



IOWA WIC ESTIMATED ELIGIBLE POPULATION

Final Report

April 2023

STATE OF IOWA DEPARTMENT OF
Health AND Human
SERVICES



Table of Contents

| | |
|------------------------------------|----|
| BACKGROUND | 2 |
| METHODS | 4 |
| RESULTS | 5 |
| Overall | 5 |
| Participant Demographics | 5 |
| Participation Rates | 7 |
| Geographic Regions | 10 |
| Collaborative Service Areas | 10 |
| Counties | 12 |
| Infants | 14 |
| Participant Demographics | 14 |
| Participation Rates | 15 |
| Children | 16 |
| Participant Demographics | 16 |
| Participation Rates | 17 |
| Pregnant Women | 19 |
| Participant Demographics | 19 |
| Participation Rates | 20 |
| Postpartum Breastfeeding Women | 21 |
| Participant Demographics | 21 |
| Participation Rates | 22 |
| Postpartum Non-Breastfeeding Women | 24 |
| Participant Demographics | 24 |
| Participation Rates | 25 |
| DISCUSSION | 27 |
| APPENDIX A: METHODOLOGY | 29 |

Background

Since its inception in 1974, the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) has earned the reputation of being one of the most successful federally funded nutrition programs in the United States. Collective findings of studies, reviews and reports demonstrate that WIC is cost-effective in protecting and improving the health and nutritional status of low-income women, infants and children up to age five.¹⁻² WIC also serves as an adjunct to health care during critical times of growth and development, and studies have linked WIC participation to the prevention of low birth weight, premature birth and the improved health status of infants and children.³

The mission of WIC is “to assure healthy pregnancies, healthy birth outcomes and healthy growth and development for women, infants and children up to age five who are at nutritional risk, by providing nutritious supplemental foods, breastfeeding promotion and support, education on healthy eating and referrals to health care and critical social services.”⁴ WIC is administered by the U.S. Department of Agriculture (USDA) Food and Nutrition Service, which provides grants to state agencies to operate the program locally.

IOWA WIC

In Iowa, WIC is administered by the Bureau of Nutrition and Physical Activity, which resides within the Division of Community Access at the Iowa Department of Health and Human Services (Iowa HHS). Iowa HHS contracts with a variety of community-based organizations called [Collaborative Service Areas \(CSAs\)](#) to allow a collaborative approach in delivering services for WIC as well as other programs that support mothers and children. The 15 CSAs provide WIC services in all of Iowa’s 99 counties to eligible families. WIC services include nutrition education, breastfeeding promotion and support, nutritious food packages and referrals to other health programs.



¹U.S. Department of Agriculture. (2021). *How WIC Helps*. U.S. Department of Agriculture; Food and Nutrition Services. Available at: <https://www.fns.usda.gov/wic/about-wic-how-wic-helps>

² National WIC Association. (March 2019). *WIC, Medicaid, And Snap: Teaming Up To Improve The Health Of Women And Children*. Available at: <https://s3.amazonaws.com/aws.upl/nwica.org/teaming-up-to-improve-the-health-of-women-and-children.pdf>

³ Soneji S, Sánchez H (2019). Association of Special Supplemental Nutrition Program for Women, Infants, and Children With Preterm Birth and Infant Mortality. *JAMA Network Open*, Vol. 2, Issue 12. Available online: <https://jamanetwork.com/journals/jamanetworkopen/article-abstract/2756257>

⁴ U.S. Department of Agriculture. (2021). *WIC*. U.S. Department of Agriculture; Food and Nutrition Services. Available at: <https://www.fns.usda.gov/wic>

To be eligible for WIC benefits, applicants must meet the following four requirements.⁵

1. *Categorical eligibility:* Women during pregnancy, women up to one year postpartum if breastfeeding, or up to six months postpartum if not breastfeeding; infants up to age one (the first birthday); and children up to age five (the fifth birthday).
2. *Residency:* An applicant must live in the state where they are applying for WIC.
3. *Income eligibility:* Applicants must meet income eligibility standards and have a household income at or below 185 percent of the Federal Poverty Guidelines. Applicants who participate in other federally administered programs, such as the Family Investment Program (FIP, also known as Iowa's Temporary Assistance to Needy Families program), Supplemental Nutrition Assistance Program (SNAP), Medicaid or Head Start or Early Head Start.
4. *Nutritional risk:* An applicant must be determined to be at nutritional risk based on a medical or nutritional assessment by a competent professional authority such as dietitians, nurses, nutrition educators or nutrition assistants. Examples of medical-based conditions include anemia, overweight or history of early term delivery. Dietary-based conditions include inappropriate nutrition practices or feeding practices that disregard developmental needs.

WIC Participant Categories

Women

- *Pregnant.* During pregnancy and up to six weeks after birth of an infant or the end of pregnancy
- *Postpartum non-breastfeeding.* Up to six months after the birth of the infant or the end of pregnancy
- *Postpartum breastfeeding.* Up to the infant's first birthday

Infants

- 0-12 months of age

Children

- 1-5 years of age

PURPOSE OF THIS REPORT

The purpose of this report is to estimate the number of Iowa residents eligible for WIC and examine trends in actual WIC participation over the past five years. This information can help determine how well eligible residents are being reached by WIC and where program improvements can be made. Additionally, these results can provide insight into geographic regions where priority audiences of all backgrounds (e.g., age, race, ethnicity, etc.) who are eligible for WIC, but not currently participating, can potentially be reached by future programming.

⁵ U.S. Department of Agriculture. (2021). *WIC Eligibility Requirements*. U.S. Department of Agriculture; Food and Nutrition Services. Available at: <https://www.fns.usda.gov/wic/wic-eligibility-requirements>

Methods

Data used to develop this report include demographic data from the Iowa WIC Data System by the Iowa HHS (2018-2022 calendar year data) and American Community Survey (ACS) 5-Year Public Use Micro Area (PUMA) data (2016-2020). Methods to estimate the population that is eligible for WIC were adapted from the USDA National- and State-Level Estimates of WIC Eligibility and WIC Program Reach in 2019 Final Report.⁶ Eligibility rates were calculated where relevant. Participation rates were calculated for each group of interest based on the actual participation counts provided in demographic data and the estimated eligible counts from ACS data. See **Exhibit I** for definitions of eligibility and participation rates. For a complete description of the detailed methodology used to create this report see **Appendix A**.

Exhibit I. Eligibility and Participation Rate Definitions

| Eligibility Rates | Participation Rates |
|--|---|
| •Number of residents estimated to be eligible for WIC divided by the total population of the geographic area | •Number of WIC participants divided by the number of residents estimated to be eligible for WIC |

Data in this report are first presented by overall metrics for the state of Iowa, CSAs and counties, and then by participant group (infants, children, etc.). County profiles for each of the 99 counties in Iowa are available in the report addendum *Iowa WIC Estimated Eligible Population: County Profiles*.



⁶ Farson Gray, K., Blach-Crystal, E., Giannarelli, L., and Johnson, P. (2022). National- and State-Level Estimates of WIC Eligibility and WIC Program Reach in 2019 Final Report. United States Department of Agriculture.

Results

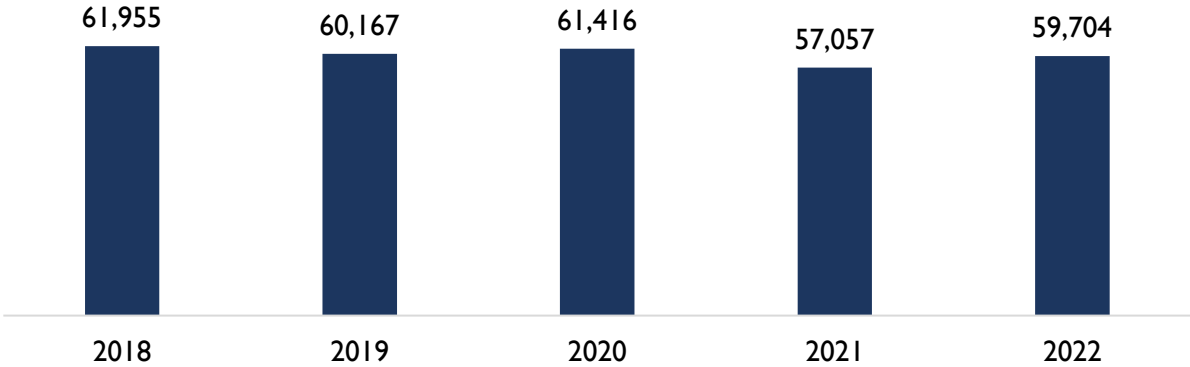
OVERALL

Participant Demographics

The overall population of Iowa is 3,093,526 residents. Based on a five-year average, approximately 131,919 residents are estimated to be eligible for WIC, which is 4.3 percent of the overall population. From 2018 to 2022, the number of residents participating in WIC fluctuated slightly with 59,704 residents most recently participating in 2022. See **Exhibit 2**.

Almost **60,000** Iowa residents are **WIC** participants.

Exhibit 2. Iowa WIC Participation, 2018-2022



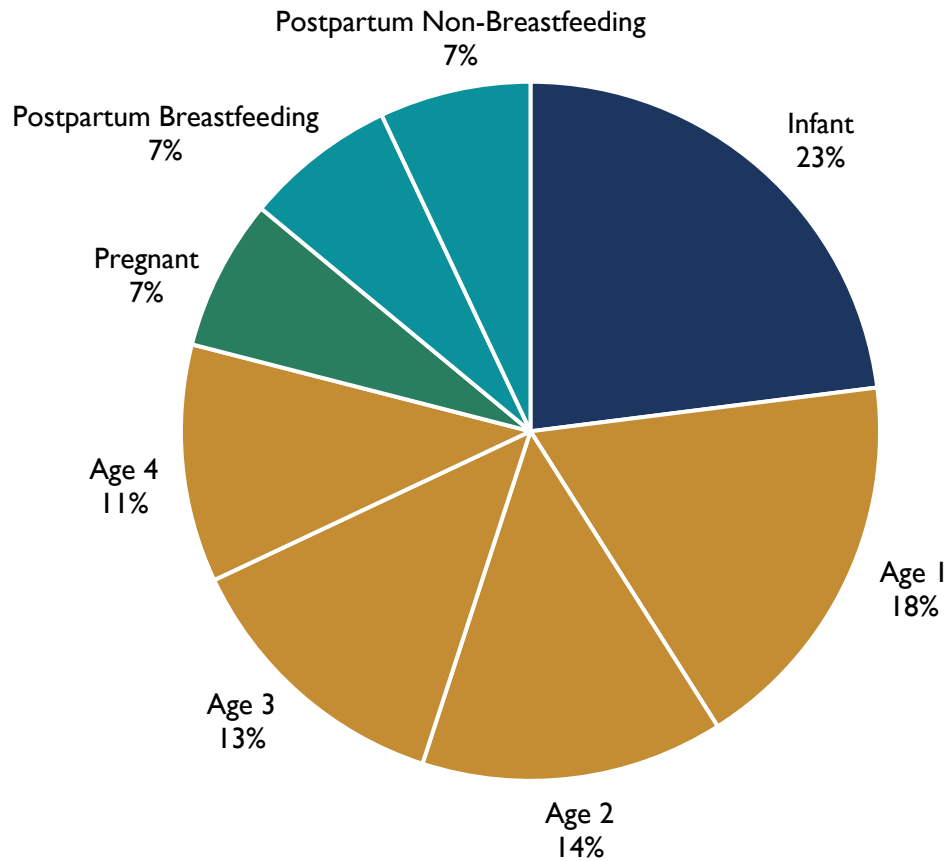
Over the past five years, children and infants comprised the greatest proportion of WIC participants. Children (aged 1-4 years) made up over half of WIC participants (56%), and infants made up almost one-quarter of WIC participants (23%). Pregnant women, postpartum breastfeeding women and postpartum non-breastfeeding women each made up approximately seven percent of WIC participants. See **Exhibit 3**.

Average Number of WIC Participants, 2018-2022

Infants: 13,640
 Age 1: 11,015
 Age 2: 8,593
 Age 3: 7,513
 Age 4: 6,744
 Pregnant women: 4,374
 Postpartum breastfeeding women: 4,012
 Postpartum non-breastfeeding women: 4,168

Infants and children make up almost 80% of WIC participants.

