WASHINGTON STATE OFM Office of Financial Management

Maternal Health in Washington State, 2010-2022

By Dicentra Consulting, LLC in consultation with the Health Care Research Center at OFM Forecasting and Research Division

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EXECUTIVE SUMMARY

This report is a significant contribution to the understanding of maternal health care in Washington state. It presents statewide findings, focusing on the pregnancy life cycle – prenatal care, labor and delivery, and postpartum care. Initiated from discussions with multiple state agency partners, this report aims to identify gaps and opportunities to enhance perinatal health care access and utilization in Washington. “Perinatal” refers to the period that includes prenatal (time before the birth), labor and delivery, and postpartum (time after the birth). Building on previous efforts from Washington state agencies and partners, this report serves as a crucial foundation for improving maternal health outcomes.

While the team utilized multiple state-level data sources for this analysis, more detailed information is needed to identify and track barriers to health care access and utilization across the perinatal time period. Several data gaps were identified below:

Data gaps

1. Access to linked datasets: Linking hospital discharge, birth certificate, claim, geocoded data, and survey data can provide a comprehensive view of perinatal health. However, this is challenging due to inconsistent member identifiers, stringent data sharing, and privacy protections, which often require Institutional Review Board approval, time to create needed datasets, and funding for the data linkages. Moreover, access to geocoded data is crucial for identifying geographic patterns in health care access.

2. Lack of consistent and standardized community-level data: While statewide datasets offer a broad view of perinatal health, community-level data is essential to complement this information. Local data, both quantitative and qualitative, are needed to understand specific situations, risk factors, and resources, enabling more focused and effective interventions. Together, these data types fill gaps in existing systems and inform better policy and action.

3. Consistency of and disaggregation of race and ethnicity categories: Race and ethnicity are often not collected or are collected inconsistently across datasets, typically being aggregated into broad categories. For instance, the category "Asian" covers dozens of cultures and countries. Additionally, many datasets allow for only a single racial identity, overlooking multiracial individuals. Consistent, uniform, and disaggregated collection of race and ethnicity data is essential for gaining accurate insights and addressing disparities in maternal health.

4. Lack of data on the quality of health care: Existing statewide datasets primarily track who accessed care, how often, and the associated costs, but they provide limited information on the quality of care. There is a need for more robust data collection beyond surveys to capture women's experiences, particularly regarding racism, bias, and discrimination, as these factors significantly impact perinatal health outcomes.

5. Focus on women's health across the lifespan: The current datasets inadequately capture women's health before pregnancy, which is a critical determinant of health during pregnancy. Comprehensive data on women's health and well-being throughout their reproductive years, including pre-conception and

interpregnancy periods, is necessary to provide a complete picture and enable more effective interventions and policies to improve maternal and perinatal health outcomes.

Despite these data limitations, this report delivers robust and actionable findings that will significantly advance the efforts of state agencies and partners.

Key findings

Birth population demographics

- Since 2016, Washington has been experiencing an **overall decline in the birth rate**, especially among women aged 15 to 34 years (1).
- Conversely, there has been an increase in the birth rate among women aged 35 to 49 years (referred to as advanced maternal age), who face higher risks for adverse perinatal outcomes and may require enhanced monitoring during the prenatal period.
- Although births at birth centers and homes account for a small percentage (< 5%) of total births, their numbers have been rising, with a notable increase during the pandemic.

Prenatal care findings

- **High prenatal care access**: Most (about 98%) women who had singleton live births (i.e. pregnant with only one child at a time) had at least one prenatal care visit with little variability across maternal racial and ethnic groups, age groups, or the type of health insurance coverage.
- **Disparities in the initiation of early prenatal care**: Despite high overall access, disparities exist in the initiation of prenatal care. Black women, Native Hawaiian and Pacific Islander (NH/PI) women, and women under 18 years old are less likely to receive care in the first trimester. Early initiation is more common among women with education beyond high school and those with commercial insurance compared with Medicaid.
- **Adequacy of prenatal care**: Between 75% to 85% of women received adequate prenatal care annually. However, NH/PI women, women under 18, those with less than a high school education, and women covered by Medicaid have relatively lower access to adequate prenatal care compared to their counterparts.
- **Cost of prenatal care:** The annual total cost of prenatal care in Washington decreased from $24.5 million in 2017 to $17.9 million in 2021, though the average costs for prenatal care visits fluctuated during this period. Disparities exist in costs by maternal race, age, and type of insurance. Black women and older women incur higher costs per prenatal visit. While Medicaid covers most of the prenatal care costs due to a higher number of clients and visits, commercial insurance pays more per visit.

Labor and delivery findings

- **Birth settings**: Most births (> 95%) in Washington occur in hospitals, but there has been a steady increase in home and birthing center deliveries.
- **C-section trends**: While Cesarean section (C-section) deliveries declined in the early 2010s, recent years have seen an increase. Disparities in C-section rates exist by maternal race, with American Indian or Alaskan Native (AI/AN) women and older women having the highest rates. Women with the highest level of education and commercial insurance had higher C-section rates than women with fewer years of education and those covered by Medicaid.
- **Delivery cost**: Both total delivery costs and costs per delivery have been steadily rising in Washington. Women aged 35 to 49 years have the highest average delivery costs. The average cost of delivery covered by commercial insurance is more than double that covered by Medicaid, with both increasing over time.

Postpartum care findings

- **Access to postpartum care**: Less than 75% of women had at least one postpartum visit. NH/PI women had the lowest proportion of at least one postpartum visit, dropping from about 64% in 2017 to 57% in 2021. A lower proportion of women covered by commercial insurance have postpartum visits than women covered under Medicaid.
- **Number of and timely initiation of postpartum visits**: Less than 60% of women initiated a postpartum visit within 42 days of giving birth, with an average of 2.4 visits within the 90-day recommended timeframe.
- **Postpartum care cost**: Postpartum care costs have been rising over time, both per visit and overall, with significant disparities by race and age. Costs per visit range from $150 to $250 across racial groups, with costs per visit for AI/AN and NH/PI women consistently exceeding $200. Total postpartum care costs appeared higher for Black women and teen mothers.
- **Cost by insurance coverage**: Medicaid paid about $5.7 million more and $4.7 million more than commercial insurance in 2017 and 2021, respectively. Additionally, for those covered by Medicaid, the total cost of postpartum care per pregnancy has increased over time.

Recommendations

1. Enhance access to quality prenatal, labor, and postpartum care and measure quality of care.
2. Advance health equity by fostering partnerships with Black, Indigenous, and People of Color (BIPOC) and supporting community-led interventions.
3. Promote women's health across the life course, integrating preventive and continuity of care.
4. Invest in data integration, with a focus on community-level and disaggregated race/ethnicity data.
5. Support women's choice of birth settings with appropriate support structures.

Conclusions

The results indicate that the state birth rate is declining, and there are persistent disparities in health care access and costs by race/ethnicity, age, and education, reflecting structural inequities in the state. These disparities, particularly among BIPOC and low socioeconomic communities, underscore the need for urgent, focused interventions that eliminate institutionalized and structural racism as well as address health care access and affordability. Addressing them requires enhancing access to quality maternal health services, empowering and building power-sharing relationships with BIPOC communities, investing in better access to linked statewide data, collecting community-level and disaggregated race/ethnicity data, and promoting women's health across the lifespan. While better data can help us understand disparities, the focus must be on changing the persistent patterns of inequity through concerted efforts at individual, community, institutional, and policy levels.

