An Analysis of 2019 Births

# Health First Colorado Maternity Report

COLORADO
Department of Health Care Policy & Financing

# Contents

# I. Executive Summary

## A. Background

Maternal and infant health outcomes are among the most important indicators of the health of the state and nation. Providing prenatal care for greater than 40% of births in the state each year, the Colorado Department of Health Care Policy & Financing (the Department) recognizes the vital importance of a healthy start to life and is focused on significantly improving health outcomes for parents and newborns. The Department has invested in enhanced benefits and services for pregnant and birthing parents, such as less restrictive income eligibility requirements, a wide variety of state-sponsored programs including Prenatal Plus and Special Connections, and creative reimbursement strategies for programs and providers like Nurse Family Partnership. Given that preterm birth rates continue to rise and racial and ethnic disparities in outcomes persist, a broad selection of initiatives will be required to improve health outcomes and change the current state and national trajectory.

The first step towards more targeted programmatic interventions and services is to take a data-informed approach to understanding the current state of maternal and child health. Members of the Department partnered with the Colorado Department of Public Health & Environment (CDPHE) to create a data dashboard with data sourced from both Medicaid claims and birth certificate data. This linkage between a birthing parent's Medicaid ID and the newborn's birth certificate allows for a better understanding of the relationship between health and social risks during pregnancy and the outcomes for both the newborn and birthing parent.

The purpose of this report – the first of its kind for the Department – is to analyze the 83% of births that were able to be linked to the birthing parent's Medicaid ID and highlight areas of opportunity and improvement with the ultimate goal of improving health outcomes while closing health disparities. Partners are encouraged to use the report to inform strategies and targeted interventions in their work to assist the Department in achieving these important, shared goals.

## B. Key Findings

### 1. Prenatal Care and Newborn Outcomes

- Timely Prenatal Care
  - More than three-fourths (77.1%) of all Medicaid members who delivered in 2019 received prenatal care in their first trimester. Non-Hispanic American Indian/Alaska Native members were the least likely to have received timely prenatal care at 72.1%, followed by non-Hispanic Black members at 73.0%.
- Preterm Birth
  - Preterm birth in this dataset is defined as delivery prior to 37 weeks gestation. In 2019, 10.4% of Health First Colorado newborns were delivered preterm – higher than the state average of 9.6%. The birthing parent's age and race/ethnicity both emerged as primary factors in determining the likelihood of delivering preterm. Members who delivered over the age of 40 experienced the highest rate of preterm birth at 18.0%. Birthing parents who self-identified as non-Hispanic Asian and non-Hispanic Black had the highest preterm birth rates at 13.1% and 12.2% respectively.

- Delivery type
    - Among Health First Colorado members who delivered in 2019, 75.2% delivered vaginally and 24.8% delivered via C-section. C-section rates were highest among non-Hispanic Black members and those delivering over the age of 40.
- Women, Infants, and Children (WIC) Nutrition Program Enrollment
    - Enrollment in WIC is open to Health First Colorado birthing parents and is one strategy to improve outcomes for the birthing parent and newborn. Across all regions, about half (55.5%) of pregnant members were enrolled in WIC during the prenatal period. There was some variance across regions, and high-performing regions attributed their success to strong partnerships with local WIC offices in their region. Non-Hispanic white members were least likely to enroll in WIC.

## 2. Behavioral Health

- Depression Screens
    - About one-third (35.5%) of members received a postnatal depression screen and only 8.7% had a prenatal depression screen billed. The goal is for screening to be universal. Claims from depression screens are the Department's primary data source for tracking and monitoring efforts at prevention and utilization. The Department acknowledges challenges with provider billing that may affect this data.
- Neonatal Abstinence Syndrome (NAS)
    - The data provides insight into Neonatal Abstinence Syndrome (NAS), which refers to a newborn's withdrawal from substances – most commonly opioids – that their birthing parent used during pregnancy. In 2019, 2.9% of infants received a diagnosis for NAS. Rates were disproportionately high in El Paso, Pueblo, Jefferson and Larimer counties.

## 3. Risk Factors for Poor Outcomes

- Diabetes and Hypertension
    - This report analyzes both chronic and gestational diabetes and hypertension. Approximately 5.6% of parents who gave birth in 2019 had a preexisting diabetes diagnosis, and 19.3% of these members gave birth to preterm babies. This is two times the rate of members who did not have a preexisting diabetes diagnosis.
    - One in 10 (10.3%) pregnant members had a diagnosis of gestational hypertension in 2019.
    - Seven percent of pregnant Colorado Medicaid members had a chronic hypertension diagnosis and experienced a higher rate of preterm birth. Non-Hispanic Black members had a disproportionately higher prevalence of either a hypertension or gestational hypertension diagnosis, increasing their risk for preterm birth.
- Age
    - Members at both ends of the age spectrum – under 17 or over 40 – are at increased risks for unfavorable birth outcomes. Members under 17 are more

likely than other age groups to forego timely prenatal care. Members over 40 are at higher risk of developing delivery complications.

- Smoking
  - More than 1 in 10 (11.6%) pregnant members had a positive screen for smoking tobacco during pregnancy. Pregnant members who smoked during pregnancy were more likely to deliver a low birth weight baby than those who did not report smoking. Non-Hispanic white members reported the highest rates of smoking during pregnancy.
- Homelessness
  - Information on the housing status of Health First Colorado members comes from a self-reported field on the Medicaid application. Approximately 5.6% of birthing parents experienced homelessness at some point in time while covered by Colorado Medicaid.

### 4. Cost

- The average cost per birth in 2019 was $3,799. Costs vary depending on the birthing parent's risk factors and the type of delivery. At a cost of $3,305 per birth, vaginal deliveries are less costly than C-sections ($5,268 per birth).

## C. Next Steps

Included in the Governor's Wildly Important Goals for the Department for 2019-2020, the Department was to work with our regional accountable entities (RAEs) to create regional maternity programs across the state. The goal was that all members will have equal access to evidence-based interventions, supports and services during their pregnancy and delivery, regardless of location within their RAE, in order to improve health outcomes while reducing disparities. With the addition of birth certificate data provided by CDPHE, the RAEs have begun to create robust maternity programs across the state, discovering ways to better identify pregnant members, test new engagement practices to direct them to services, and support digital program pilots for members who prefer to connect virtually. These programs have been implemented during fiscal year 2020-21. As a next step, the Department continues to develop metrics to monitor health outcomes for this population and reward high-performing partners.

Improvement in data quality will continue to be a priority for the Department. The Department is undergoing data refinement and initiating projects to enhance our data quality, such as working to link family members in the data, identifying data sources to incorporate social factors, and collecting electronic medical record data for inclusion in future data dashboards.

In the spring of 2020, the Department announced the implementation of a voluntary pilot program for value-based perinatal bundled payments for providers serving our maternity population. Through this program, the Department will incentivize high quality maternity care with an emphasis on screening and prevention for substance use disorder and behavioral health to minimize emergency procedures and poor birth outcomes. The Department worked collaboratively with stakeholders to determine the specific interventions used. Obstetric providers who participate in the program are required to share data from their electronic

health record (EHR) with the Department. This effort is intended to improve the quality of data being collected by the Department and to monitor the number of prenatal services being delivered.

The Department plans on updating the dashboard and publishing an annual report on Medicaid birth outcomes in Colorado. This data is meant to encourage partners, advocates, and the public to generate well-informed policy recommendations to help improve health outcomes for pregnant members and newborns while addressing health equity opportunities.

## II. Introduction

A healthy pregnancy is vital for giving newborns a healthy start in life. The birthing parent's health and wellness is of equal importance during this period of risk and exacerbation of emotional and physical conditions. Colorado's Medicaid program is a key player in the lives of both expectant parents and their children as it is the primary insurer for over 40% of the births in the state. The program covered the delivery of nearly 27,000 births in 2019 and provided prenatal care, delivery, and postnatal services to expectant parents in 63 of Colorado's 64 counties. With its wide-reaching impact on the lives of so many Coloradans, Colorado Medicaid has a deep commitment to providing quality maternity care to improve health outcomes for both the pregnant parent and newborn.

Even with this commitment, birthing parents enrolled in Colorado Medicaid across the state continue to struggle with various aspects of their pregnancy. From challenges like access to prenatal care to health behaviors like smoking, work clearly remains to improve outcomes. A first step in addressing these disparities is to understand the full picture of the data. Given this, the Department is releasing this first of its kind report to analyze and communicate trends in Colorado Medicaid's maternity population. The report also supports the Department's strategic initiatives related to maternity.

The data in this report reflects births covered by Health First Colorado in calendar year 2019. One unique aspect of this report is that many of the indicators link a birthing parent's Medicaid ID with their newborn's birth certificate. This linking is performed by the Colorado Department of Public Health and Environment (CDPHE). Through this partnership with CDPHE, the Department is able to link approximately 83% of Medicaid births (a total of 22,343), providing important information on how the pregnant parent's health behaviors and access to care relate to birth outcomes.

This report serves as a resource for stakeholders to understand disparities in pregnancy-related care and outcomes across the state, learn about the programs and policies the Department is implementing to address them, and inform regional strategies. The Department encourages readers to use the report to inform the work happening in their communities and continue the critical dialogs happening across our state on how to ensure a strong start for Colorado families.

A Note On Terminology: When possible, this report uses gender inclusive language to allow us to speak to all families and increase visibility for the LGBTQIA+ community. While some constructs around federal reporting or self-reporting include gender or sex binary language, this report uses language that explicitly includes families who have a pregnant parent who does not identify as a woman, female or mother. The Department acknowledges this is an iterative process and encourages feedback to increase our language inclusivity of traditionally marginalized groups.

## Coverage Basics

Colorado Medicaid covers a range of services – from prenatal care to postnatal screenings – as part of its maternity benefit at no cost to the parent. You can read about the full list of services in the Department's billing manual[1], but broadly these services include:

- Prenatal care visits and testing. One comprehensive initial prenatal visit and 7-13 subsequent visits throughout the pregnancy course.
- Imaging. Two ultrasounds are standard with additional ultrasounds allowable for higher risk pregnancies.
- Labor and delivery.
- Depression screens. One screen allowed prenatally, up to three screens in the first year postpartum.
- Screening, Brief Intervention, and Referral to Treatment (SBIRT) for substance use.
- Postpartum visits up to 60 days after giving birth.

Newborns are covered by Health First Colorado up to one year after birth.

