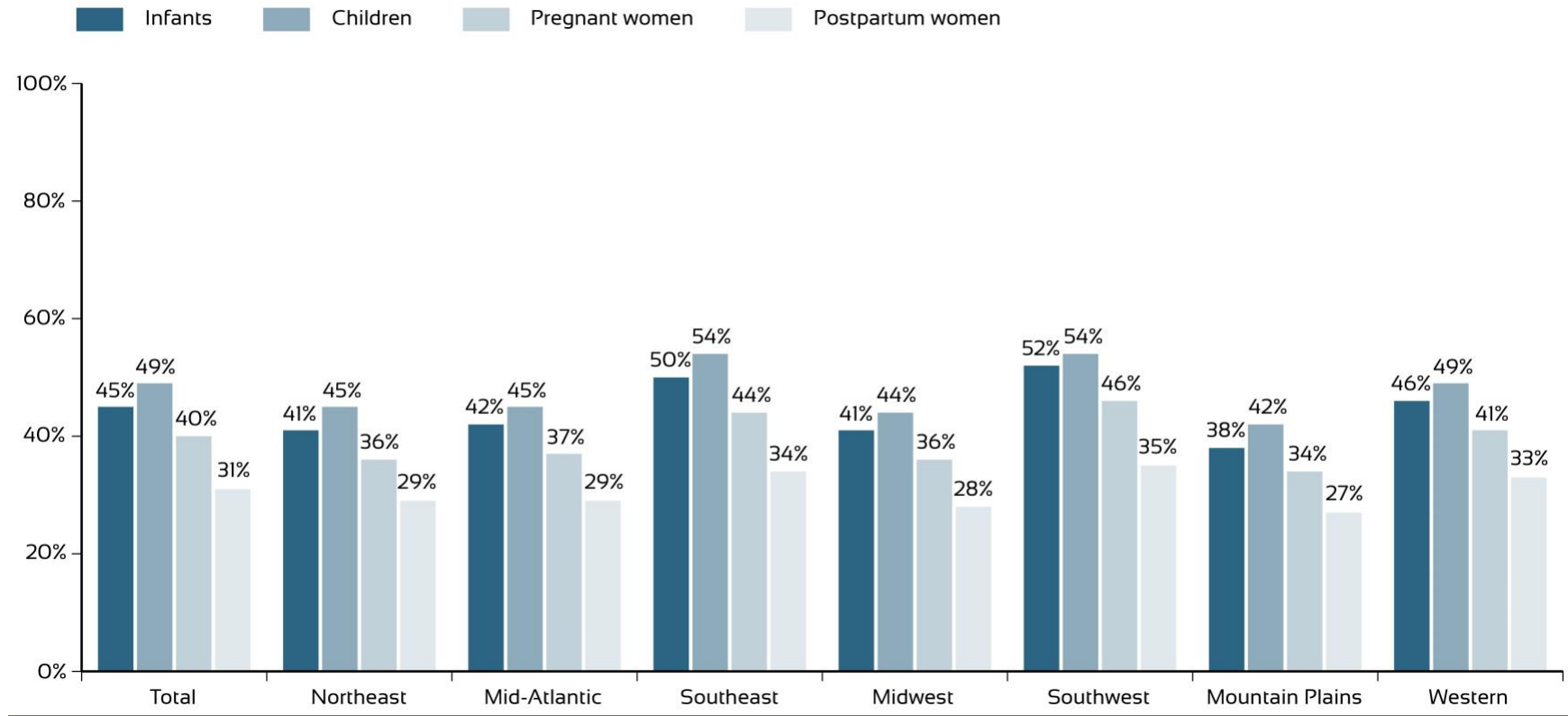
Table 3.4. WIC Eligibility Rates by FNS Region and Participant Category: CY 2018

FNS Region	Infants	Children	Pregnant Women	Postpartum Women	Total
Northeast	40.8	45.0	36.0	28.7	41.1
Mid-Atlantic	41.7	45.1	36.9	28.8	41.4
Southeast	50.0	54.4	44.2	33.6	49.7
Midwest	41.0	44.4	36.3	27.7	40.7
Southwest	51.8	54.3	45.8	34.8	50.2
Mountain Plains	38.0	42.0	33.6	26.6	38.3
Western	46.2	49.3	40.8	32.8	45.6
Total	45.2	48.7	40.0	31.0	44.7

CY = calendar year; FNS = Food and Nutrition Service

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

Figure 3.4. WIC Eligibility Rates by FNS Region and Participant Category: CY 2018



CY = calendar year; FNS = Food and Nutrition Service
 Sources: IPUMS-USA, n.d.; NBER, n.d.; U.S. Census Bureau, n.d.a

Table 3.5. Distribution of Individuals Eligible for WIC (Percentage) by State and FNS Region: CY 2018

State	Percent Share of National Estimate of Population Eligible for WIC
Alabama	1.7
Alaska	0.2
Arizona	2.4
Arkansas	1.2
California	12.5
Colorado	1.4
Connecticut	0.8
Delaware	0.3
District of Columbia	0.2
Florida	6.6
Georgia	3.6
Hawaii	0.4
Idaho	0.6
Illinois	3.5
Indiana	2.0
Iowa	0.8
Kansas	0.9
Kentucky	1.4
Louisiana	1.9
Maine	0.2
Maryland	1.6
Massachusetts	1.4
Michigan	2.8
Minnesota	1.3
Mississippi	1.2
Missouri	1.8
Montana	0.3
Nebraska	0.5
Nevada	1.0
New Hampshire	0.2
New Jersey	2.1
New Mexico	0.9
New York	5.7
North Carolina	3.2
North Dakota	0.2
Ohio	3.3
Oklahoma	1.4
Oregon	1.1
Pennsylvania	3.3
Puerto Rico	1.2
Rhode Island	0.3
South Carolina	1.6
South Dakota	0.3

State	Percent Share of National Estimate of Population Eligible for WIC
Tennessee	2.3
Texas	11.2
Utah	0.9
Vermont	0.1
Virginia	2.0
Washington	2.1
West Virginia	0.5
Wisconsin	1.3
Wyoming	0.1
FNS Region	
Northeast	8.7
Mid-Atlantic	11.2
Southeast	21.6
Midwest	14.2
Southwest	16.4
Mountain Plains	7.2
Western	20.6
Total	100.0

Note: State and regional eligibility estimates 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 small sample sizes.

CY = calendar year; FNS = Food and Nutrition Service; ITO = Indian Tribal Organization

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

C. Changes in the Numbers of Individuals Eligible for WIC: CY 2016–CY 2018

For this report, the 2016 and 2017 estimates were updated to reflect changes to the CPS-ASEC data used to produce the 2018 estimates of WIC eligibility (see chapter 2 for more information). As a result, changes in the numbers of individuals eligible for WIC are observed across the 3-year period—2016 through 2018—for which the estimates are based on consistent data and methodology. Estimates for the total population, total number of eligible individuals, and eligibility rates are displayed for all 3 years of estimates (see table 3.6).

Overall, the estimated total number of individuals eligible for WIC decreased between 2016 and 2018 from 12.9 million to 11.9 million, a decrease of 8 percent (see table 3.6). The decrease in the estimated number of eligible individuals was relatively consistent across all WIC participant categories. The estimated number of eligible infants, pregnant women, and postpartum women decreased by 9 percent, whereas the number of eligible children decreased by 8 percent.

The percentage changes in the population eligible for WIC 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 example, the 8-percent decrease in the total number of children eligible for WIC can be almost entirely attributed to a decrease in the eligibility rate among children (the total population of children decreased by 1 percent, but the eligibility rate among children decreased by 7 percent). As a result, the total number of children eligible for WIC decreased by 8 percent.

Table 3.6. Changes in the Total Population, Total WIC Eligibility, and WIC Eligibility Rates by Participant Category: CY 2016–CY 2018

Participant Category	2016	2017	2018	Percent Change 2016–2018
Total Population				
Infants	3,929,773	3,924,906	3,817,508	-2.9*
Children	16,191,683	16,155,807	16,063,431	-0.8*
1-year-old children	4,073,396	3,989,451	3,924,580	-3.7*
2-year-old children	4,071,608	4,066,840	3,974,744	-2.4*
3-year-old children	4,019,444	4,057,594	4,050,942	0.8
4-year-old children	4,027,234	4,041,923	4,113,165	2.1*
Pregnant women	2,931,489	2,927,962	2,847,899	-2.9*
Postpartum women	3,908,652	3,903,950	3,797,198	-2.9*
Breastfeeding women	2,291,169	2,287,227	2,222,934	-3.0*
Non-breastfeeding women	1,617,483	1,616,723	1,574,264	-2.7*
Total	26,961,597	26,912,626	26,526,035	-1.6*
Total Eligible				
Infants	1,890,953	1,882,098	1,725,558	-8.7*
Children	8,458,358	8,423,507	7,827,066	-7.5*
1-year-old children	2,159,720	2,132,153	1,925,732	-10.8*
2-year-old children	2,133,906	2,199,235	1,931,721	-9.5*
3-year-old children	2,111,732	2,078,947	2,051,732	-2.8
4-year-old children	2,053,001	2,013,172	1,917,881	-6.6*
Pregnant women	1,246,284	1,240,634	1,138,061	-8.7*
Postpartum women	1,292,642	1,286,942	1,178,712	-8.8*
Breastfeeding women	858,632	856,033	781,683	-9.0*
Non-breastfeeding women	434,010	430,909	397,029	-8.5*
Total	12,888,236	12,833,181	11,869,397	-7.9*
Eligibility Rate				
Infants	48.1	48.0	45.2	-6.1*
Children	52.2	52.1	48.7	-6.7*
1-year-old children	53.0	53.4	49.1	-7.5*
2-year-old children	52.4	54.1	48.6	-7.3*
3-year-old children	52.5	51.2	50.6	-3.6
4-year-old children	51.0	49.8	46.6	-8.5*
Pregnant women	42.5	42.4	40.0	-6.0
Postpartum women	33.1	33.0	31.0	-6.1*
Breastfeeding women	37.5	37.4	35.2	-6.2*
Non-breastfeeding women	26.8	26.7	25.2	-6.0*
Total	47.8	47.7	44.7	-6.4*

* indicates a statistically significant difference between the 2016 and 2018 estimates of individuals eligible for WIC or WIC eligibility rate at the 95-percent confidence level. The statistical significance testing was conducted on the 2016–2018 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.

CPS-ASEC = Current Population Survey Annual Social and Economic Supplement; CY = calendar year

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

D. Trends in WIC Eligibility Estimates: CY 2005–CY 2018

The estimates for 2016–2018 presented in this report differ methodologically from earlier estimates because of changes to the underlying data sources (see chapter 2 for more information).⁵⁸ Comparisons between the 2016–2018 estimates and prior estimates should be interpreted with caution (see table 3.7). However, the relative share of the eligible population by participant category remained the same over time: 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, trends in WIC eligibility estimates by participant category have remained relatively stable across all years. The decrease in the number of infants estimated to be eligible for WIC between 2015 and 2016 can largely be attributed to changes in the CPS-ASEC data (see chapter 2 for more information).

Table 3.7. Estimated Average Monthly Number of Individuals Eligible for WIC by Year and Participant Category: CY 2005–CY 2018

Year	Infants	Children	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	1,890,953	8,458,358	1,246,284	858,632	434,010	12,888,236
2017	1,882,098	8,423,507	1,240,634	856,033	430,909	12,833,181
2018	1,725,558	7,827,066	1,138,061	781,683	397,029	11,869,397

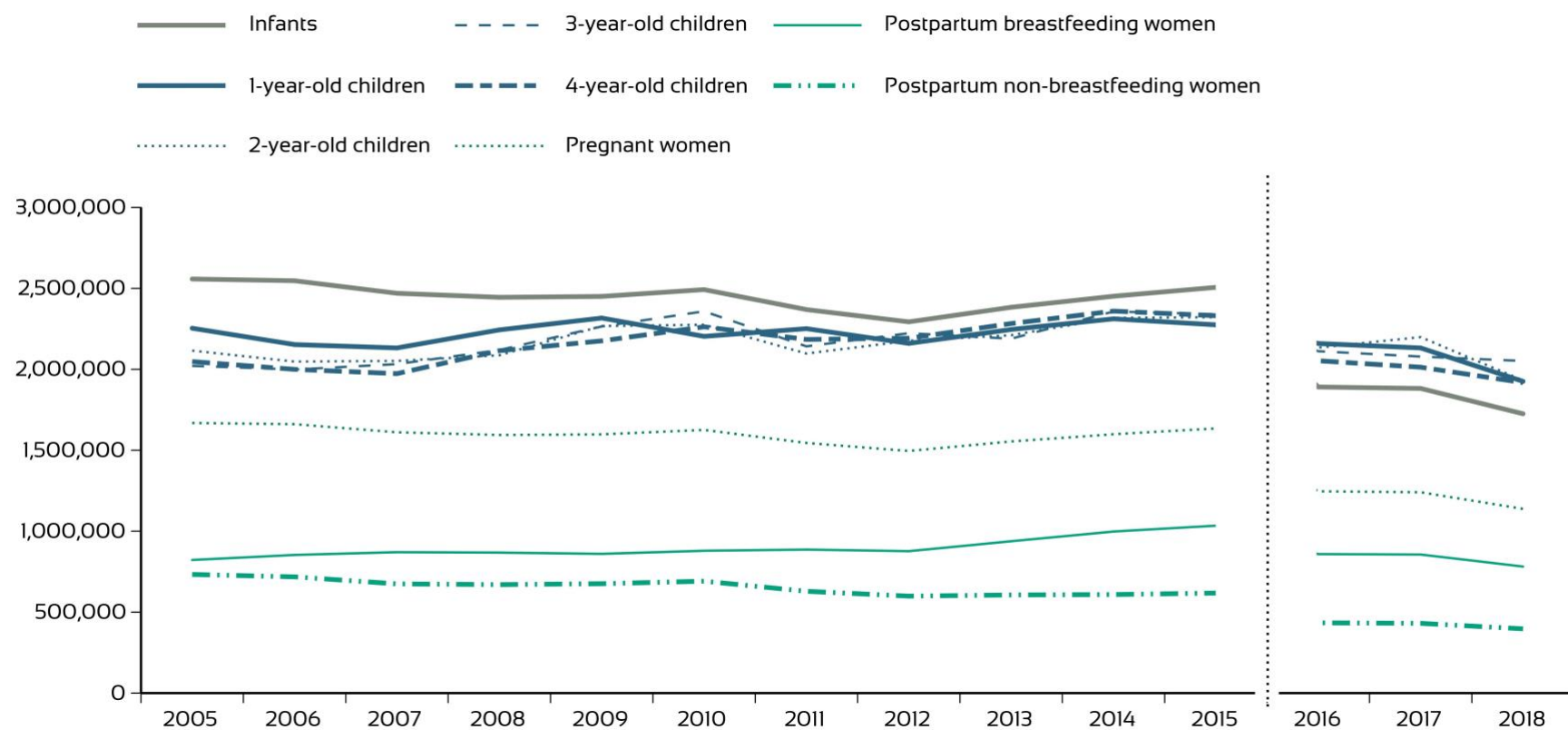
Note: Estimates for 2016–2018 differ methodologically from earlier estimates because of changes to the underlying data sources. Comparisons between the 2016–2018 estimates and prior estimates should be interpreted with caution. See chapter 2 in volume I for more information.

CY = calendar year

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

⁵⁸ The 2016–2018 estimates presented in this report use a consistent methodology.

Figure 3.5. Trends in WIC Eligibility by Participant Category: CY 2005–CY 2018



Note: Estimates for 2016–2018 differ methodologically from earlier estimates because of changes to the underlying data sources. Comparisons between the 2016–2018 estimates and prior estimates should be interpreted with caution. See chapter 2 in volume I for more information.