CHAPTER 1: INTRODUCTION

In recent years, women have faced increasing challenges and barriers to reproductive and sexual health care that have repercussions across a woman's lifespan. Women's health is important. It influences their capacity to take care of themselves and their families, contribute to their communities, participate in the workforce, and build economic security for their households. For women, the barriers to accessing health care create wide disparities by race, education, income, and employment and perpetuate challenges in improving and maintaining health. Women in low-income households who have complex medical conditions or face structural and institutional racism and discrimination experience greater challenges to accessing health care than those who do not experience these barriers.

Family planning, pregnancy, and childbirth are some of the main reasons reproductive-aged women (15 to 49 years) access and use health and hospital care. In 2023, there were 1,833,265 women reproductive-aged women in Washington and 79,403 births (Birth Data File Technical Notes 2024) among Washington residents. Medicaid covers about 4 out of 10 births each year.

There has been growing attention to pregnancy-related quality of care and maternal health. Maternal and infant mortality rates in the U.S. are higher than those in similarly large and developed countries (2–4). Women of color are at a higher risk for poor maternal and infant health outcomes compared to White women (5–7). While Washington has a lower pregnancy-related mortality rate than the national rate, it is characterized by stark racial disparities reflecting what is observed at the national level (5,8).

The observed racial and ethnic disparities in health and health care reflect structural inequities in the U.S. These disparities are caused by social and economic inequities that are rooted in historical and ongoing racism and discrimination (9,10). The social and economic inequities for maternal and child health are interwoven with the structural determinants of health, such as education, income, access to quality housing and health care, food stability, and personal and community safety. All these can promote or prevent maternal well-being and are usually influenced by local, state, and federal policies. These factors are compounded by poor communication and mistreatment in the health care setting necessitating the training of health care providers in structural racism, health equity, and cultural safety (11,12).

This report is divided into three sections that describe trends in the characteristics of Washington state pregnant women, their utilization of services, and costs of services paid by birth payer during the perinatal period, which includes prenatal (time before the birth), labor and delivery, and postpartum (time after the birth) period. The results of the analyses identify disparities in accessing health care and guide recommendations for how we can eliminate these disparities.

While fertility treatments, abortion services, and maternal and infant mortality are important topics with many recent national interests focused on them – they are out of scope for this report.

CHAPTER 2: METHODS

Population

This report focused on all pregnancies of residents of Washington that resulted in singleton live births in the state because almost all (97%) of in-state births are singleton. Keeping to this fact, we excluded pregnancies resulting in multiple births, pregnancies that resulted in stillbirth, out-of-state Washington resident births, or live births from nonresidents. We recognize the full diversity of gender identity, and we use the term "women" to refer to "all individuals who identify as women, including cisgender, transgender, and gender-diverse women," as is used by the National Institutes of Health, Office of Research on Women's Health (1).

Data sources

We used data from several sources that recorded births, prenatal care, labor and delivery, and postpartum information and costs. These sources include:

1) Birth certificate data (WA-birth certificate data) (13)

Birth certificate data captures demographic and medical information for all births in WA. These data are collected from various sources, including the mother, medical records, and the clinician. Methods used to collect this information, along with follow-up to collect missing information, vary by birthing facility. Information for all singleton live-born births to mothers who were residents of Washington from 2010 through 2022 were included in the analyses for the prenatal and delivery periods.

2) Washington All-Payer Health Care Claims Database (WA-APCD) (14)

The WA-APCD includes medical, pharmacy, and dental claims from public and commercial payers including Medicaid, Medicare, Public Employees and School Benefits Board, and other commercial plans (group and individual markets). This database does not include claims from the Veterans Administration or all self-funded commercial plans. The cost information in this report was derived from the amount paid by insurers in each claim.

Demographic information for mothers who resided and delivered in Washington state from 2017 through 2021 was included in the analyses. To assess costs, we constructed a cohort of women who gave birth during this period and reviewed their prenatal and postpartum care utilization. The prenatal cohort included a one-year period prior to childbirth for singleton live births. The postpartum cohort was designed to include the 90-day period following childbirth discharge for singleton live births, in alignment with the American College of Obstetricians and Gynecologists (ACOG) recommended timeframe for postpartum care and the transition to well-woman care. Only postpartum care visits within the 2017-2021 timeframe were considered in this analysis.

To estimate the costs of services during the prenatal, delivery, and postpartum care periods from 2017-2021, we adjusted all costs according to the medical consumer price index for 2023 (the most recent available at the time of writing this report) to reflect amounts paid equivalent to the value of the dollar in 2023 (Bureau of Labor Statistics).

Maternal sociodemographic variable

Race is not collected consistently across data sources and some results may not be presented by race. Birth data include the following categories of maternal race: American Indian/Alaska Native (AI/AN), Asian, Black, Native Hawaiian or Pacific Islander (NH/PI), Mexican/Chicano/Hispanic, and White. However, the APCD data does not include the Mexican/Chicano/Hispanic race classification. The race categories used in the analyses include both Hispanic and non-Hispanic ethnicity. Maternal age in years was categorized as under 18, 18-24, 25-34, and 35-49. Mothers aged 50 and above were excluded from the analyses. Educational attainment was categorized as less than high school, high school or GED, some college, associate degree, bachelor's degree, and graduate or professional degree. We only included Medicaid and commercial insurance payers in this report. Medicare results were excluded due to extremely small sample sizes.

Analyses

We conducted the analyses using R statistical software v 4.2.3 (packages- dplyr and ggplot2). We present trends for maternal sociodemographic variables and maternal health service utilization. Distribution of maternal health service utilization, prenatal care, delivery, and postpartum care were shown by maternal race, age, educational attainment, and payer type. The average cost per prenatal or postpartum care visit was determined by adding the bundle cost of each visit and dividing it by the number of visits. The grey shaded area in each figure beginning in 2020 through 2022 denotes the COVID-19 pandemic period for which health care access and utilization may not reflect normal behavior outside of the public health emergency.