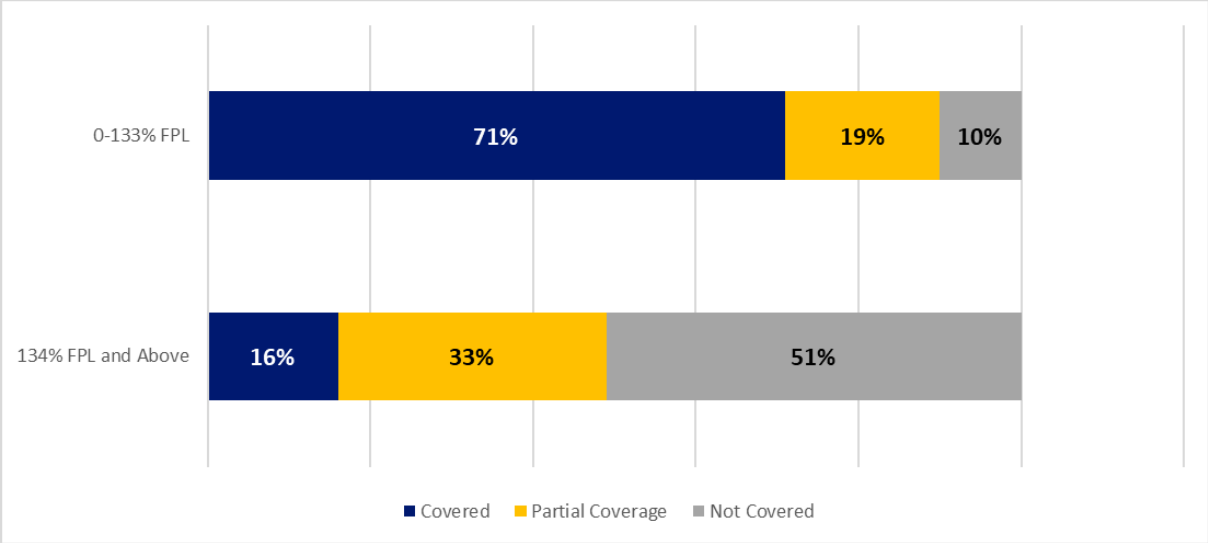
Pregnant members with incomes up to 195% of the Federal Poverty Level (FPL) are eligible for coverage under Colorado Medicaid. This is higher than the income limit for adults who are not pregnant, whose income cannot exceed 133% FPL. Income changes during pregnancy do not affect eligibility. Additionally, pregnant individuals are currently eligible until the end of the month in which the 60th day following the end of the pregnancy occurs. Recently passed

[1] Health First Colorado. "Obstetrical Care Billing Manual." https://www.colorado.gov/pacific/hcpf/OB-manual

legislation, Senate Bill 21-194, has extended this coverage for pregnant individuals up to twelve months postpartum. This will go into effect on July 1st, 2022.

Figure 1 below displays the effect of the current policy for members at or below 133% FPL and those whose income level exceeds 133% FPL.

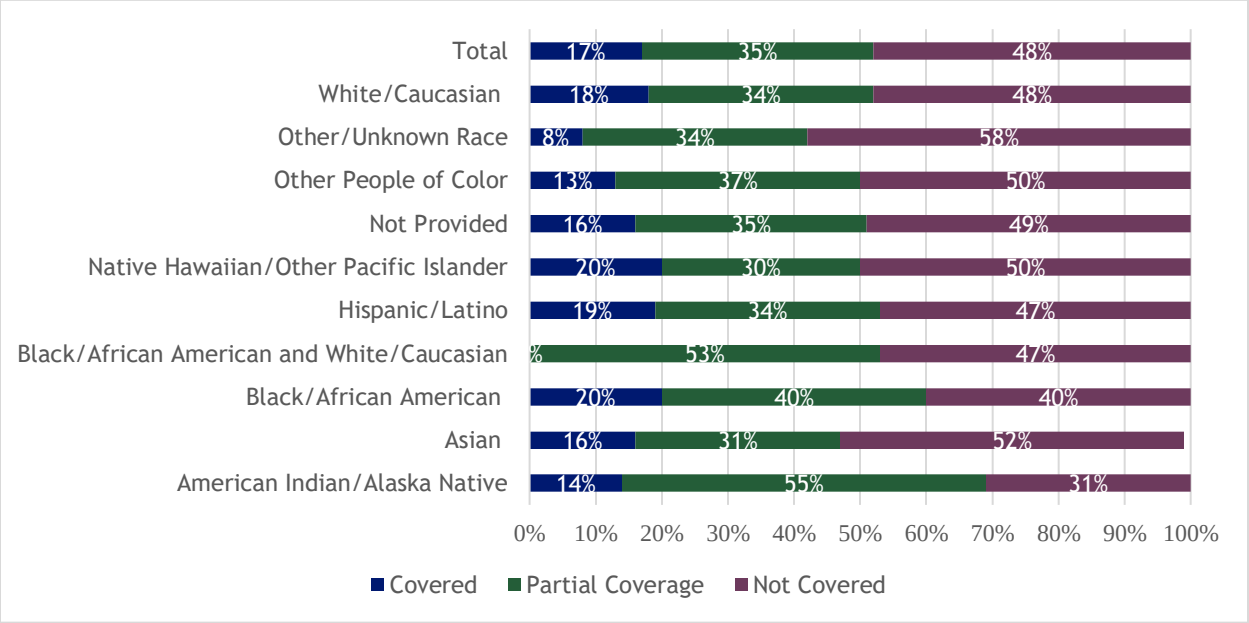
*Figure 1. Coverage Status by Federal Poverty Level in 12 Months Following Pregnancy Eligibility Span Ended*




The covered group are those members who are eligible for Medicaid and/or, for a very small number of members, Child Health Plan *Plus* (CHP+), all 12 months after the pregnancy eligibility span. Partially covered refers to members who were eligible for Medicaid or CHP+ for some months, but not eligible for other months. Members in the not covered group were not eligible for Medicaid or CHP+ during the 12 months. About half (51%) of members with incomes 134% FPL and above were not eligible for Medicaid or CHP+ during the 12 months following the end of their pregnancy eligibility span. This is in comparison to only 10% of members with incomes between zero and 133%FPL.

The Department is actively monitoring the impact of these coverage policies on health equity. Figure 2 displays the coverage patterns in the 12 months after the pregnancy eligibility span ended by race/ethnicity for those in the 134% and above FPL group.

*Figure 2. Coverage Status for 134%+ FPL in the 12 Months Following End of Pregnancy Eligibility Span by Race/Ethnicity*



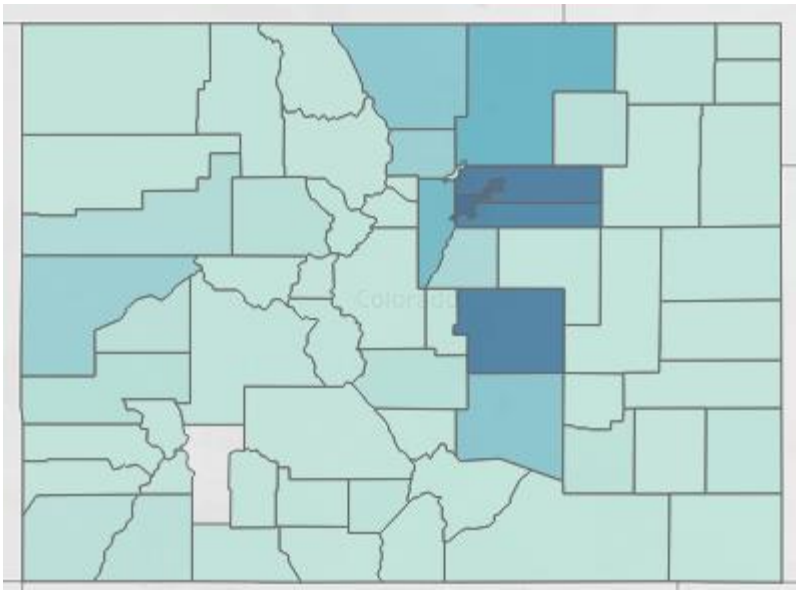

Asian members and those whose race is other/unknown were slightly more likely to lack coverage for the entire 12 month period following the end of their pregnancy eligibility. Black/African American members and American Indian/Alaska Native members were more likely than other groups to experience partial coverage.

This analysis does not include pregnant people who qualify for the Child Health Program *Plus* (CHP+). CHP+ is available to children under age 18 and pregnant people ages 19 and older whose household income is under 260% of the Federal Poverty Level. More information on the CHP+ program is on our website.

## D. Who Is Covered: Demographics

There were 26,907 total births covered by Colorado Medicaid in 2019. In line with the overall population trends in Colorado, most of the births occurred along the Front Range. Births in Denver County accounted for 15.0% of all births followed by 13.4% in Adams County and 12.9% in El Paso. Map 1 shows all Medicaid births by the location of the birthing parent. Darker blue indicates that a higher proportion of the state's Medicaid births occurred in that county. Please see the appendix for a table of the percentage of Medicaid-covered births by county.

*Map 1. Medicaid Births by Client Residence Location, by County, Calendar Year 2019*

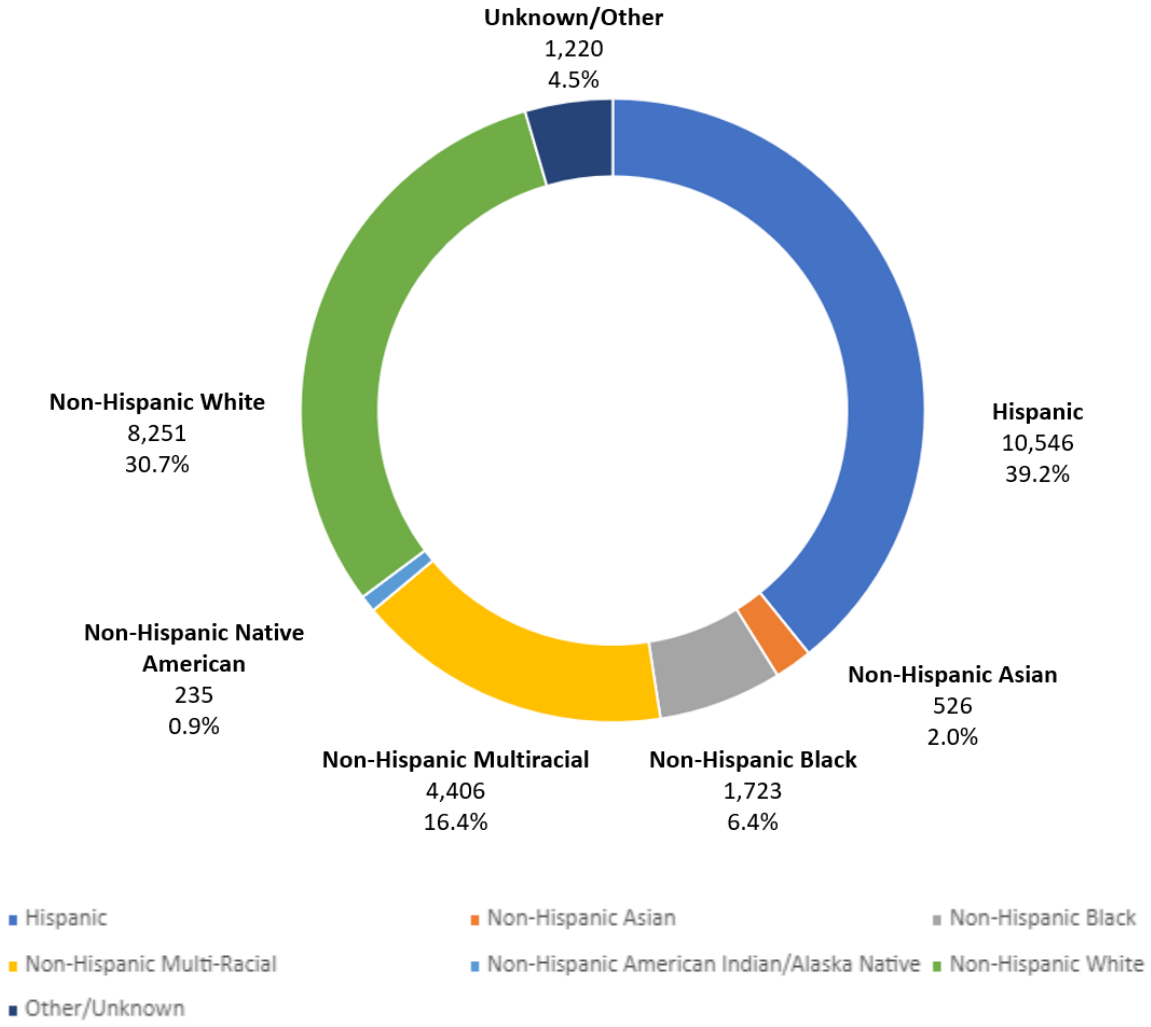


Members between the ages of 25 and 34 represent more than half (52.2%) of all Colorado Medicaid covered births. Births to members 18-24 years old represented nearly one-third (32.6%) of the births. Teen pregnancies have seen a large decline in the last decade, largely due to the investments made in Long Acting Reversible Contraceptives (LARCs). Statewide, the birth rate for Coloradans ages 15 to 19 fell by 59% between 2009 and 2017.[2] In 2019, births to Colorado Medicaid members ages 17 and under represented only 2.3% of births.