Exhibit 3. WIC Participation by Participant Group, 2018-2022

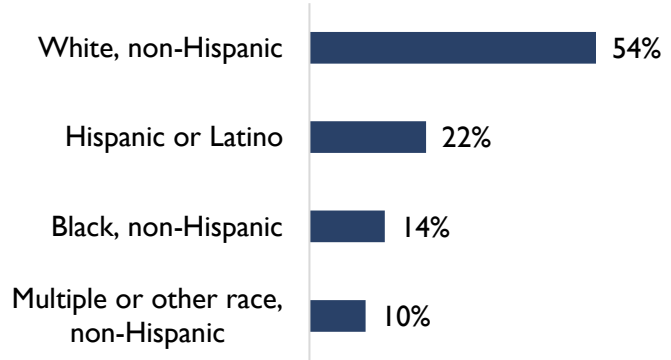


Over the past five years, an average of approximately half (54%) of WIC participants were White, non-Hispanic, 22 percent were Hispanic or Latino, 14 percent were Black, non-Hispanic, and 10 percent reported multiple or other races. See **Exhibit 4**.

Exhibit 4. WIC Participant Race and Ethnicity, 2018-2022

Average Number of WIC Participants

- White, non-Hispanic: 32,222
- Hispanic or Latino: 13,074
- Black, non-Hispanic: 8,474
- Multiple or other race, non-Hispanic: 6,290



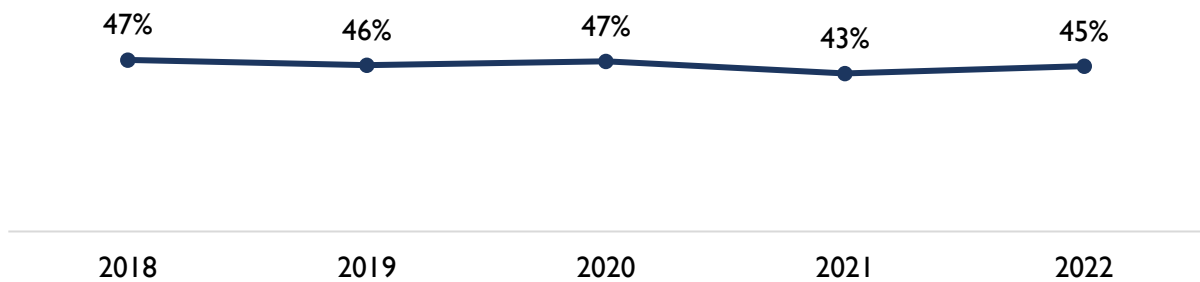
Participation Rates

The average WIC participation rate over the past five years is 46 percent, with participation remaining relatively stable between 2018 (47%) and 2022 (45%). See **Exhibit 5**.

Participation rates are the number of WIC participants divided by the number of residents estimated to be eligible for WIC.

Less than half of Iowa residents **who were eligible** for WIC were **participating** in the program.

Exhibit 5. Trends Over Time for Overall Participation Rates

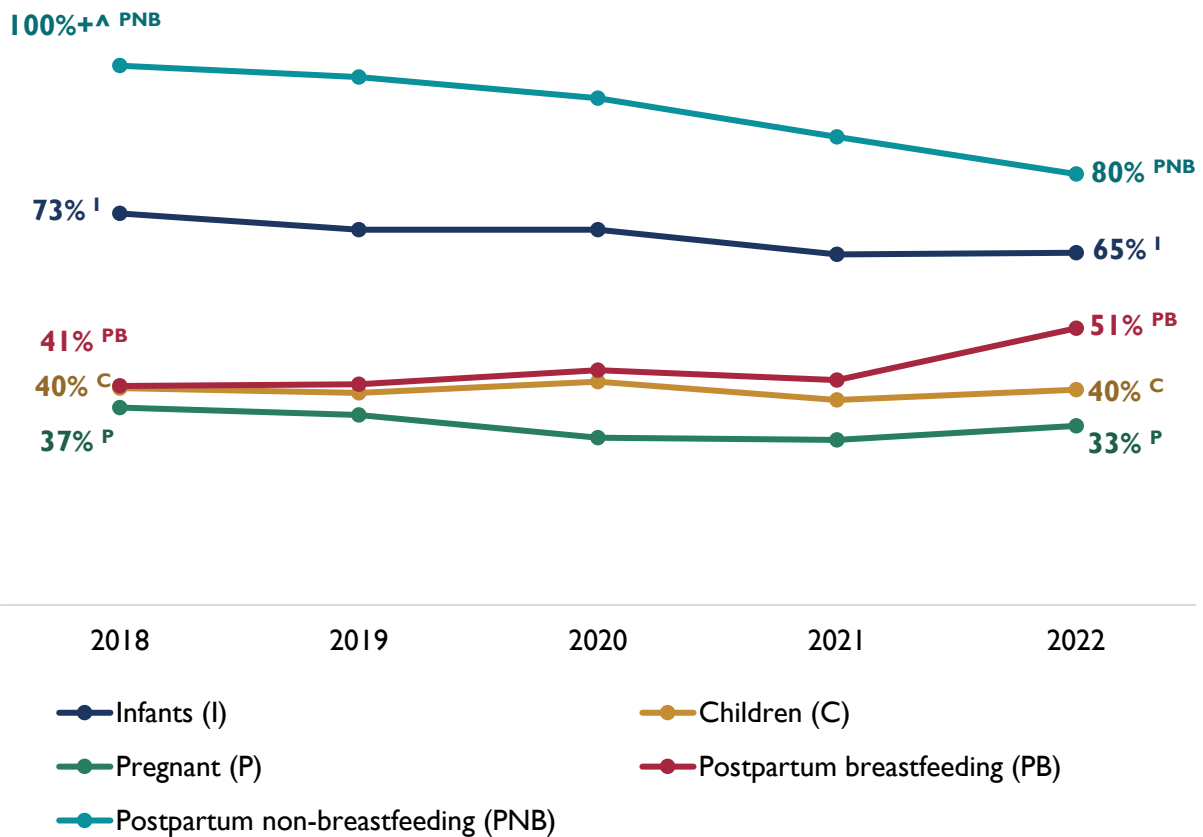


From 2018 to 2022, the participant group with the lowest participation rate was pregnant women, while the participant group with the highest participation rate was postpartum non-breastfeeding women. Infants, pregnant women and postpartum non-breastfeeding women had decreases in participation rates, postpartum breastfeeding women had an increase in participation rate, and child participation rates remained the same. See **Exhibit 6**.



Pregnant women and children had the lowest participation rates.

Exhibit 6. Trends Over Time for Participation Rates by Participant Group

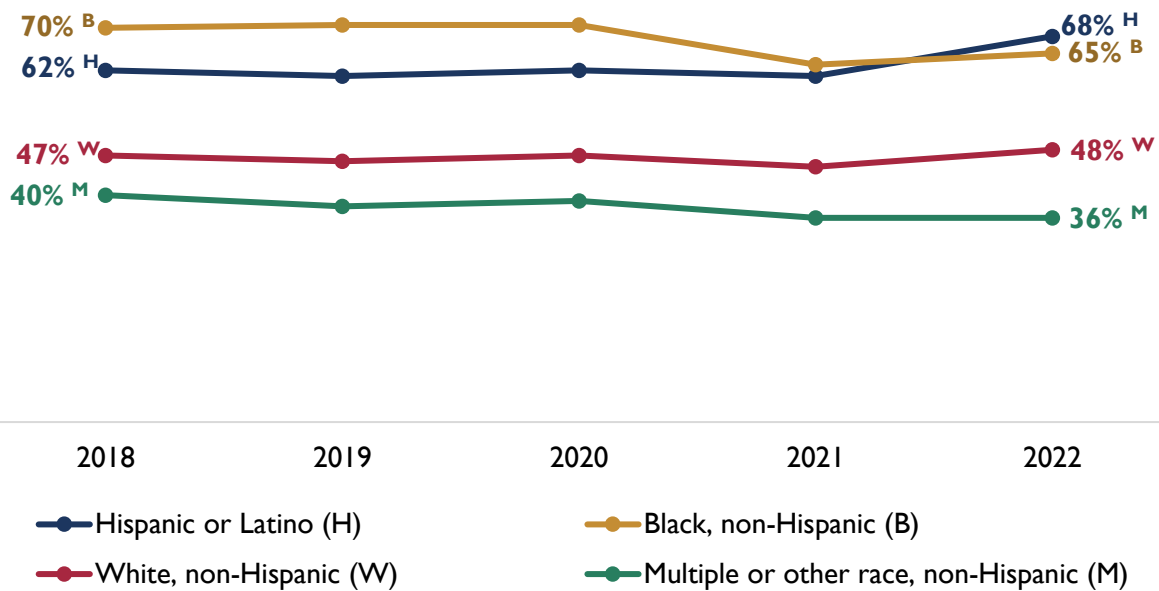


^AThe participation rate for this group is 100% or greater; all estimated eligible residents are being reached. Variations in participation rates may be because of estimation methods or limitations in data from small sample sizes. Caution should be used when examining estimates that are greater than 100%.

When examining participation rates by race and ethnicity, residents who were Black, non-Hispanic and residents who were Hispanic or Latino had the highest participation rates. Residents reporting multiple or other races had the lowest participation rates. Across most race and ethnic groups, participation rates remained relatively stable over the past five years, however, residents who were Black, non-Hispanic experienced a slight decrease (from 70% to 65%) and residents who were Hispanic or Latino experienced a slight increase (from 62% to 68%) in participation rates. See **Exhibit 7**.

Residents reporting **multiple or other races** had the lowest participation rates.

Exhibit 7. Trends Over Time by Race and Ethnicity



GEOGRAPHIC REGIONS

Collaborative Service Areas

Areas of highest need can be determined by assessing geographic regions for high eligibility rates and low participation rates. See **Exhibits 8-9** for all CSA eligibility and participation rates.

Exhibit 8. High Eligibility Rates by CSA, 2018-2022

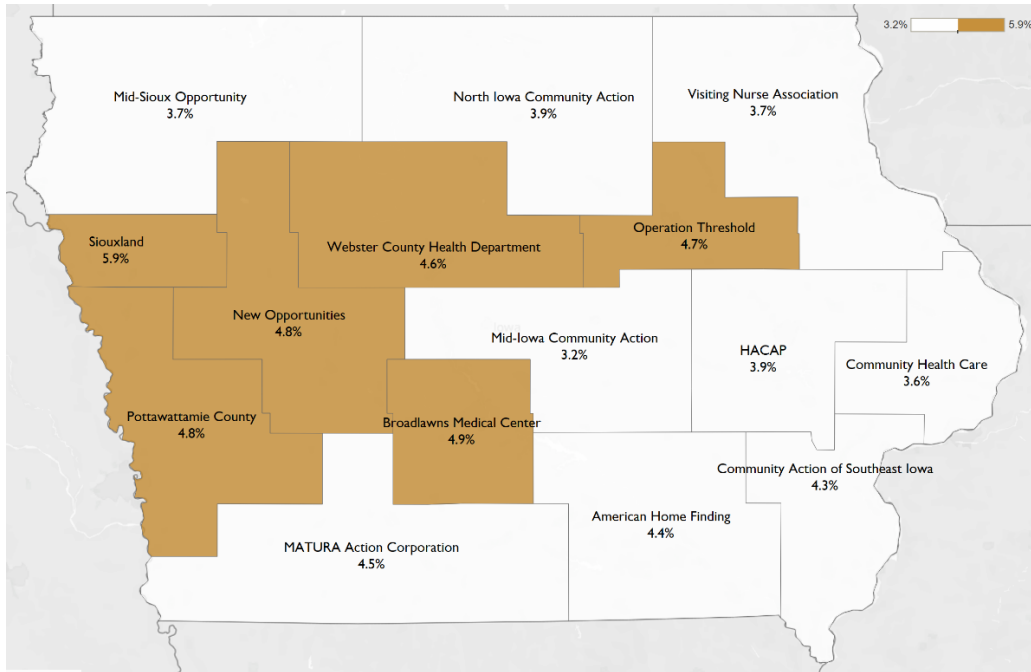
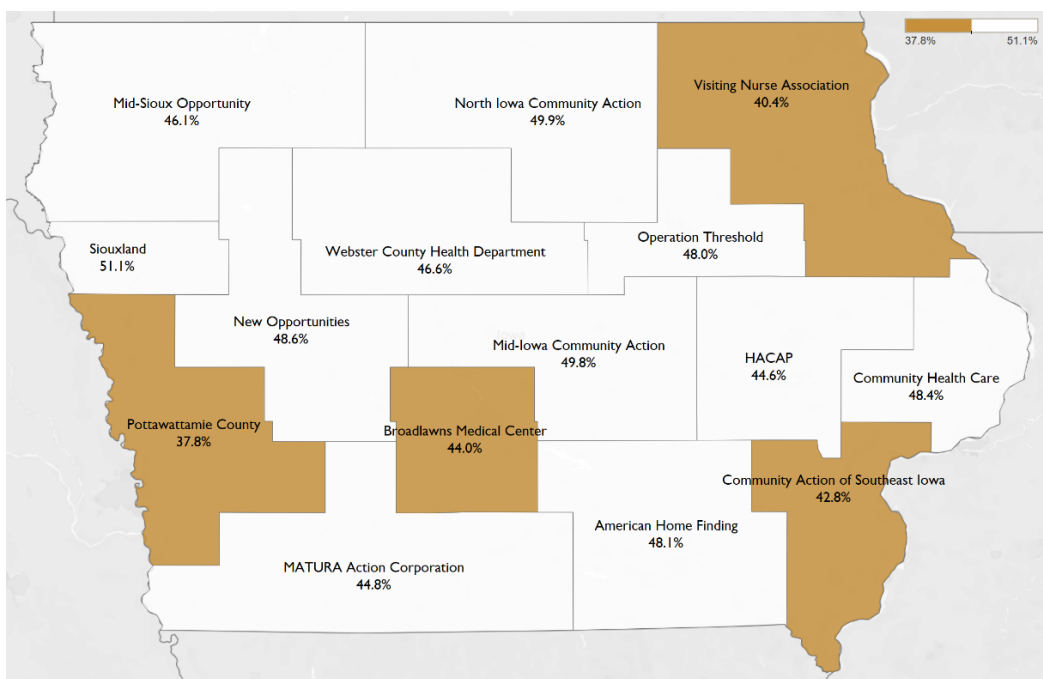