CY = calendar year

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

Chapter 4. WIC Coverage Rates for CY 2018

This chapter presents coverage rates for women, infants, and children in 2018. The coverage rates were calculated as the percentages of women, infants, and children eligible for WIC who received WIC benefits in an average month in 2018. 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 national-level WIC coverage rates in 2018 by participant category and by race and ethnicity. Section B presents regional- and State-level coverage rates. Section C examines the changes in coverage rates from 2016 to 2018. Section D discusses general trends in coverage rates from 2005 to 2018.⁵⁹

A. National-Level WIC Coverage Rates

Of the 11.9 million individuals eligible for WIC in an average month in 2018, 6.7 million participated, resulting in a 57-percent national coverage rate (see table 4.1). Coverage rates were highest for infants (98 percent) and lowest for children (44 percent; see figure 4.1).⁶⁰ Moreover, coverage rates for children decreased with age; rates were highest for 1-year-olds (61 percent) and lowest for 4-year-olds (26 percent; see figure 4.2).⁶¹ Coverage rates were higher for postpartum women (84 percent) than pregnant women (53 percent).⁶²

Coverage rates were highest for Hispanic/Latino individuals (63 percent) and lowest for non-Hispanic White-only individuals (49 percent; see table 4.2). The coverage rate for non-Hispanic Black-only individuals and non-Hispanic individuals who did not self-identify as Black only or White only was 59 percent. Coverage rates were highest for Hispanic/Latino children (53 percent) and lowest for non-Hispanic White-only children (35 percent). Non-Hispanic White-only individuals had the lowest coverage rates for all participant categories except pregnant women. Coverage rates were highest for non-Hispanic White-only pregnant women (56 percent) and lowest for non-Hispanic Black-only pregnant women and non-Hispanic pregnant women who did not self-identify as Black only or White only (51 percent). Within all race and ethnicity groups, coverage rates were highest for infants (see figure 4.3).

⁵⁹ Estimates for 2016–2018 differ methodologically from earlier estimates because of changes to the underlying data sources. Comparisons between the 2016–2018 estimates and prior estimates should be interpreted with caution. See chapter 2 for more information.

⁶⁰ The coverage rate for postpartum non-breastfeeding women is unreliable because the rate is over 100 percent with a 95-percent confidence interval that does not contain a value below 100 percent. It may be partially attributable to the underestimate of the number of infants eligible for WIC because of the lack of health insurance data for infants born during the CPS-ASEC interview year (see chapter 2 for more information). As a result, the estimated number of pregnant women eligible for WIC may be underestimated.

⁶¹ The unrounded coverage rate is 26.495 percent for 4-year-old-children, which rounds to 26 percent.

⁶² As noted in the methodology section (chapter 2), 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.

Table 4.1. WIC Coverage Rate by Participant Category: CY 2018

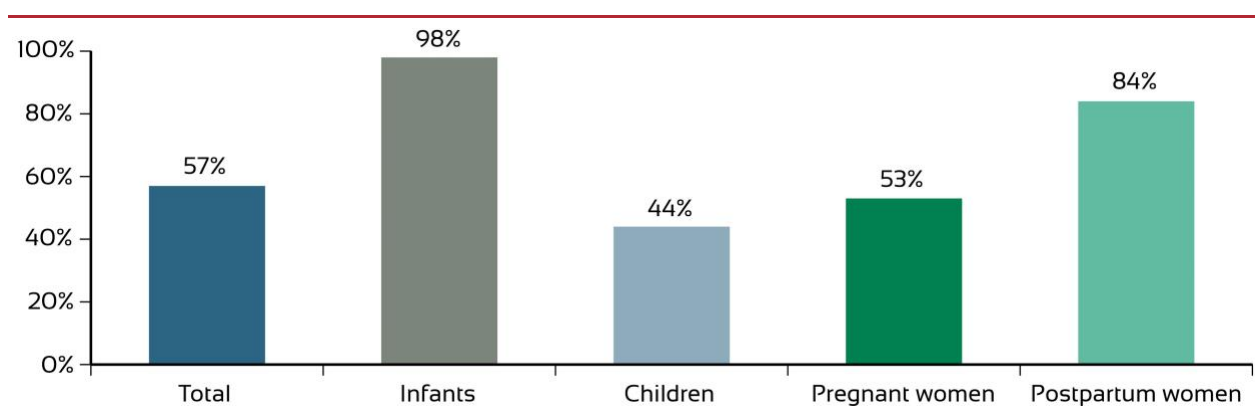
Participant Category	Number Eligible	Number Participating	Coverage Rate
Infants	1,725,558	1,687,310	97.8
Children	7,827,066	3,460,449	44.2
1-year-old children	1,925,732	1,181,989	61.4
2-year-old children	1,931,721	934,538	48.4
3-year-old children	2,051,732	835,780	40.7
4-year-old children	1,917,881	508,142	26.5
Pregnant women	1,138,061	606,373	53.3
Postpartum women	1,178,712	994,780	84.4
Breastfeeding women	781,683	536,944	68.7
Non-breastfeeding women	397,029	457,836	†
Total	11,869,397	6,748,911	56.9

Note: 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 PC2018 data.

CY = calendar year

† indicates an unreliable coverage rate over 100 percent with the lower bound of a 95-percent confidence interval above 100 percent

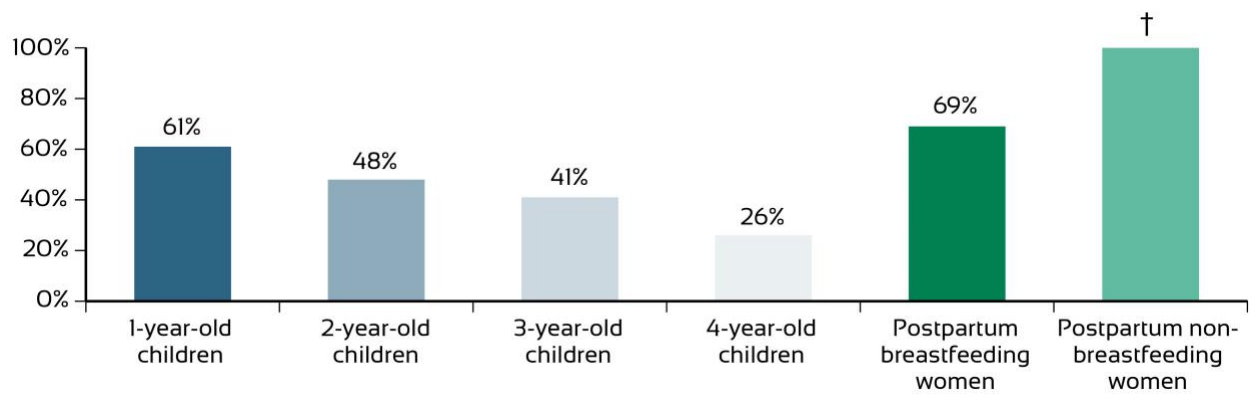
Sources: IPUMS-USA, n.d.; NBER, n.d.; Kline et al., 2020; U.S. Census Bureau, n.d.a; unpublished WIC administrative data

Figure 4.1. WIC Coverage Rate by Participant Category: CY 2018

CY = calendar year; FNS = Food and Nutrition Service

Sources: IPUMS-USA, n.d.; NBER, n.d.; Kline et al., 2020; U.S. Census Bureau, n.d.a; unpublished internal WIC administrative data

Figure 4.2. WIC Coverage Rates for Children by Year of Age and Postpartum Women by Breastfeeding Status: CY 2018



CPS-ASEC = Current Population Survey Annual Social and Economic Supplement; CY = calendar year

† indicates an unreliable coverage rate over 100 percent with the lower bound of a 95-percent confidence interval above 100 percent

Sources: IPUMS-USA, n.d.; NBER, n.d.; Kline et al., 2020; U.S. Census Bureau, n.d.a; unpublished internal WIC administrative data

Table 4.2. WIC Eligibility, Participants, and Coverage Rates by Participant Category and by Race and Ethnicity: CY 2018

Participant Category	Non-Hispanic White-Only	Non-Hispanic Black-Only and Other ^a	Hispanic/Latino	Total
Number Eligible				
Infants	560,919	495,929	663,580	1,720,428
Children	2,720,740	2,227,287	2,857,700	7,805,726
Pregnant women	368,038	328,350	438,296	1,134,683
Postpartum women	387,478	331,196	456,539	1,175,214
Total	4,037,175	3,382,762	4,416,115	11,836,051
Number Participating				
Infants	503,681	542,357	637,611	1,683,649
Children	956,701	979,432	1,513,880	3,450,013
Pregnant women	207,233	168,478	229,340	605,051
Postpartum women	314,129	291,476	386,810	992,415
Total	1,981,744	1,981,743	2,767,641	6,731,128
Coverage Rate				
Infants	89.8*	†	96.1	97.9
Children	35.2*	44.0	53.0*	44.2
Pregnant women	56.3	51.3	52.3	53.3
Postpartum women	81.1	88.0	84.7	84.4
Total	49.1*	58.6*	62.7*	56.9

Note: Estimates for U.S. territories other than Puerto Rico are not included in the calculation of the coverage rates in this table because information on race and ethnicity was not available for the other U.S. territories in the data.

CPS-ASEC = Current Population Survey Annual Social and Economic Supplement; CY = calendar year; FNS = Food and Nutrition Service

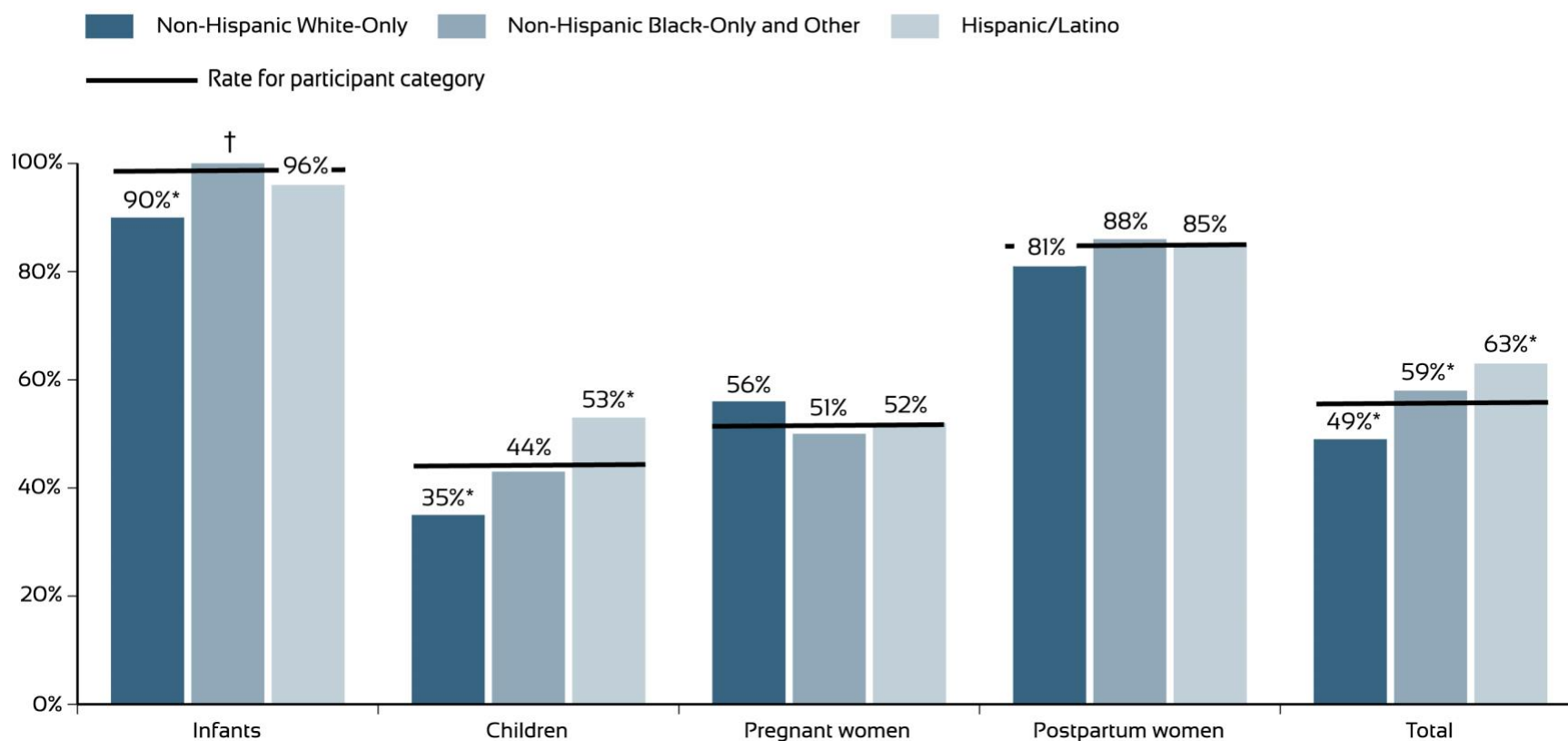
* indicates a statistically significant difference at the 95-percent confidence level between the coverage rate for a participant category's race/ethnicity and the national coverage rate for that category. The statistical significance testing was conducted based on the CPS-ASEC data, which included data only for States. It did not include data for Puerto Rico or the other U.S. territories served by WIC.

† indicates an unreliable coverage rate over 100 percent with the lower bound of a 95-percent confidence interval above 100 percent

^a The "Non-Hispanic Black-Only and Other" category includes non-Hispanic Black-only individuals and non-Hispanic individuals who did not self-identify as Black only or White only. These categories were combined because of small sample size concerns.

Sources: IPUMS-USA, n.d.; NBER, n.d.; Kline et al., 2020; unpublished internal WIC administrative data

Figure 4.3. WIC Coverage Rates by Race and Ethnicity and by Participant Category: CY 2018



Note: Estimates for U.S. territories other than Puerto Rico are not included in the calculation of the coverage rates in this figure because information on race and ethnicity was not available for the other U.S. territories in the data.

* indicates a statistically significant difference at the 95-percent confidence level between the coverage rate for a participant category's race/ethnicity and the national coverage rate for that category. The statistical significance testing was conducted 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.

† indicates an unreliable coverage rate over 100 percent with the lower bound of a 95-percent confidence interval above 100 percent

CPS-ASEC = Current Population Survey Annual Social and Economic Supplement; CY = calendar year

Sources: IPUMS-USA, n.d.; NBER, n.d.; Kline et al., 2020; 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 in volume II 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 (62 percent), and the Mountain Plains region had the lowest rate (52 percent) in comparison with the 57-percent national rate (see table 4.3).

In general, when comparing coverage rates by participant category, regional rates mirrored national rates (see table 4.3). For example, coverage rates were highest for infants across all regions. And, like national rates, coverage rates were lowest for children across all participant categories, except in the Western region, where rates were lowest for children and pregnant women (53 percent).

Regional coverage rates varied by race and ethnicity (see table 4.4). Coverage rates for non-Hispanic White-only individuals were lowest in six of the seven regions; rates for non-Hispanic individuals who did not self-identify as Black only or White only were only lower in the Southwest region. The coverage rates in the Northeast, Midwest, Mountain Plains, and Western regions were highest for non-Hispanic participants who did not self-identify as Black only or White only, whereas the remaining three regions (Mid-Atlantic, Southwest, and Southeast) had the highest rates for Hispanic/Latino participants.

Coverage rates by State had substantial variation in 2018. Rates ranged from a high of 75 percent in Vermont to a low of 44 percent in New Mexico compared with the national average coverage rate of 57 percent (see table 4.5 and figure 4.4). Puerto Rico had a higher coverage rate (77 percent) than any State. Twenty-two States and Puerto Rico had coverage rates greater than 57 percent. Three States had a coverage rate below 45 percent (District of Columbia, New Hampshire, and New Mexico).

State coverage rates by participant category were generally consistent with State coverage rates overall but differed in some cases. For example, in States such as Maryland, Minnesota, and Oregon, coverage rates were consistently higher than national rates across all categories (see table 4.6 and figures 4.5 through 4.8). Ten States (Arizona, District of Columbia, Idaho, Illinois, Kansas, Louisiana, Montana, New Mexico, Utah, and Virginia) had coverage rates that were consistently lower than national rates across all categories and age groups. Many States had higher or lower coverage rates compared with average coverage rates across participant categories. For example, compared with the national average, coverage rates in Arkansas were lower for children and postpartum women (by 8 and 6 percentage points, respectively), but 3 percentage points higher for pregnant women and slightly higher for infants (less than 1 percentage point). In California, compared with the national average, coverage rates were much higher for children (by 15 percentage points) and slightly higher for pregnant women and postpartum women (by 3 percentage points), but lower for infants (by 2 percentage points). In Washington, compared with the national average, coverage rates were lower for infants, pregnant women, and postpartum women (by 4 to 18 percentage points), but higher for children (by 5 percentage points).