Disparities in outcomes for members of different racial and ethnic backgrounds are stark. These disparities will be examined thoroughly in this report and therefore, it is important to understand the racial and ethnic composition of births in Colorado Medicaid to set the context for the rest of the report.

[2] LARC4Colorado. "Fact Sheet." http://www.larc4co.com/facts

*Figure 3. Race/Ethnicity of Birthing Parent Among Colorado Medicaid Covered Births, Calendar Year 2019*




Source: Health First Colorado Application Data, Calendar Year 2019

A Note on Equity: The Department echoes the equity statement released by our fellow agency, the Colorado Department of Public Health & Environment. We acknowledge that long-standing systemic racism, including economic and environmental injustice, has created conditions that negatively affect marginalized communities, particularly people of color. These conditions, which limit opportunities for optimal health and influence individual behaviors, are critical predictors of health outcomes. To realize a future where all Coloradans can thrive, we must be leaders in undoing policies and practices that have contributed to these inequities.

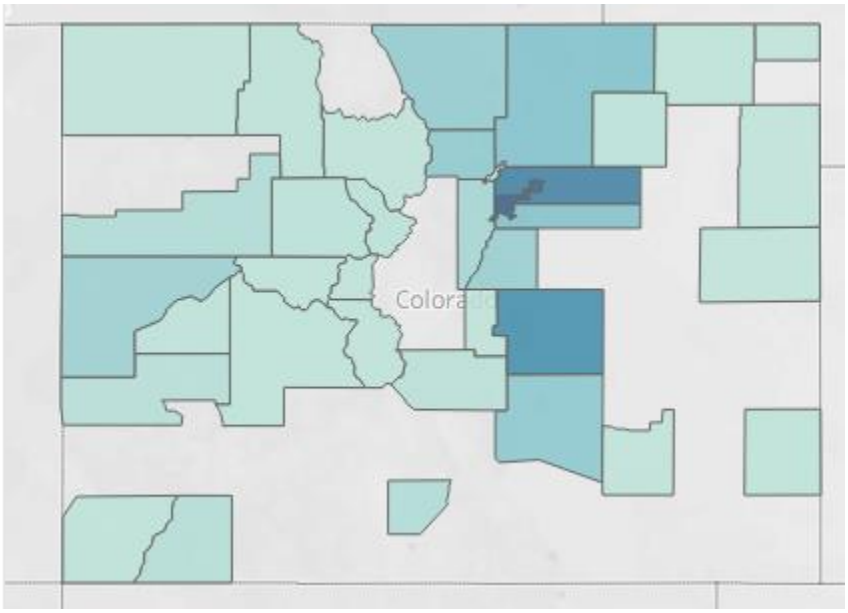
Hispanic members of any race represent the largest proportion of births at 39.2%, followed by non-Hispanic white members at 30.7%. These two groups make up 70% of births in Colorado Medicaid. Non-Hispanic multi-racial members represent 16.4% of births and those who are non-Hispanic Black comprise 6.4% of births statewide. Asian and American Indian/Alaska Native pregnant members represent 2.0% and 0.9% of births, respectively. These groups will be included throughout the report, though it is important to consider the size of these populations when analyzing the data.

## E. Providers and Access to Care

Several provider types can provide obstetric care to a pregnant or postpartum member. The most common type of provider is a physician (around 78% of births in 2019), which includes obstetricians, family practice doctors, maternal fetal medicine specialists or other physicians who can provide these services in their scope of practice. The next most common provider is certified nurse midwife, who served approximately 18% of birthing parents. Members also see their providers at a variety of locations. The majority of pregnant members see providers who are enrolled in Medicaid as a clinic (86.6%), followed by Federally Qualified Health Centers (FQHCs) at 10.9%. While birth centers are eligible Medicaid providers, they account for less than 1% of claims.

The availability of providers offering obstetric services varies throughout the state. Map 2 displays the number of births to an obstetric provider by county. Darker colors indicate higher number of births delivered in that county. Gray counties indicate that Health First Colorado did not receive a bill for obstetric services from a provider in that county during the time period. This may indicate that there is no provider offering perinatal care in that county, that the providers in that county do not accept Medicaid, or that there were no Medicaid births in that county during the 2019 calendar year. While absence of claims in a county may indicate access challenges, it may also indicate few births or births attended in neighboring counties or across state lines.

*Map 2. Colorado Medicaid Births by OB Provider, CY 2019*

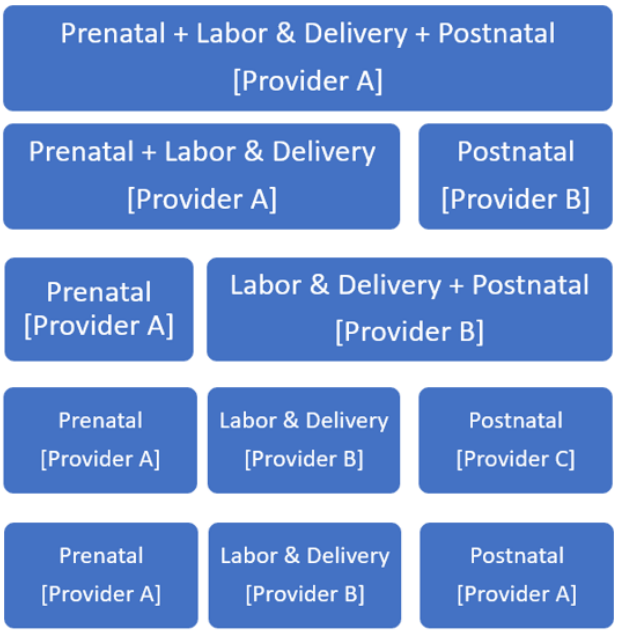


Source: Medicaid Claims

- From this point forward, the numbers in the report will reflect the 83% of births (22,343 births) where the Department was able to match a birthing parent's Medicaid ID with their newborn's birth certificate. This decision was made in order to report on the most complete data available. This means that numbers in this report may not match data reported by other sources. The Department continues to work with CDPHE to understand the 17% of birthing parent member IDs where a birth certificate was unable to be matched. Initial analysis indicates that these members in the unmatched category were more likely to be in the noncitizen emergency services eligibility category and more likely to self-identify as Hispanic. Billing for Maternity Services

Colorado Medicaid, like many other Medicaid programs, uses a "global bill" for maternity services. This billing mechanism is a complete, one-time billing which includes almost all medical services for routine prenatal care, labor and delivery and postpartum care. Rather than billing individually for each service provided, the provider bills once to account for all services provided during the course of the pregnancy. These services can be grouped into different package types to account for changes in providers (see Figure 4), but serve as only a general proxy of the intensity and initiation of care received. For example, as shown in Figure 4, Provider A may be the billing provider for all three components of prenatal care, labor and delivery, and postnatal care. In another scenario, Provider A might bill for the prenatal care and the labor and delivery, but not the postnatal care. The other possible scenarios are depicted in Figure 4. This billing methodology is intended to reduce administrative burden and control costs, but it has clear limitations in promoting clinical quality of care and allowing meaningful analysis of perinatal care for members. Data limitations due to the global bill in this report will be noted.

*Figure 4. Explanation of Global Billing Services*




## III. Programs and Initiatives

In addition to providing routine maternity care, the Department also has several programs and initiatives for pregnant and parenting members. These are designed to improve outcomes and control costs for members at risk of adverse birth outcomes.

*Prenatal Plus* is a team-based model that provides a mental health professional, a dietitian and a specialized care coordinator to members with increased risk factors throughout their pregnancy and postpartum period. The model is delivered in addition to obstetric care and can be offered through local public health agencies, obstetric care clinics or home visitation. The program is offered through several packages that range from least to most intensive, and at the highest intensity of services the program has been shown to improve critical outcomes, such as reducing rates of prematurity.

*Nurse Family Partnership* is offered during pregnancy, and until the child is 2. Nurses visit first-time parents at home to educate them on parenting, share resources and perform health checks. The program is primarily funded through Colorado Department of Human Services dollars including the Maternal Infant and Early Childhood Home Visiting funds and Tobacco Master Settlement Agreement dollars. Medicaid currently covers a set of reimbursable services and continues to explore more opportunities to sustain program funding. The program has short- and long-term impacts on families including reducing low birth weight, increasing interbirth intervals and even increasing graduation rates for children whose parents were enrolled in the program.

*Special Connections* is a residential and outpatient substance use disorder treatment program for pregnant members up to one year postpartum. The program is co-administered with the Office of Behavioral Health, which credentials providers to offer gender-responsive, specialized services that are trauma-informed. This benefit will expand as the new statewide

residential substance use disorder benefit is implemented, so sites will be able to increase the number of beds.

*WIC,* or the Special Supplemental Nutrition Program for Women, Infants and Children, is a federal assistance program providing nutritious foods, nutrition education, breastfeeding support, and referrals to health care and social services for millions of low-income families, and plays a crucial role in improving lifetime health for birthing parents, their infants, and young children. Enrollment in WIC can reduce food insecurity, and has been shown to lead to improvement in gestational age, and substantial improvements for low and very low birth weight infants.[3]

In addition to special programs, that Department incentivizes the Regional Accountable Entities (RAEs), hospitals and providers to promote quality outcomes. The RAEs are eligible for enhanced payments from the Department by improving prenatal care rates. The RAEs are also required to expand maternity-specific models under the condition management program. The Department has set expectations around five universal characteristics for maternity programming and has developed individualized clinical components. Hospitals are incentivized through the Hospital Quality Improvement Program, which has many maternity- specific components. Finally, the Department is also piloting a new maternity bundle that will use electronic health records to collect enhanced quality data to drive provider performance.

All of these initiatives will leverage the work of a soon-to-be established Maternity Stakeholder Advisory Council. This group will review program data, provide input on member quality and experience metrics, and give recommendations to help improve member experiences and maternity outcomes. Stakeholders in the process will include advocates and Colorado Medicaid members who have lived experience with Colorado Medicaid maternity services. Given the disparities observed in maternity outcomes, the group will have a particular focus on the experiences of members of color.