Exhibit 9. Low Participation Rates by CSA, 2018-2022





Pottawattamie County and Broadlawns Medical Center are the CSAs of highest need.

The CSAs with the highest eligibility rates were:

- Siouxland (5.9%),
- Broadlawns Medical Center (4.9%),
- Pottawattamie County (4.8%),
- New Opportunities (4.8%),
- Operation Threshold (4.7%), and
- Webster County Health Department (4.6%).

The CSA's with the lowest participation rates were:

- Pottawattamie County (37.8%),
- Visiting Nurse Association (40.4%),
- Community Action of Southeast Iowa (42.8%), and
- Broadlawns Medical Center (44.0%).

Pottawattamie County and Broadlawns Medical Center CSAs are both amongst the highest eligibility rates and lowest participation rates.⁷

⁷Changes to CSAs in 2022. On October 1st, 2022, 15 defined Collaborative Service Areas (CSAs) were formed to better align programs and services for WIC, Maternal, Child, and Adolescent Health, I-Smile™, 1st Five and Family Planning (Title X) participants. Due to this change, many local WIC agencies' service areas have changed, which may impact data and interpretation.

Counties

Exhibits 10 and 11 display high eligibility and low participation rates for all Iowa counties.

Exhibit 10. High Eligibility Rates by County, 2018-2022

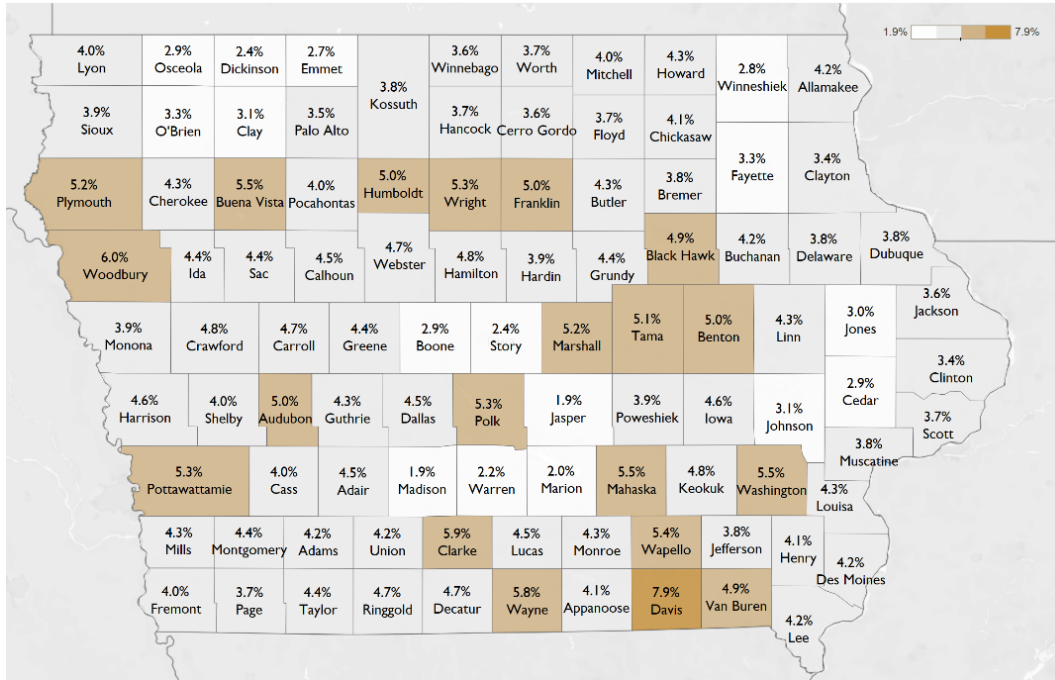
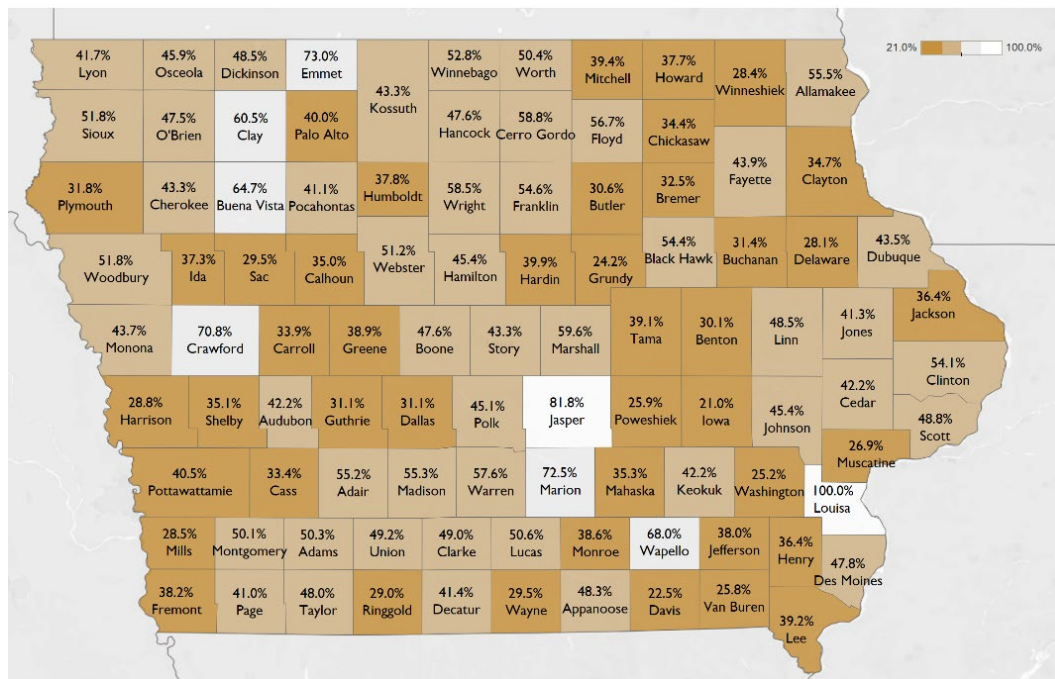


Exhibit 11. Low Participation Rates by County, 2018-2022



*Louisa County has a participation rate >100%. Variations in county participation rates may be because of estimation methods or limitations in data resulting from small sample sizes; caution should be used when examining county-level estimates.

Davis and Washington counties are the areas of **highest need**.

When assessing need by county, the counties with the highest eligibility rates include:

- Davis County (7.9%)
- Woodbury County (6.0%)
- Clarke County (5.9%)
- Wayne County (5.8%)
- Buena Vista County (5.5%)
- Washington County (5.5%)
- Mahaska County (5.5%)

The counties with the lowest participation rates include:

- Iowa County (21.0%)
- Davis County (22.5%)
- Grundy County (24.2%)
- Washington County (25.2%)
- Van Buren County (25.8%)

Davis and Washington counties are both amongst the highest eligibility rates and lowest participation rates.



INFANTS

Participant Demographics

An average of 13,640 infants participated in WIC each year between 2018 and 2022. The majority of infant participants were White, non-Hispanic (52%) and there was an almost even distribution of male (51%) and female (49%) infants. See **Exhibits 12-13**.

Exhibit 12. Infant Participant Race and Ethnicity, 2018-2022

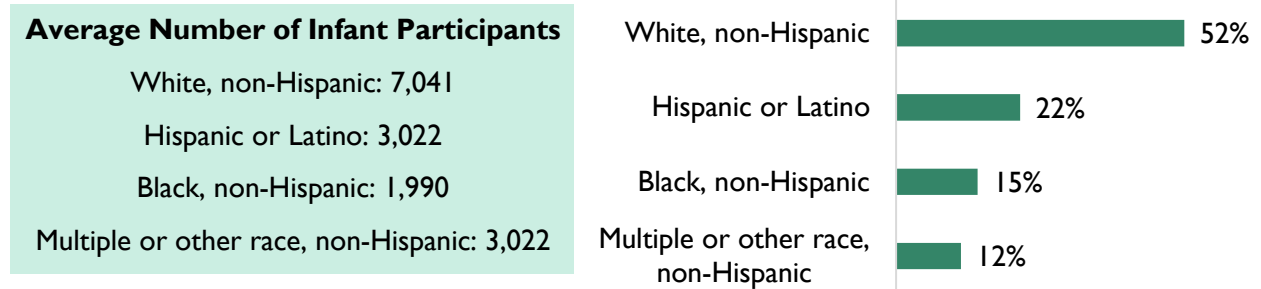


Exhibit 13. Infant Participant Sex, 2018-2022

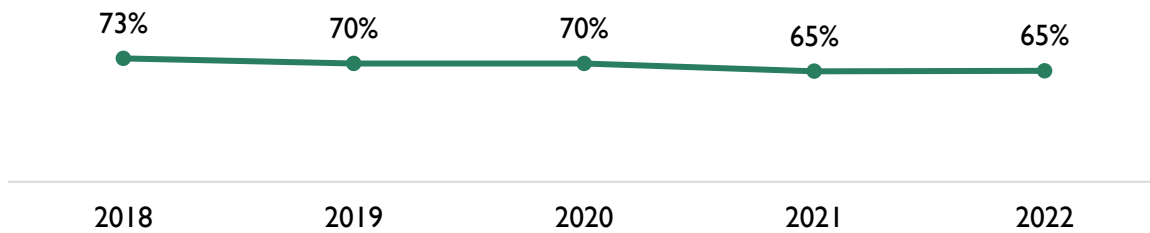


Participation Rates

Overall, two-thirds (65%) or more of infants who were eligible for WIC were participating. From 2018 to 2022, infant participation rates decreased eight percentage points, from 73 percent to 65 percent. See **Exhibit 14**.

Two-thirds of infants who were eligible for WIC were participating in the program.