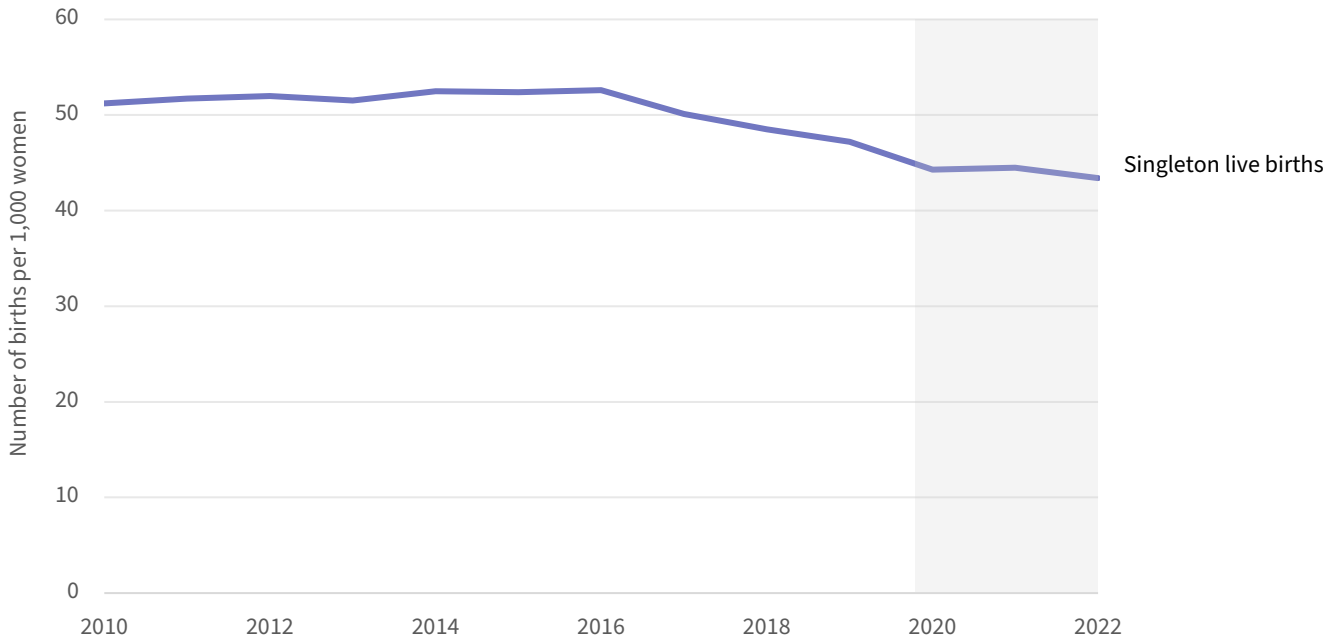
CHAPTER 3: RESULTS

I. Birth population demographics and geography

In this section, we provide the overall characteristics of pregnant women from 2010 to 2022. These results provide an understanding of the overall context of the birthing population and the declines seen during this period.

The total number of all live births (singleton and multiple births) in Washington ranged from 84,965 in 2010 to 81,346 in 2022. There were 82,200 and 78,900 singleton live births in 2010 and 2022, respectively, with a decline of 4% over this period. The highest number for all births (88,719) was recorded in 2016, while the highest number of singleton live births was 80,812 in 2016. The birth rate has declined by approximately 17%, from 51 births per 1,000 women in 2010 to 43 births per 1,000 women in 2022 (Figure 1.1). This mirrors the national trend where a drop of 10% in birth rate was reported between 2016 and 2022 (15).

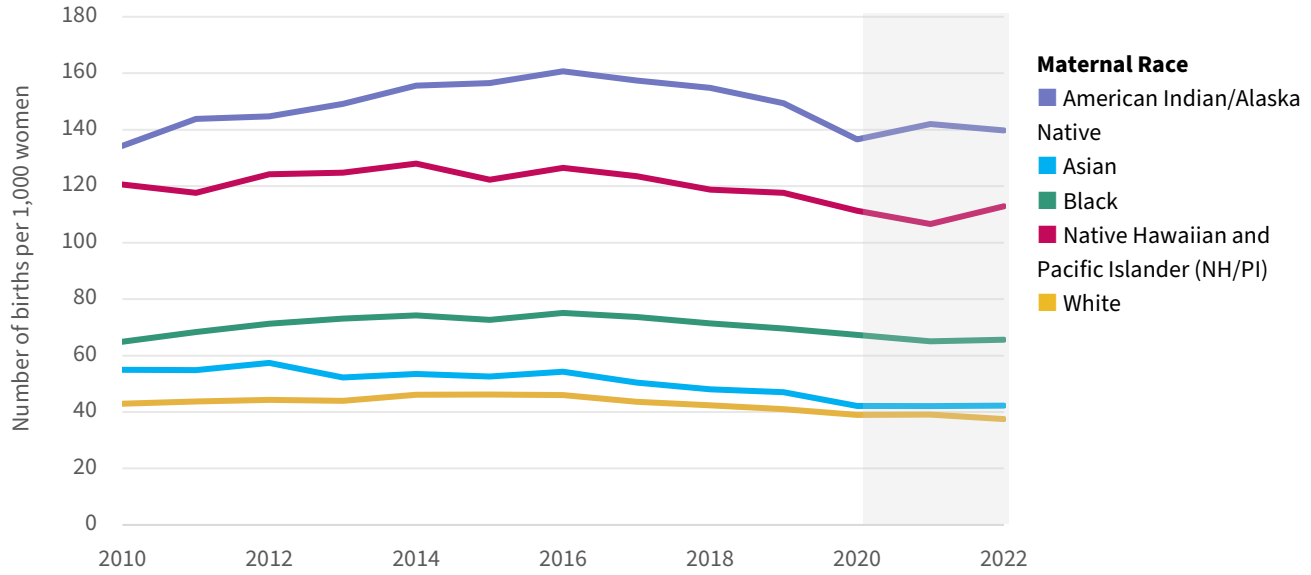
Figure 1.1: Number of singleton live births per 1,000 women, Washington state, 2010-2022



Data source: WA-birth certificate data

Singleton live birth rates were highest among AI/AN women between 134.3 births per 1,000 in 2010 and 139.9 per 1,000 in 2022 (Figure 1.2). This was followed by NH/PI, Black, Asian, and White. The birth rates for all race groups increased from 2010 to 2016 and declined after 2016.

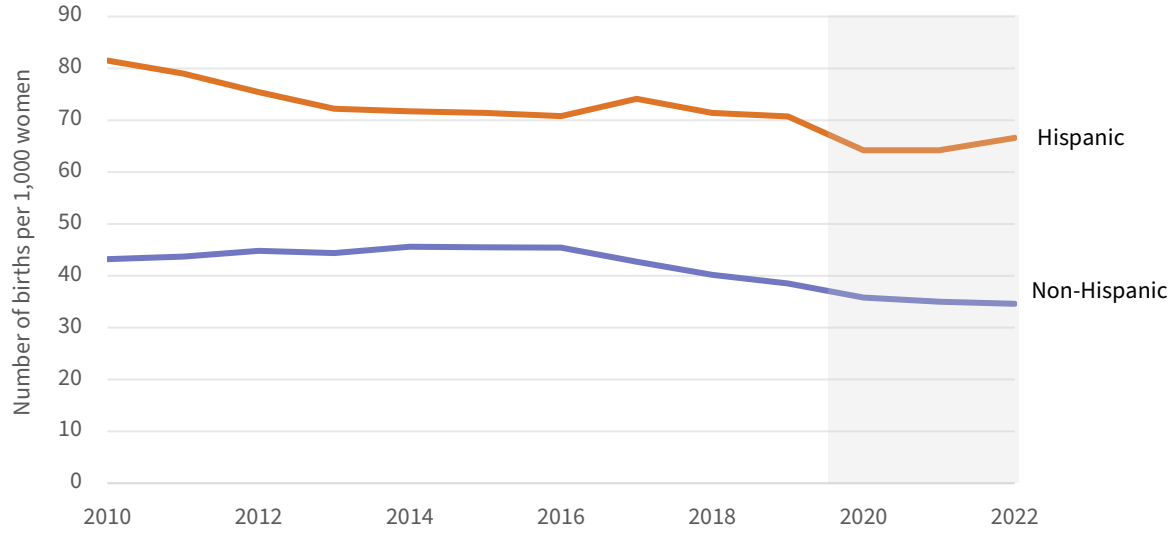
Figure 1.2 Number of singleton live births per 1,000 women by race/ethnicity, Washington state, 2010-2022



Data source: WA-birth certificate data

When we examined birth rate by ethnicity, the birth rate for Hispanic women was consistently higher than the birth rate of non-Hispanic women, but the trend decreased for both over time (Figure 1.3). This birth rate for Hispanic women declined by about 18%, from 81.5 births per 1,000 in 2010 to 66.6 births per 1,000 in 2022. The birth rate for non-Hispanic women declined by 10%, from 43.2 births per 1,000 in 2010 to 34.6 births per 1,000 in 2022 (Figure 1.3).