## IV. Prenatal Care and Newborn Outcomes

Access to quality prenatal care is one of the most important determinants of birth outcomes and a primary strategy to reduce infant and maternal mortality. Inadequate prenatal care has been associated with increased risk of prematurity and infant death.[4] Studies have found that even after adjusting for other differences such as socioeconomic status and maternal age, infants born to pregnant parents who did not receive prenatal care weigh considerably less, on average, than those whose pregnant parents receive prenatal care.[5] Given these data

[3] Center on Budget and Policy Priorities. (March 2017). "WIC Works: Addressing the Nutrition and Health Needs of Low-Income Families for More Than Four Decades" https://www.cbpp.org/research/food-assistance/wic-works-addressing-the-nutrition-and-health-needs-of-low-income-families

[4] Health and Human Services. (2013). "Report of the Secretary's Advisory Committee on Infant Mortality: Recommendations for HHS Action and Framework for a National Strategy." https://www.hrsa.gov/sites/default/files/hrsa/advisory-committees/infant-mortality/reports/final-recommendations.pdf

[5] Bush, J, Barlow, D and K. Belevin. (2017). "Impact of a Mobile Health Application on User Engagement and Pregnancy Outcomes Among Wyoming Medicaid Members." *Telemedicine Journal and E-Health: 23(11): 891-898.*

points, the delivery of prenatal care provides an avenue for health professionals to identify and treat medical complexities, refer patients to services for nonmedical issues, and provide general education.

## F. Timely Prenatal Care

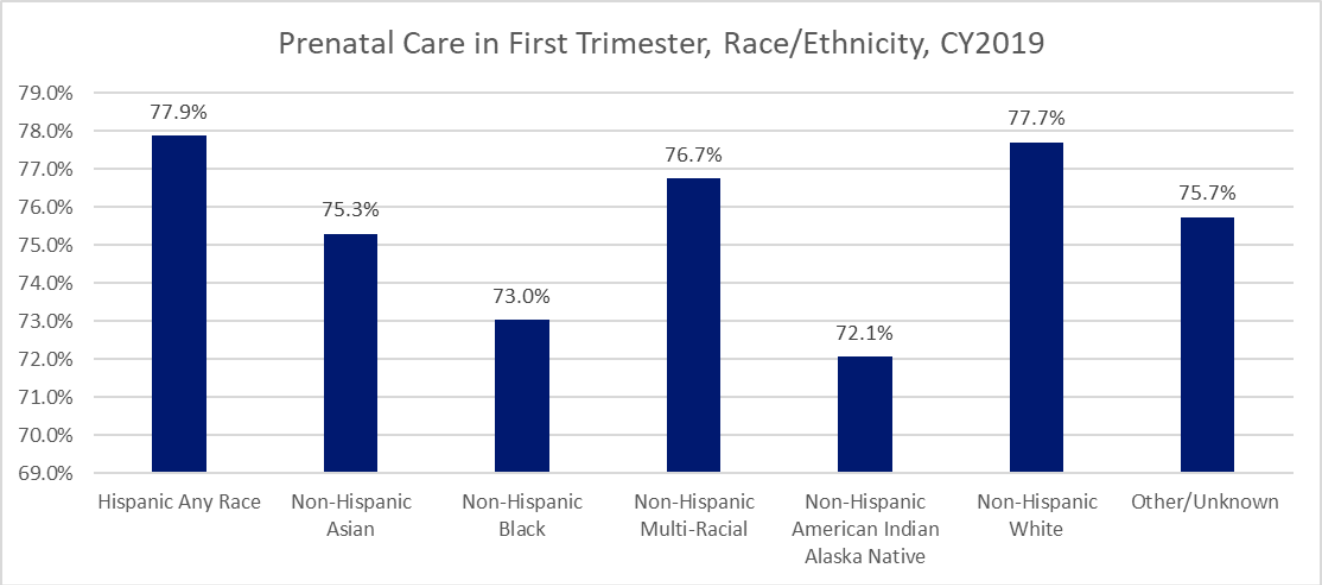
Prenatal care appointments are a critical check point to identify maternal risk factors. However, the **timing** of this care is vital to improvement in birth outcomes. According to Colorado birth certificate data, 77.1% of all Colorado Medicaid members who delivered in 2019 received prenatal care in their first trimester. Due to the global billing for maternity services, it is difficult to accurately determine when a member receives their first prenatal visit. Instead, this information comes from the birth certificate data and is either pulled from the electronic health record or self-reported by the member. Outside of billing, there are also challenges in identifying members who are pregnant. The Department provides the Regional Accountable Entities (RAEs) with a list of members who have a new eligibility type of "pregnant" or have any obstetric services. This list does not capture all pregnant people. While some members become eligible because they are pregnant, there are others who are already enrolled in Medicaid at the time they become pregnant, so they may not change their eligibility type to pregnant. Additionally, because of the global bill, a member may not have any pregnancy-related claims billed until after the baby has been born. According to the data we do have, there is great room for improvement in the initiation of timely prenatal care in the first trimester.

Prenatal care within the first trimester varies greatly by race and ethnicity. Among birthing parents who identified as non-Hispanic white, 77.7% received prenatal care within the first trimester compared to 73.0% who identified as non-Hispanic Black. More work is needed to understand the drivers behind this disparity. Studies show that there is a relationship between timely entry into prenatal care and unintended pregnancy.[6] The Department continues to work with the RAEs on improving early pregnancy identification in order to outreach to pregnant members as soon as possible.

To reduce unintended pregnancies in Colorado, SB 21-025 expands and redefines family planning services for both Medicaid members and those up to 250% of the FPL who do not qualify for Medicaid based on income, but would still benefit from access to family planning coverage.

[6] Guttmacher Institute. (January 2015). "Unplanned Births Associated with Less Prenatal Care and Worse Infant Health, Compared with Planned Births." https://www.guttmacher.org/news-release/2015/unplanned-births-associated-less-prenatal-care-and-worse-infant-health-compared

*Figure 5. Colorado Medicaid Prenatal Care in First Trimester by Race/Ethnicity, Calendar Year 2019*




## G. Impacts of Preterm Birth

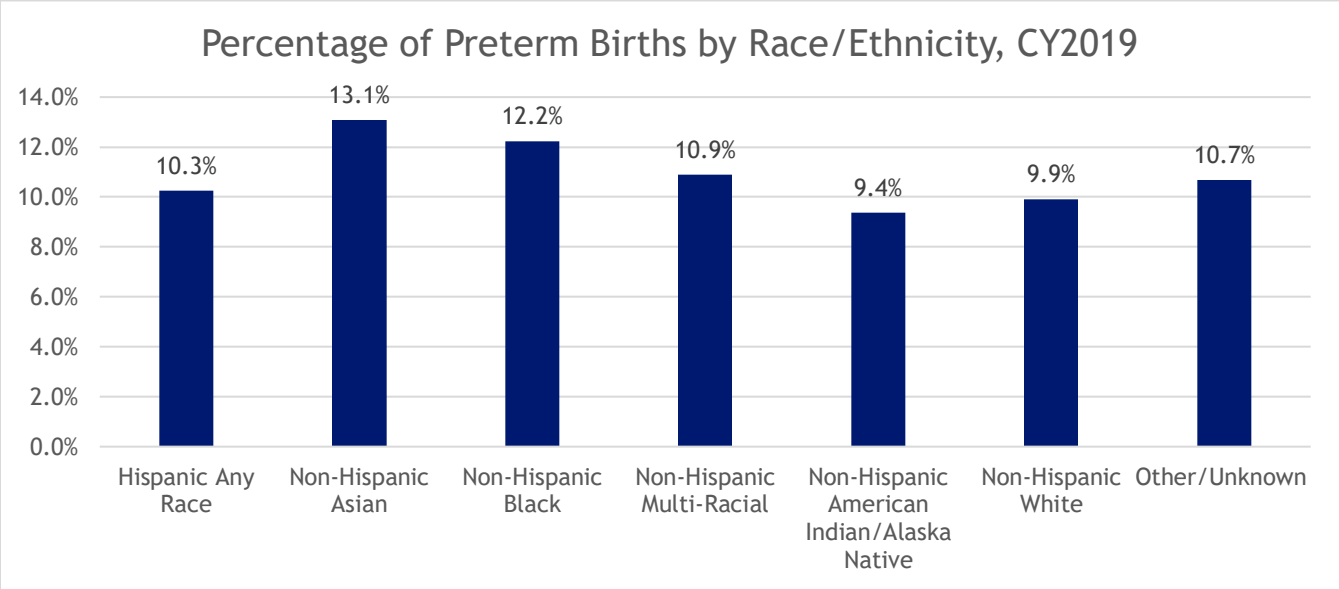
Preterm birth in this dataset is defined as delivery prior to 37 weeks gestation. The causes of preterm birth are multifaceted, but can result in long-term health impacts for the birthing parent and their newborn. Preterm birth is associated with 38% of infant mortality in Colorado, and additionally is associated with nearly 50% of all childhood neurodevelopmental disorders.[7] Developmental delays hinder children's success and put both the parent and baby at a long-term disadvantage.

In 2019, 10.4% of Colorado Medicaid newborns were delivered preterm. This compares with 9.6% for all Colorado births.[8] Age, race and ethnicity emerged as primary factors in determining the likelihood of delivering preterm. Parents who delivered over the age of 40 experienced the highest rate of preterm birth at 18.0%, compared to 9.1% of births delivered preterm for those aged 25-34. Birthing parents who self-identified as non-Hispanic Asian and non-Hispanic Black had the highest preterm birth rates at 13.1% and 12.2% respectively. See Figure 6 for all rates. Research indicates that chronic stress associated with being a racial or ethnic minority in the United States is largely responsible for higher preterm birth rates,

[7] Colorado Department of Public Health & Environment. "Recommendations to Reduce Preterm Birth in Colorado." https://www.colorado.gov/pacific/sites/default/files/PF_Preterm-BirthRecs.pdf
[8] March of Dimes. "2020 March of Dimes Report Card: Colorado." https://www.marchofdimes.org/peristats/tools/reportcard.aspx?frmodrc=1&reg=08

particularly among non-Hispanic Black parents, and constitutes an independent risk factor for preterm delivery.[9]

*Figure 6. Colorado Medicaid, Percentage of Preterm Births by Race/Ethnicity, Calendar Year 2019*




Prenatal care alone is not enough to prevent preterm birth. The RAEs and community-based partners have implemented evidence-based interventions to tackle preterm birth. Examples include group prenatal care, peer support programs, and medical interventions such progesterone supplementation. Additionally, the special programming from Nurse Family Partnership and Prenatal Plus can support the reduction of preterm birth rates.

**WIC**

Prenatal care is also an opportunity to connect pregnant members with resources. The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) is an evidence-based program available to all pregnant Colorado Medicaid members and their infants up to age 5. Research studies and program evaluation continue to indicate the benefits of WIC enrollment during pregnancy. One influential study estimated that WIC reduced the probability of low birth weight by about 30% and the probability of delivering a **very** low birth weight baby by about half.[10] WIC participants see benefits even after pregnancy and delivery, such as improved breast feeding practices, improved child immunization levels, and higher scores related to mental development assessments. Approximately 55.5% of all Colorado Medicaid members who are pregnant are enrolled in WIC at the time of delivery, which may indicate a

[9] Colorado Department of Public Health & Environment. "Recommendations to Reduce Preterm Birth in Colorado." https://www.colorado.gov/pacific/sites/default/files/PF_Preterm-BirthRecs.pdf
[10] Center on Budget and Policy Priorities. (March 2017). "WIC Works: Addressing the Nutrition and Health Needs of Low-Income Families for More Than Four Decades" https://www.cbpp.org/research/food-assistance/wic-works-addressing-the-nutrition-and-health-needs-of-low-income-families

significant opportunity for focused enrollment strategies to improve health outcomes. A common trend across all regions was a variance of WIC enrollment across race and ethnicities. Non-Hispanic white members were the least likely to be enrolled in WIC at 51.0%. Non-Hispanic American Indian/Alaska Natives had the highest enrollment rate at 62.4%, followed by non-Hispanic Black members at 61.3%. We also see enrollment variance across regions. Regions with higher enrollment attribute this success to dedicated partnerships with local WIC offices. Due to the consistent improvements in birth outcomes and overall infant and child health from WIC program enrollment, all RAEs are prioritizing early enrollment to this program as a prevention opportunity. The Department will continue to monitor this measure and support WIC enrollment and engagement opportunities for Colorado Medicaid members.