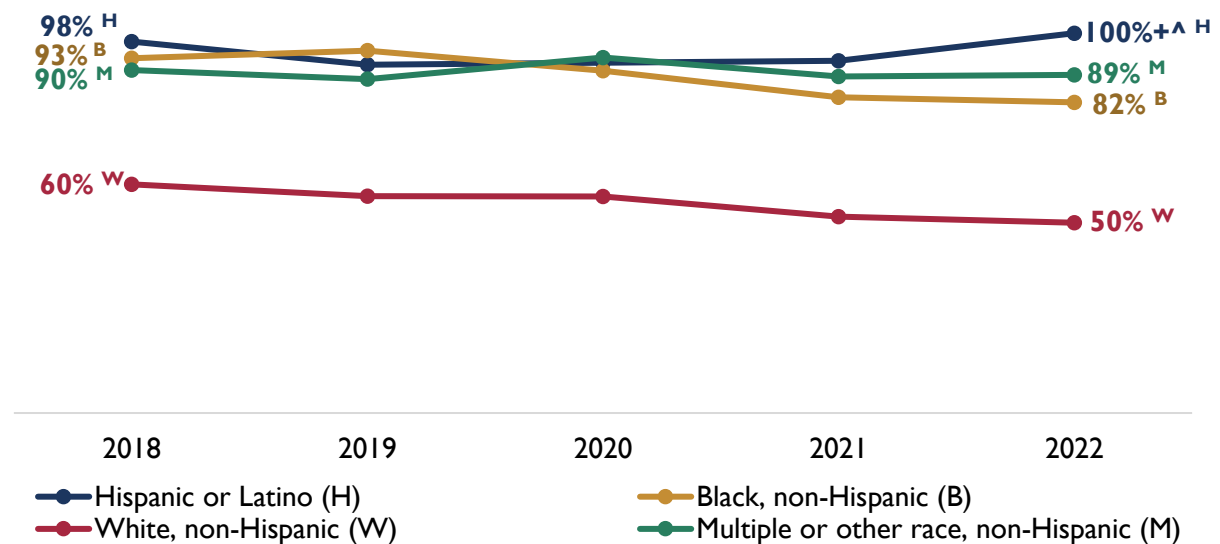
Exhibit 14. Overall Infant Participation Rate, 2018-2022



A majority of eligible infants (more than 80%) who are Hispanic or Latino, Black, non-Hispanic or reporting multiple or other races were participating in WIC. When examining infant participation rates in WIC by race and ethnicity, infants who were White, non-Hispanic had substantially lower participation rates than all other races and ethnicities. Additionally, all groups except infants who were Hispanic or Latino had a decrease in participation rates from 2018 to 2022. See **Exhibit 15**.

Infants who are White, non-Hispanic have the lowest participation rates.

Exhibit 15. Infant Participation Over Time by Race and Ethnicity, 2018-2022



[^]The participation rate for this group is 100% or greater; all estimated eligible residents are being reached. Variations in participation rates may be because of estimation methods or limitations in data from small sample sizes. Caution should be used when examining estimates that are greater than 100%.

CHILDREN

Participant Demographics

From 2018 to 2022, an average of 33,865 children participated in WIC each year. Approximately half of children who participated in WIC were White, non-Hispanic (53%), one-third were age one (33%) and there was an almost even distribution of male (51%) and female (49%) children. Fewer participants were children ages three and four (42%), when compared to children ages one and two (58%). See Exhibits 16-18.

Exhibit 16. Child Participant Age, 2018-2022

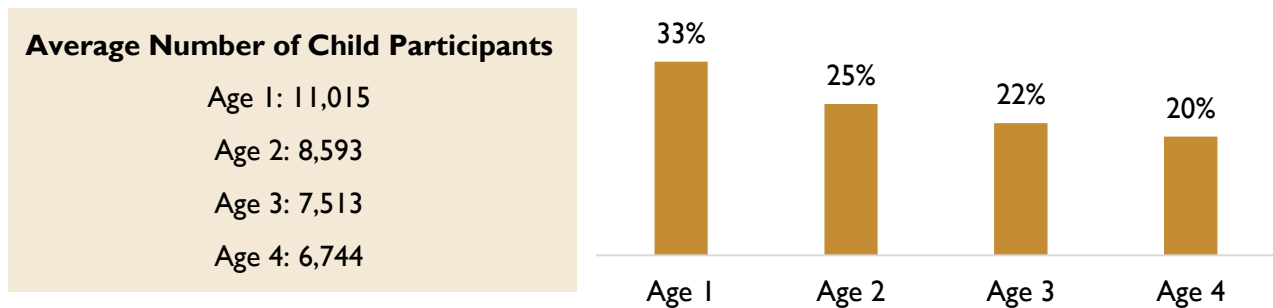


Exhibit 17. Child Participant Race and Ethnicity, 2018-2022

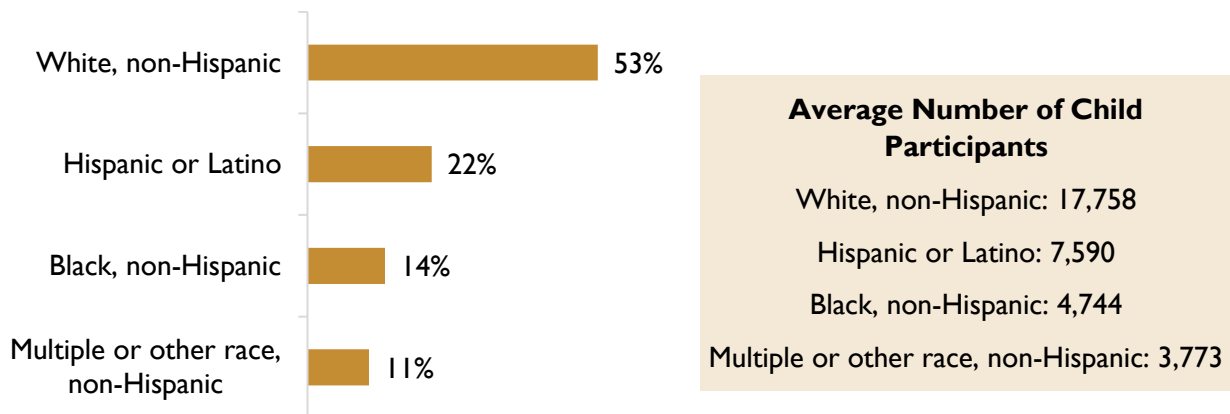
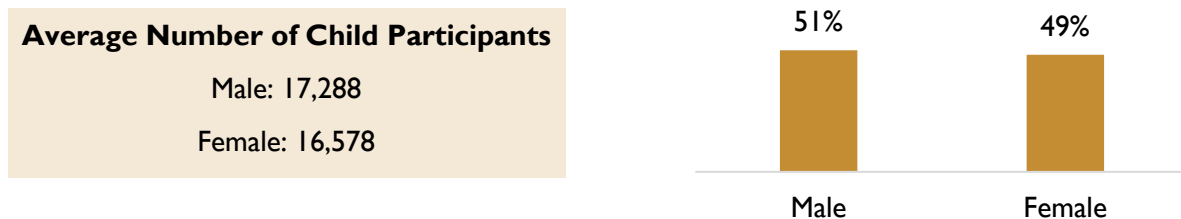


Exhibit 18. Child Participant Sex, 2018-2022

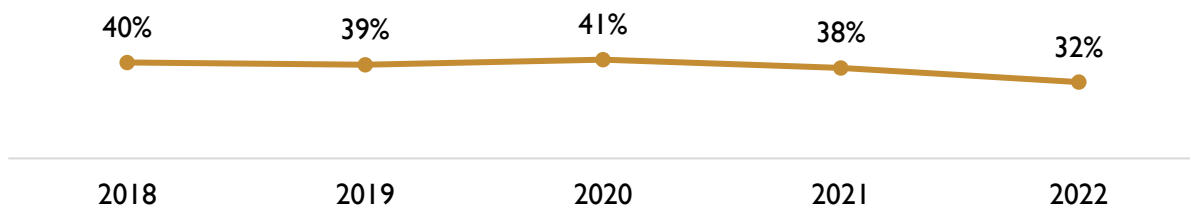


Participation Rates

From 2018 to 2022, approximately one-third (32%) of eligible children participated in WIC. Participation rates amongst children decreased eight percentage points, from 40 percent to 32 percent. See **Exhibit 19**.

One-third of children eligible for WIC were participating in the program.

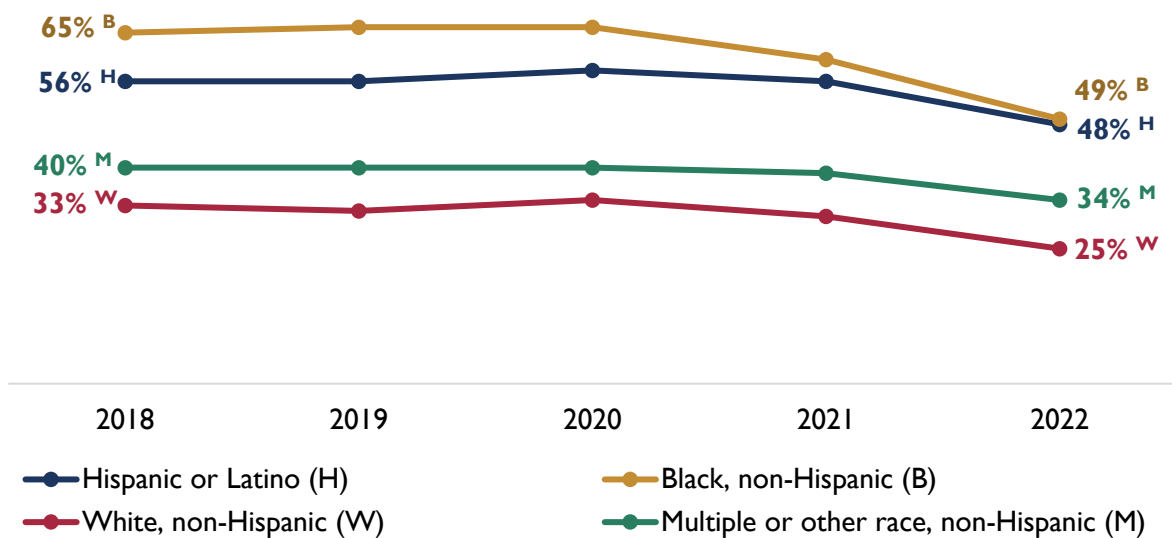
Exhibit 19. Overall Child Participation Rate, 2018-2022



Across all race and ethnicity groups, WIC participation rates amongst children decreased from 2018 to 2022, with noted declines starting in 2020. In 2022, children who were White, non-Hispanic had substantially lower participation rates (25%) than other races and ethnicities, while children who were Black, non-Hispanic had the highest WIC participation rates (49%). See **Exhibit 20**.

Children who are White, non-Hispanic had the lowest participation rates.

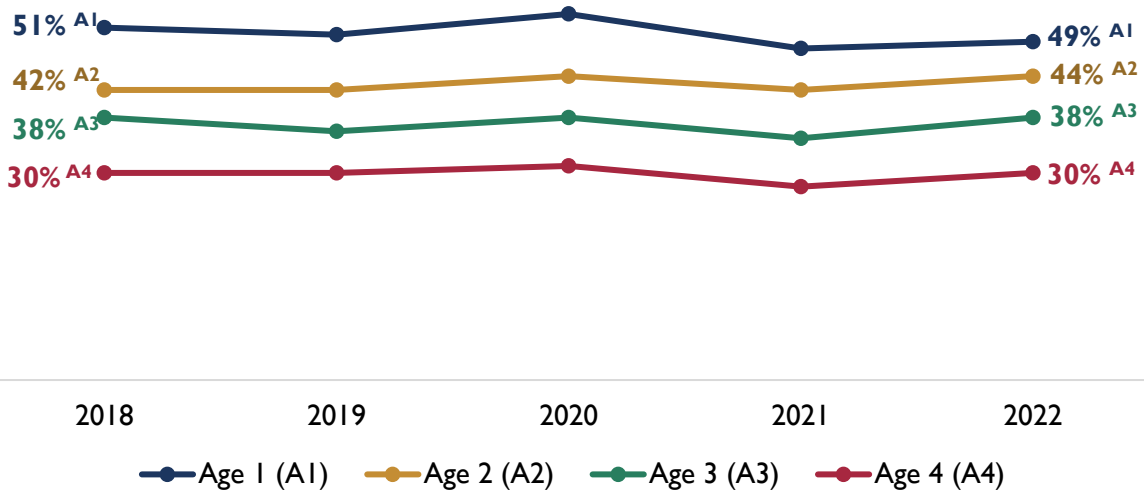
Exhibit 20. Children Participation Over Time by Race and Ethnicity, 2018-2022



When examining child WIC participation by age, participation rates decrease with age. However, rates within each age group have remained relatively stable with only small changes amongst children ages one and two, and no changes in children ages three and four. See **Exhibit 21**.

Participation rates were **lower** in **older** children.

Exhibit 21. Children Participation Over Time by Age Groups, 2018-2022



PREGNANT WOMEN

Participant Demographics

Between 2018 and 2022, an average of 4,374 pregnant women participated in WIC each year. A majority of pregnant women participants were White, non-Hispanic (60%) and approximately half were between the ages of 25 and 34 (49%). See Exhibits 22-23.