State rates by race and ethnicity were also generally consistent with average State rates for these subgroups.⁶³ For example, similar to national coverage rates, State-level coverage rates were lowest for non-Hispanic White-only individuals in every States except for Arkansas, Indiana, Kentucky, Louisiana, Nevada, New Hampshire, North Carolina, Oregon, South Carolina, Tennessee, Wyoming (see table 4.7 and figures 4.9 through 4.11). In Arkansas, Kentucky, and Tennessee rates were highest for non-Hispanic White-only individuals.

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 in Vermont, a State with a small population, coverage rates were higher for 1-year-olds than for infants. It is unlikely that any State truly had higher coverage rates for 1-year-olds than infants. This demonstrates the limitations 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.

⁶³ Because of small sample sizes, estimates for “Non-Hispanic Black-Only” and “Non-Hispanic Other” subgroups were combined.

Table 4.3. WIC Eligibility, Participants, and Coverage Rates by FNS Region and Participant Category: CY 2018

FNS Region	Infants	Children	Pregnant Women	Postpartum Women	Total
Number Eligible					
Northeast	149,462	682,180	98,548	105,168	1,035,358
Mid-Atlantic	192,181	882,159	126,789	132,349	1,333,478
Southeast	371,393	1,704,501	245,061	245,724	2,566,679
Midwest	243,318	1,118,345	160,366	162,705	1,684,733
Southwest	289,989	1,274,908	191,390	192,213	1,948,500
Mountain Plains	122,813	568,933	80,861	86,036	858,643
Western	356,402	1,596,040	235,047	254,518	2,442,006
Total	1,725,558	7,827,066	1,138,061	1,178,712	11,869,397
Number Participating					
Northeast	145,655	333,666	52,961	90,693	622,975
Mid-Atlantic	187,630	404,051	69,864	105,950	767,495
Southeast	375,906	674,368	138,866	206,660	1,395,800
Midwest	258,903	473,229	84,551	132,830	949,513
Southwest	276,107	495,878	95,988	179,819	1,047,791
Mountain Plains	111,360	227,691	39,443	66,122	444,616
Western	331,748	851,566	124,700	212,706	1,520,720
Total	1,687,310	3,460,449	606,373	994,780	6,748,911

FNS Region	Infants	Children	Pregnant Women	Postpartum Women	Total
Coverage Rate					
Northeast	97.5	48.9*	53.7	86.2	60.2*
Mid-Atlantic	97.6	45.8	55.1	80.1	57.6
Southeast	100.0	39.6*	56.7	84.1	54.4*
Midwest	100.0*	42.3*	52.7	81.6	56.4
Southwest	95.2	38.9*	50.2	93.6*	53.8*
Mountain Plains	90.7	40.0*	48.8*	76.9*	51.8*
Western	93.1	53.4*	53.1	83.6	62.3*
Total	97.8	44.2	53.3	84.4	56.9

Note: The estimated coverage rate exceeded 100 percent for infants in the Southeast and Midwest regions. However, the lower bound of the 95-percent confidence interval for these rates is below 100 percent. See chapter 6 in volume I for more information on measures of statistical uncertainty for the eligibility estimates. Regional eligibility estimates and participant data include individuals in ITOs who were eligible for WIC and/or receiving WIC. Estimates for Puerto Rico are included in the Mid-Atlantic regional totals. As a result, the Mid-Atlantic regional coverage rates were excluded from significance testing. When Puerto Rico was excluded from the Mid-Atlantic region, the regional coverage rates were not statistically different from the national coverage rates at a 95-percent confidence level.

CPS-ASEC = Current Population Survey Annual Social and Economic Supplement; CY = calendar year; ITO = Indian Tribal Organization

* indicates a statistically significant difference between the regional coverage rate and the national coverage rate at the 95-percent confidence level

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

Table 4.4. WIC Eligibility, Participants, and Coverage Rates by FNS Region and by Race and Ethnicity Category: CY 2018

FNS Region	Non-Hispanic White-Only	Non-Hispanic Black-Only	Non-Hispanic Other	Hispanic/Latino	Total
Number Eligible					
Northeast	368,958	180,055	102,235	384,110	1,035,358
Mid-Atlantic	443,309	323,402	95,234	464,283	1,326,228
Southeast	937,046	860,283	182,044	587,306	2,566,679
Midwest	805,434	404,870	155,262	319,166	1,684,733
Southwest	454,535	361,369	122,332	1,010,264	1,948,500
Mountain Plains	470,976	91,123	84,025	212,519	858,643
Western	556,916	154,235	266,292	1,438,467	2,415,910
Total	4,037,175	2,375,337	1,007,424	4,416,115	11,836,051
Number Participating					
Northeast	186,581	123,568	74,397	238,428	622,975
Mid-Atlantic	212,272	187,469	49,213	315,654	764,609
Southeast	481,602	487,791	75,634	350,774	1,395,800
Midwest	420,000	239,575	103,334	186,604	949,513
Southwest	203,056	186,726	66,985	591,025	1,047,791
Mountain Plains	218,240	53,989	50,310	122,078	444,616
Western	259,993	94,209	188,543	963,078	1,505,823
Total	1,981,744	1,373,327	608,416	2,767,641	6,731,128
Coverage Rate					
Northeast	50.6	68.6	72.8	62.1	60.2
Mid-Atlantic	47.9	58.0	51.7	68.0	57.7
Southeast	51.4	56.7	41.5	59.7	54.4
Midwest	52.1	59.2	66.6	58.5	56.4
Southwest	44.7	51.7	54.8	58.5	53.8
Mountain Plains	46.3	59.2	59.9	57.4	51.8
Western	46.7	61.1	70.8	67.0	62.3
Total	49.1	57.8	60.4	62.7	56.9

Note: Estimates for U.S. territories other than Puerto Rico are not included in the calculation of the coverage rates in this table because information on race and ethnicity was not available for the other U.S. territories in the data. Estimates for Puerto Rico are included in regional totals.

CY = calendar year; FNS = Food and Nutrition Service

Sources: IPUMS-USA, n.d.; NBER, n.d.; Kline et al., 2020; unpublished internal WIC administrative data

Table 4.5. WIC Eligibility, Participants, and Coverage Rates by State and FNS Region: CY 2018

State	Number Eligible	Number Participating	Coverage Rate
Alabama	203,381	119,661	58.8
Alaska	29,424	16,869	57.3
Arizona	284,729	147,692	51.9*
Arkansas	138,625	72,510	52.3*
California	1,482,197	994,115	67.1*
Colorado	167,581	84,506	50.4*
Connecticut	93,566	46,883	50.1*
Delaware	33,928	16,765	49.4*
District of Columbia	27,426	12,244	44.6*
Florida	781,368	448,406	57.4
Georgia	430,444	212,250	49.3*
Hawaii	45,189	25,944	57.4
Idaho	70,029	32,976	47.1*
Illinois	411,665	195,488	47.5*
Indiana	239,752	142,468	59.4
Iowa	98,988	59,661	60.3
Kansas	107,020	50,143	46.9*
Kentucky	170,291	99,475	58.4
Louisiana	222,096	110,002	49.5*
Maine	28,753	18,121	63.0
Maryland	192,784	126,848	65.8*
Massachusetts	166,327	107,051	64.4*
Michigan	329,917	211,012	64.0*
Minnesota	157,624	104,495	66.3*
Mississippi	136,420	84,017	61.6*
Missouri	209,772	112,604	53.7*
Montana	36,190	16,546	45.7*
Nebraska	64,664	35,178	54.4
Nevada	115,873	61,169	52.8*
New Hampshire	27,851	12,271	44.1*
New Jersey	243,675	138,860	57.0
New Mexico	101,065	44,363	43.9*
New York	671,162	408,567	60.9*
North Carolina	384,041	217,264	56.6
North Dakota	23,321	12,114	51.9
Ohio	386,317	204,672	53.0*
Oklahoma	163,898	96,458	58.9
Oregon	134,122	84,854	63.3*
Pennsylvania	387,235	214,483	55.4
Puerto Rico	140,830	108,873	77.3

State	Number Eligible	Number Participating	Coverage Rate
Rhode Island	32,462	18,642	57.4
South Carolina	190,293	90,032	47.3*
South Dakota	29,795	17,538	58.9
Tennessee	270,443	124,695	46.1*
Texas	1,322,816	724,458	54.8
Utah	105,301	47,575	45.2*
Vermont	15,235	11,441	75.1*
Virginia	237,013	112,149	47.3*
Washington	254,347	142,205	55.9
West Virginia	63,336	34,388	54.3
Wisconsin	159,457	91,379	57.3
Wyoming	16,010	8,751	54.7
FNS Region			
Northeast	1,035,358	622,975	60.2*
Mid-Atlantic	1,333,478	767,495	57.6
Southeast	2,566,679	1,395,800	54.4*
Midwest	1,684,733	949,513	56.4
Southwest	1,948,500	1,047,791	53.8*
Mountain Plains	858,643	444,616	51.8*
Western	2,442,006	1,520,720	62.3*
Total	11,869,397	6,748,911	56.9

Note: State and regional eligibility estimates and participant data include individuals in ITOs who were eligible for WIC and/or receiving 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 and included in the Mid-Atlantic regional totals. As a result, the Mid-Atlantic regional coverage rate was excluded from significance testing. When Puerto Rico was excluded from the Mid-Atlantic region, the regional coverage rate was 50.2 percent, which is not statistically different from the national coverage rate at a 95-percent confidence level.

CPS-ASEC = Current Population Survey Annual Social and Economic Supplement; CY = calendar year; FNS = Food and Nutrition Service; ITO = Indian Tribal Organization

* indicates a statistically significant difference between the State or regional coverage rate and the national coverage rate at the 95-percent confidence level. The statistical significance testing was conducted 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; therefore, no statistical testing was done to compare the provided coverage rate for Puerto Rico with that of the national coverage rate.

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

National Coverage Rate: 56.9 Percent

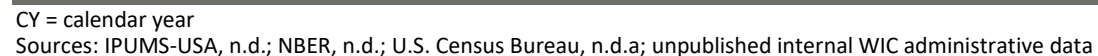


Table 4.6. WIC Coverage Rates by State and Participant Category: CY 2018

State	Infants	1-Year-Old Children	2-Year-Old Children	3-Year-Old Children	4-Year-Old Children	All Children	Pregnant Women	Postpartum Women	Total
Alabama	100.0	71.4	48.8	36.5	25.7	44.7	63.0	78.0	58.8
Alaska	100.0	54.9	50.8	54.7	23.0	45.2	61.3	81.1	57.3
Arizona	91.1	55.9	43.7	38.7	22.2	40.7	41.6	79.4	51.9
Arkansas	98.2	57.2	37.2	30.2	20.6	36.4	56.4	78.4	52.3
California	95.6	74.2	61.4	55.8	44.2	58.8	56.6	87.4	67.1
Colorado	82.2	61.9	40.3	35.5	22.7	40.4	44.8	74.4	50.4
Connecticut	89.1	63.2	42.4	31.6	22.1	39.0	57.0	57.6	50.1
Delaware	100.0	57.5	35.9	30.3	18.4	35.1	53.9	74.3	49.4
District of Columbia	89.6	60.4	32.1	22.7	12.6	30.1	36.5	77.5	44.6
Florida	99.1	67.2	47.2	38.7	23.3	43.9	55.6	88.3	57.4
Georgia	96.3	49.8	37.1	33.4	17.6	34.5	53.4	76.6	49.3
Hawaii	100.0	64.3	47.2	44.6	16.7	44.4	57.4	80.9	57.4
Idaho	85.1	46.1	46.7	34.2	17.9	36.5	46.3	71.7	47.1
Illinois	93.5	42.3	38.9	31.6	23.8	34.1	43.1	73.9	47.5
Indiana	100.0	62.6	53.9	40.8	26.6	46.4	48.1	92.2	59.4
Iowa	100.0	68.5	52.5	44.8	19.8	45.5	56.5	100.0	60.3
Kansas	75.6	55.0	44.3	33.8	20.1	38.0	44.7	61.8	46.9
Kentucky	100.0	55.9	49.3	36.8	29.5	42.9	63.2	83.5	58.4
Louisiana	95.9	54.4	36.9	26.8	18.7	33.7	52.0	79.2	49.5
Maine	100.0	59.1	67.5	47.4	31.3	50.3	61.0	87.5	63.0
Maryland	100.0	74.5	55.9	45.6	30.8	51.5	67.1	92.3	65.8
Massachusetts	100.0	77.2	60.8	48.6	30.6	54.0	58.2	88.4	64.4
Michigan	†	71.3	56.4	47.7	26.2	50.2	66.8	83.3	64.0
Minnesota	100.0	68.3	59.5	52.2	38.4	54.7	57.1	94.0	66.3
Mississippi	100.0	62.9	48.9	44.4	27.9	45.8	55.4	92.8	61.6
Missouri	100.0	52.6	41.6	30.8	22.1	36.7	60.4	87.2	53.7
Montana	91.3	43.1	39.2	40.4	18.2	34.6	49.8	69.0	45.7

State	Infants	1-Year-Old Children	2-Year-Old Children	3-Year-Old Children	4-Year-Old Children	All Children	Pregnant Women	Postpartum Women	Total
Nebraska	81.0	72.5	50.3	38.8	31.4	46.9	40.0	70.9	54.4
Nevada	88.3	61.2	50.0	34.6	24.9	42.3	39.5	79.1	52.8
New Hampshire	64.7	55.6	43.7	30.7	28.0	39.1	35.7	51.7	44.1
New Jersey	89.0	58.8	49.4	46.7	32.0	46.9	47.4	79.1	57.0
New Mexico	75.6	46.2	38.7	30.4	19.1	33.9	40.2	67.5	43.9
New York	99.7	68.0	52.1	44.7	29.5	48.8	53.1	92.3	60.9
North Carolina	100.0	57.8	47.7	38.8	25.2	42.2	56.1	90.4	56.6
North Dakota	80.0	67.7	38.9	40.7	31.0	44.6	39.7	66.7	51.9
Ohio	†	49.3	36.9	31.2	23.5	35.0	54.3	75.8	53.0
Oklahoma	100.0	46.2	54.9	42.8	29.0	43.3	70.0	84.5	58.9
Oregon	100.0	62.8	65.8	48.1	30.4	52.2	61.5	90.9	63.3
Pennsylvania	100.0	61.8	50.1	37.3	21.7	42.2	54.9	81.4	55.4
Rhode Island	83.4	64.3	58.7	46.6	33.4	51.3	43.7	64.8	57.4
South Carolina	100.0	53.4	34.6	26.6	11.4	30.6	54.4	80.5	47.3
South Dakota	97.4	57.1	39.6	48.5	51.0	48.7	53.1	75.5	58.9
Tennessee	100.0	43.1	32.6	25.9	16.0	29.2	58.9	78.0	46.1
Texas	94.3	60.8	42.5	37.0	18.7	39.8	47.6	100.0	54.8
Utah	72.8	46.7	40.7	35.2	22.5	36.9	37.4	64.3	45.2
Vermont	94.6	100.0	88.8	47.8	49.5	70.3	60.7	88.6	75.1
Virginia	85.2	40.0	45.8	34.5	21.2	35.3	44.8	66.1	47.3
Washington	79.4	57.4	54.7	46.6	37.7	49.3	48.9	69.7	55.9
West Virginia	100.0	50.7	46.2	32.2	23.3	37.6	61.3	99.4	54.3
Wisconsin	100.0	78.5	47.8	39.9	24.2	46.1	48.9	83.5	57.3
Wyoming	96.3	61.5	52.2	44.4	15.9	42.5	50.9	84.2	54.7

State	Infants	1-Year-Old Children	2-Year-Old Children	3-Year-Old Children	4-Year-Old Children	All Children	Pregnant Women	Postpartum Women	Total
FNS Region									
Northeast	97.5	68.9	53.3	43.8	29.4	48.9	53.7	86.2	60.2
Mid-Atlantic	97.6	61.6	52.1	44.6	25.7	45.8	55.1	80.1	57.6
Southeast	100.0	58.6	43.3	35.4	21.8	39.6	56.7	84.1	54.4
Midwest	100.0	58.4	46.7	38.6	26.0	42.3	52.7	81.6	56.4
Southwest	95.2	57.7	42.3	35.5	19.8	38.9	50.2	93.6	53.8
Mountain Plains	90.7	57.3	43.3	36.2	23.1	40.0	48.8	76.9	51.8
Western	93.1	67.3	57.5	50.3	37.8	53.4	53.1	83.6	62.3
Total	97.8	61.4	48.4	40.7	26.5	44.2	53.3	84.4	56.9

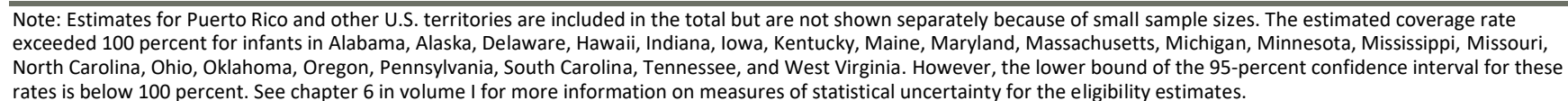
Note: Estimates for Puerto Rico and other U.S. territories are included in the total but are not shown separately because of small sample sizes. Estimates of State-level coverage rates by year of age for children and other participant categories should be viewed with caution because of the small sample sizes for many States. See chapter 6 for more details on statistical uncertainty for these estimates. The estimated coverage rate exceeded 100 percent for infants in Alabama, Alaska, Delaware, Hawaii, Indiana, Iowa, Kentucky, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, North Carolina, Ohio, Oklahoma, Oregon, Pennsylvania, South Carolina, Tennessee, and West Virginia; for 1-year-old children in Vermont; for postpartum women in Iowa and Texas; and for infants in the Southeast and Midwest regions. However, the lower bound of the 95-percent confidence interval for these rates is below 100 percent. State and regional eligibility estimates and participant data include individuals in ITOs who were eligible for WIC.