## H. Delivery Type

Traditionally, the United States has had a higher caesarean (C-section) delivery rate compared to other countries. In 2018, 31.9% of all births in the United States were delivered via C-section.[11] Since 1985, the World Health Organization has recommended an ideal C-section rate of 10-15% of births.[12] Though the appropriate rate of C-section is debated, there is widespread agreement that work remains to reduce unnecessary deliveries of this type.[13] When medically necessary, delivery by C-section can effectively prevent maternal and infant mortality. However, due to the complications that can occur with any surgery, and the high cost of cesarean delivery versus vaginal delivery, most organizations aim to reduce elective C-section deliveries or inductions of labor and C-sections before 39 completed weeks of gestation without a medical indication. At this point in time, the Department's data does not indicate whether the C-section was elective or medically necessary.

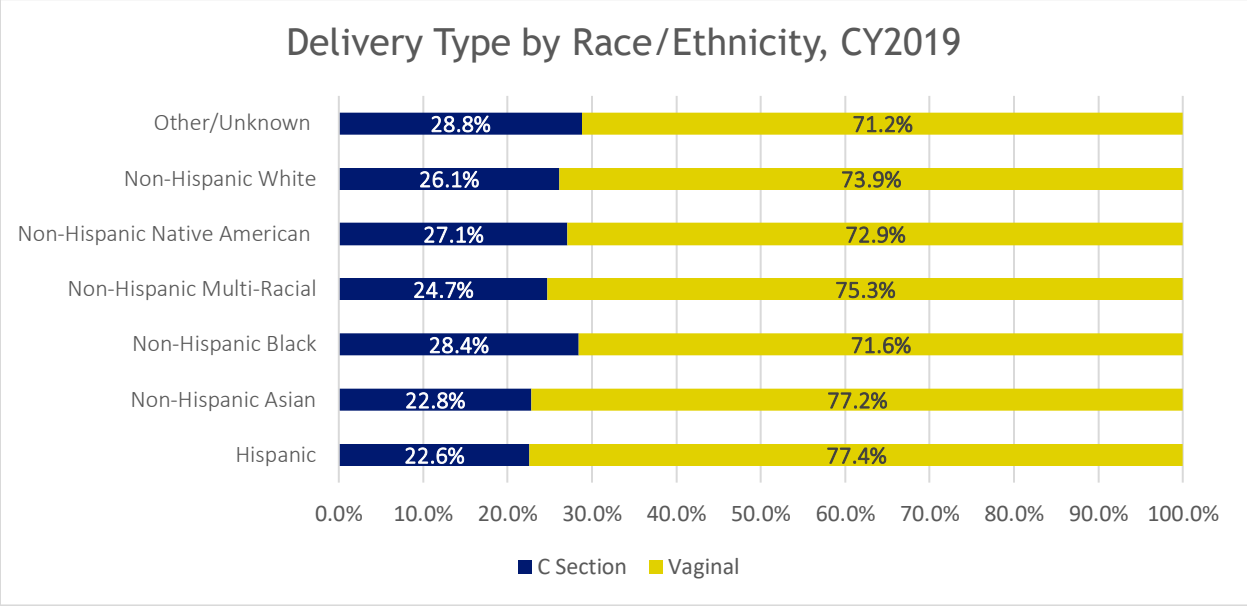
Among Colorado Medicaid members who delivered in 2019, three-quarters (75.2%) delivered vaginally and the remaining 24.8% delivered via C-section. The national C-section rate among all payers is 32%.[14] This data point aligns with the recent uptake in elective C-sections for higher income pregnant people, specifically in urban areas, and low rates for rural and vulnerable groups.[15] Because the trend of increased elective C-section is typically occurring in more affluent communities, it is assumed that most of the C-sections below are medically-indicated. The Department will continue to research this data point.

The C-section rate for Colorado Medicaid members varies by demographic characteristics. Birthing parents who identified as non-Hispanic Black had the highest rate of C-section at 28.4%. Birthing parents who identified as Hispanic had the lowest rate of C-section at 22.6%. C-section rates increase with maternal age. Even after controlling for parents who had never

[11] National Center for Health Statistics. "Births - Delivery of Method." https://www.cdc.gov/nchs/fastats/delivery.htm
[12] World Health Organization. (2015). "WHO Statement on Caesarean Section Rates." https://apps.who.int/iris/bitstream/handle/10665/161442/WHO_RHR_15.02_eng.pdf;jsessionid=0B685045D385D7181BA2DA4A6FEA8EC2?sequence=1
[13] American College of Obstetricians and Gynecologists. (2014). "Safe Prevention of the Primary Cesarean Delivery."
[14] Centers for Disease Control and Prevention. (November 2019). "National Vital Statistics Report. Births: Final Data for 2018." https://www.cdc.gov/nchs/data/nvsr/nvsr68/nvsr68_13-508.pdf
[15] March of Dimes. (October 2018). "March of Dimes and Partners Respond to Alarming Rise in C-section Rates." https://www.marchofdimes.org/news/march-of-dimes-and-partners-respond-to-alarming-rise-in-C-section-rates.aspx

had a prior C-section, there is a linear relationship between increasing maternal age and C-section rates. Birthing parents age 40 and above without a prior C-section have a 35.0% C-section rate, compared to birthing parents age 17 and under at 10.6%. These findings indicate a need for entry into early prenatal care to better identify and plan for delivery complications for pregnant members of increasing age and non-Hispanic Black members.

*Figure 7. Colorado Medicaid Delivery Type by Race/Ethnicity, Calendar Year 2019*




**Value-Based Payments**

Value-based payment reform is one initiative the Department is pursuing to improve quality prenatal care. The Department is currently piloting a bundled maternity payment program that aims to pay for outcomes instead of services. Targeted areas for improvement include prenatal behavioral risk assessment, postpartum depression screening, C-section births, postpartum contraceptive care, elective delivery, and equality in service provision for members who experience racism. Incentive payments will be based on the average cost per episode.

## V. Behavioral Health

A member's behavioral health during pregnancy – both mental health and health behaviors involving substance use – is of equal importance to the care taken to address their physical health. Perinatal mood and anxiety disorders (PMADs) affect one in seven pregnant and postpartum people nationwide, making it the most common obstetric complication.[16] In a recent survey of postpartum Coloradans, 34.0% of Colorado Medicaid members reported elevated anxiety scores.[17] Untreated mental health symptoms can negatively impact pregnancy outcomes, and can become a multigenerational issue affecting a child's long-term

[16] Mathematica. (April 2019). "Societal Costs of Untreated Perinatal Mood and Anxiety Disorders in the United States." https://www.mathematica.org/our-publications-and-findings/publications/societal-costs-of-untreated-perinatal-mood-and-anxiety-disorders-in-the-united-states

[17] Colorado Department of Public Health & Environment. "Health eMoms 2018 Survey 2.1 – Medicaid."

physical, emotional, and developmental health. Parents who forgo treatment for their behavioral health challenges are more likely to adopt unhealthy behaviors to cope like smoking both tobacco and marijuana, use of other substances, and unhealthy eating patterns.[18] Untreated behavioral health conditions can also lead to avoidable death: Behavioral health conditions are the leading cause of maternal mortality in Colorado.[19]

The stress and challenges of pregnancy and parenting with limited financial resources are contributing factors to a high rate of depression among Colorado Medicaid members. One in four low-income pregnant or postpartum people experience depression in a given year.[20] Support from peers or family is an important protective factor during this challenging time. Given that Colorado Medicaid members who have recently given birth are significantly more likely to say that they do not have someone to turn to for emotional support than other pregnant people, there are clear opportunities to connect these members to additional support groups or other opportunities.[21]

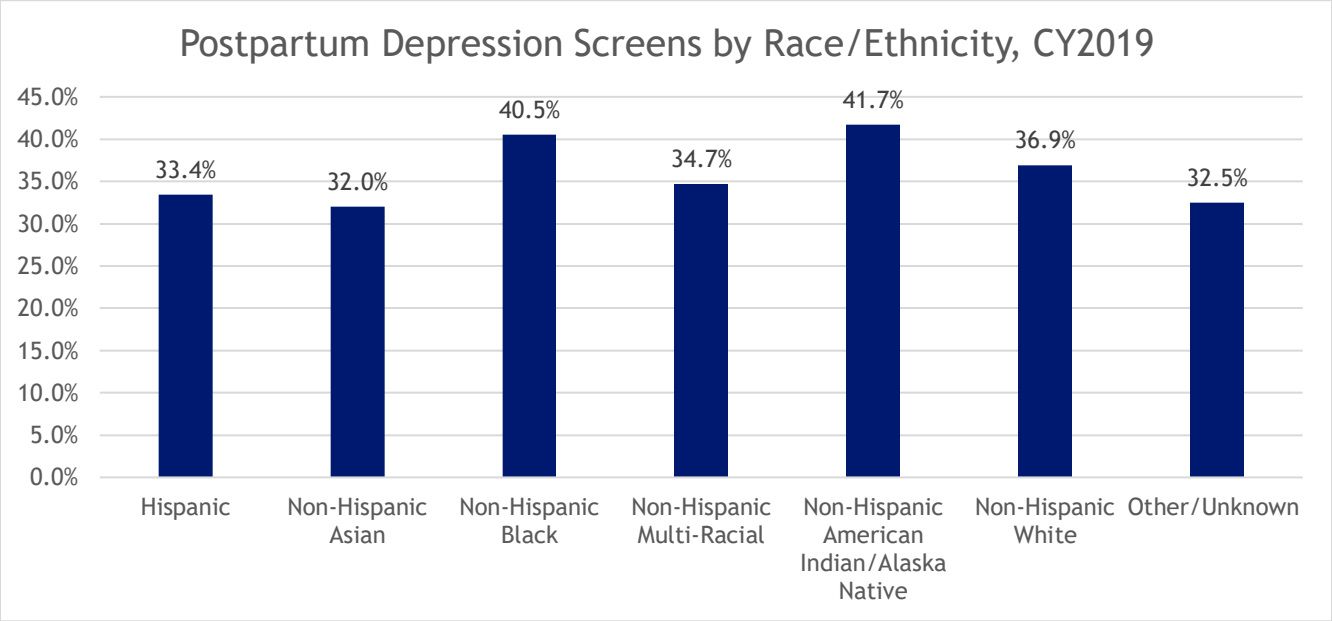
### Depression Screens

Colorado Medicaid reimburses for one prenatal depression screen and up to three depression screens in the postnatal period up to 12 months postpartum. The postnatal depression screens may be billed under either the birthing parent or the newborn's member ID. One challenge of the data on depression screens is that the service may be provided under the global bill versus being billed separately, so the percentage of pregnant and postpartum members receiving a screen is likely an undercount.

The ultimate goal for screening is that it be universal. According to the American College of Obstetricians and Gynecologists Committee on Obstetric Practice, there is evidence that screening alone can have clinical benefits.[22] The maximum benefits come from referral to and initiation of treatment. About one-third (35.5%) of pregnant Medicaid members received a postpartum depression screen.