Exhibit 22. Pregnant Women Participant Race and Ethnicity, 2018-2022

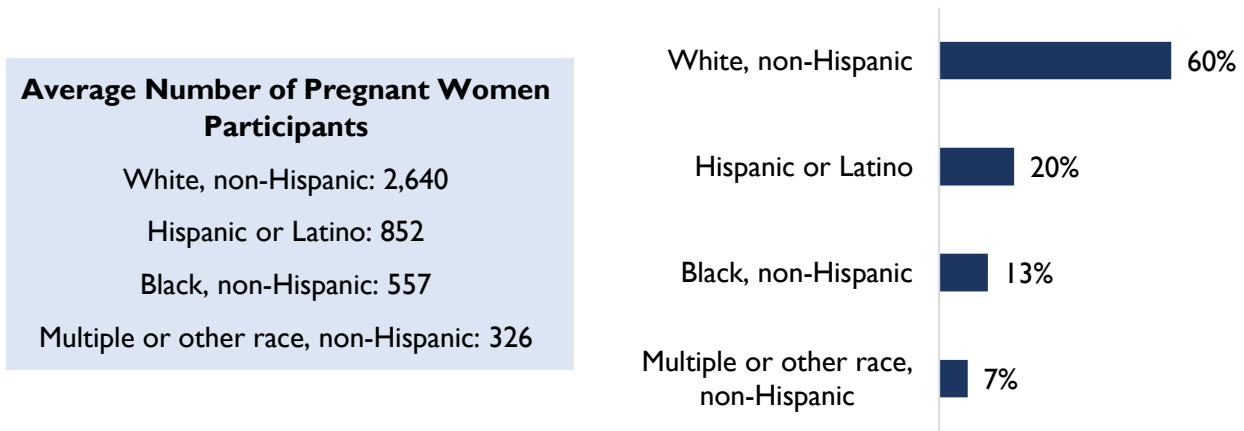
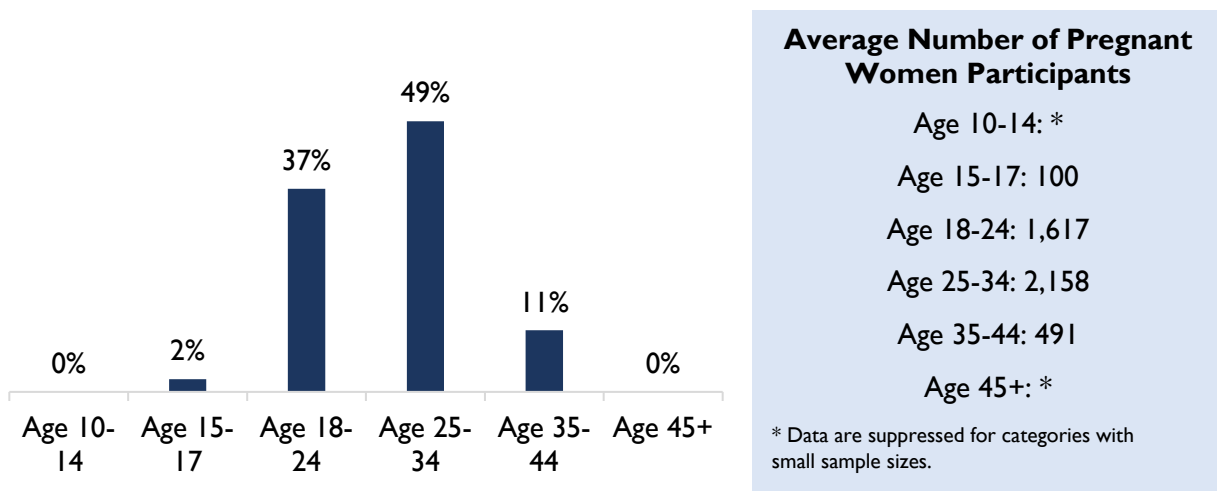


Exhibit 23. Pregnant Women Participant Age, 2018-2022

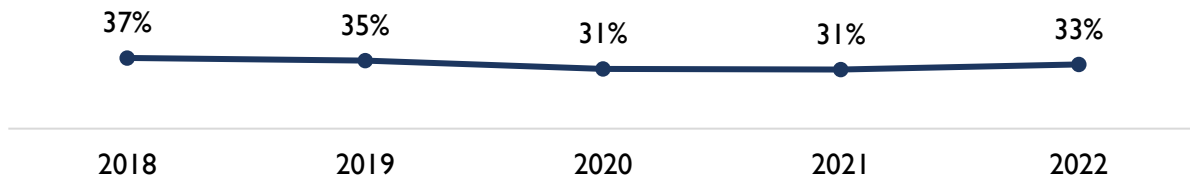


Participation Rates

Overall, approximately one-third (33%) of pregnant women who were eligible for WIC were participating. From 2018 to 2022, participation rates amongst pregnant women decreased four percentage points, from 37 percent to 33 percent. See **Exhibit 24**.

In 2022, one-third of pregnant women who were eligible for WIC were participating in the program.

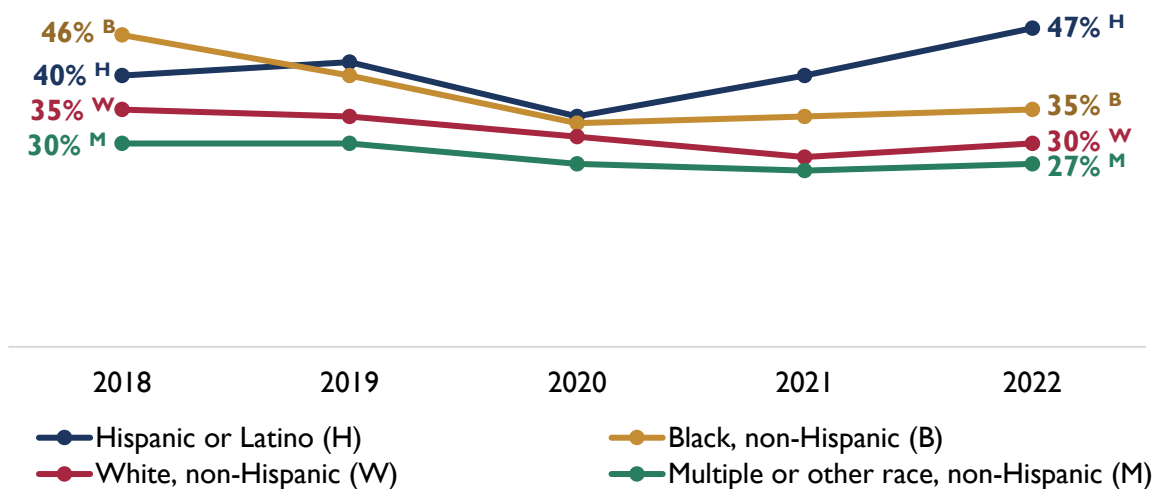
Exhibit 24. Overall Pregnant Women Participation Rate, 2018-2022



When examining WIC participation rates amongst pregnant women by race and ethnicity, rates ranged from 27 percent to 47 percent. Black non-Hispanic and Hispanic or Latino pregnant women had higher participation rates than White, non-Hispanic pregnant women and pregnant women who reported being multiple or other races. All race and ethnicity groups experienced a decrease in participation between 2018 and 2022 except pregnant women who are Hispanic or Latino, who had a seven percentage point increase in participation rate. See **Exhibit 25**.

Pregnant women who reported multiple or other races had the lowest participation rates.

Exhibit 25. Pregnant Women Participation Over Time by Race and Ethnicity, 2018-2022



POSTPARTUM BREASTFEEDING WOMEN

Participant Demographics

Between 2018 and 2022, an average of 4,012 postpartum breastfeeding women participated in WIC each year. A majority of postpartum breastfeeding participants were White, non-Hispanic (56%) and between the ages of 25 and 34 (57%). See **Exhibits 26-27**.

Exhibit 26. Postpartum Breastfeeding Women Participant Race and Ethnicity, 2018-2022

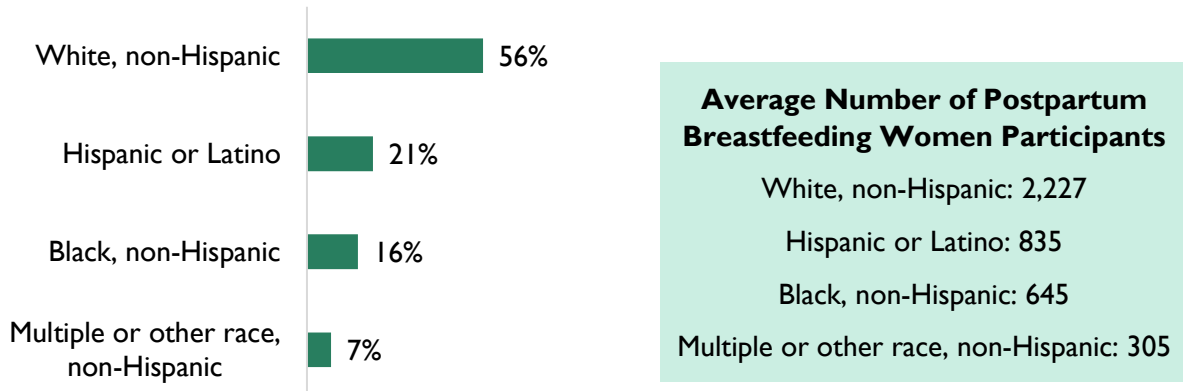
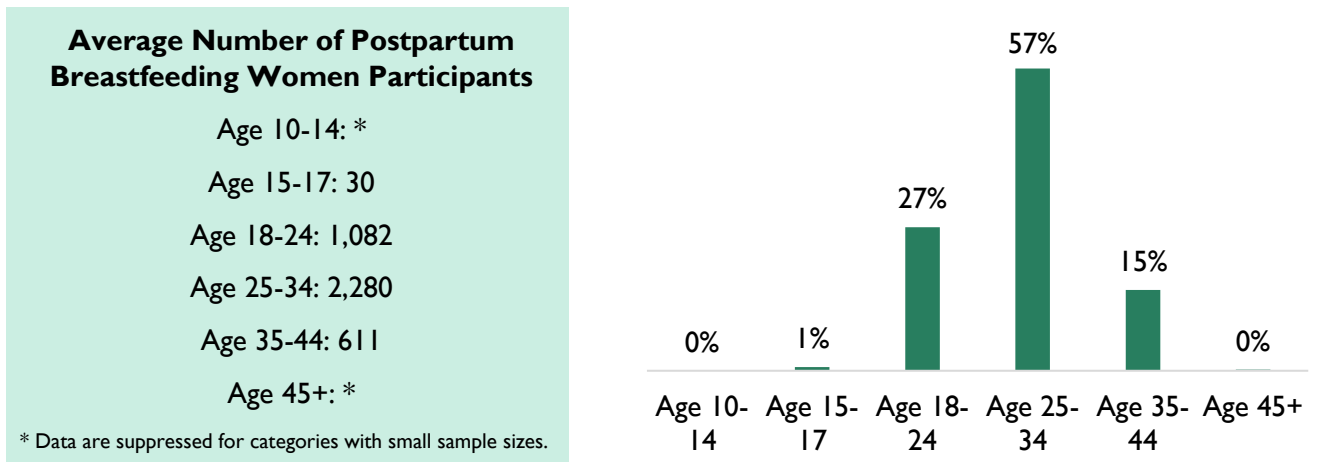


Exhibit 27. Postpartum Breastfeeding Women Participant Age, 2018-2022



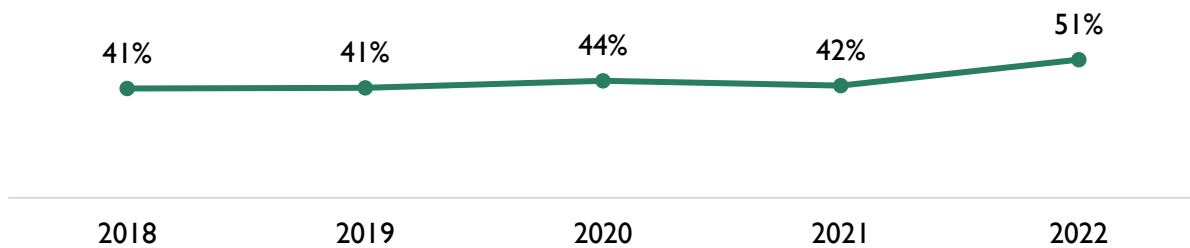


Participation Rates

From 2018 to 2021, WIC participation amongst postpartum breastfeeding women remained relatively stable around 41 to 42 percent. However, between 2021 and 2022, participation increased nine percentage points, from 42 percent to 51 percent. See **Exhibit 28**.