CPS-ASEC = Current Population Survey Annual Social and Economic Supplement; CY = calendar year; ITO = Indian Tribal Organization

† indicates an unreliable coverage rate over 100 percent with the lower bound of a 95-percent confidence interval above 100 percent

Sources: IPUMS-USA, n.d.; NBER, n.d.; U.S. Census Bureau, n.d.a; Kline et al., 2020; unpublished internal WIC administrative data

National Coverage Rate for Infants: 97.8 Percent

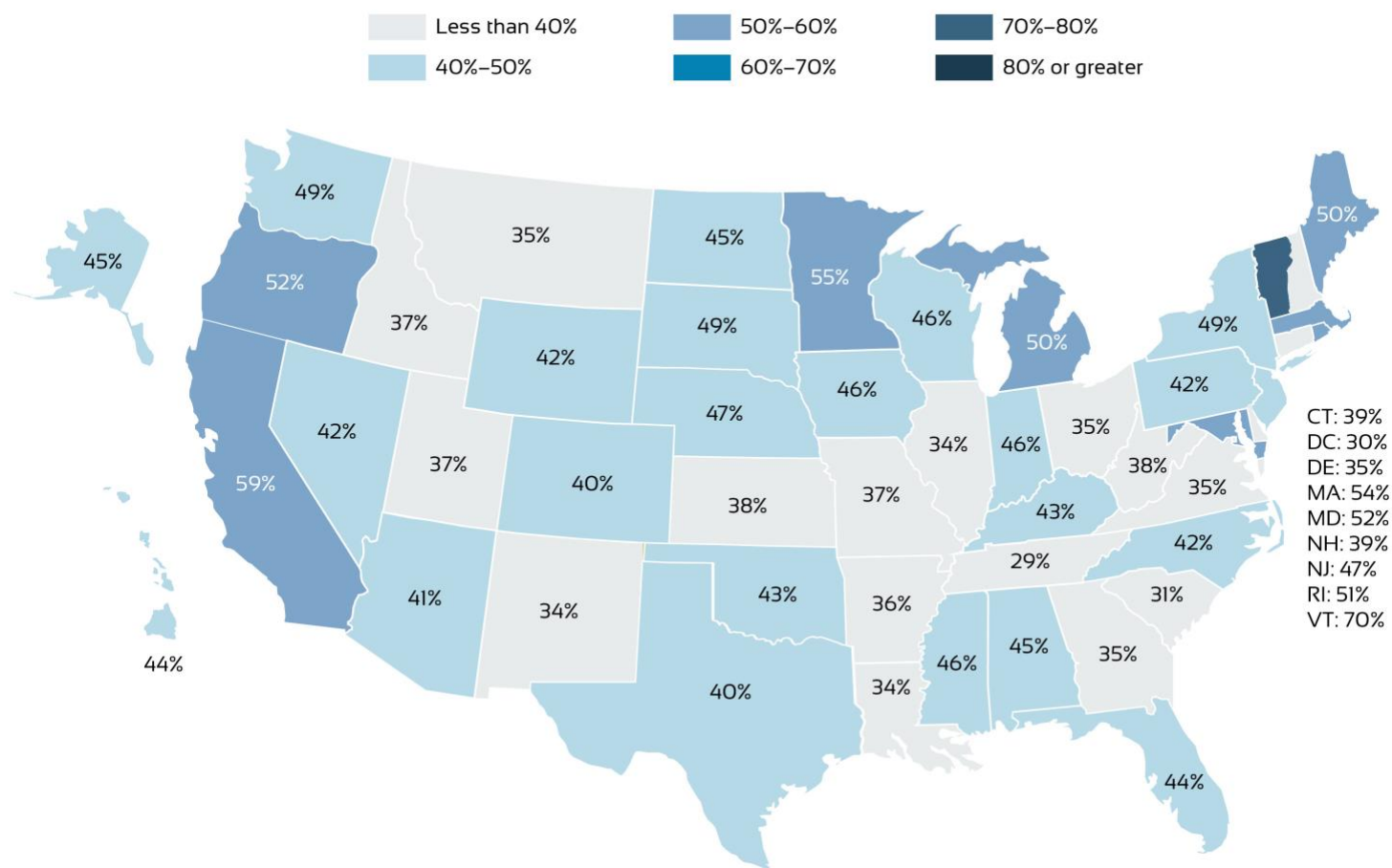


† indicates an unreliable coverage rate over 100 percent with the lower bound of a 95-percent confidence interval above 100 percent

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

Figure 4.6. WIC Coverage Rate for Children by State: CY 2018

National Coverage Rate for Children: 44.2 Percent



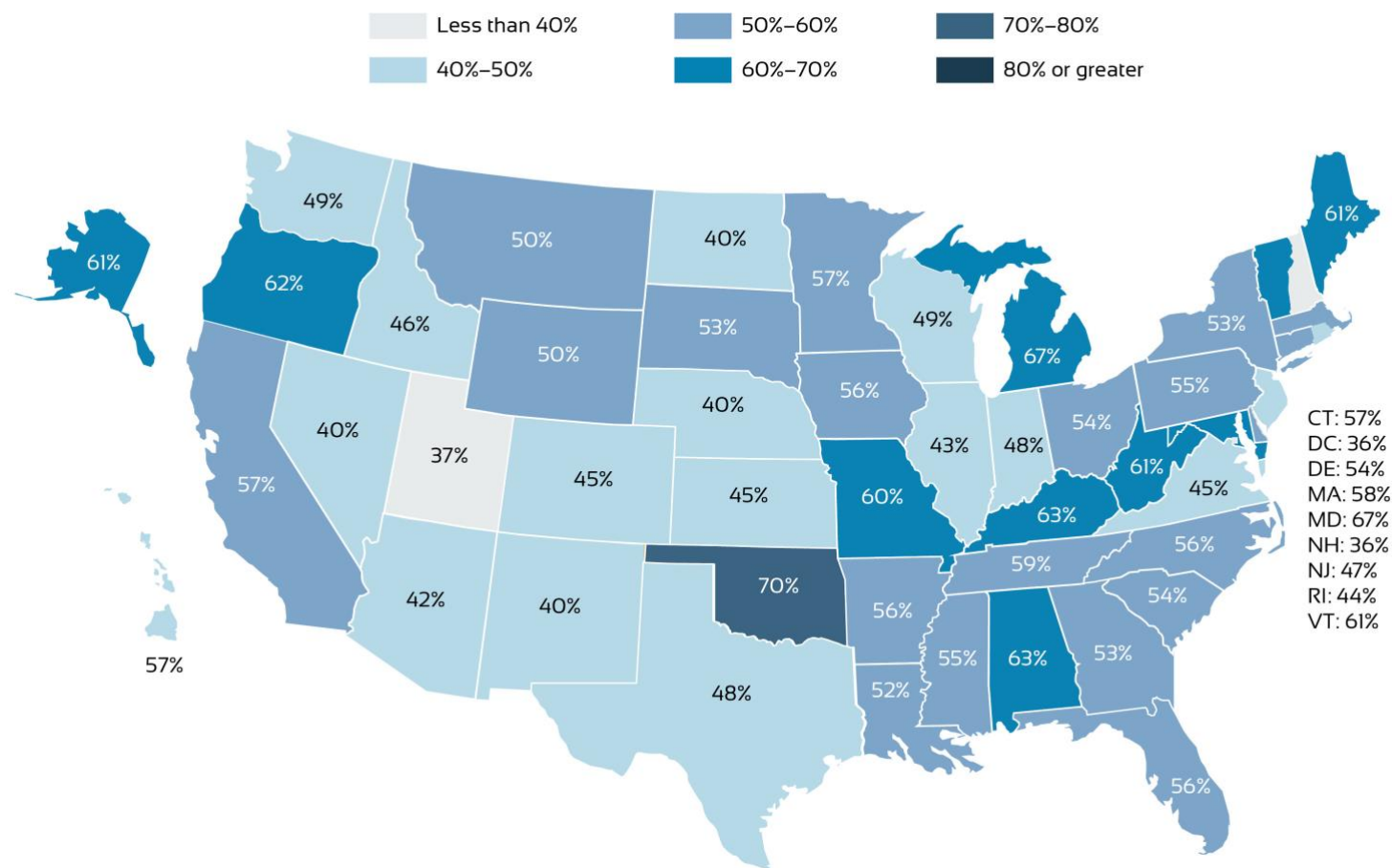
Note: Estimates for Puerto Rico and other U.S. territories are included in the total but are not shown separately because of small sample sizes.

CY = calendar year

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

Figure 4.7. WIC Coverage Rate for Pregnant Women by State: CY 2018

National Coverage Rate for Pregnant Women: 53.3 Percent



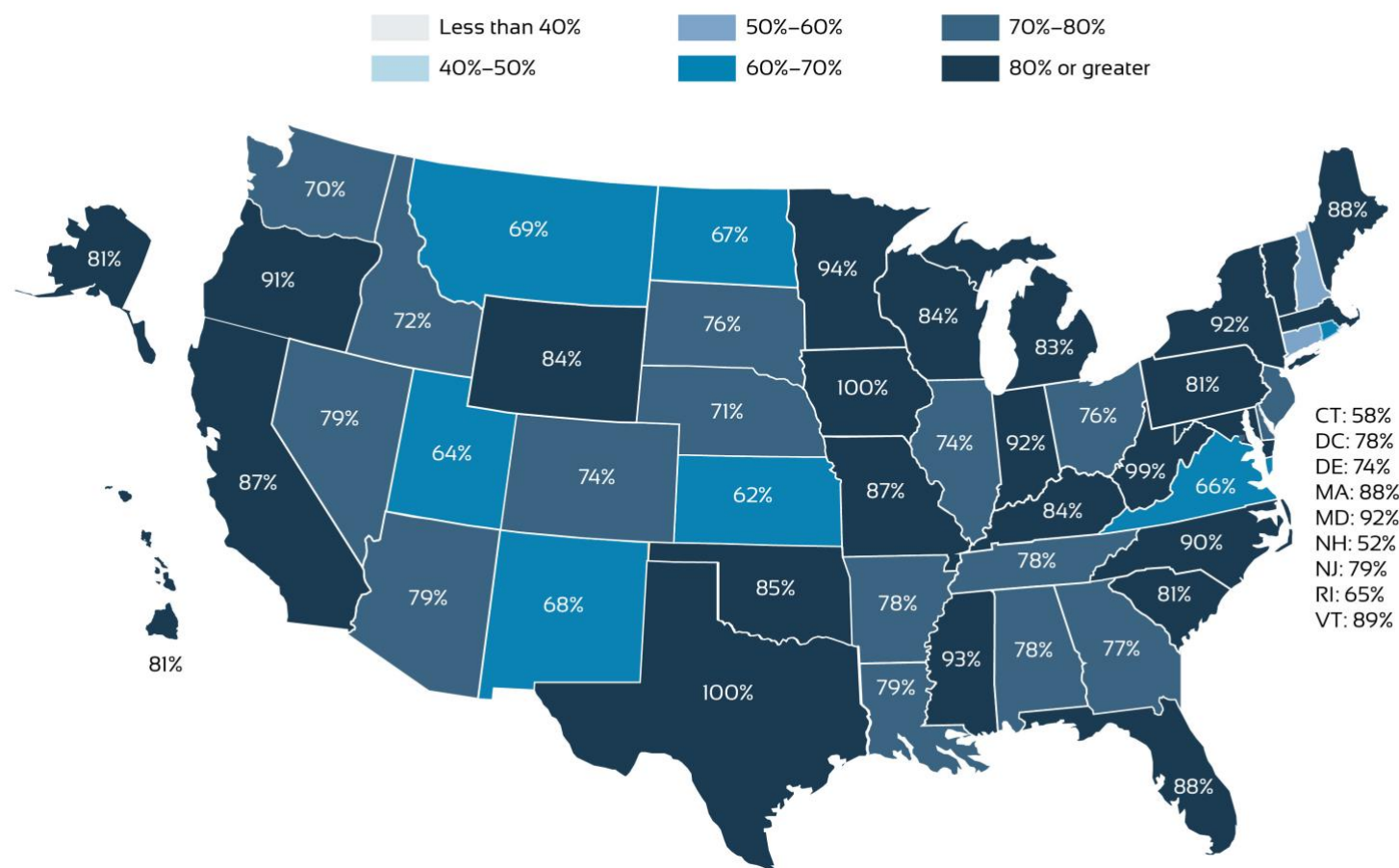
Note: Estimates for Puerto Rico and other U.S. territories are included in the total but are not shown separately because of small sample sizes.

CY = calendar year

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

Figure 4.8. WIC Coverage Rate for Postpartum Women by State: CY 2018

National Coverage Rate for Postpartum Women: 84.4 Percent



Note: 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 rate exceeded 100 percent for postpartum women in Iowa and Texas. However, the lower bound of the 95-percent confidence interval for these rates is below 100 percent. See chapter 6 in volume I for more information on measures of statistical uncertainty for the eligibility estimates.

CPS-ASEC = Current Population Survey Annual Social and Economic Supplement; CY = calendar

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

Table 4.7. State-Level WIC Coverage Rates by Race and Ethnicity: CY 2018

State	Non-Hispanic White-Only	Non-Hispanic Black-Only and Other ^a	Hispanic/Latino	Total
Alabama	53.7*	60.6	70.8	58.8
Alaska	36.0*	71.4*	100.0	57.3
Arizona	46.9	74.0*	48.4*	51.9*
Arkansas	55.8*	47.4*	51.8*	52.3*
California	41.6*	68.2*	72.1*	67.1*
Colorado	44.4	57.1	53.2*	50.4*
Connecticut	34.5*	55.5	56.8*	50.1*
Delaware	43.2	49.0	57.7	49.4*
District of Columbia	23.4*	39.9*	74.8	44.6*
Florida	45.5*	59.9	64.2	57.4
Georgia	46.3	51.1*	49.2*	49.3*
Hawaii	35.1*	67.5*	48.1*	57.4
Idaho	43.2*	74.8	50.6*	47.1*
Illinois	42.8*	47.3*	52.0*	47.5*
Indiana	57.7*	67.4*	53.9*	59.4
Iowa	52.5	77.2*	71.5	60.3
Kansas	42.8*	45.9*	54.5*	46.9*
Kentucky	60.5*	55.1	50.0*	58.4
Louisiana	47.7	51.2*	46.9*	49.5*
Maine	55.9	100.0	†	63.0
Maryland	45.2	68.0*	80.1*	65.8*
Massachusetts	54.5	61.0	75.5*	64.4*
Michigan	59.8*	65.6*	78.2*	64.0*
Minnesota	53.9	76.1*	79.5*	66.3*
Mississippi	58.5*	61.0	96.9*	61.6*
Missouri	53.2	54.7	53.4*	53.7*
Montana	39.7*	66.8	44.1	45.7*
Nebraska	44.2	72.7	59.6	54.4
Nevada	54.9	55.6	50.5*	52.8*
New Hampshire	43.6	41.7	48.1	44.1*
New Jersey	47.0	52.9*	64.6	57.0
New Mexico	30.3*	49.1*	46.4*	43.9*
New York	50.4	73.9*	59.6	60.9*
North Carolina	57.8*	54.7	57.9	56.6
North Dakota	36.0*	84.3	56.2	51.9
Ohio	49.6	57.3	56.5	53.0*
Oklahoma	54.4*	65.1	57.9	58.9
Oregon	62.8*	59.5	65.4	63.3*

State	Non-Hispanic White-Only	Non-Hispanic Black-Only and Other ^a	Hispanic/Latino	Total
Pennsylvania	50.6	61.1	58.3	55.4
Rhode Island	45.1	69.4	61.8	57.4
South Carolina	46.4	46.3*	54.8	47.3*
South Dakota	42.5	79.8	65.1	58.9
Tennessee	50.5	38.9*	48.3*	46.1*
Texas	38.6*	51.4*	60.0	54.8
Utah	36.9*	39.4*	67.1	45.2*
Vermont	73.0*	74.8	†	75.1*
Virginia	42.4*	47.6*	54.5*	47.3*
Washington	47.4	64.5	61.1	55.9
West Virginia	52.5	59.4	†	54.3
Wisconsin	47.1	74.3*	59.6	57.3
Wyoming	53.7	66.4	52.6	54.7
Total	49.1	58.6	62.7	56.9

Note: 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 calculation of the coverage rates in this table because information on race and ethnicity was not available for the other U.S. territories in the data. The estimated coverage rate exceeded 100 percent for non-Hispanic Black-only individuals and non-Hispanic individuals who did not self-identify as Black only or White only in Maine and for Hispanic/Latino individuals in Alaska. However, the lower bound of the 95-percent confidence interval for these rates is below 100 percent. See chapter 6 in volume I for more information on measures of statistical uncertainty for the eligibility estimates.