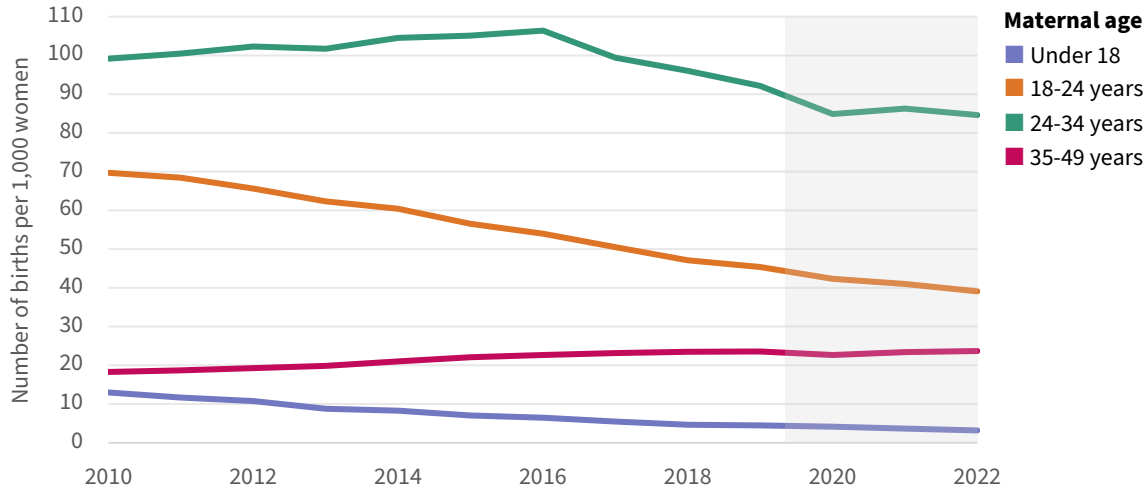
Figure 1.3 Number of singleton live births per 1,000 by Hispanic ethnicity, Washington state, 2010-2022



Data source: WA-birth certificate data

Overall, there were significant declines in birth rates from 2010 to 2022 among younger reproductive age groups (under 35 years old); however, there was a 30% increase in births for women 35 and over (Figure 1.4). These trends mirror the national trends for age-specific birth rates (15).

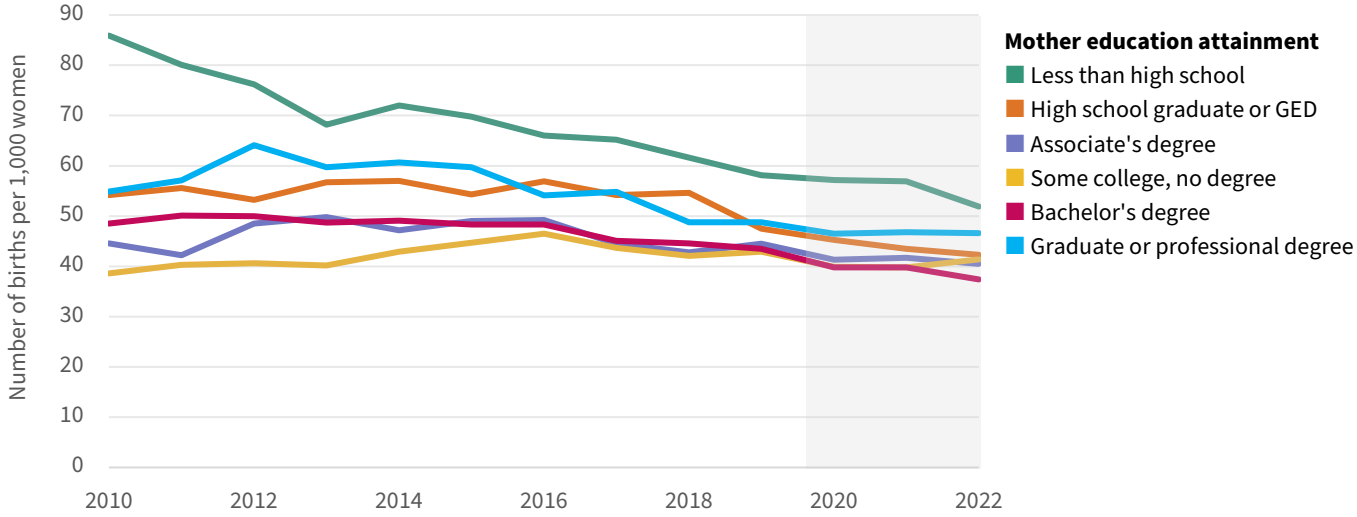
Figure 1.4 Number of singleton live births per 1,000 women by age, Washington state, 2010-2022



Data source: WA-birth certificate data

While there are declines in birth rates among women at all education attainment levels, the steepest decline was among those with less than high school education attainment (Figure 1.5). The birth rate for this group dropped from 85.9 births per 1,000 in 2010 to 51.9 births per 1,000 in 2022, resulting in about a 40% percent change. Delays in childbearing may be a result of economic forces, such as the continuing rise in costs to raise and care for a child and personal choice.