Approximately half of postpartum breastfeeding women that were **eligible** for WIC **were participating** in the program in 2022.

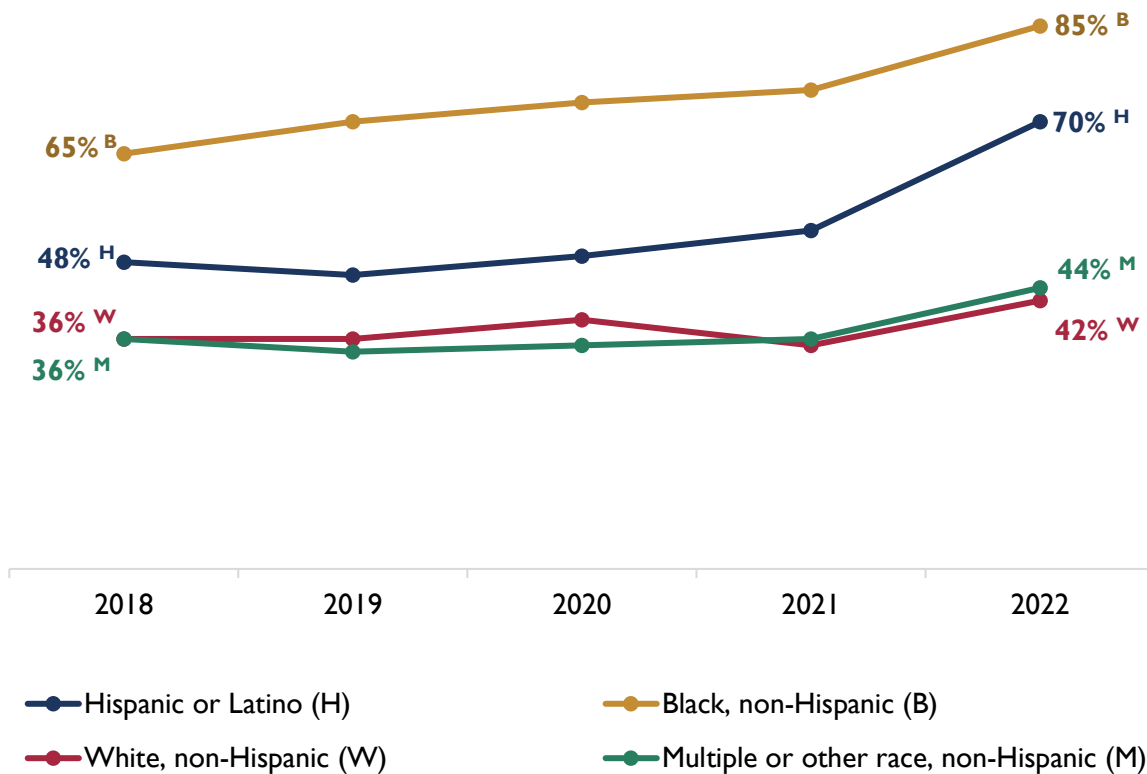
Exhibit 28. Overall Postpartum Breastfeeding Women Participation Rate, 2018-2022



Amongst postpartum breastfeeding women, an increase in participation rates occurred between 2018 and 2022 across all race and ethnicities, with most notable changes happening from 2021 to 2022. Postpartum breastfeeding women who are Black, non-Hispanic or Hispanic or Latino had the greatest increases with participation rates increasing more than 20 percentage points. Postpartum breastfeeding women who were White, non-Hispanic or reported multiple or other races had substantially lower rates of participation when compared to other groups, with less than half of eligible postpartum breastfeeding women participating in WIC. See **Exhibit 29**.

Postpartum breastfeeding women who were **White, non-Hispanic** and who reported **multiple or other races** had the **lowest** participation rates.

Exhibit 29. Postpartum Breastfeeding Women Participation Over Time by Race and Ethnicity, 2018-2022



POSTPARTUM NON-BREASTFEEDING WOMEN

Participant Demographics

An average of 4,168 postpartum non-breastfeeding women participated in WIC each year from 2018 to 2022. A majority of postpartum breastfeeding WIC participants identified as White, non-Hispanic (61%) and approximately half were between the ages of 25 and 34 (49%). See **Exhibits 30-31**.

Exhibit 30. Postpartum Non-Breastfeeding Women Participant Race and Ethnicity, 2018-2022

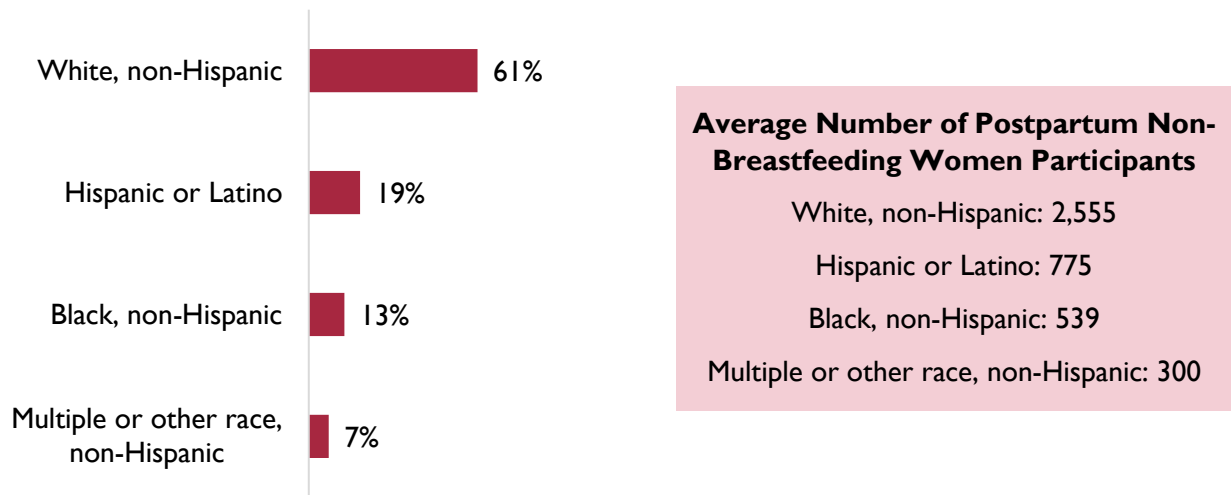
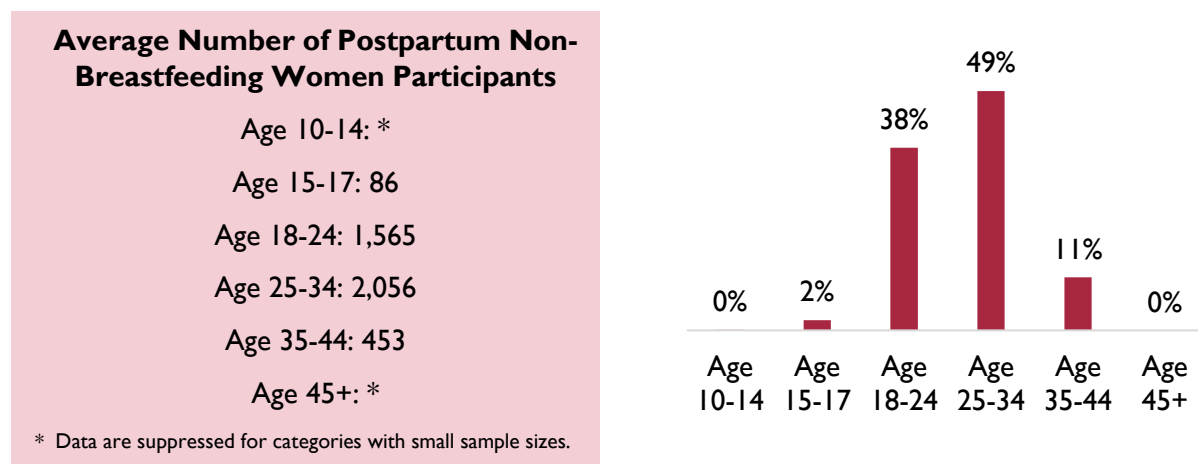


Exhibit 31. Postpartum Non-Breastfeeding Women Participant Age, 2018-2022

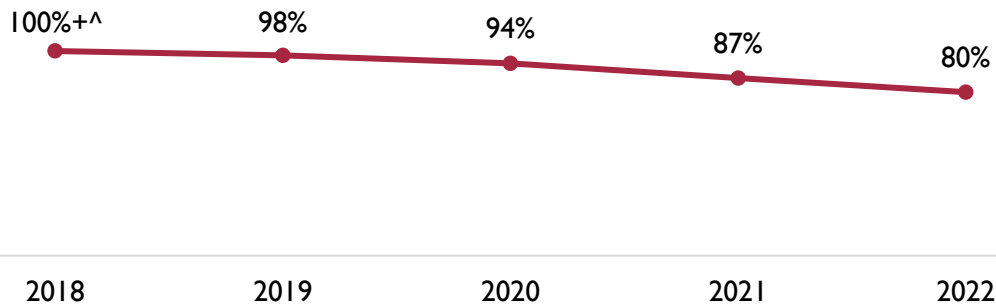


Participation Rates

A majority of postpartum non-breastfeeding women who were eligible for WIC were participating. However, from 2018 to 2022, WIC participation rates decreased by 25 percentage points, to 80 percent in 2022. See **Exhibit 32**.

80 percent of postpartum non-breastfeeding women who were eligible for WIC were participating in the program in 2022.

Exhibit 32. Overall Postpartum and Not Breastfeeding Women Participation Rate, 2018-2022



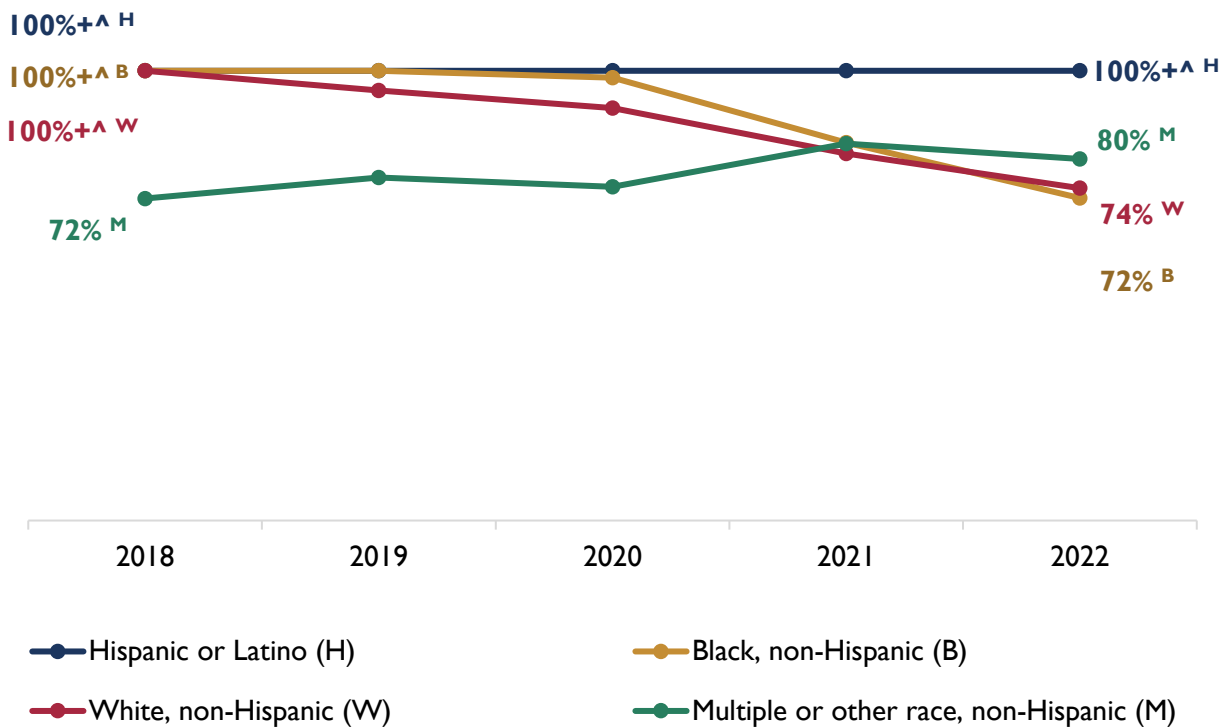
[^]The participation rate for this group is 100% or greater; all estimated eligible residents are being reached. Variations in participation rates may be because of estimation methods or limitations in data from small sample sizes. Caution should be used when examining estimates that are greater than 100%.