CPS-ASEC = Current Population Survey Annual Social and Economic Supplement; CY = calendar year

* indicates a statistically significant difference at the 95-percent confidence level between the coverage rate for a participant category's race/ethnicity and the national coverage rate for that category

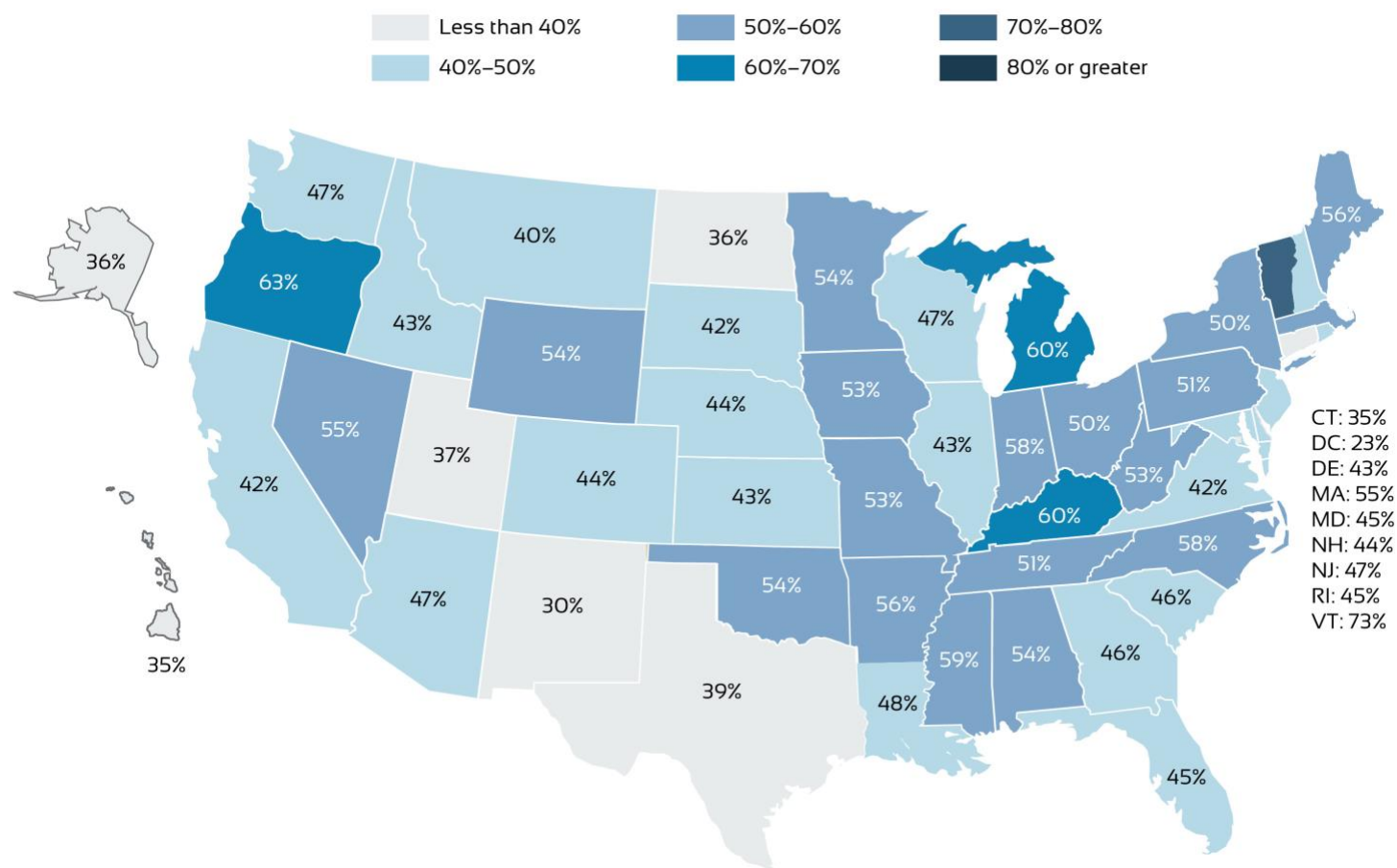
† indicates an unreliable coverage rate over 100 percent with the lower bound of a 95-percent confidence interval above 100 percent or an unreliable coverage rate with the lower bound of a 95-percent confidence interval below 0 percent and the upper bound above 100 percent

^a The "Non-Hispanic Black-Only and Other" category includes non-Hispanic Black-only individuals and non-Hispanic individuals who did not self-identify as Black only or White only. These categories were combined because of small sample size concerns.

Sources: IPUMS-USA, n.d.; NBER, n.d.; Kline et al., 2020; unpublished internal WIC administrative data

Figure 4.9. WIC Coverage Rate for Non-Hispanic White-Only Individuals by State: CY 2018

National Coverage Rate for Non-Hispanic White-Only Individuals: 49.1 Percent



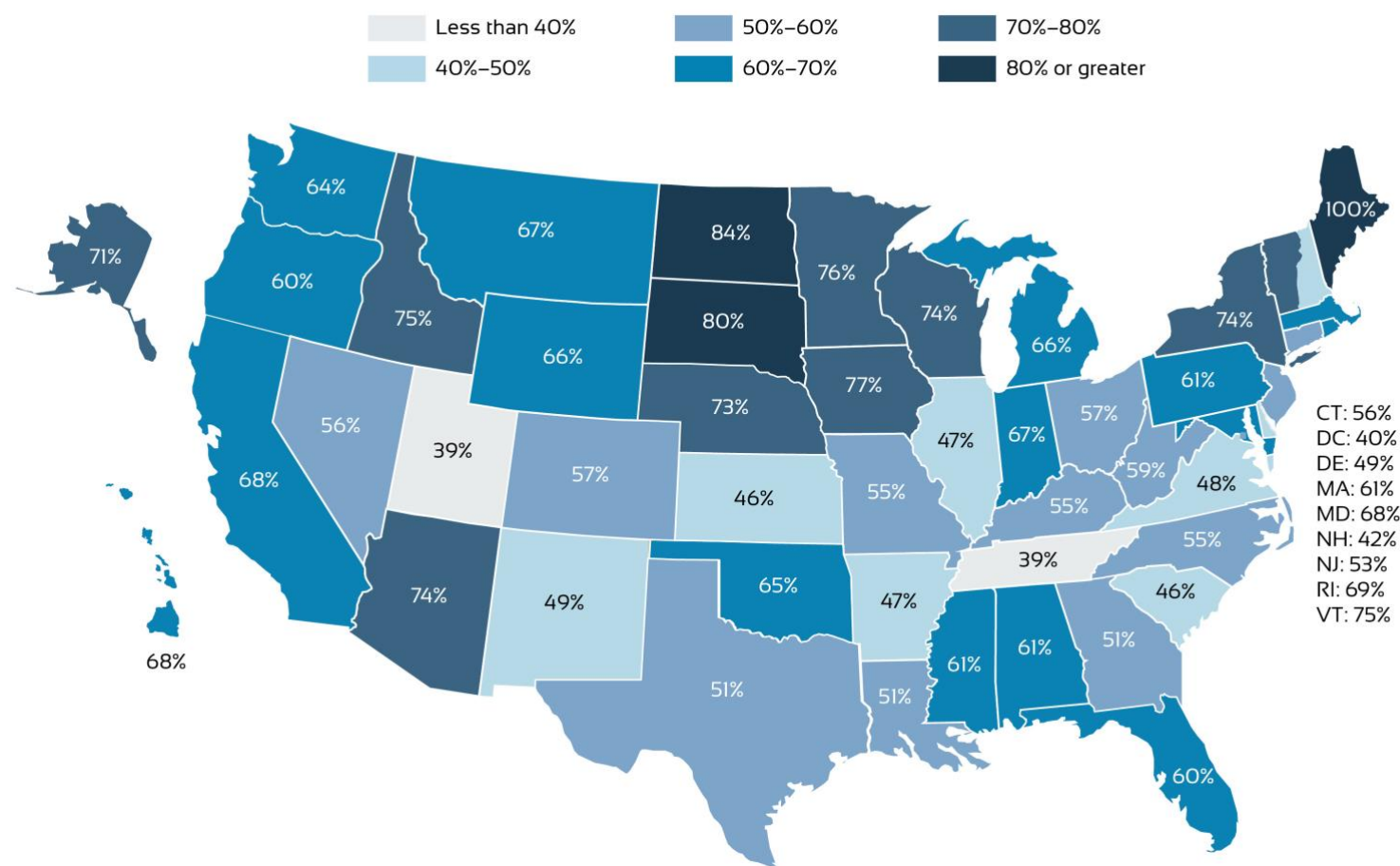
Note: Estimates for U.S. territories other than Puerto Rico are not included in the calculation of the coverage rates in this figure because information on race and ethnicity was not available for the other U.S. territories in the data. Estimates for Puerto Rico are included in the national coverage rate.

CY = calendar year

Sources: IPUMS-USA, n.d.; NBER, n.d.; Kline et al., 2020; unpublished internal WIC administrative data

Figure 4.10. WIC Coverage Rate for Non-Hispanic Black-Only Individuals and Non-Hispanic Individuals Who Did Not Self-Identify as Black Only or White Only by State: CY 2018

National Coverage Rate for Non-Hispanic Black-Only Individuals and Non-Hispanic Individuals Who Did Not Self-Identify as Black Only or White Only: 58.6 Percent

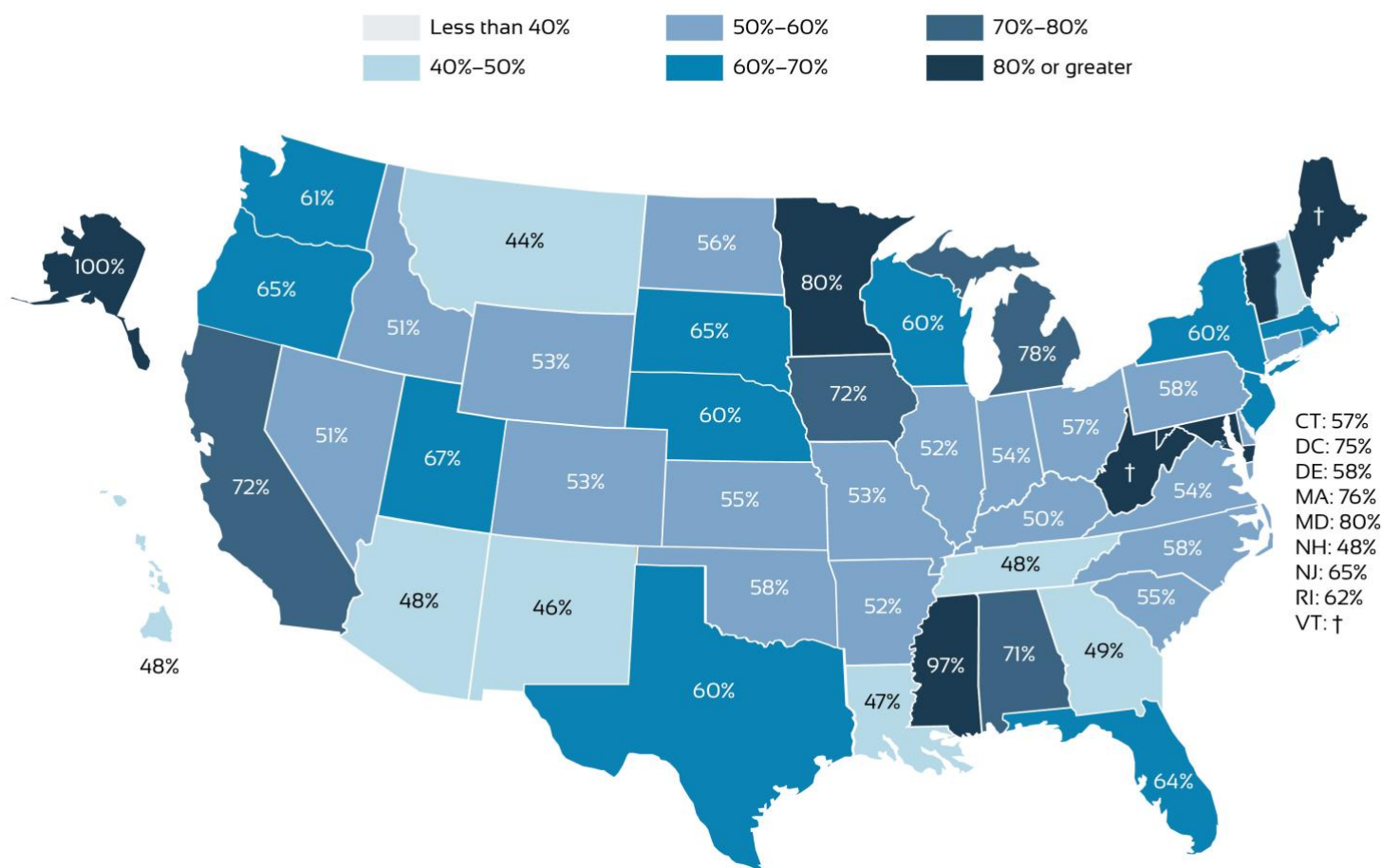


Note: Estimates for U.S. territories other than Puerto Rico are not included in the calculation of the coverage rates in this figure because information on race and ethnicity was not available for the other U.S. territories in the data. Estimates for Puerto Rico are included in the national coverage rate. The estimated coverage rate exceeded 100 percent for non-Hispanic Black-only individuals and non-Hispanic individuals who did not self-identify as Black only or White only in Maine. However, the lower bound of the 95-percent confidence interval for this rate is below 100 percent. See chapter 6 in volume I for more information on measures of statistical uncertainty for the eligibility estimates.

CPS-ASEC = Current Population Survey Annual Social and Economic Supplement; CY = calendar year
 Sources: IPUMS-USA, n.d.; NBER, n.d.; Kline et al., 2020; unpublished internal WIC administrative data

Figure 4.11. WIC Coverage Rate for Hispanic/Latino Individuals by State: CY 2018

National Coverage Rate for Hispanic/Latino Individuals: 62.7 Percent



Note: Estimates for U.S. territories other than Puerto Rico are not included in the calculation of the coverage rates in this figure because information on race and ethnicity was not available for the other U.S. territories in the data. Estimates for Puerto Rico are included in the national coverage rate. The estimated coverage rate exceeded 100 percent for Hispanic/Latino individuals in Alaska. However, the lower bound of the 95-percent confidence interval for this rate is below 100 percent. See chapter 6 in volume I for more information on measures of statistical uncertainty for the eligibility estimates.