[18] Colorado Department of Public Health & Environment. "Recommendations to Reduce Preterm Birth in Colorado." https://www.colorado.gov/pacific/sites/default/files/PF_Preterm-BirthRecs.pdf
[19] Colorado Department of Public Health & Environment (2020). Colorado Maternal Mortality Prevention Program Legislative Report 2014–2016.
[20] American Academy of Pediatrics. (October 2010). "Clinical Report: Incorporating Recognition and Management of Perinatal and Postpartum Depression Into Pediatric Practice."
[21] Colorado Department of Public Health & Environment. Colorado Health eMoms Survey: 2018 Birth Cohort.
[22] American College of Obstetrics and Gynecology. (November 2018). "Screening for Perinatal Depression." https://www.acog.org/clinical/clinical-guidance/committee-opinion/articles/2018/11/screening-for-perinatal-depression

*Figure 8. Colorado Medicaid Postnatal Depression Screens, Calendar Year 2019*




Source: Medicaid Claims Data

Prenatal depression screens are much less commonly reported. Only 8.7% of members had a prenatal depression screen billed. As previously stated, this may be a function of the data limitations associated with the global billing method.

## Substance Use

Substance use during pregnancy poses great risks both to the expectant parent and the child in the short- and long-term. This dataset is limited in its ability to provide information on substance use among members and potential outcomes for their newborns. For data on self-reported substance use, please see results from the Colorado Behavioral Risk Factor Surveillance System, Pregnancy Risk Assessment Monitoring System, or Health eMoms Survey.

The data provides insight into Neonatal Abstinence Syndrome (NAS), which refers to a newborn's withdrawal from substances – most commonly opioids – that their birthing parent used during pregnancy. In calendar year 2019, 2.9% of infants received a diagnosis for NAS. Rates were disproportionately high in El Paso, Pueblo, Jefferson and Larimer counties. Efforts are underway to support the expansion of Special Connections sites in these higher risk areas.

Hospitals are a key player in improving care for substance-exposed newborns. The CHoSEN Colorado Hospital Substance Exposed Newborns (CHoSEN)- Quality Improvement Collaborative is an effort led by 20 hospitals in Colorado and Wyoming to standardize care and improve outcomes for newborns. The collaborative has made great progress over the last two years by focusing on using the Eat, Sleep, Console assessment tool, developing guidelines for breastfeeding eligibility, employing comfort measures before pharmacologic therapy and administering opiate therapy on an as-needed basis. Through these efforts, the average

length of stay for opioid exposed newborns has dropped from 21.9 days to 8.0 days. In addition, the use of pharmacological therapy decreased from 61% to 23%. [23]

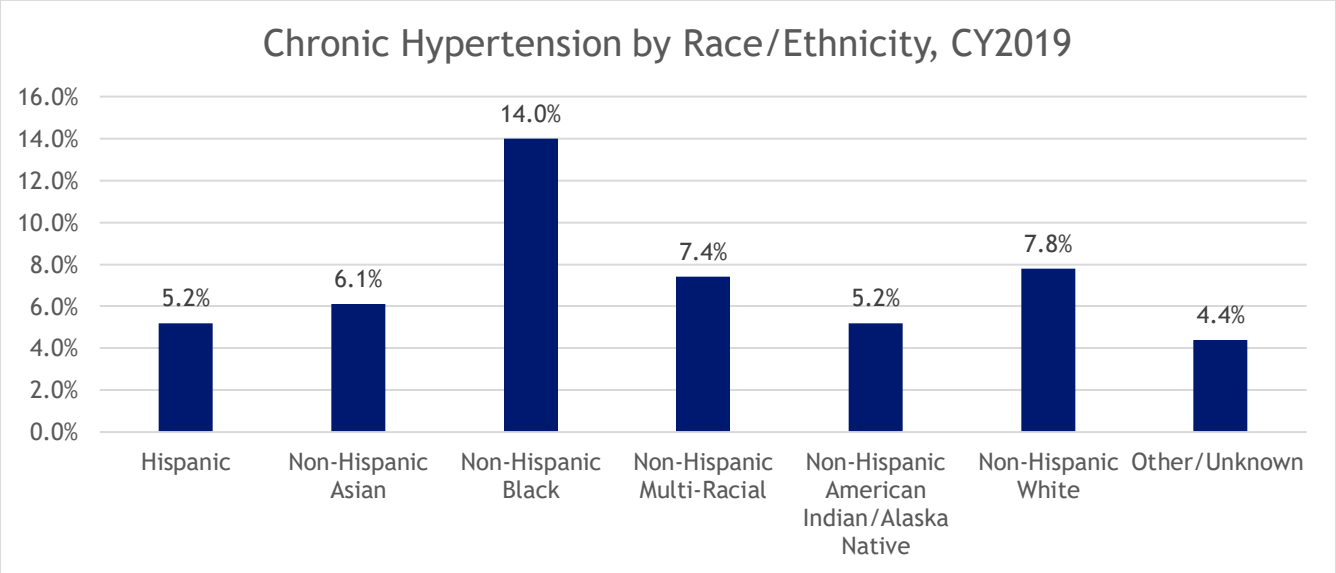
## VI. Risk Factors

There is a range of health and social factors that can increase risk and therefore pregnancy and delivery complications for both the birthing parent and baby. It is important that these health and social factors are identified and treated appropriately in order to avoid delivery complications and poor birth outcomes. Pregnant members with a preexisting chronic condition or those who develop a gestational condition during pregnancy have an increased risk for complications throughout their pregnancy and delivery, leading to a risk of poor birth outcomes and direct health impacts on newborns. This analysis will specifically identify pregnant members with both preexisting and gestational hypertension and diabetes, which show the largest prevalence in this population.

### I. Preexisting Hypertension

As mentioned, preexisting chronic hypertension has numerous health risks associated with pregnancy and delivery, such as eclampsia, preeclampsia, and potentially hemorrhage. Approximately 7% of pregnant Colorado Medicaid members had a preexisting hypertension diagnosis. Over 20% (22.1%) of these members delivered preterm newborns, compared to 9.6% of members without a preexisting hypertension diagnosis. Data show a stark disparity in this diagnosis for non-Hispanic Black members. Among birthing parents who self-identified as non-Hispanic Black and gave birth in 2019, 14.0% had a diagnosis of chronic hypertension. This is more than double the rate of all other racial and ethnic categories.

*Figure 9. Colorado Medicaid Pregnant Members, Chronic Hypertension, Calendar Year 2019*

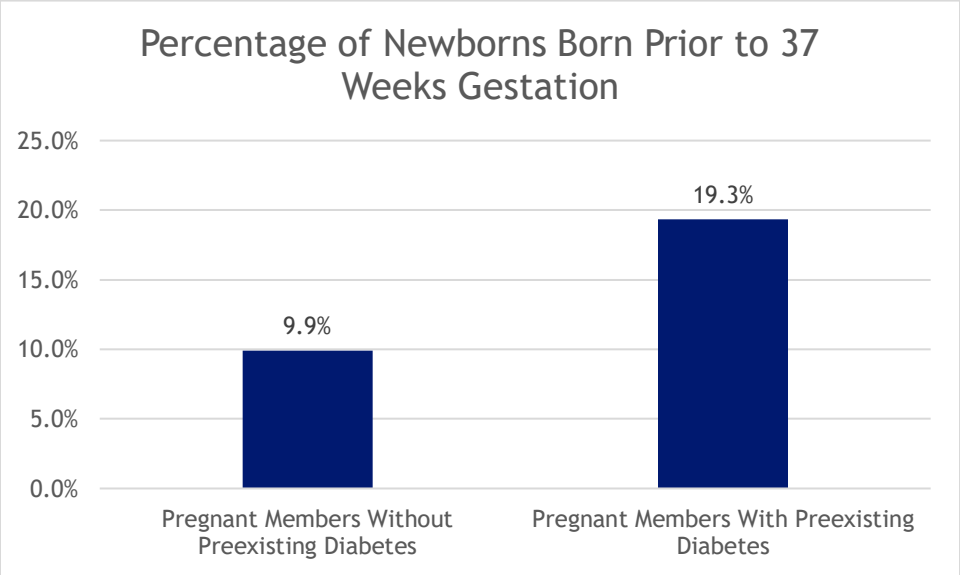



[23] Hwang et al. (August 2020). "The Colorado Hospitals Substance Exposed Newborn Quality Improvement Collaborative: Standardization of Care for Opioid-Exposed Newborns Shortens Length of Stay and Reduces Number of Infants Requiring Opiate Therapy." *Hospital Pediatrics Vol. 10 Issue 11.*

Given the complications associated with hypertension and pregnancy, there is a clear need for increased support and services for non-Hispanic Black members who are or are planning to become pregnant. RAEs with a large non-Hispanic Black population are working with obstetricians and other physicians to ensure that members with preexisting hypertension are identified early and receive high risk program supports.

## J. Preexisting Diabetes

*Figure 10. Percentage of Newborns Born Prior to 37 Weeks Gestation by Preexisting Diabetes Diagnosis*




Similar to hypertension, poorly controlled chronic diabetes during pregnancy can increase health risks to the pregnant parent and newborn. Common birth complications include increased risk of maternal hypertension/preeclampsia, large birth weight, and neonatal hypoglycemia. Approximately 5.6% of parents who gave birth in 2019 had a preexisting diabetes diagnosis. Nearly 20% (19.3%) of these members gave birth to preterm babies compared to about 9.9% of members who did not have a preexisting diabetes diagnosis (see Figure 10). Birthing parents who identified as Non-Hispanic Asian had the highest prevalence of preexisting diabetes at 9.5%, followed by non-Hispanic Black members at 6.7%.

## K. Gestational Conditions

Gestation is defined as the time between conception and birth, and gestational conditions are medical conditions that develop after conception. Gestational hypertension, or pregnancy induced hypertension (PIH), and gestational diabetes mellitus (GDM) are among the most common and most dangerous gestational diagnoses, if not addressed and treated properly. Similar to chronic conditions, unidentified gestational conditions increase the risk to both the pregnant parent and baby at delivery and later in life. Gestational hypertension can lead to placental abruption, intrauterine growth restriction and risk of preeclampsia/eclampsia. When a birthing parent is diagnosed with a gestational condition, the likelihood of developing

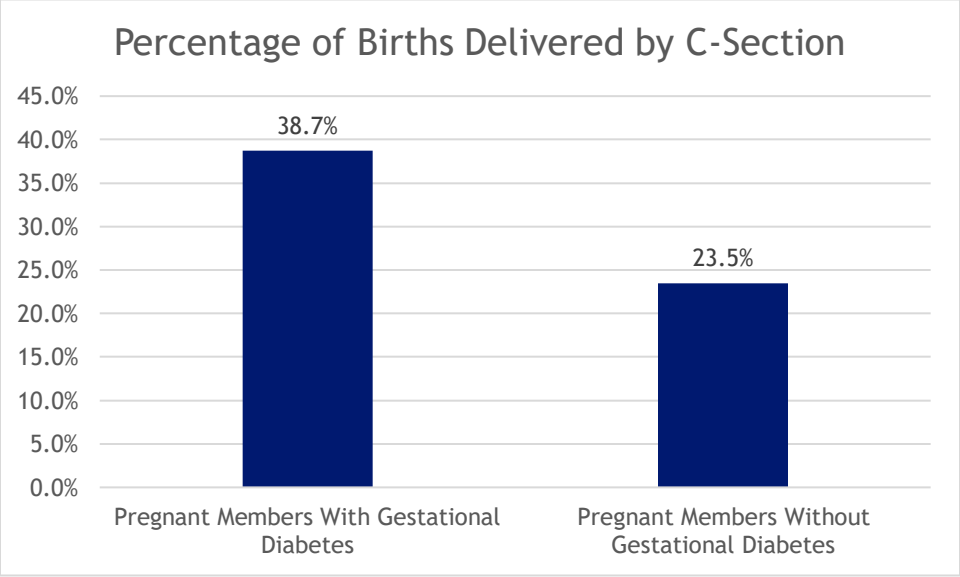
a chronic diagnosis after delivery increases. Half of pregnant members diagnosed with gestational diabetes go on to develop type 2 diabetes after pregnancy.[24]

### Gestational Hypertension

One in 10 (10.3%) pregnant members had a diagnosis of gestational hypertension in 2019. Members who developed gestational hypertension were more likely to deliver preterm than those without the diagnosis – 16.1% compared to 9.8% among those without gestational hypertension. The rate of gestational hypertension was highest among members who self-identified as non-Hispanic Black at 14.4%. Non-Hispanic white members had a rate of 11.5%.