When examining participation rates by race and ethnicity between 2018 and 2022, rates remained relatively stable across postpartum non-breastfeeding women who were Hispanic or Latino with all estimated WIC-eligible women being reached by programming. However, postpartum non-breastfeeding women who were Black, non-Hispanic or White, non-Hispanic had a decrease in participation rates. Postpartum non-breastfeeding women who reported multiple or other races had an increase in participation rate from 72 percent to 80 percent. See **Exhibit 33**.

Postpartum non-breastfeeding women who Black, non-Hispanic and White, non-Hispanic had the **lowest** participation rates in 2022.

Exhibit 33. Postpartum Non-Breastfeeding Women Participation Over Time by Race and Ethnicity, 2018-2022



^AThe participation rate for this group is 100% or greater; all estimated eligible residents are being reached. Variations in participation rates may be because of estimation methods or limitations in data from small sample sizes. Caution should be used when examining estimates that are greater than 100%.

Discussion

KEY FINDINGS

WIC provides critical services to lower income pregnant and postpartum women, infants and children at key time points of development, supporting improved health outcomes among these groups. This report estimates the number of Iowa residents eligible for WIC and examines trends in actual WIC participation over the past five years. Key findings and recommendations are presented below.

Iowa WIC reaches approximately 60,000 participants each year, but less than half of Iowans who are eligible for WIC are participating in the program.

In 2022, only 45 percent of Iowa residents who were estimated to be eligible for WIC were participating in the program. Program reach fluctuated slightly over the past five years. Pregnant women and children have the lowest participation rates, while postpartum non-breastfeeding women have the highest rates. Participation rates also varied by race and ethnicity. Residents who are White, non-Hispanic had the lowest participation rates and residents who were Black, non-Hispanic and Hispanic had the highest participation rates. One consideration as these findings are interpreted is Iowa's population as a whole is primarily White, non-Hispanic, which is also reflected in WIC participation rates. Populations that identify as Hispanic or Latino, Black, non-Hispanic and as multiple or other races are substantially smaller and rates may fluctuate more over time. Iowa WIC can concentrate outreach and engagement efforts on populations with the lowest participation rates to ensure that eligible participants engage in the WIC program and receive all of the benefits the program offers.

Trends in WIC participation varied across participant groups and race and ethnicity.

The primary audiences currently served by Iowa WIC are infants and children. Over the past five years, infant participation in WIC has remained relatively stable, however, other groups have experienced varied participation. Children, pregnant women and postpartum non-breastfeeding women experienced decreases in participation rates over the past five years, while postpartum breastfeeding women were the only participant group to experience an increase in participation rate. Participation rates also varied across race and ethnicity. Participation amongst residents who are White, non-Hispanic remained stable between 2018 and 2022. Participation rates amongst residents who identified as Hispanic or Latino increased slightly. However, the participation rate of residents who are Black, non-Hispanic and who reported multiple or other races decreased over the past five years. The WIC program can play an important role in improving health outcomes for priority audiences of all backgrounds (e.g., age, race, ethnicity, income, geographic location) while contributing to reducing health disparities for these groups. Iowa WIC may consider coordinating with other programs that serve these populations such as Medicaid and SNAP to develop data sharing agreements and facilitated enrollment processes.

Some geographic regions have greater levels of need than others.

Pottawattamie County and Broadlawns Medical Center are the CSAs with the greatest potential for increased enrollment based on higher eligibility rates and lower participation rates within these service



areas compared to other CSAs. Davis County and Washington County are the counties with highest need based on having higher eligibility rates and lower participation rates amongst county residents. While CSAs were developed to allow for a more collaborative approach to achieve health outcomes across service programs, these areas were recently reorganized in October 2022. Additional time may still be needed for the CSAs to better understand their population's needs and address gaps in participation. The geographic results can be used to support focused outreach and assistance in these specific regions to WIC-eligible populations to encourage program enrollment and retention. County profiles developed as part of this project can be used to further focus and identify more specific populations with potential reach by participant group or race and ethnicity.

LIMITATIONS

Limitations to this analysis include:

- ▲ Use of different time periods for American Community Survey 5-Year estimates (2016-2020) and Iowa WIC program data (2018-2022) due to the delay in data release by the Census data system. Population and economic changes between 2021 and 2022 may have impacted the estimates calculated.
- ▲ Assumptions made when calculating estimated WIC-eligible populations from Census data. Data are not made available at the county-level for the variables needed to estimate WIC-eligibility. Therefore, estimates were calculated from PUMA data. Variations in county participation rates by participant category and race and ethnicity may be because of estimation methods or limitations in data resulting from small sample sizes; caution should be used when examining county-level estimates. For example, some participant and racial and ethnic groups had participation rates greater than 100%. This means that the number of Iowa residents in that group that were estimated to be eligible for WIC was less than the number of WIC participants in that group.
- ▲ Changes to CSAs in 2022. On October 1st, 2022, 15 defined Collaborative Service Areas (CSAs) were formed to better align programs and services for WIC, Maternal, Child, and Adolescent Health, I-Smile™, 1st Five and Family Planning (Title X) participants. Due to this change, many local WIC agencies' service areas have changed, which may impact data and interpretation.



CONCLUSIONS

This information provides a high-level assessment of the number of residents who are eligible for WIC and current WIC participation rates. Results can be used to guide program improvements. In particular, identification of participant types, racial and ethnic populations and geographic regions where additional outreach and partnerships may be needed to improve participation rates. Reaching more residents who are eligible for WIC, which provides critical services to eligible populations, can support greater health and wellness amongst populations that are priority audiences of all backgrounds across Iowa. Future work should explore barriers to participation amongst groups with lower participation rates, as well as implementing targeted and tailored outreach methods to reach residents who are eligible but not yet participating in WIC.

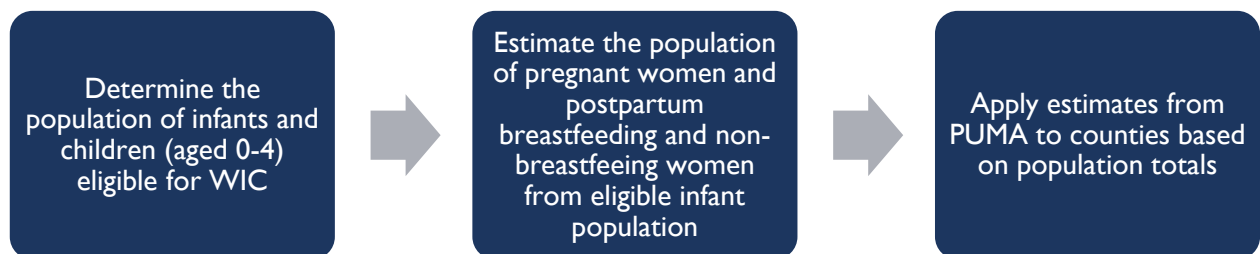
Appendix A: Methodology

ESTIMATING THE ELIGIBLE POPULATION

To calculate the population estimated to be eligible for WIC in each county of Iowa, methodology used in the USDA National- and State-Level Estimates of WIC Eligibility and WIC Program Reach in 2019 Final Report⁸ were followed and modified as needed based on data available at the county level. ACS 5-year estimates (2016-2020) for public use microdata sample were downloaded from the Census for all public use microdata areas (PUMA) in Iowa. Data consisted of 22 PUMAs covering 99 counties in Iowa.

The first step in the process was to determine the population of infants and children (aged 0-4) that were eligible for WIC. Then the populations of pregnant women and postpartum breastfeeding and non-breastfeeding women were estimated from the eligible infant population. Last, estimates were calculated for counties based on their population counts. See **Exhibit 34**.

Exhibit 34. Process for Determining the WIC Eligible Population.



Data Accessed

To access the data needed to estimate the population eligible for WIC, three datasets were downloaded from the Census data for all PUMAs in Iowa:

- ▲ Children aged 0-4 with household incomes at or below 185 percent federal poverty level (FPL).
- ▲ Children aged 0-4 with household incomes above 185 percent FPL but adjunctively eligible based on Medicaid participation.
- ▲ Children aged 0-4 with household incomes above 185 percent FPL but adjunctively eligible based on SNAP participation.

Data were not available for children ages 0-4 with household incomes above 185 percent FPL but adjunctively eligible based on TANF participation. Variables accessed included age, sex, race, federal poverty level, SNAP participation and Medicaid participation. Categorization of responses is described for each dataset downloaded in **Exhibits 35-37**.

⁸ Farson Gray, K., Blach-Crystal, E., Giannarelli, L., and Johnson, P. (2022). National- and State-Level Estimates of WIC Eligibility and WIC Program Reach in 2019 Final Report. United States Department of Agriculture.

Exhibit 35. Census Variables for Children Aged 0-4 with Household Income At or Below 185% FPL

| Variable | Census Variable Code | Variable Description | Categories |
|-----------------------|----------------------|----------------------------------|---|
| Age | AGEP | Age | <ul style="list-style-type: none"> • Under 1 year • 1 year • 2 years • 3 years • 4 years |
| Sex | SEX | Sex | <ul style="list-style-type: none"> • Male • Female |
| Race | RACIP | Recoded detailed race code | <ul style="list-style-type: none"> • White alone • Black or African American alone • All other categories combined |
| Hispanic or Latino | HISP | Recoded detailed Hispanic origin | <ul style="list-style-type: none"> • Not Spanish/Hispanic/Latino • All other categories combined |
| Federal Poverty Level | POVPIP | Income-to-poverty ratio recode | <ul style="list-style-type: none"> • 0-185 |

Exhibit 36. Census Variables for Children Aged 0-4 with Household Above 185% FPL and Adjunctively Eligible Based on Medicaid Participation

| Variable | Census Variable Code | Variable Description | Categories |
|----------|----------------------|----------------------------|---|
| Age | AGEP | Age | <ul style="list-style-type: none"> • Under 1 year • 1 year • 2 years • 3 years • 4 years |
| Sex | SEX | Sex | <ul style="list-style-type: none"> • Male • Female |
| Race | RACIP | Recoded detailed race code | <ul style="list-style-type: none"> • White alone • Black or African American alone • All other categories combined |

| Variable | Census Variable Code | Variable Description | Categories |
|-----------------------|----------------------|----------------------------------|--|
| Hispanic or Latino | HISP | Recoded detailed Hispanic origin | <ul style="list-style-type: none"> Not Spanish/Hispanic/Latino All other categories combined |
| Federal Poverty Level | POVPIP | Income-to-poverty ratio recode | <ul style="list-style-type: none"> 186-501 percent or more |

Exhibit 37. Census Variables for Children Aged 0-4 with Household Above 185% FPL and Adjunctively Eligible Based on SNAP Participation

| Variable | Census Variable Code | Variable Description | Categories |
|-----------------------|----------------------|----------------------------------|---|
| Age | AGEP | Age | <ul style="list-style-type: none"> Under 1 year 1 year 2 years 3 years 4 years |
| Sex | SEX | Sex | <ul style="list-style-type: none"> Male Female |
| Race | RACIP | Recoded detailed race code | <ul style="list-style-type: none"> White alone Black or African American alone All other categories combined |
| Hispanic or Latino | HISP | Recoded detailed Hispanic origin | <ul style="list-style-type: none"> Not Spanish/Hispanic/Latino All other categories combined |
| Federal Poverty Level | POVPIP | Income-to-poverty ratio recode | <ul style="list-style-type: none"> 186-501 percent or more |

Calculating the Estimates

Participant Type

To produce final counts of estimated WIC-eligible populations for each participant type (i.e., infants, children 1-4, pregnant women, postpartum breastfeeding women and postpartum non-breastfeeding women) data downloaded from the Census were combined and the following process was adapted from the national report.

Infants and Children

Adjustment factors were applied to infant and child counts based on factors used in the national report. Factors included adjustments for weighting, fluctuations in monthly income and certifications periods, and nutritional risk. Factors were specific to age, sex and race and ethnicity. See **Exhibits 38-42** for a detailed list of factors applied.