CPS-ASEC = Current Population Survey Annual Social and Economic Supplement; CY = calendar year

† indicates an unreliable coverage rate over 100 percent with the lower bound of a 95-percent confidence interval above 100 percent or an unreliable coverage rate with the lower bound of a 95-percent confidence interval below 0 percent and the upper bound above 100 percent

Sources: IPUMS-USA, n.d.; NBER, n.d.; Kline et al., 2020; unpublished internal WIC administrative data

C. Changes in WIC Coverage Rates: CY 2016–CY 2018

For this report, the 2016 and 2017 estimates were updated to reflect changes to the CPS-ASEC data used to produce 2018 estimates of WIC eligibility (see chapter 2 for more information). As a result, changes in WIC coverage rates are compared across a 3-year period. Estimates for the total number of eligible individuals, total participants, and coverage rates are displayed for all 3 years of estimates (see table 4.8).

Overall, the national WIC coverage rate decreased by 2 percentage points between 2016 and 2018 to 57 percent. The decline in coverage rates during this period occurred because the WIC caseload declined by a larger percentage than the number of individuals eligible for WIC. The number of WIC participants declined by 11 percent between 2016 and 2018, whereas the number of individuals eligible for WIC decreased by 8 percent (see table 4.8).

Coverage rates declined across all participant categories. The largest decline was for pregnant women (4 percentage points; see figure 4.12), followed by children (2 percentage points). Coverage rates decreased by 1 percentage point for postpartum women and by less than 0.5 percentage points for infants.

The change in coverage rates between 2016 and 2018 varied across regions, as shown in table 4.9. The change in coverage rates ranged from a decrease of 6 percentage points in the Southwest region to a slight increase in the Midwest region (1 percentage point). The Southwest and Western regions had the largest decreases for any individual participant category (8 percentage points).⁶⁴ Specifically, the Southwest and Western regions each had a decrease in the coverage rate for pregnant women of 8 percentage points. The Western region also had a decrease of 8 percentage points in the coverage rate for postpartum women.

Table 4.8. Change in WIC Coverage Rate by Participant Category: CY 2016–CY 2018

Participant Category	2016	2017	2018	Percent Change 2016–2018 ^a
Total Eligible				
Infants	1,890,953	1,882,098	1,725,558	-8.7*
Children	8,458,358	8,423,507	7,827,066	-7.5*
Pregnant women	1,246,284	1,240,634	1,138,061	-8.7*
Postpartum women	1,292,642	1,286,942	1,178,712	-8.8*
Breastfeeding women	858,632	856,033	781,683	-9.0*
Non-breastfeeding women	434,010	430,909	397,029	-8.5*
Total	12,888,236	12,833,181	11,869,397	-7.9*

⁶⁴ The unrounded change in the coverage rate for pregnant women in the Southwest region is -8.485, which rounds to -8.

Participant Category	2016	2017	2018	Percent Change 2016–2018 ^a
Total Participants				
Infants	1,853,735	1,767,615	1,687,310	-9.0
Children	3,926,307	3,702,190	3,460,449	-11.9
Pregnant women	707,748	658,131	606,373	-14.3
Postpartum women	1,106,191	1,056,141	994,780	-10.1
Breastfeeding women	590,430	570,509	536,944	-9.1
Non-breastfeeding women	515,761	485,633	457,836	-11.2
Total	7,593,981	7,184,078	6,748,911	-11.1
Coverage Rate				
Infants	98.0	93.9	97.8	-0.2
Children	46.4	44.0	44.2	-2.2*
Pregnant women	56.8	53.0	53.3	-3.5
Postpartum women	85.6	82.1	84.4	-1.2
Breastfeeding women	68.8	66.6	68.7	-0.1
Non-breastfeeding women	†	†	†	–
Total	58.9	56.0	56.9	-2.1*

CPS-ASEC = Current Population Survey Annual Social and Economic Supplement; CY = calendar year

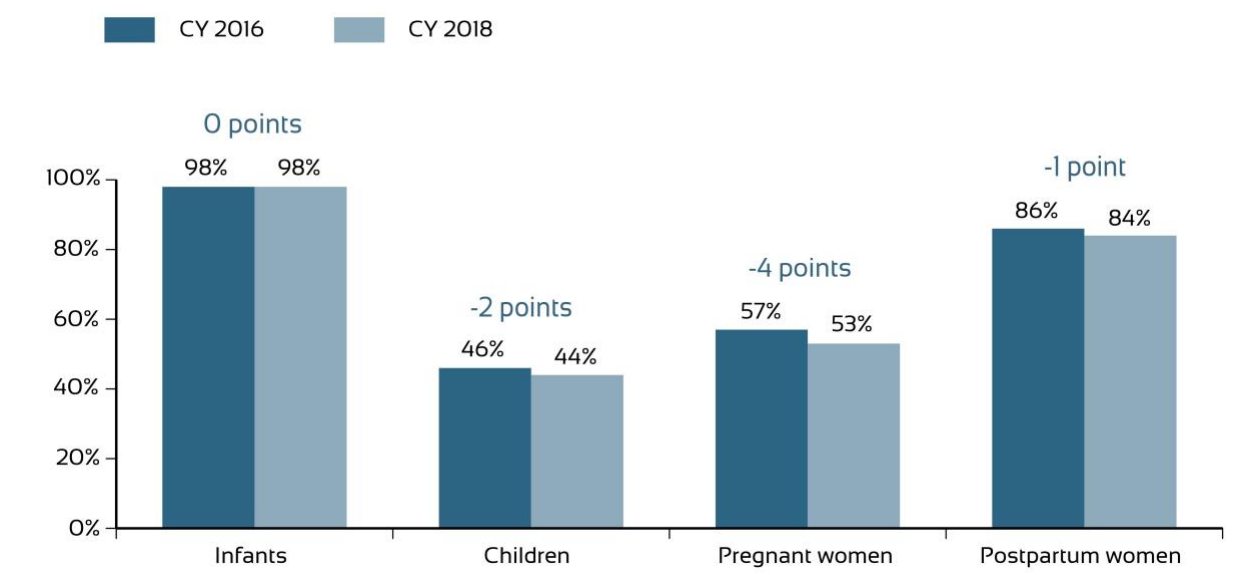
* indicates a statistically significant difference between the 2016 and 2018 estimates of individuals eligible for WIC and the 2016 and 2018 estimates of WIC coverage rates at the 95-percent confidence level. The number of total WIC participants by category is not subject to statistical uncertainty because it is based on WIC administrative data, which is a census of WIC participants receiving benefits; no sampling is involved. The statistical significance testing was conducted on the 2016–2018 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.

† indicates an unreliable coverage rate over 100 percent with the lower bound of a 95-percent confidence interval above 100 percent

^a For the change in coverage rates, this column displays the difference between coverage rates in 2016 and 2018 rather than the percentage change.

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

Figure 4.12. Change in WIC Coverage Rate by Participant Category: CY 2016–CY 2018



CY = calendar year

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

Table 4.9. WIC Coverage Rates by FNS Region and Participant Category: CY 2016–CY 2018

FNS Region	Infants	Children	Pregnant Women	Postpartum Women	Total
Coverage Rate 2016					
Northeast	93.3	49.5	54.9	81.2	59.8
Mid-Atlantic	100.0	49.6	61.1	81.8	61.5
Southeast	94.3	42.0	54.7	84.1	55.2
Midwest	100.0	42.4	54.8	76.3	55.7
Southwest	100.0	43.7	58.6	100.0	59.5
Mountain Plains	85.5	40.6	47.7	71.9	51.4
Western	100.0	54.7	61.0	91.7	65.4
Total	98.0	46.4	56.8	85.6	58.9
Coverage Rate 2017					
Northeast	92.2	48.2	52.8	81.0	58.5
Mid-Atlantic	97.6	46.6	57.4	79.1	58.1
Southeast	96.4	39.8	55.5	84.8	53.8
Midwest	100.0	40.1	53.4	78.2	53.8
Southwest	93.3	41.3	51.9	91.7	55.4
Mountain Plains	84.0	38.0	46.5	71.5	48.9
Western	88.6	52.2	51.5	80.3	60.6
Total	93.9	44.0	53.0	82.1	56.0
Coverage Rate 2018					
Northeast	97.5	48.9	53.7	86.2	60.2
Mid-Atlantic	97.6	45.8	55.1	80.1	57.6
Southeast	100.0	39.6	56.7	84.1	54.4
Midwest	100.0	42.3	52.7	81.6	56.4
Southwest	95.2	38.9	50.2	93.6	53.8
Mountain Plains	90.7	40.0	48.8	76.9	51.8
Western	93.1	53.4	53.1	83.6	62.3
Total	97.8	44.2	53.3	84.4	56.9
Change in Coverage Rate for 2018 Versus 2016 (Percentage Point Difference)					
Northeast	4.1	-0.6	-1.1	5.0	0.3
Mid-Atlantic	-4.6	-3.8*	-6.0*	-1.7	-3.9*
Southeast	7.0	-2.5*	2.0	0.0	-0.9
Midwest	4.5	-0.1	-2.1	5.4	0.6
Southwest	-7.4	-4.8*	-8.5*	-6.4	-5.7*
Mountain Plains	5.2	-0.6	1.0	5.0	0.4
Western	-7.1	-1.3	-7.9*	-8.1*	-3.2*
Total	-0.2	-2.2	-3.5	-1.2	-2.1

Note: The estimated coverage rate exceeded 100 percent for infants in Mid-Atlantic, Midwest, Southwest, and Western regions in 2016; for infants in Midwest region in 2017; and for infants in Southeast and Midwest regions in 2018. However, the lower bound of the 95-percent confidence interval for these rates is below 100 percent. See chapter 6 in volume I for more information on measures of statistical uncertainty for the eligibility estimates.

CPS-ASEC = Current Population Survey Annual Social and Economic Supplement; CY = calendar year; FNS = Food and Nutrition Service

* indicates a statistically significant difference between the 2016 and 2018 estimates of WIC coverage rates at the 95-percent confidence level. The statistical significance testing was conducted 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: IPUMS-USA, n.d.; NBER, n.d.; U.S. Census Bureau, n.d.a; unpublished internal WIC administrative data

D. Trends in WIC Coverage Rates: CY 2005–CY 2018

The 2016–2018 estimates presented in this report differ methodologically from earlier estimates because of changes to the underlying data sources (see chapter 2 for more information). Comparisons between the 2016–2018 estimates and prior estimates should be interpreted with caution. However, general trends in WIC coverage rates can be assessed. For example, the overall WIC coverage rate generally increased from 2005 to 2011 before steadily declining through 2015 (see table 4.10 and figure 4.13). Rates fell between 2016 and 2017 and increased slightly between 2017 and 2018.

The relative magnitude of coverage rates by participant category has remained consistent from 2005 to 2018 (see table 4.11). For example, throughout that period, coverage rates were consistently highest for infants, followed by those for 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 1-year-old children were consistently highest (and higher than total coverage rates), followed by 2-year-old and 3-year-old children; 4-year-old children had the lowest coverage rates (see figure 4.14).

Figure 4.15 shows the overall coverage rates by region from 2005 through 2018. The Western region consistently had the highest rates of coverage during this period (primarily because of the high rates in California), and the Mountain Plains region had the lowest. See appendix F in volume II of this report for trends in coverage rates by region from 2005 through 2018 for each participant category.

Table 4.10. WIC Coverage Rates: CY 2005–CY 2018

Year	Number Eligible	Number Participating	Coverage Rate
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	12,888,236	7,593,981	58.9
2017	12,833,181	7,184,078	56.0
2018	11,869,397	6,748,911	56.9

Note: Estimates for 2016–2018 differ methodologically from earlier estimates because of changes to the underlying data sources. Comparisons between the 2016–2018 estimates and prior estimates should be interpreted with caution. See chapter 2 in volume I for more information.

CY = calendar year

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

Table 4.11. WIC Coverage Rates by Participant Category: CY 2005–CY 2018

Year	Infants	1-Year-Old Children	2-Year-Old Children	3-Year-Old Children	4-Year-Old Children	All Children	Pregnant Women	Postpartum Breastfeeding Women	Postpartum Non-Breastfeeding Women	All Postpartum Women	Total
2005	80.3	62.0	49.0	45.1	32.0	47.4	52.4	61.4	81.3	70.8	56.5
2006	82.2	65.8	50.2	44.5	32.7	48.6	54.1	62.1	85.8	72.9	58.1
2007	88.5	67.9	51.3	44.7	33.9	49.8	56.5	64.1	95.3	77.7	60.6
2008	91.1	72.0	54.2	46.0	33.4	51.7	58.1	67.2	97.4	80.3	62.4
2009	90.5	75.4	54.0	46.5	35.2	53.1	59.0	68.4	95.8	80.5	62.9
2010	86.3	76.5	55.7	46.8	34.5	53.2	56.8	64.4	91.4	76.3	61.6
2011	88.5	73.6	59.5	50.7	35.1	54.8	57.9	65.1	99.4	79.3	63.5
2012	89.8	76.1	54.9	49.5	35.5	53.9	59.0	67.5	100.0	81.6	63.2
2013	84.6	70.0	51.6	48.0	32.6	50.5	54.0	63.3	97.2	76.6	59.3
2014	80.0	68.2	48.1	42.2	25.9	46.0	50.2	59.5	94.1	72.6	54.8
2015	76.9	62.8	47.0	41.8	26.3	44.4	46.4	57.4	88.9	69.2	52.7
2016	98.0	63.5	49.3	44.1	27.8	46.4	56.8	68.8	†	85.6	58.9
2017	93.9	60.7	45.1	42.2	26.7	44.0	53.0	66.6	†	82.1	56.0
2018	97.8	61.4	48.4	40.7	26.5	44.2	53.3	68.7	†	84.4	56.9

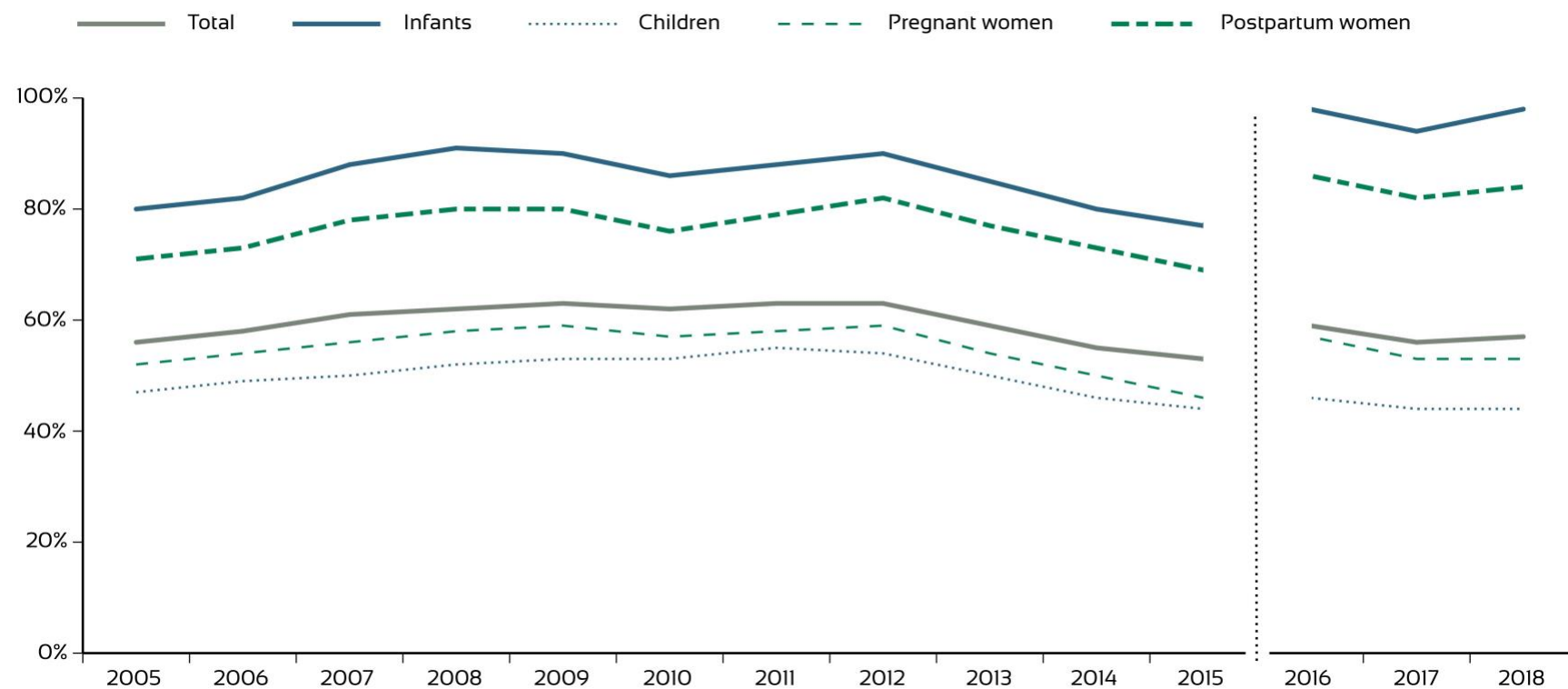
Note: Estimates for 2016–2018 differ methodologically from earlier estimates because of changes to the underlying data sources. Comparisons between the 2016–2018 estimates and prior estimates should be interpreted with caution. See chapter 2 in volume I for more information. The estimated coverage rates for postpartum non-breastfeeding rates exceeded 100 percent in 2012. 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.