### Gestational Diabetes Mellitus (GDM)

*Figure 11. Percentage of Births Delivered by C-section, By Gestational Diabetes Diagnosis, Calendar Year 2019*




The prevalence of GDM is lower than gestational hypertension, with 8.6% of Health First Colorado members developing a gestational diabetes diagnosis in 2019. Birthing parents with a GDM diagnoses were more than one-and-a-half times more likely to deliver by C-section in comparison to parents without a GDM diagnosis. Race and ethnicity, as well as age, are factors in the likelihood of a pregnant person developing GDM. As age increases, the prevalence of gestational diabetes also increases. Of pregnant members ages 25 to 34, 9.7% developed GDM compared to 21.5% of members who gave birth over the age of 40. Among members who self-identified as Non-Hispanic Asian, 14.0% of expectant parents had a GDM diagnosis. In comparison, 8.8% of expectant parents who identified as non-Hispanic Black had a GDM diagnosis and 7.3% of members who identified as non-Hispanic white.

[24] Centers for Disease Control and Prevention. "Gestational Diabetes" https://www.cdc.gov/diabetes/basics/gestational.html

## L. Age at Delivery

The birthing parent's age at delivery is an important indicator of receipt of timely prenatal care and birth outcomes. Teenage parents receive prenatal care later in their pregnancy. Among members under the age of 17 who gave birth in calendar year 2019, 37.4% did not receive prenatal care in the first trimester. This is compared to 22.5% of parents ages 18 to 24. On the opposite end of the age spectrum, members who deliver over the age of 40 are more likely to have or develop medical conditions resulting in delivery complications. Eighteen percent of those over the age of 40 delivered preterm (prior to 37 weeks gestation), compared to members age 18-24, who delivered preterm at a rate of 9.1%. The RAEs have focused programmatic efforts on teenage pregnancies to improve birth outcomes for the pregnant teen and baby. All RAEs identify pregnancies under the age of 17 as high risk. The Department has found that Prenatal Plus is particularly effective with teens. The Colorado Adolescent Maternity Program (CAMP) is a Prenatal Plus site that leverages the program's reimbursement model to provide more wraparound services for this population.

## M. Smoking

According to CDPHE, smoking during pregnancy is the most serious and preventable cause of infant morbidity and mortality.[25] Smoking is often a coping behavior for stress and anxiety. More than 1 in 10 (11.6%) pregnant members enrolled in Colorado Medicaid had a positive screen for smoking. Since this data is self-reported, it is likely that this number is underreported. According to data from the 2015-2017 Pregnancy Risk Assessment Monitoring Systems (PRAMS), a survey of Coloradans who have recently given birth, the rate of tobacco use during pregnancy among Colorado Medicaid members is significantly higher than members of other insurers.[26] This trend is also true among members who are not pregnant. Data from the 2018 Behavioral Risk Factor Surveillance System (BRFSS) shows that self-reported tobacco use among Health First Colorado members was 33.7% - 10 [27]OBJ

This behavior has long been known to lead to adverse health outcomes in the short- and long-term for newborns.[28] Smoking during pregnancy is directly correlated to poor birth outcomes, contributing to preterm birth, low birth weight, and preterm related infant mortality. Figure 12 shows that among members who smoked during pregnancy, 16.2% gave birth to a low birth weight baby compared to 9.8% who did not report smoking during pregnancy.

[25] Colorado Department of Public Health & Environment. "Preventing Preterm Birth." https://www.colorado.gov/pacific/sites/default/files/PF_Preterm-BirthRecs.pdf
[26] Colorado Department of Public Health & Environment. 2015-2016 Pregnancy Risk Assessment Monitoring System.
[27] Colorado Department of Public Health & Environment. 2018 Behavioral Risk Factor Surveillance System.
[28] Dietz PM et al. (2010). "Infant morbidity and mortality attributable to prenatal smoking in the U.S." *American Journal of Preventive Medicine 39(1):45-52.*

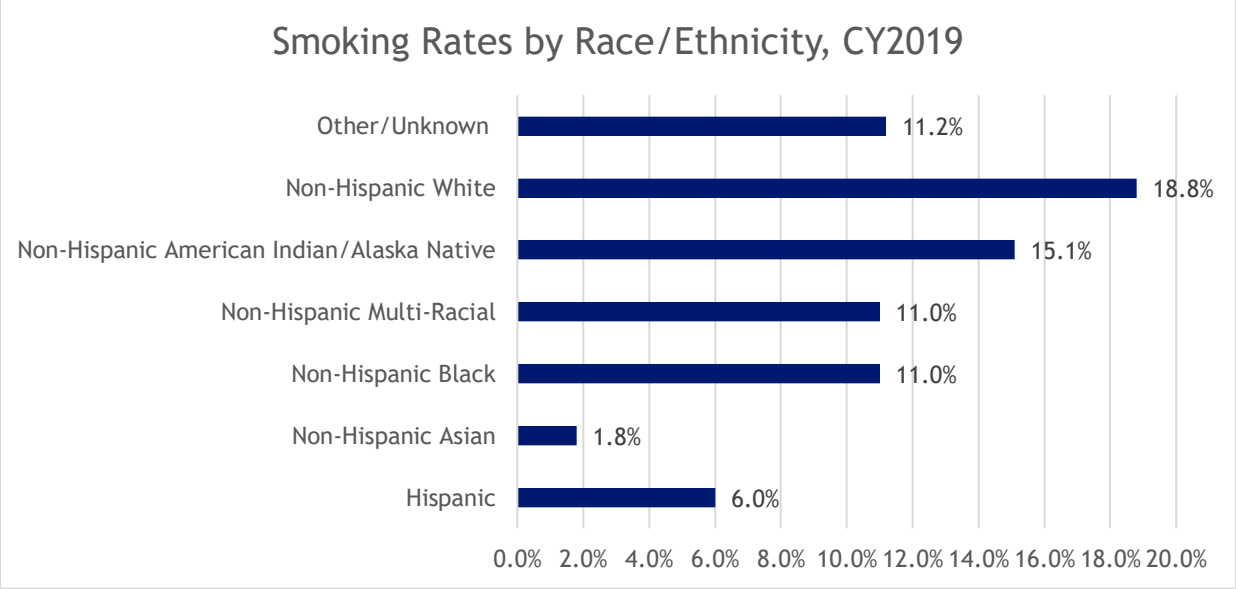
*Figure 12. Health First Colorado, Smoking During Pregnancy and Birth Weight, Calendar Year 2019*

Among members who smoked during pregnancy, **16.2%** gave birth to a low birth weight baby.

Among nonsmokers, **9.7%** gave birth to a low birth weight baby.

Smoking rates vary greatly by race and ethnicity. Non-Hispanic white birthing parents were three times more likely to smoke during pregnancy than Hispanic birthing parents. See Figure 13 for further detail. This trend was consistently observed in each of the state's seven RAE regions.

*Figure 13. Percentage of Pregnant Colorado Medicaid Members Reporting Smoking During Pregnancy, By Race and Ethnicity, Calendar Year 2019*




Source: Colorado Birth Certificate Data

There are significant regional differences in rates of smoking during pregnancy with higher rates in rural areas. The rates of smoking while pregnant are disproportionately higher in Larimer, Jefferson, Pueblo, and Mesa counties. Several RAEs have sponsored and supported programs aimed at reducing smoking during pregnancy. One national, evidence-based

program with numerous sites in Colorado, Baby and Me Tobacco Free, has shown a 24-28% reduction in the risk of preterm birth and a 24-55% reduction in the risk of Neonatal Intensive Care Unit (NICU) admission through smoking cessation intervention.[29]

### N. Homelessness

According to studies compiled by the Robert Wood Johnson Foundation, low-income people with housing instability were less likely to have routine medical care, more likely to postpone treatment and more likely to use the emergency room for treatment. Additional studies show that children experiencing housing instability have worse overall health, more behavioral problems and lower school performance.[30] Information on the housing status of Colorado Medicaid members comes from a self-reported field on the Medicaid application.

Approximately 5.6% of birthing parents experienced homelessness at some point in time while covered by Colorado Medicaid. The rate of homelessness among non-Hispanic Black members was twice as high as the state average of 11.4%. Pregnant members who reported homelessness at the time of enrollment were more likely to deliver preterm and low birth weight newborns than those who were not homeless. It is important to note that the data on housing status is collected at the time of application and is likely not updated over the course of enrollment. This means that the reported rate of homelessness is a snapshot from the time the member enrolled and may not necessarily be their housing status during pregnancy. The Department will use this information to understand the specific needs of members experiencing homelessness and how the Department can partner with other state agencies to ensure these needs are met.

## VI. Cost

The Department analyzed costs associated with maternity care and delivery in two different ways. An average cost per birth is the total cost of claims incurred on the estimated delivery date. This would include the global bill of prenatal care from an obstetrician or other physician, and an inpatient hospital claim for the delivery. The average cost per birth in 2019 was $3,799. A second analysis of cost is for the entire maternal episode, which includes all of the birthing parent's claims – both maternity and nonmaternity related - from 10 months prior to the delivery date up to 60 days postpartum. The average cost per maternal episode was $4,585 – an expected increase over the cost per birth given that these costs include both pregnancy and nonpregnancy related services.

### O. Cost by Risk Factors

Average cost per maternal episode increases as maternal age increases. Births to members ages 25 to 34 - about half of all births – was $4,848. For members ages 35 to 40, the average cost was $5,060 and for members over 40, the average cost was $5,052. This indicates the increasingly likelihood that a member faces co-occurring health challenges as they age.

Additionally, births closer to full term cost less. For newborns born at greater than 37 weeks, the average cost per birth was $3,534. This is compared to $5,225 for newborns with a

[29] Polinski K. et al. (2020). "Impact of an incentive-based prenatal smoking cessation program for low-income women in Colorado." Public Health Nursing 37(1):39-49.
[30] https://www.rwjf.org/en/library/research/2011/05/housing-and-health.html

gestational age between 33 and 36 weeks. Newborns with a gestational age between 28 to 32 weeks had an average cost per birth of $9,827, reflecting the additional care needed for these infants.

As expected, members in the high-risk condition group with either preexisting hypertension, an episode of hypertensive crisis, chronic diabetes, chronic kidney disease, asthma, or heart disease within the last five years have more expensive maternal episodes than those who do not. Members in the high-risk condition group (one or more of the aforementioned conditions) had an average maternal episode cost of $5,667 compared to $3,688 for those without a high-risk condition.