Exhibit 38. Adjustment Factors for Infants

| Sex | Weighting | Fluctuations in Monthly Income and Certification Periods | Nutritional Risk |
|---------------|--|--|------------------|
| Female | <ul style="list-style-type: none"> White-Only, Not Hispanic: 0.9963 Black-Only, Not Hispanic: 1.0456 Two or More Races or Other Race, Not Hispanic: 1.0000 Hispanic/Latino: 1.0030 | <ul style="list-style-type: none"> White-Only, Not Hispanic: 1.1110 All others: 1.0141 | 0.9700 |
| Male | <ul style="list-style-type: none"> White-Only, Not Hispanic: 1.0229 Black-Only, Not Hispanic: 1.1327 Two or More Races or Other Race, Not Hispanic: 1.0000 Hispanic/Latino: 1.0057 | <ul style="list-style-type: none"> White-Only, Not Hispanic: 1.1110 All others: 1.0141 | 0.9700 |

Note: Factors were adapted from Farson Gray, K., Blach-Crystal, E., Giannarelli, L., and Johnson, P. (2022). National- and State-Level Estimates of WIC Eligibility and WIC Program Reach in 2019 Final Report. United States Department of Agriculture.

Exhibit 39. Adjustment Factors for Children Aged 1

| Sex | Weighting | Fluctuations in Monthly Income and Certification Periods | Nutritional Risk |
|---------------|--|--|------------------|
| Female | <ul style="list-style-type: none"> White-Only, Not Hispanic: 0.9835 Black-Only, Not Hispanic: 1.0000 Two or More Races or Other Race, Not Hispanic: 0.8448 Hispanic/Latino: 1.0000 | <ul style="list-style-type: none"> White-Only, Not Hispanic: 1.1126 All others: 1.0326 | 0.9900 |
| Male | <ul style="list-style-type: none"> White-Only, Not Hispanic: 1.0000 Black-Only, Not Hispanic: 0.9113 Two or More Races or Other Race, Not Hispanic: 0.8944 Hispanic/Latino: 1.0317 | <ul style="list-style-type: none"> White-Only, Not Hispanic: 1.1126 All others: 1.0326 | 0.9900 |

Note: Factors were adapted from Farson Gray, K., Blach-Crystal, E., Giannarelli, L., and Johnson, P. (2022). National- and State-Level Estimates of WIC Eligibility and WIC Program Reach in 2019 Final Report. United States Department of Agriculture.

Exhibit 40. Adjustment Factors for Children Aged 2

| Sex | Weighting | Fluctuations in Monthly Income and Certification Periods | Nutritional Risk |
|---------------|--|--|------------------|
| Female | <ul style="list-style-type: none"> White-Only, Not Hispanic: 1.0000 Black-Only, Not Hispanic: 1.0000 Two or More Races or Other Race, Not Hispanic: 0.9333 Hispanic/Latino: 1.0133 | <ul style="list-style-type: none"> White-Only, Not Hispanic: 1.1126 All others: 1.0326 | 0.9900 |
| Male | <ul style="list-style-type: none"> White-Only, Not Hispanic: 1.0000 Black-Only, Not Hispanic: 0.9763 Two or More Races or Other Race, Not Hispanic: 0.9999 Hispanic/Latino: 1.0060 | <ul style="list-style-type: none"> White-Only, Not Hispanic: 1.1126 All others: 1.0326 | 0.9900 |

Note: Factors were adapted from Farson Gray, K., Blach-Crystal, E., Giannarelli, L., and Johnson, P. (2022). National- and State-Level Estimates of WIC Eligibility and WIC Program Reach in 2019 Final Report. United States Department of Agriculture.

Exhibit 41. Adjustment Factors for Children Aged 3

| Sex | Weighting | Fluctuations in Monthly Income and Certification Periods | Nutritional Risk |
|---------------|--|--|------------------|
| Female | <ul style="list-style-type: none"> White-Only, Not Hispanic: 1.0000 Black-Only, Not Hispanic: 0.9729 Two or More Races or Other Race, Not Hispanic: 0.9174 Hispanic/Latino: 1.0000 | <ul style="list-style-type: none"> White-Only, Not Hispanic: 1.1126 All others: 1.0326 | 0.9900 |
| Male | <ul style="list-style-type: none"> White-Only, Not Hispanic: 1.0000 Black-Only, Not Hispanic: 1.0997 Two or More Races or Other Race, Not Hispanic: 0.9872 Hispanic/Latino: 1.0055 | <ul style="list-style-type: none"> White-Only, Not Hispanic: 1.1126 All others: 1.0326 | 0.9900 |

Note: Factors were adapted from Farson Gray, K., Blach-Crystal, E., Giannarelli, L., and Johnson, P. (2022). National- and State-Level Estimates of WIC Eligibility and WIC Program Reach in 2019 Final Report. United States Department of Agriculture.

Exhibit 42. Adjustment Factors for Children Aged 4

| Sex | Weighting | Fluctuations in Monthly Income and Certification Periods | Nutritional Risk |
|--------|--|--|------------------|
| Female | <ul style="list-style-type: none"> White-Only, Not Hispanic: 1.0065 Black-Only, Not Hispanic: 0.9989 Two or More Races or Other Race, Not Hispanic: 1.0000 Hispanic/Latino: 1.0045 | <ul style="list-style-type: none"> White-Only, Not Hispanic: 1.1126 All others: 1.0326 | 0.9900 |
| Male | <ul style="list-style-type: none"> White-Only, Not Hispanic: 0.9967 Black-Only, Not Hispanic: 0.9934 Two or More Races or Other Race, Not Hispanic: 1.0799 Hispanic/Latino: 1.0000 | <ul style="list-style-type: none"> White-Only, Not Hispanic: 1.1126 All others: 1.0326 | 0.9900 |

Note: Factors were adapted from Farson Gray, K., Blach-Crystal, E., Giannarelli, L., and Johnson, P. (2022). National- and State-Level Estimates of WIC Eligibility and WIC Program Reach in 2019 Final Report. United States Department of Agriculture.

Pregnant Women

To calculate the estimated population of pregnant women eligible for WIC, the estimated population of infants were used. From the final infant count, factors were applied to adjust for multiple births and infant deaths, length of pregnancy and income during pregnancy and nutritional risk. Factors were specific to race and ethnicity. See **Exhibit 43** for a detailed list of factors applied.

Exhibit 43. Adjustment Factors for Pregnant Women

| Sex | Multiple Births and Infant Deaths | Length of Pregnancy and Income During Pregnancy | Nutritional Risk |
|----------------|--|---|------------------|
| Pregnant Women | <ul style="list-style-type: none"> White-Only, Not Hispanic: 0.9911 Black-Only, Not Hispanic: 1.0019 Two or More Races or Other Race, Not Hispanic: 0.9944 Hispanic/Latino: 0.9977 | 0.6825 | 0.97 |

Note: Factors were adapted from Farson Gray, K., Blach-Crystal, E., Giannarelli, L., and Johnson, P. (2022). National- and State-Level Estimates of WIC Eligibility and WIC Program Reach in 2019 Final Report. United States Department of Agriculture.

Postpartum Women

To calculate the estimated population of postpartum women eligible for WIC, the estimated population of infants were used. From the final infant count, factors were applied to adjust for multiple births and infant deaths, breastfeeding status and nutritional risk. Factors were specific to race and ethnicity. See **Exhibit 44** for a detailed list of factors applied.

Exhibit 44. Adjustment Factors for Postpartum Women

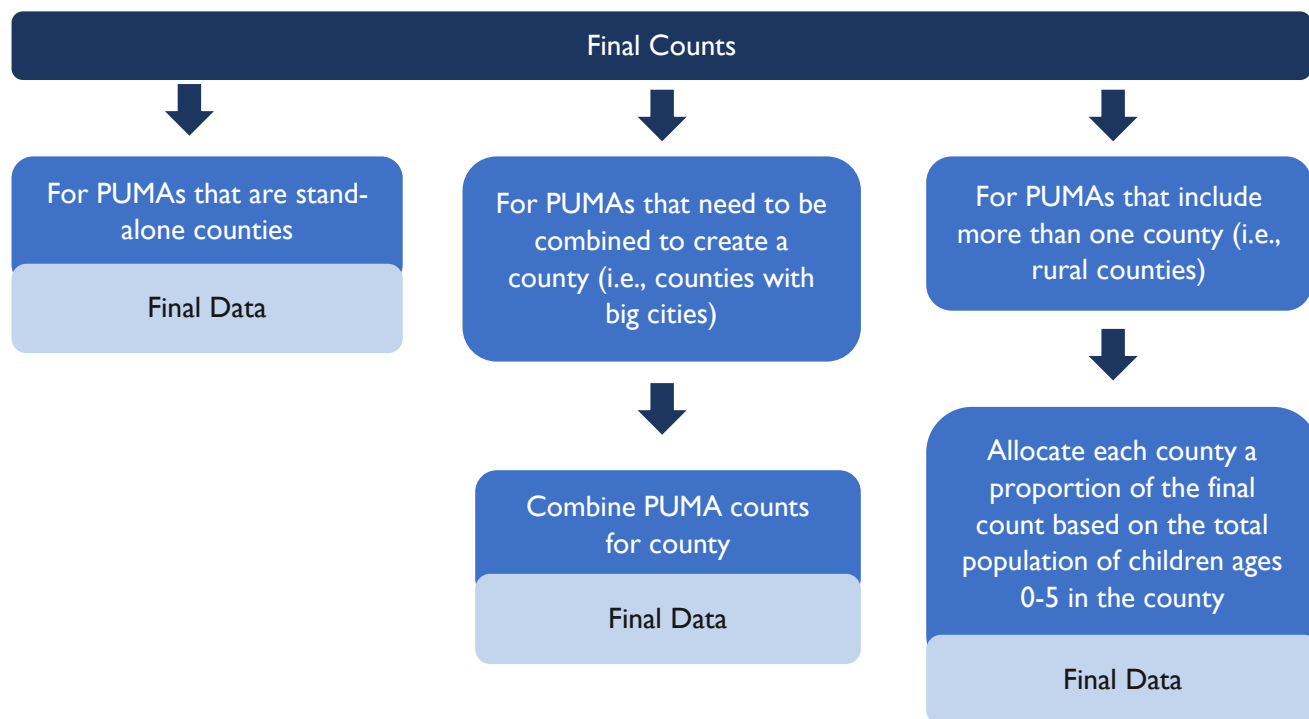
| Sex | Multiple Births and Infant Deaths | Breastfeeding Status | Nutritional Risk |
|---|--|--|------------------|
| Breastfeeding Postpartum Women | <ul style="list-style-type: none"> White-Only, Not Hispanic: 0.9911 Black-Only, Not Hispanic: 1.0019 Two or More Races or Other Race, Not Hispanic: 0.9944 Hispanic/Latino: 0.9977 | <ul style="list-style-type: none"> White-Only, Not Hispanic: 0.4695 Black-Only, Not Hispanic: 0.3904 Two or More Races or Other Race, Not Hispanic: 0.4677 Hispanic/Latino: 0.4933 | 1.0 |
| Non-Breastfeeding Postpartum Women | <ul style="list-style-type: none"> White-Only, Not Hispanic: 0.9911 Black-Only, Not Hispanic: 1.0019 Two or More Races or Other Race, Not Hispanic: 0.9944 Hispanic/Latino: 0.9977 | <ul style="list-style-type: none"> White-Only, Not Hispanic: 0.2248 Black-Only, Not Hispanic: 0.2619 Two or More Races or Other Race, Not Hispanic: 0.2242 Hispanic/Latino: 0.2103 | 1.0 |

Note: Factors were adapted from Farson Gray, K., Blach-Crystal, E., Giannarelli, L., and Johnson, P. (2022). National- and State-Level Estimates of WIC Eligibility and WIC Program Reach in 2019 Final Report. United States Department of Agriculture.

County-Level Estimates

To calculate county level estimates from the PUMA data, three different approaches were taken depending on the county size. For PUMAs that were comprised of only one county, the final estimates were already available. For PUMAs that needed to be combined to create a county, the PUMA data were combined. For PUMAs that included more than one county, the final counts were allocated to each county in the PUMA based on the total population of children aged 0-5 in the county. See **Exhibit 45** for a description of this process.

Exhibit 45. County Level Estimates from PUMA Data



WIC Participant Data

WIC Participant Demographic data were provided by the Iowa HHS WIC for five years from 2018 to 2022. Data were cleaned and prepared for analysis by removing children ages 5-9 in the datasets.

ACS County Population Data

For each county, ACS 5-Year estimates for total population counts and total population of children ages 0-5 were downloaded from the Census data system.

STATISTICAL ANALYSIS

Data were analyzed using descriptive statistics, including frequencies and percentages. Data were graphed for five-year trends based on demographic groups of interest, including participant group, race and ethnicity, age and sex where possible.