CPS-ASEC = Current Population Survey Annual Social and Economic Supplement; CY = calendar year

† indicates an unreliable coverage rate over 100 percent with the lower bound of a 95-percent confidence interval above 100 percent

Sources: IPUMS-USA, n.d.; NBER, n.d.; Thorn et al., 2018; Kline et al., 2020; U.S. Census Bureau, n.d.a; unpublished internal WIC administrative data

Figure 4.13. Trends in WIC Coverage Rates by Participant Category: CY 2005–CY 2018

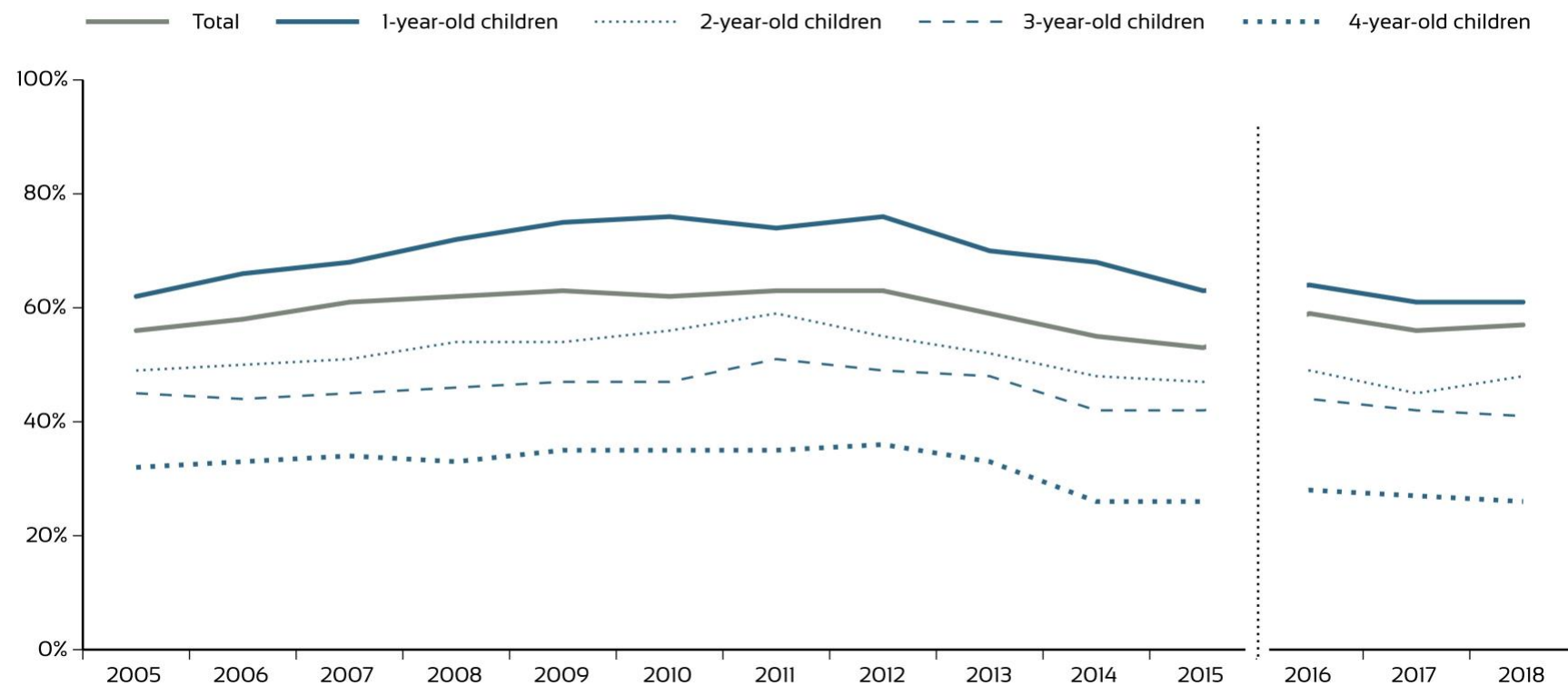


Note: Estimates for 2016–2018 differ methodologically from earlier estimates because of changes to the underlying data sources. Comparisons between the 2016–2018 estimates and prior estimates should be interpreted with caution. See chapter 2 in volume I for more information.

CY = calendar year

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

Figure 4.14. Trends in WIC Coverage Rates for Children by Year of Age: CY 2005–CY 2018

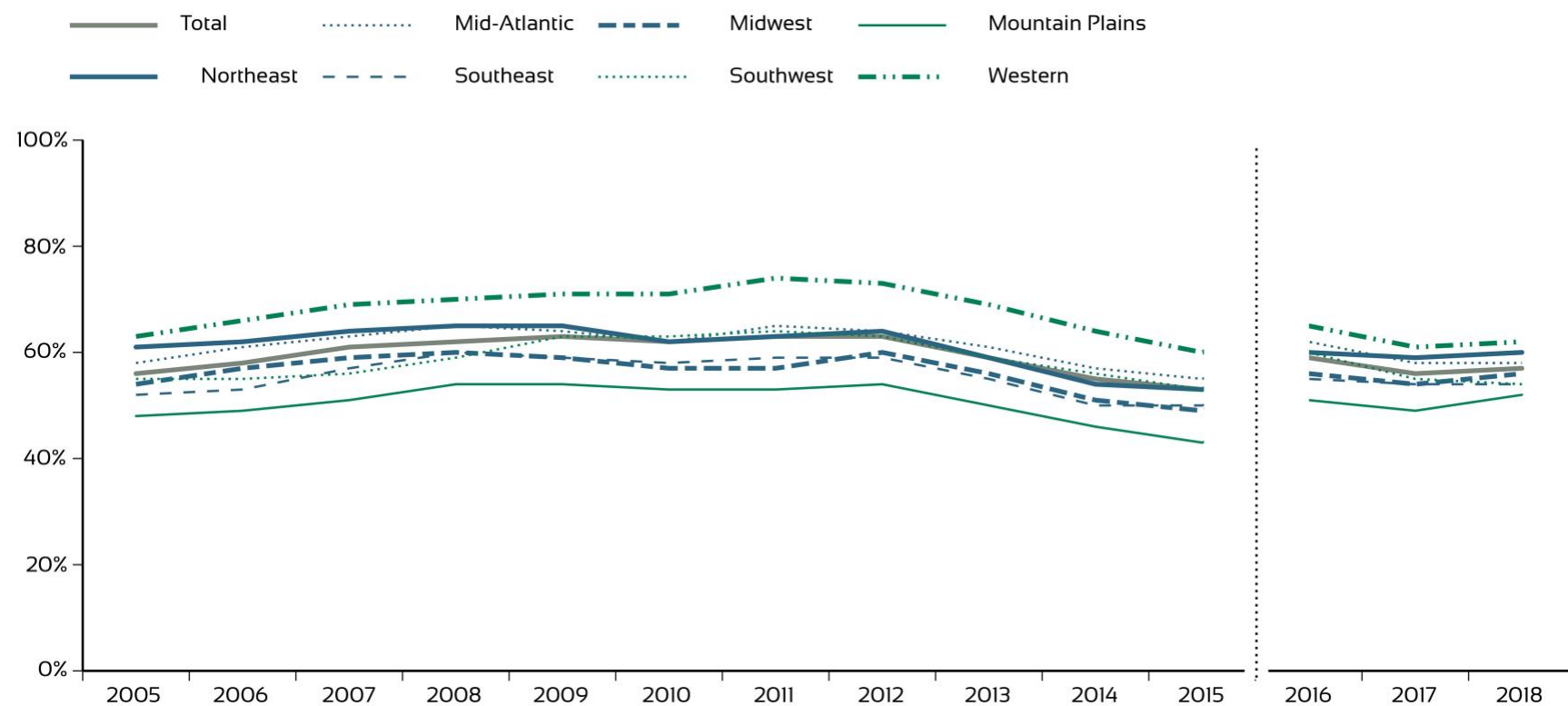


Note: Estimates for 2016–2018 differ methodologically from earlier estimates because of changes to the underlying data sources. Comparisons between the 2016–2018 estimates and prior estimates should be interpreted with caution. See chapter 2 in volume I for more information.

CY = calendar year

Sources: IPUMS-USA, n.d.; NBER, n.d.; Thorn et al., 2018; Kline et al., 2020; U.S. Census Bureau, n.d.a; unpublished internal WIC administrative data

Figure 4.15. Trends in WIC Coverage Rates by FNS Region: CY 2005–CY 2018



Note: Estimates for 2016–2018 differ methodologically from earlier estimates because of changes to the underlying data sources. Comparisons between the 2016–2018 estimates and prior estimates should be interpreted with caution. See chapter 2 in volume I for more information.

CY = calendar year; FNS = Food and Nutrition Service

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

Chapter 5. WIC Participation Rates for CY 2018

This chapter presents participation rates for women, infants, and children in 2018. The participation rates were calculated as the percentages of the total population of women, infants, and children who received WIC benefits in an average month in 2018. 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 income eligibility, or nutritional risk. Participation rates are useful for understanding the overall reach of WIC across the total population.

Section A presents 2018 national WIC participation rates by participant category, and section B presents State-level participation rates.

A. National-Level WIC Participation Rates

Forty-four percent of all infants and 22 percent of all children received WIC benefits (see table 5.1). Similar to WIC coverage rates, participation rates for children were highest for 1-year-olds (30 percent) and lowest for 4-year-olds (12 percent). Slightly more postpartum women (26 percent) than pregnant women (21 percent) received WIC benefits. The participation rate was higher for postpartum non-breastfeeding women (29 percent) than postpartum breastfeeding women (24 percent).

Table 5.1. WIC Participation Rates by Participant Category: CY 2018

Participant Category	Number Participating	Total Population	Participation Rate
Infants	1,687,310	3,817,508	44.2
Children	3,460,449	16,063,431	21.5
1-year-old children	1,181,989	3,924,580	30.1
2-year-old children	934,538	3,974,744	23.5
3-year-old children	835,780	4,050,942	20.6
4-year-old children	508,142	4,113,165	12.4
Pregnant women	606,373	2,847,899	21.3
Postpartum women	994,780	3,797,198	26.2
Breastfeeding women	536,944	2,222,934	24.2
Non-breastfeeding women	457,836	1,574,264	29.1
Total	6,748,911	26,526,035	25.4

Note: 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 2018 according to WIC PC2018 data.

CY = calendar year

Sources: NBER, n.d.; Kline et al., 2020; U.S. Census Bureau, n.d.a; unpublished internal WIC administrative data

B. Regional- and State-Level WIC Participation Rates

Participation rates varied considerably among regions and States. The Western region had the highest participation rate (28 percent), and the Mountain Plains region had the lowest (20 percent) in comparison with the national average of 25 percent (see table 5.2). Among States, rates ranged from a low of 14 percent in Utah to a high of 34 percent in Mississippi. Nine States had participation rates of less than 20 percent (Colorado, Connecticut, District of Columbia, Illinois, New Hampshire, North

Dakota, Utah, Virginia, and Wyoming), and three States had participation rates of 30 percent or greater (Alabama, California, and Mississippi). Puerto Rico had a higher participation rate (66 percent) than any State.

Table 5.2. WIC Participation Rates by State and FNS Region: CY 2018

State	Number Participating	Total Population	Participation Rate
Alabama	119,661	391,937	30.5*
Alaska	16,869	69,905	24.1
Arizona	147,692	577,001	25.6
Arkansas	72,510	252,561	28.7*
California	994,115	3,250,454	30.6*
Colorado	84,506	447,155	18.9*
Connecticut	46,883	242,497	19.3*
Delaware	16,765	71,428	23.5
District of Columbia	12,244	63,605	19.3*
Florida	448,406	1,531,178	29.3*
Georgia	212,250	882,855	24.0*
Hawaii	25,944	112,608	23.0*
Idaho	32,976	152,833	21.6*
Illinois	195,488	1,012,673	19.3*
Indiana	142,468	550,717	25.9*
Iowa	59,661	260,028	22.9*
Kansas	50,143	249,735	20.1*
Kentucky	99,475	361,418	27.5*
Louisiana	110,002	412,306	26.7*
Maine	18,121	84,142	21.5*
Maryland	126,848	490,236	25.9*
Massachusetts	107,051	476,936	22.4*
Michigan	211,012	756,233	27.9*
Minnesota	104,495	467,901	22.3*
Mississippi	84,017	249,969	33.6*
Missouri	112,604	492,050	22.9*
Montana	16,546	81,742	20.2*
Nebraska	35,178	175,974	20.0*
Nevada	61,169	246,572	24.8
New Hampshire	12,271	83,884	14.6*
New Jersey	138,860	688,946	20.2*

State	Number Participating	Total Population	Participation Rate
New Mexico	44,363	164,630	26.9*
New York	408,567	1,523,225	26.8*
North Carolina	217,264	813,630	26.7*
North Dakota	12,114	72,111	16.8*
Ohio	204,672	914,170	22.4*
Oklahoma	96,458	341,561	28.2*
Oregon	84,854	305,194	27.8*
Pennsylvania	214,483	926,972	23.1*
Puerto Rico	108,873	166,139	65.5
Rhode Island	18,642	71,988	25.9
South Carolina	90,032	389,262	23.1*
South Dakota	17,538	81,468	21.5*
Tennessee	124,695	540,093	23.1*
Texas	724,458	2,707,972	26.8*
Utah	47,575	335,428	14.2*
Vermont	11,441	38,507	29.7*
Virginia	112,149	680,251	16.5*
Washington	142,205	612,358	23.2*
West Virginia	34,388	122,889	28.0*
Wisconsin	91,379	441,262	20.7*
Wyoming	8,751	46,956	18.6*
FNS Region			
Northeast	622,975	2,521,180	24.7*
Mid-Atlantic	767,495	3,219,695	23.8*
Southeast	1,395,800	5,160,341	27.0*
Midwest	949,513	4,142,956	22.9*
Southwest	1,047,791	3,879,031	27.0*
Mountain Plains	444,616	2,242,648	19.8*
Western	1,520,720	5,360,186	28.4*
Total	6,748,911	26,526,035	25.4

Note: 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. State and regional estimates and participant data include individuals in ITOs.

CPS-ASEC = Current Population Survey Annual Social and Economic Supplement; CY = calendar year; FNS = Food and Nutrition Service; ITO = Indian Tribal Organization

* indicates a statistically significant difference between the State or regional participation rate and the national participation rate at the 95-percent confidence level. The statistical significance testing was conducted 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; therefore, no statistical testing was done to compare the provided participation rate for Puerto Rico with that of the national participation rate.

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

Chapter 6. Measures of Precision for the Estimates of Eligibility

Coverage and participation rate estimates were calculated, in part, using data from several large-scale, complex, nationally representative surveys, including the CPS-ASEC (NBER, n.d.) 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 2018 national-, regional-, and State-level estimates of eligibility for WIC.⁶⁵ The standard errors for the national-level estimates were derived using the replicate weight methodology described in appendix E of Trippe et al., 2019. 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 2018 national eligibility estimates were higher for infants, pregnant women, and postpartum women (3.3 percent for each) than children (1.4 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 2018

Region	Infants	Children	Pregnant Women	Postpartum Women	Total
Number Eligible					
Northeast	149,462	682,180	98,548	105,168	1,035,358
Mid-Atlantic	171,100	783,501	112,868	117,930	1,185,398
Southeast	371,393	1,704,501	245,061	245,724	2,566,679
Midwest	243,318	1,118,345	160,366	162,705	1,684,733
Southwest	289,989	1,274,908	191,390	192,213	1,948,500
Mountain Plains	122,813	568,933	80,861	86,036	858,643
Western	352,370	1,579,379	232,393	251,769	2,415,910
Total	1,700,445	7,711,746	1,121,486	1,161,544	11,695,221

⁶⁵ 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.a). These estimates were not subject to sampling variability.