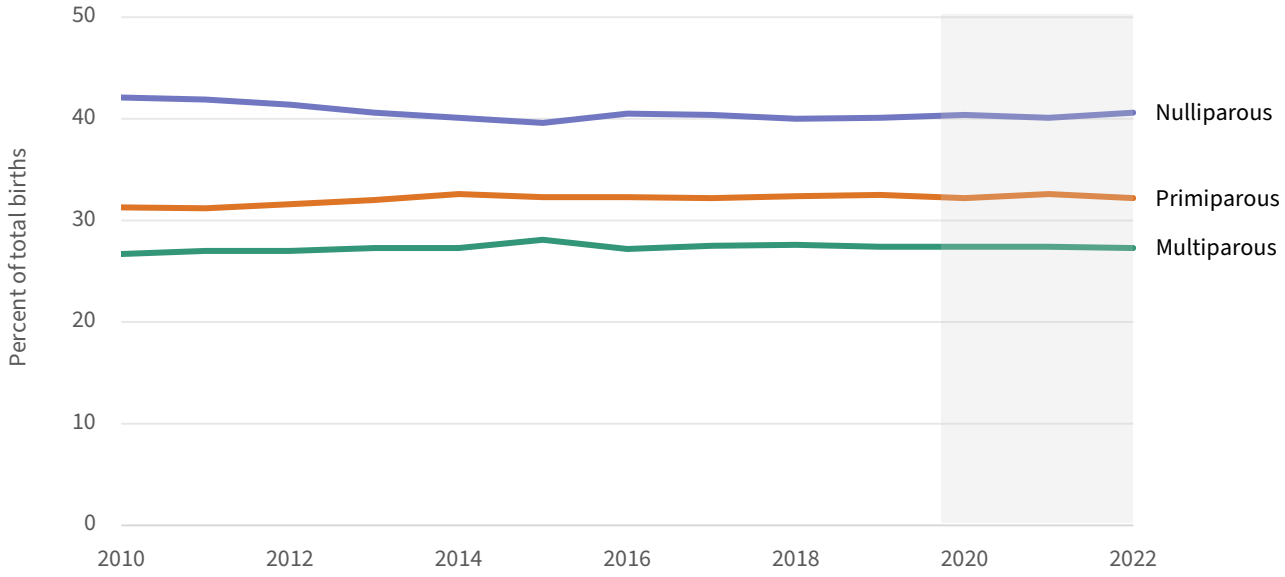
Figure 1.5 Number of singleton live births per 1,000 women by education attainment, Washington state, 2010-2022



Data source: WA-birth certificate data

Parity refers to the number of live births. From 2010-2022, between 41% and 42% of singleton live births in Washington were from women who have not given birth to a live infant – individuals who are considered nulliparous. This was followed by individuals who have had one live birth (primiparous) and individuals who have had more than one live birth (multiparous) (Figure 1.6).

Figure 1.6 Percent of total singleton live births by parity, Washington 2010-2022



Data source: WA-birth certificate data

Figures 1.7 a-c show the singleton live birth rate per 1,000 women by county. Chelan, Adams, and Benton Counties have consistently had the highest birth rates in 2010, 2016, and 2022. Adams County had the highest birth rate in 2010 at 139.7 per 1,000 women. Benton County had the highest birth rate in 2016 and 2022 at 109.3 and 89.2 births per 1,000 women, respectively. Benton County is not considered rural, while Adams and Chelan counties are considered rural frontier counties based on total population size (16).

Figure 1.7a Number of singleton live births per 1,000 women by county, Washington state, 2010

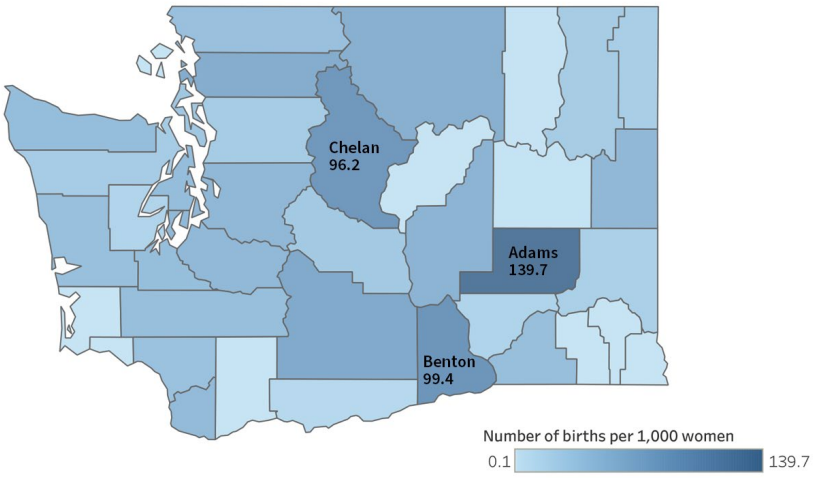


Figure 1.7b Number of singleton live births per 1,000 women by county, Washington state, 2016

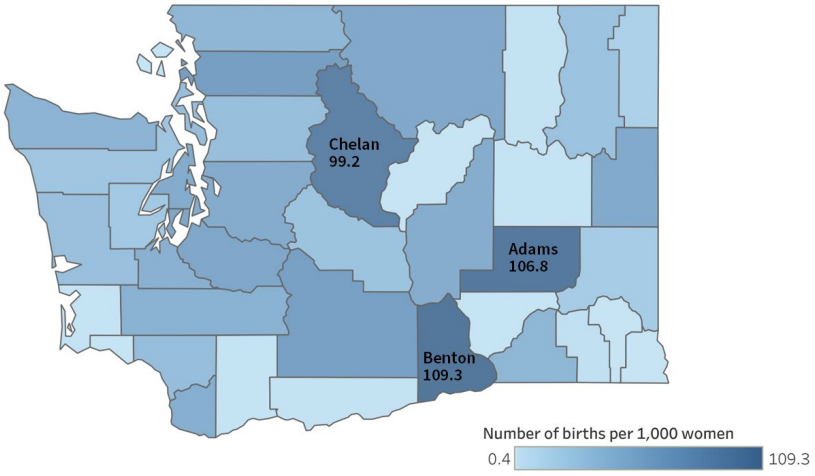
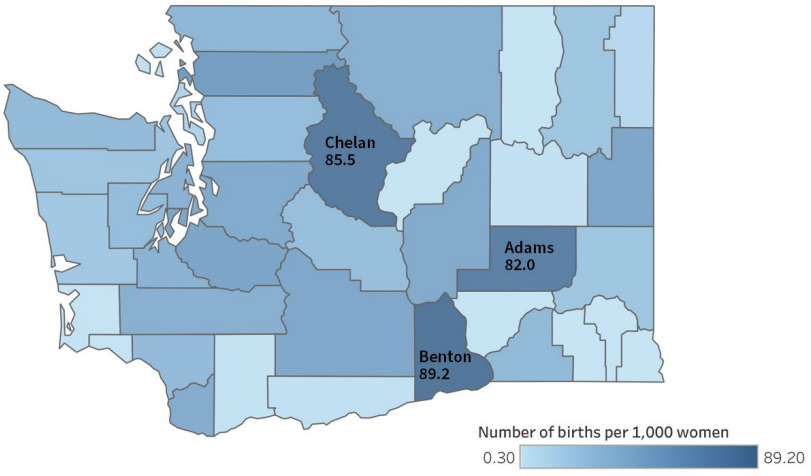