Independent conditions, such as gestational diabetes and gestational hypertension significantly affect the cost of maternal episodes. The average cost of a maternal episode with a diagnosis of gestational hypertension is $7,339 compared to $4,232 for members without this diagnosis. The average cost of a maternal episode with a diagnosis of gestational diabetes is $7,959 compared to $4,233 for members who do not have gestational diabetes.

## P. Cost and Delivery Outcomes

At a cost of $3,305 per birth, vaginal deliveries are less costly than C-sections ($5,268 per birth). Maternal episodes associated with vaginal births are also much less costly at $4,065. The average cost of a maternal episode associated with a C-section is $6,112. This difference is likely accounted for by the fact that members who deliver by C-section are more likely to have a preexisting condition.

Another area of cost related to pregnancy and birth is the NICU. Newborns are admitted to the NICU when they need extra care following delivery. In calendar year 2019, 3,966 newborns were admitted to the NICU for a total cost of $52.8 million. The average length of stay in the NICU was 11.3 days. The Department has recently developed a new tool to analyze NICU data and is exploring how to leverage the new data to inform policy and guidance. This data will be included in future reporting.

## IV. Conclusion

The Colorado Department of Health Care Policy & Financing is committed to improving health outcomes for pregnant Medicaid members and their newborns, ensuring that pregnant and postpartum Colorado Medicaid members receive high quality care to provide a healthy start to achieving lifetime health for the whole family, and to closing disparities in health outcomes. By leveraging our evolving data systems, dedicated Department staff, and community feedback, this report advances us towards that goal in two ways. First, this report provides stakeholders with data on more than 40% of births in Colorado. This is the first time the Department has publicly reported data on Medicaid births in this format. It is the intention of the Department that partners use the data to inform their programs and interventions.

Second, the data in this report will inform Department maternity initiatives. For example, in alignment with the Governor Polis' Wildly Important Goals, the Department and the RAEs will implement condition management programs for specific populations. The Department has set expectations around five universal characteristics of all condition management programs and is developing individualized clinical components for each condition. Maternity is one of the targeted conditions. The Department is incorporating the findings of this report into the condition management programs and reviewing this data with the RAEs.

The data in this report clearly show that nonwhite pregnant members – and therefore, their newborns – are disproportionately at risk. In the fall of 2020, the Department hired a Health Disparities and Equity, Diversity and Inclusion Officer to oversee efforts to specifically address these differences due to structural inequities. Over the coming months, this new Officer will use the Department's data to develop strategies to improve outcomes.

Finally, the Department is identifying ways to improve future reporting on maternity care. Efforts are underway to add critical data components (e.g., birthing parent's education level), improve data quality (e.g., increase our matching rate to birth certificates), examine more infant health impacts (e.g., NICU stays), and include additional postpartum maternal outcomes. This report is a first iteration, and the Department welcomes feedback on current content and opportunities to improve future versions. Through transparent reporting and productive partnerships, this report represents a critical step toward improving the lives of pregnant and newly parenting Coloradans. The Department invites community partners,

providers, and other stakeholders to use the report to guide work in this area and join us in advancing the health of our members.

For more information or to provide feedback, please email inquiries to Susanna Snyder, Maternal Child Health Manager, at Susanna.Snyder@state.co.us or Tamara Keeney, Research & Analysis Manager, at Tamara.Keeney@state.co.us

## V. Data Definitions and Sources:

**Age at Delivery**: The mother's age at delivery. Sourced from member data in the Business Intelligence and Data Management (BIDM).

**Birth Weight**: Infant's weight in grams at delivery, sourced from the birth certificate.

**Chronic Diabetes:** A diagnosis of Type 1 or Type 2 diabetes prior to pregnancy. Sourced from claims data.

**Chronic Hypertension:** A diagnosis of hypertension or a hypertensive crisis up to five years before the estimated delivery date. Sourced from claims data.

**Cost per Birth:** The total cost of the claims incurred on the estimated delivery date (this is typically, but not always, the combination of an OBGYN physician claim and an inpatient hospital claim).

**Cost per Maternal Episode:** Encompasses all fee-for-service Medicaid costs incurred by the mother between 10 months before and 60 days after the estimated delivery date.

**Facility**: The facility at which the mother gave birth, sourced from the birth certificate.

**First Prenatal Visit**: The trimester during which prenatal care was initiated. Sourced from the birth certificate.

**Gestational Age**: Infant's gestational age at delivery, sourced from the birth certificate.

**Gestational Diabetes:** A diagnosis of gestational diabetes from 10 months before through the estimated delivery date. Sourced from claims data.

**Gestational Hypertension:** A diagnosis of gestational hypertension from 10 months before through the estimated delivery date. Sourced from claims data.

**Long Acting Reversible Contraceptive (LARC) Insertions**: Member received a LARC during the delivery stay (a buffer period of three days after the inpatient stay is included). Sourced from claims data.

**Neonatal Abstinence Syndrome (NAS) Diagnosis**: Infant diagnosed with NAS after delivery. Sourced from claims data.

**NICU Indicator**: Whether the infant was admitted into the NICU after birth. Data is sourced from claims, connecting to the infant's ID listed on the birth certificate.

**Obstetrician (OB) Provider Type**: the provider type listed on the global bill. Sourced from claims data.

**Postnatal Depression Screens**: Depression screening after the delivery date. Sourced from claims data, depressions screens billed under the mother's ID or the infants ID are included in this measure.

**Prenatal Care**: The number of prenatal care visits for the mother observed in claims data. Defined by global bill definitions and stand-alone care claims.

**Prenatal Depression Screens**: Depression screening prior to the delivery date. Sourced from claims data.

**Prenatal Visit First Trimester**: Received prenatal care in the first trimester. Sourced from the birth certificate.

**Previous Preterm Birth:** There is a birth certificate in our files indicating that the mother gave birth to a premature infant (<37 weeks) at some point in the past. Sourced from claims data.

**Prior C-section**: C-section during a previous delivery. Sourced from claims data, so data may not be complete if the mother was not a Medicaid member during a previous delivery.

**Race/Ethnicity**: A Department-defined combination of race and ethnicity data provided in the BIDM. Collected at time of enrollment into Medicaid.

**Smoker**: Member reports being a smoker upon delivery. Sourced from the birth certificate.

**Type of Delivery**: C-section or vaginal delivery, sourced from the birth claim.

**WIC Enrolled**: Whether the mother is enrolled in Women, Infant, and Children Nutrition Program benefits. Sourced from the birth certificate.

# VI. APPENDIX

**Percent of Births by County Covered by Medicaid, Calendar Year 2019**

| County | Percent of Births Covered by Medicaid |
|---|---|
| Adams | 53.3% |
| Alamosa | 68.9% |
| Arapahoe | 42.5% |
| Archuleta | 54.7% |
| Baca | 52.9% |
| Bent | 78.0% |
| Boulder | 34.3% |
| Broomfield | 21.5% |
| Chaffee | 41.5% |
| Cheyenne | 54.5% |
| Clear Creek | 29.9% |
| Conejos | 52.4% |
| Costilla | 75.7% |
| Crowley | 73.3% |
| Custer | 32.5% |
| Delta | 61.6% |
| Denver | 46.3% |
| Dolores | 46.7% |
| Douglas | 14.1% |
| Eagle | 40.2% |
| El Paso | 38.3% |
| Elbert | 24.3% |
| Fremont | 64.2% |
| Garfield | 50.1% |
| Gilpin | 33.3% |
| Grand | 33.6% |
| Gunnison | 36.2% |
| Hinsdale | 0.0% |
| Huerfano | 75.0% |
| Jackson | 41.7% |
| Jefferson | 28.1% |
| Kiowa | 47.1% |

| County | Percent of Births Covered by Medicaid |
|---|---|
| Kit Carson | 54.4% |
| La Plata | 39.6% |
| Lake | 49.4% |
| Larimer | 36.6% |
| Las Animas | 66.4% |
| Lincoln | 43.8% |
| Logan | 51.1% |
| Mesa | 52.8% |
| Mineral | 66.7% |
| Moffat | 53.6% |
| Montezuma | 68.6% |
| Montrose | 62.8% |
| Morgan | 56.0% |
| Otero | 66.1% |
| Ouray | 44.4% |
| Park | 33.6% |
| Phillips | 57.1% |
| Pitkin | 17.0% |
| Prowers | 69.0% |
| Pueblo | 66.4% |
| Rio Blanco | 41.1% |
| Rio Grande | 61.2% |
| Routt | 30.7% |
| Saguache | 64.6% |
| San Juan | 33.3% |
| San Miguel | 36.5% |
| Sedgwick | 58.8% |
| Summit | 37.1% |
| Teller | 44.2% |
| Washington | 40.8% |
| Weld | 41.5% |
| Yuma | 54.4% |

*709 Medicaid-covered births have an unknown location and are not included in this table

**Recently Passed Legislation and Estimated Impacts**

The following chart details recently passed legislation that will impact maternity services and outcomes:

| Bill Number | Bill Summary and Intended Impact |
|---|---|
| **SB 21 - 194** | Extends postpartum coverage to 365 days for persons who qualified for medical assistance benefits while pregnant. This will allow the pregnant person to maintain access to services during the postpartum period beyond the current 60 day coverage period. |
| **SB 21 - 009** | Requires family planning coverage for undocumented residents as a Medicaid benefit. The legislation aims to reduce rates of unintended pregnancy among undocumented residents. |
| **SB 21 - 025** | Requires HCPF to provide family planning services to individuals up to 250% FPL, which could reduce unintended pregnancy for members in this expanded income group. |
| **SB 21- 016** | Expands preventive services & redefines family planning related services as eligible outside managed care organizations, likely reducing unintended pregnancies. |

SB21-194 extends the pregnancy eligibility category from 60 to 365 days postpartum to ensure continuity of care for birthing parents through the full first year postpartum. This is a critical change because of the over 40% of parents who give birth on Medicaid, one quarter of them lost their Medicaid coverage after the current 60 day change in eligibility determinations. Recent analysis from CDPHE shows that while people who gave birth on Medicaid have a higher maternal mortality rate than other payers, there was no significant difference in the rate of death during the early postpartum period (up to six weeks). However, birthing people on Medicaid were significantly more likely to die during the late postpartum period than parents covered by other payers. The late postpartum period is defined as six weeks up to one year postpartum—after current Medicaid coverage may have ended for those Medicaid enrolled parents. This indicates a strong need to make sure people who give birth while on Medicaid are guaranteed access to life-saving services beyond our current authority.

The other three bills (009, 016, 025) expand eligibility and access for family planning and family planning related services. In 2019, 36% of pregnancies in Colorado were unintended, and on Medicaid, 53% were unintended[31]. Numerous studies show that unintended pregnancies are associated with an increased likelihood of negative maternal and infant health outcomes. This includes an increase in perinatal mood and anxiety disorders[32], low birth weight, preterm birth[33] and inadequate or delayed prenatal care[34]. By increasing the proportion of pregnancies that are planned, we can increase the likelihood of improved outcomes.

[31] Colorado Department of Public Health & Environment. (2019). "Pregnancy Risk Assessment Monitoring System."
[32] Fellenzer JL and Cibula DA. (2014). "Intendedness of pregnancy and other predictive factors for symptoms of prenatal depression in a population-based study." *Maternal Child Health Journal18(10):2426-36.*
[33] Shah PS et al. (2011). "Intention to become pregnant and low birth weight and preterm birth: a systematic review." *Maternal Child Health Journal 15(2):205-16.*
[34] Dibaba Y et al. (2013). "The effects of pregnancy intention on the use of antenatal care services: systematic review and meta-analysis." *Reproductive Health 16;10:50.*