Region	Infants	Children	Pregnant Women	Postpartum Women	Total
Standard Error					
Northeast	7,019	12,469	4,631	4,911	21,250
Mid-Atlantic	7,878	14,266	5,201	5,417	22,095
Southeast	14,034	27,201	9,264	9,292	42,517
Midwest	10,334	19,132	6,818	6,895	30,954
Southwest	11,606	21,841	7,665	7,696	34,037
Mountain Plains	5,588	12,033	3,681	3,913	18,121
Western	13,483	25,641	8,895	9,575	41,326
Total	56,039	111,228	36,970	38,174	180,551
Coefficient of Variation (Percent)					
Northeast	4.7	1.8	4.7	4.7	2.1
Mid-Atlantic	4.6	1.8	4.6	4.6	1.9
Southeast	3.8	1.6	3.8	3.8	1.7
Midwest	4.2	1.7	4.3	4.2	1.8
Southwest	4.0	1.7	4.0	4.0	1.7
Mountain Plains	4.6	2.1	4.6	4.5	2.1
Western	3.8	1.6	3.8	3.8	1.7
Total	3.3	1.4	3.3	3.3	1.5

Note: The coefficient of variation is defined as the ratio of the standard error to the eligibility estimate. Estimates for Puerto Rico and the other U.S. territories are not included in regional totals or standard errors.

CY = calendar year; FNS = Food and Nutrition Service

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

At the State level, the coefficients of variation were notably higher than at the national level, except for the four largest States (California, Florida, New York, and Texas). For States, the coefficient of variation ranged from 1.8 percent in California and Texas to 9.9 percent in South Dakota. 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 and Coefficients of Variation for Estimated Number of Individuals Eligible for WIC by State and FNS Region: CY 2018

State	Number Eligible	Standard Error	Coefficient of Variation (Percent)
Alabama	203,381	6,163	3.0
Alaska	29,424	1,970	6.7
Arizona	284,729	7,158	2.5
Arkansas	138,625	4,531	3.3
California	1,482,197	26,708	1.8
Colorado	167,581	5,273	3.1
Connecticut	93,566	3,699	4.0
Delaware	33,928	2,634	7.8
District of Columbia	27,426	2,330	8.5
Florida	781,368	16,149	2.1

State	Number Eligible	Standard Error	Coefficient of Variation (Percent)
Georgia	430,444	10,401	2.4
Hawaii	45,189	2,718	6.0
Idaho	70,029	3,585	5.1
Illinois	411,665	10,264	2.5
Indiana	239,752	7,293	3.0
Iowa	98,988	4,346	4.4
Kansas	107,020	4,356	4.1
Kentucky	170,291	4,821	2.8
Louisiana	222,096	6,361	2.9
Maine	28,753	1,966	6.8
Maryland	192,784	7,219	3.7
Massachusetts	166,327	5,640	3.4
Michigan	329,917	8,983	2.7
Minnesota	157,624	6,719	4.3
Mississippi	136,420	4,185	3.1
Missouri	209,772	6,427	3.1
Montana	36,190	2,535	7.0
Nebraska	64,664	3,273	5.1
Nevada	115,873	4,037	3.5
New Hampshire	27,851	2,257	8.1
New Jersey	243,675	8,051	3.3
New Mexico	101,065	3,889	3.8
New York	671,162	15,338	2.3
North Carolina	384,041	9,460	2.5
North Dakota	23,321	2,176	9.3
Ohio	386,317	9,568	2.5
Oklahoma	163,898	4,985	3.0
Oregon	134,122	4,633	3.5
Pennsylvania	387,235	10,321	2.7
Rhode Island	32,462	2,293	7.1
South Carolina	190,293	4,813	2.5
South Dakota	29,795	2,955	9.9
Tennessee	270,443	6,955	2.6
Texas	1,322,816	24,416	1.8
Utah	105,301	4,858	4.6
Vermont	15,235	1,486	9.8
Virginia	237,013	7,255	3.1
Washington	254,347	6,940	2.7
West Virginia	63,336	2,610	4.1
Wisconsin	159,457	6,015	3.8
Wyoming	16,010	1,214	7.6

State	Number Eligible	Standard Error	Coefficient of Variation (Percent)
FNS Region			
Northeast	1,035,358	21,250	2.1
Mid-Atlantic	1,185,398	22,095	1.9
Southeast	2,566,679	42,517	1.7
Midwest	1,684,733	30,954	1.8
Southwest	1,948,500	34,037	1.7
Mountain Plains	858,643	18,121	2.1
Western	2,415,910	41,326	1.7
Total	11,695,221	180,551	1.5

Note: The coefficient of variation is defined as the ratio of the standard deviation to the eligibility estimate. State and regional eligibility estimates include individuals in ITOs who were eligible for WIC. Estimates for Puerto Rico and the other U.S. territories are not included in regional totals or standard errors.

CY = calendar year; FNS = Food and Nutrition Service; ITO = Indian Tribal Organization

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

The coefficients of variation were even larger for the estimated coverage rates for participant categories by State (see table 6.3). The coefficients of variation for infant coverage rates ranged from 4.0 percent (California) to 27.4 percent (the District of Columbia). Similarly, the coefficients of variation for non-Hispanic White-only individuals ranged from 3.8 percent (California) to 49.8 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 2018 (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 for individuals eligible for WIC in the Northeast in an average month of 2018 is 1,035,358. The standard error of that estimate is 21,250. There is a 95-percent likelihood that the true number falls within the range from (1,035,358 minus $(1.96 \times 21,250)$) to (1,035,358 plus $(1.96 \times 21,250)$), or from 993,708 to 1,077,008.

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 in chapter 4 are equal to the point estimates shown plus or minus 1.96 times the standard error.⁶⁶

⁶⁶ 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.

As an illustration, consider the WIC coverage rate for individuals in Kansas (see table 4.6 in chapter 4). The point estimate for the coverage rate in Kansas is 46.9 percent. The standard error of that estimate (1.9 percent) is calculated from the coefficient of variation (0.469×0.041 ; see table 6.3). There is a 95-percent likelihood that the true coverage rate falls within the following range:

$$\begin{aligned} &46.9 \pm (1.96 * 1.9) \\ &= 46.9 \pm 3.7 \\ &95\% \text{ confidence interval} = (43.2, 50.6) \end{aligned}$$

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 46.9 percent minus/plus the MOE, which is 3.7. Thus, there is a 95-percent likelihood that the true coverage rate for Kansas falls between 46.9 minus/plus 3.7, or between 43.2 and 50.6 percent. Volume II of this report includes tables showing MOEs for all State-level coverage rates; in that volume, 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 an individual fully reports the kinds of benefits received); 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 by State and Participant Category: CY 2018

State	Infants	1-Year-Old Children	2-Year-Old Children	3-Year-Old Children	4-Year-Old Children	All Children	Pregnant Women	Postpartum Women	Total
Alabama	7.6	8.5	8.7	7.2	6.3	2.7	7.6	7.6	3.0
Alaska	17.8	18.2	14.3	19.7	16.3	8.1	17.8	17.9	6.7
Arizona	6.5	5.4	5.9	5.8	5.9	2.5	6.5	6.4	2.5
Arkansas	8.5	7.9	8.3	8.1	8.4	3.9	8.5	8.5	3.3
California	4.0	3.5	3.7	3.7	3.5	1.8	4.0	4.0	1.8
Colorado	7.6	9.1	8.5	7.6	9.2	3.4	7.6	7.5	3.1
Connecticut	9.6	10.7	11.8	9.3	8.9	4.4	9.6	9.6	4.0
Delaware	17.7	18.5	17.3	19.5	18.0	7.4	17.8	17.8	7.8
District of Columbia	27.4	23.9	27.4	22.6	18.1	9.0	27.4	27.4	8.5
Florida	4.8	4.3	4.4	4.4	4.3	2.0	4.8	4.8	2.1
Georgia	5.9	5.4	5.1	5.3	5.8	2.4	5.9	5.9	2.4
Hawaii	14.0	14.4	13.1	15.7	13.8	6.7	14.0	14.1	6.0
Idaho	12.4	10.7	10.0	12.0	12.8	5.1	12.4	12.4	5.1
Illinois	5.7	6.0	6.5	5.3	5.3	2.4	5.7	5.7	2.5
Indiana	7.8	7.4	6.1	7.1	6.4	3.0	7.8	7.8	3.0
Iowa	8.5	11.3	9.4	11.1	9.6	4.7	8.5	8.5	4.4
Kansas	10.3	10.7	10.5	8.8	8.8	4.5	10.4	10.3	4.1
Kentucky	7.3	6.9	8.3	7.3	6.9	3.0	7.3	7.2	2.8
Louisiana	7.3	7.4	7.8	7.0	6.9	2.9	7.3	7.3	2.9
Maine	13.7	21.5	16.8	20.1	15.4	7.9	13.7	13.7	6.8
Maryland	8.2	8.1	8.1	7.5	8.0	3.5	8.3	8.2	3.7
Massachusetts	9.2	8.3	8.8	7.0	7.6	3.1	9.2	9.2	3.4
Michigan	6.6	5.1	6.4	6.0	5.9	2.8	6.6	6.5	2.7
Minnesota	9.5	7.5	7.8	10.4	9.7	4.5	9.5	9.4	4.3
Mississippi	7.8	7.5	9.1	8.8	9.0	3.2	7.8	7.7	3.1
Missouri	7.4	6.2	7.5	7.5	7.0	3.0	7.4	7.4	3.1
Montana	16.4	15.8	13.8	15.0	16.3	7.9	16.4	16.5	7.0

State	Infants	1-Year-Old Children	2-Year-Old Children	3-Year-Old Children	4-Year-Old Children	All Children	Pregnant Women	Postpartum Women	Total
Nebraska	10.9	10.9	12.9	10.8	11.6	5.6	11.0	10.9	5.1
Nevada	7.7	8.7	10.0	8.7	8.8	3.7	7.7	7.7	3.5
New Hampshire	17.7	17.5	15.4	18.8	21.9	8.1	17.7	17.6	8.1
New Jersey	8.2	6.3	7.6	7.4	6.9	3.2	8.2	8.2	3.3
New Mexico	11.7	8.9	10.7	9.9	10.4	3.4	11.8	11.7	3.8
New York	5.4	4.9	4.9	4.4	4.3	2.0	5.4	5.3	2.3
North Carolina	5.8	6.0	5.1	5.7	5.8	2.7	5.8	5.8	2.5
North Dakota	22.0	23.7	19.2	23.1	23.6	11.1	22.0	22.1	9.3
Ohio	5.8	5.4	5.0	5.7	5.1	2.4	5.8	5.8	2.5
Oklahoma	8.4	7.0	7.9	7.3	7.3	3.3	8.4	8.4	3.0
Oregon	9.6	8.0	7.4	8.2	9.5	2.9	9.6	9.6	3.5
Pennsylvania	7.0	6.1	5.8	5.9	5.5	2.7	7.0	7.0	2.7
Rhode Island	18.7	20.8	17.7	17.7	19.4	8.8	18.7	18.6	7.1
South Carolina	7.9	7.3	7.6	7.2	6.7	3.0	7.9	7.9	2.5
South Dakota	23.1	17.4	19.2	19.1	17.1	8.8	23.2	23.0	9.9
Tennessee	6.7	6.2	6.0	5.4	5.8	2.9	6.7	6.7	2.6
Texas	4.3	3.6	4.1	3.9	3.7	1.8	4.3	4.3	1.8
Utah	10.1	9.0	8.4	9.7	9.0	4.8	10.2	10.1	4.6
Vermont	24.2	24.2	19.9	19.8	26.2	9.1	24.2	24.3	9.8
Virginia	7.6	7.2	7.8	6.6	7.2	2.8	7.6	7.6	3.1
Washington	7.2	7.4	6.7	6.2	5.8	3.0	7.2	7.1	2.7
West Virginia	11.9	11.1	11.8	9.0	9.5	4.2	11.9	11.9	4.1
Wisconsin	10.0	8.0	7.9	9.7	8.0	3.8	10.0	10.0	3.8
Wyoming	19.3	23.9	17.9	23.7	18.8	10.8	19.3	19.4	7.6
Total	3.3	2.6	3.0	2.7	2.7	1.4	3.3	3.3	1.5

Note: 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. Estimates for Puerto Rico and the other U.S. territories are not included in the totals.

CY = calendar year

Sources: IPUMS-USA, n.d.; NBER, n.d.; Kline et al., 2020; unpublished internal WIC administrative data

Table 6.4. Coefficients of Variation of WIC Coverage Rates by State and by Race and Ethnicity: CY 2018

State	Non-Hispanic White-Only	Non-Hispanic Black-Only and Other ^a	Hispanic/Latino	Total
Alabama	4.6	4.6	8.6	3.0
Alaska	11.4	9.0	41.4	6.7
Arizona	5.6	6.5	3.4	2.5
Arkansas	4.7	6.1	7.5	3.3
California	3.8	3.8	2.4	1.8
Colorado	6.1	8.7	4.5	3.1
Connecticut	9.4	8.2	5.0	4.0
Delaware	15.8	14.9	9.4	7.8
District of Columbia	49.8	9.3	25.2	8.5
Florida	4.1	3.6	3.3	2.1
Georgia	4.4	3.8	4.7	2.4
Hawaii	19.2	6.9	14.4	6.0
Idaho	6.5	18.3	7.8	5.1
Illinois	4.4	4.9	3.8	2.5
Indiana	4.1	5.2	6.8	3.0
Iowa	5.9	11.5	10.0	4.4
Kansas	6.0	8.3	7.2	4.1
Kentucky	3.9	7.3	9.1	2.8
Louisiana	5.7	4.0	9.0	2.9
Maine	7.5	23.2	77.3	6.8
Maryland	7.0	5.0	6.5	3.7
Massachusetts	6.6	6.9	5.3	3.4
Michigan	4.2	4.9	8.3	2.7
Minnesota	6.3	6.5	11.2	4.3
Mississippi	6.5	4.1	12.5	3.1
Missouri	4.5	5.5	8.8	3.1
Montana	8.8	14.2	34.9	7.0
Nebraska	7.8	13.0	8.6	5.1
Nevada	9.8	7.2	5.1	3.5
New Hampshire	8.8	23.5	28.9	8.1
New Jersey	6.0	6.0	4.5	3.3
New Mexico	8.8	6.8	4.9	3.8
New York	3.9	4.2	3.2	2.3
North Carolina	4.4	4.1	4.5	2.5
North Dakota	13.5	17.3	42.3	9.3
Ohio	4.1	3.9	7.2	2.5
Oklahoma	5.1	5.8	6.0	3.0
Oregon	5.1	9.4	5.8	3.5

State	Non-Hispanic White-Only	Non-Hispanic Black-Only and Other ^a	Hispanic/Latino	Total
Pennsylvania	4.1	5.0	5.5	2.7
Rhode Island	13.3	17.7	11.3	7.1
South Carolina	5.2	4.2	9.2	2.5
South Dakota	11.2	15.8	36.8	9.9
Tennessee	4.2	4.6	5.6	2.6
Texas	4.2	3.8	2.4	1.8
Utah	5.7	11.0	12.4	4.6
Vermont	11.0	37.8	46.1	9.8
Virginia	5.1	4.7	7.0	3.1
Washington	4.7	7.5	4.2	2.7
West Virginia	4.9	14.2	65.0	4.1
Wisconsin	5.7	7.5	9.3	3.8
Wyoming	11.1	26.0	12.5	7.6
Total	3.0	2.7	2.1	1.5

Note: 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. Estimates for Puerto Rico and the other U.S. territories are not included in the totals.

CY = calendar year

^a The “Non-Hispanic Black-Only” and “Non-Hispanic Other” categories were combined because of sample size concerns.

Sources: IPUMS-USA, n.d.; NBER, n.d.; Kline et al., 2020; unpublished internal WIC administrative data

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