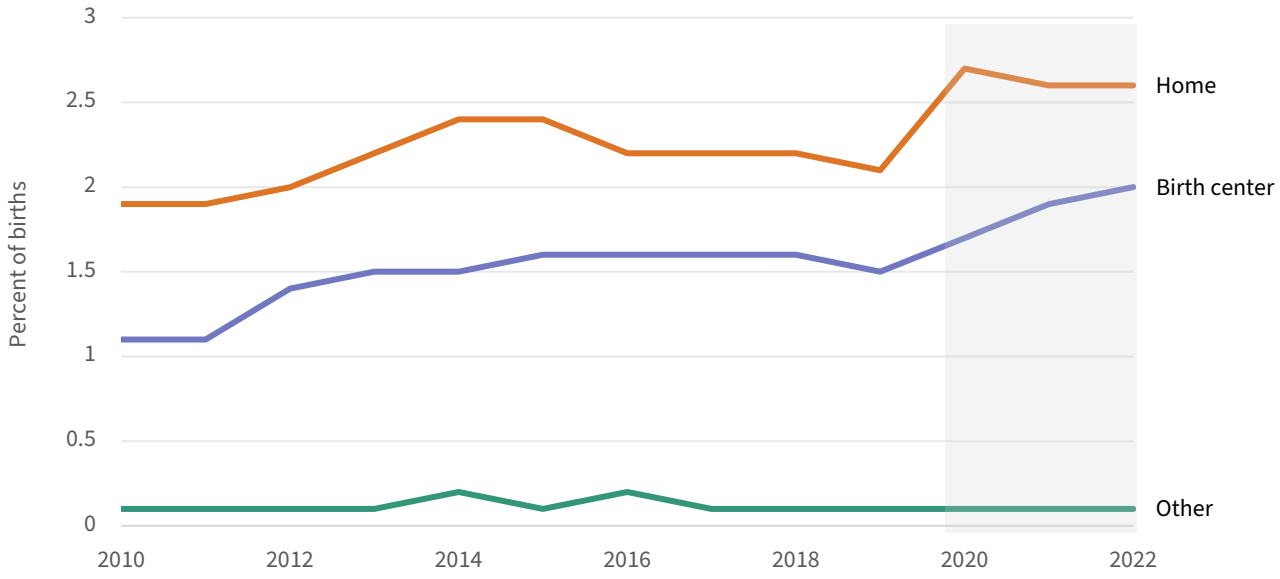
Figure 1.7c Number of singleton live births per 1,000 women by county, Washington state, 2022



Data source: WA-birth certificate data

More than 95% of births in Washington occur in hospitals. While the percentage of births occurring in birth centers (between 1.9% and 2.6%) and in the home environment (between 1% and 2.1%) is low from 2010 to 2022, there is a slight increasing trend, particularly during the pandemic years (Figure 1.8).

Figure 1.8 Singleton live births at a birth center or home, Washington 2010-2022



Data source: WA-birth certificate data

Summary

The birth rate in Washington is declining as it is nationally. We are especially seeing declines among women between the ages of 18-34 years, who represent the largest group among those who are pregnant. There is an increasing trend of delaying childbirth, which is reflected in an increasing birth rate among women between 35 and 49 years old who may need more access to care due to higher risks associated with their pregnancies (also referred to as women with advanced maternal age). Birth rate differences by race, ethnicity, and geographic location in Washington are evident. During the pandemic, births outside hospitals, at home, and in birth centers slightly increased but still remained at less than 5% of all singleton births. It will take a few years to determine if this is the start of a new trend.

II. Prenatal Care

Women who receive early, consistent, and comprehensive prenatal care that includes preventive screenings are more likely to experience healthy pregnancies and positive birth outcomes (2). The goal of prenatal care is to optimize maternal health, promote fetal development, and minimize complications associated with pregnancy (17). It encompasses a range of services including examinations, lab tests, imaging, screenings, and counseling (18). Prenatal care visits are critical for identifying risk factors and alleviating the impact of these risk factors on maternal morbidity and mortality and poor infant health outcomes.

a. Any prenatal care

Between 2017 and 2021, more than 98% of all women in Washington who had singleton live births had at least one prenatal care visit. There were no meaningful differences across maternal age, race, or insurance type, with high proportions of women having at least one prenatal care visit, ranging from 96% to around 99%.

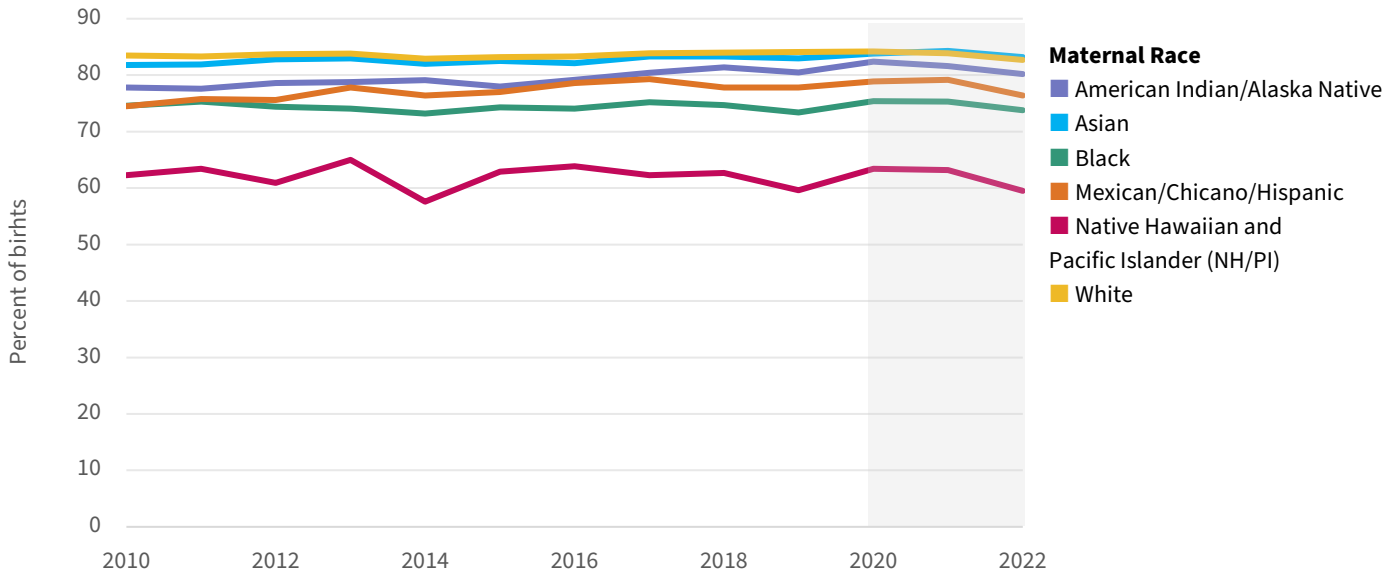
b. Timely initiation of prenatal care

Timely initiation of prenatal care is defined as initiation of prenatal care within the first trimester (3 months) of pregnancy. The first prenatal appointment generally occurs sometime between eight weeks and 10 weeks after the first day of the last menstrual period (19). Since 2010, over 80% of pregnant women with singleton live births commenced prenatal care during the first trimester each year. This is better than the national average of around 77% (15).

When we consider the timing of prenatal care by maternal ethnicity, early initiation of prenatal care is consistently lower for women of Hispanic ethnicity (76% in 2010, 77% in 2022) compared with those of non-Hispanic ethnicity (83% in 2010, 82% in 2022). Data not shown.

Disparities also exist by maternal race, with more than 80% of White and Asian women initiating prenatal care during the first trimester, but less than 65% of NH/PI women and less than 75% of Black women initiating prenatal care in the first trimester (Figure 2.1). These trends are reflective of the national-level trends (15,20).

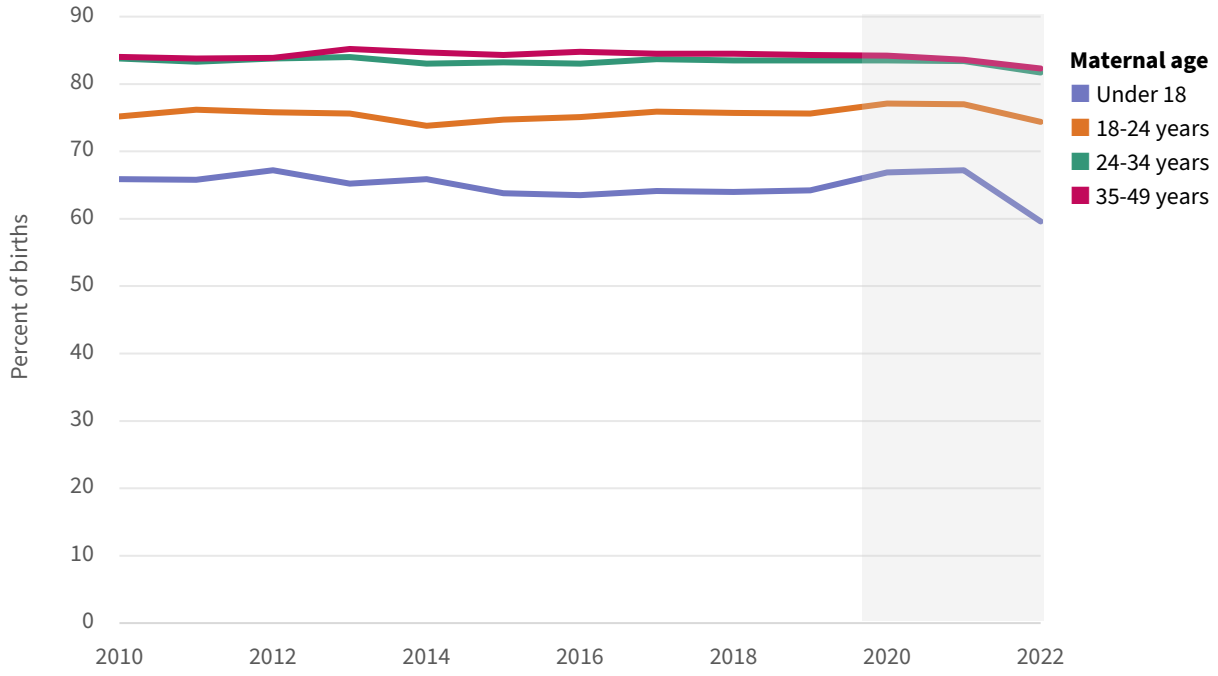
Figure 2.1 Prenatal care initiation in the first trimester by maternal race, Washington state, 2010-2022



Data source: WA-birth certificate data

An apparent disparity is also evident in the early initiation of prenatal care based on maternal age. Pregnant women aged 25 and older were more likely to initiate prenatal care during the first trimester of pregnancy. Approximately 85% of pregnant women in this age group commenced prenatal care during the first trimester. In contrast, less than 70% of pregnant women under age 18 years and around 75% of those aged 18-24 initiated prenatal care during the first trimester (Figure 2.2). These trends also reflect the national-level trends (15,20).

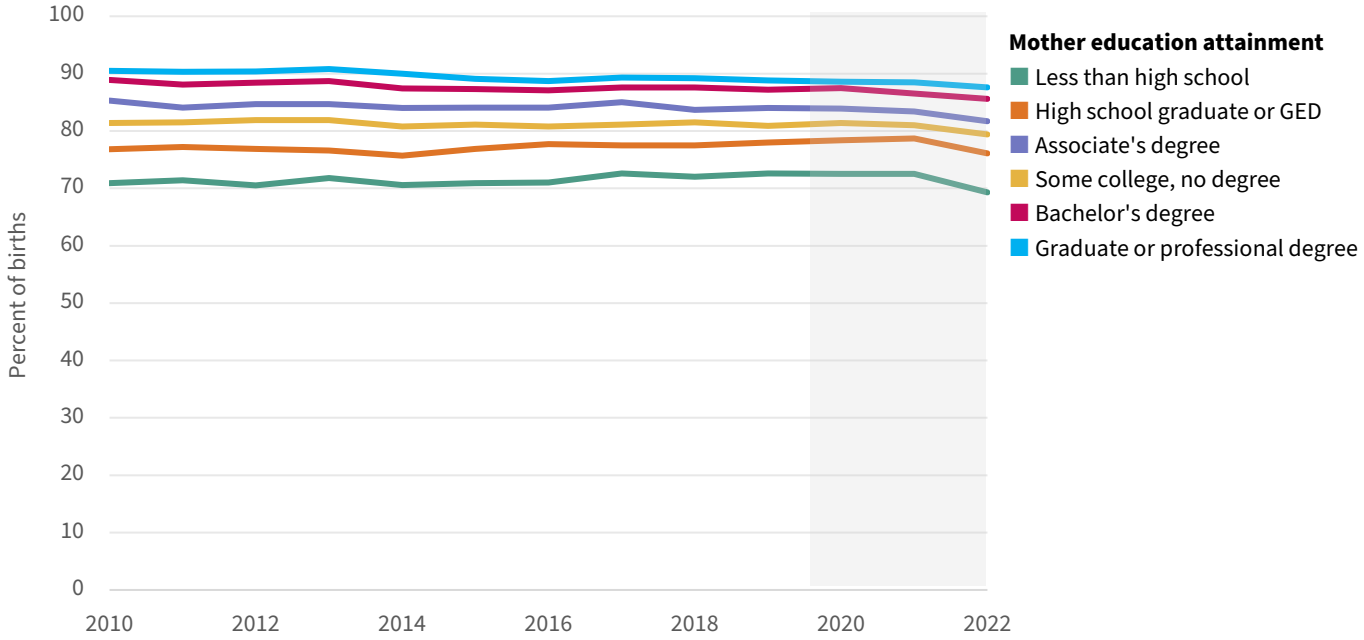
Figure 2.2 Prenatal care initiation in the first trimester by maternal age, Washington state, 2010-2022



Data source: WA-birth certificate data

Similarly, there are disparities in the initiation of first-trimester prenatal care based on maternal educational status. The likelihood of initiating prenatal care during the first trimester increases with higher maternal educational attainment. Approximately 85% - 90% of pregnant women with graduate or professional degrees initiated prenatal care within the first trimester, whereas fewer than 75% of mothers with less than a high school education started prenatal care within the same timeframe (Figure 2.3). Again, Washington's trends appear similar to the national landscape (20).

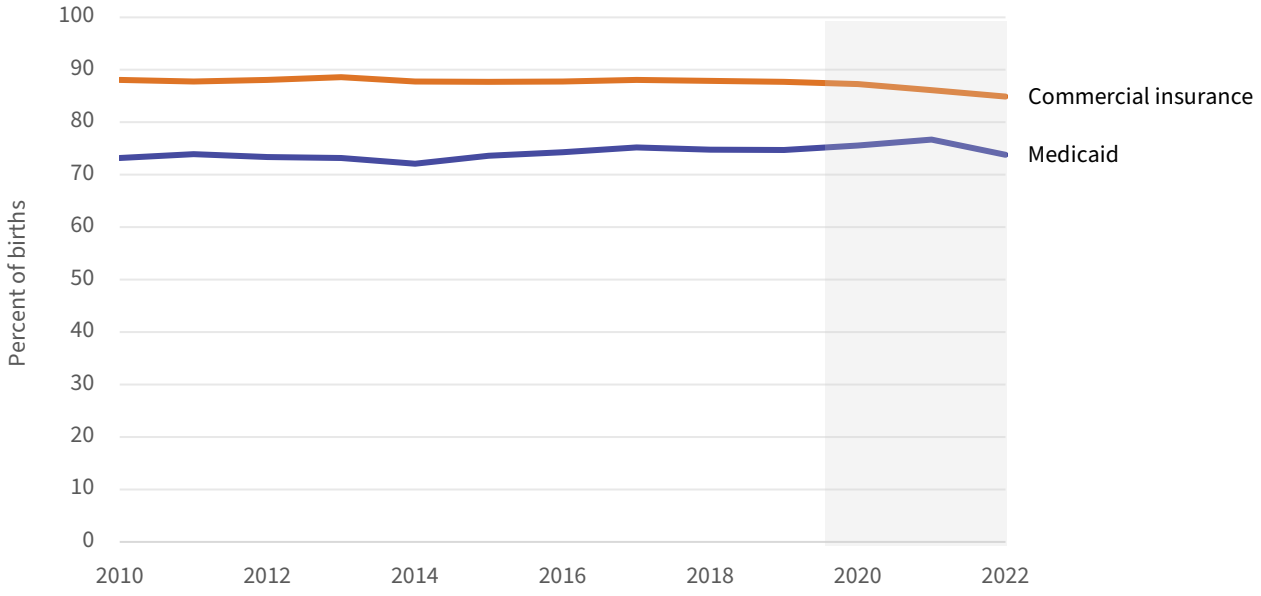
Figure 2.3 Prenatal care initiation in the first trimester by maternal education attainment, Washington state, 2010-2022



Data source: WA-birth certificate data

Disparities in the timely initiation of prenatal care were observed based on the type of insurance coverage. Every year since 2010, over 85% of pregnant women with commercial insurance initiated prenatal care in the first trimester. In contrast, only about 75% of women with Medicaid coverage did so during the same period (Figure 2.4). These trends reflect the national landscape (20).

Figure 2.4 Prenatal care initiation in the first trimester by birth payer, Washington state, 2010-2022



Data source: WA-birth certificate data

c. Adequacy of prenatal care utilization

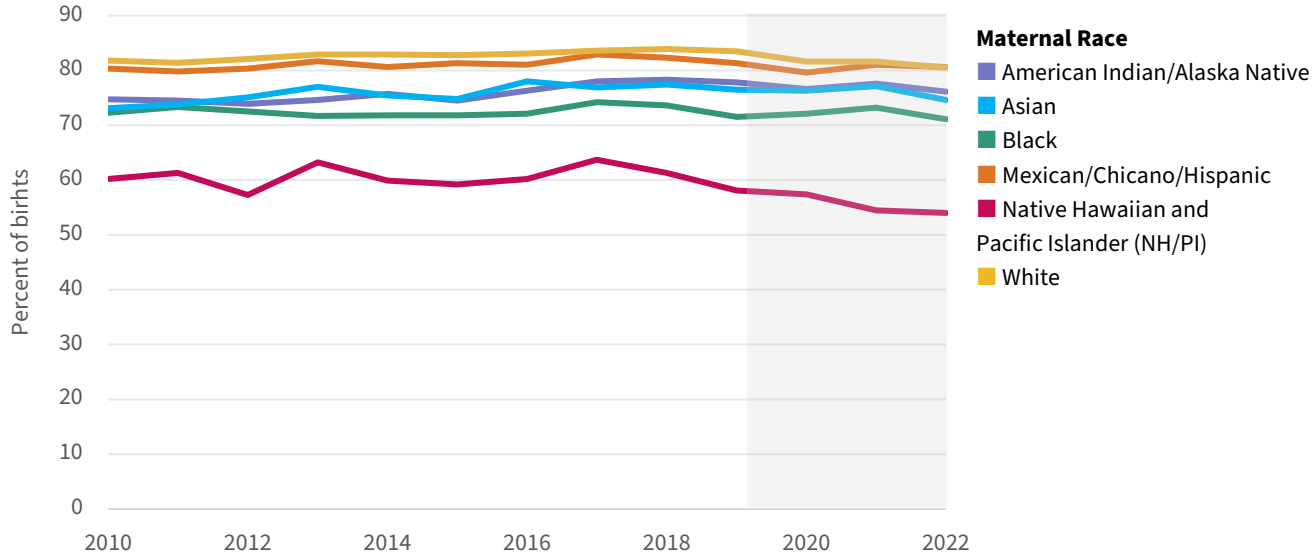
The Adequate Prenatal Care Utilization (APNCU) Index measures prenatal care based on the timing of the initiation of care and the number of visits, accounting for gestational age (21). The adequacy of prenatal care is assessed by comparing the actual number of prenatal visits a mother attends to the number expected at a specific gestational age during pregnancy, as recommended by ACOG (22). Inadequate prenatal care is defined as care that begins *after* the fourth month of pregnancy or includes fewer than 50% of the recommended number of visits. Intermediate care is defined as encompassing 50%–79% of the recommended visits. Adequate care includes 80%–109% of the recommended visits, and adequate plus care consists of 110% or more of the recommended visits. We categorize prenatal care as "at least adequate" or adequate prenatal care when the APNCU falls within the adequate or adequate plus category and inadequate when the APNCU falls within the inadequate or intermediate category (20–22). The distribution of adequacy of prenatal care is shown by maternal race, age, educational attainment, and insurance type to highlight disparities.

Each year from 2010 through 2022, about 75-85% of pregnant women in Washington state received at least adequate prenatal care. Specifically, about 65-70% of these women received adequate-plus prenatal care, while approximately 10-15% received adequate care. About 22% of women received inadequate prenatal care. This aligns with national trends, although Washington reports a higher prevalence of adequate-plus prenatal care usage at 65-70%, compared to the national average of 34.7% (20–22).

Disparity exists in APNCU by maternal race (Figure 2.5). Since 2010, more than 80% of White pregnant women have consistently had adequate or adequate-plus prenatal care utilization, whereas less than 65% of NH/PI women had the same level of prenatal care utilization during the same period. A similar pattern was observed in 2016 when 81% of White women received adequate prenatal care utilization and only 60% of NH/PI women had the same level of care. NH/PI women have a disproportionately lower percentage in APNCU (60% in 2010 and 54% in 2022) among all racial groups. Between 70% and 75% of Black mothers had adequate prenatal care from 2010 through 2022. Since 2010, about 75% of AI/AN women have adequate prenatal care utilization. Across race groups, NH/PI women represent the highest percentage with inadequate prenatal care utilization, followed by Black and AI/AN women (Table 1).

When we examined APNCU by maternal ethnicity between 2010 and 2022, a higher percentage of non-Hispanic women (81% in 2010, 79% in 2022) had adequate prenatal care compared with those of Hispanic ethnicity (74% in 2010, 75% in 2022).

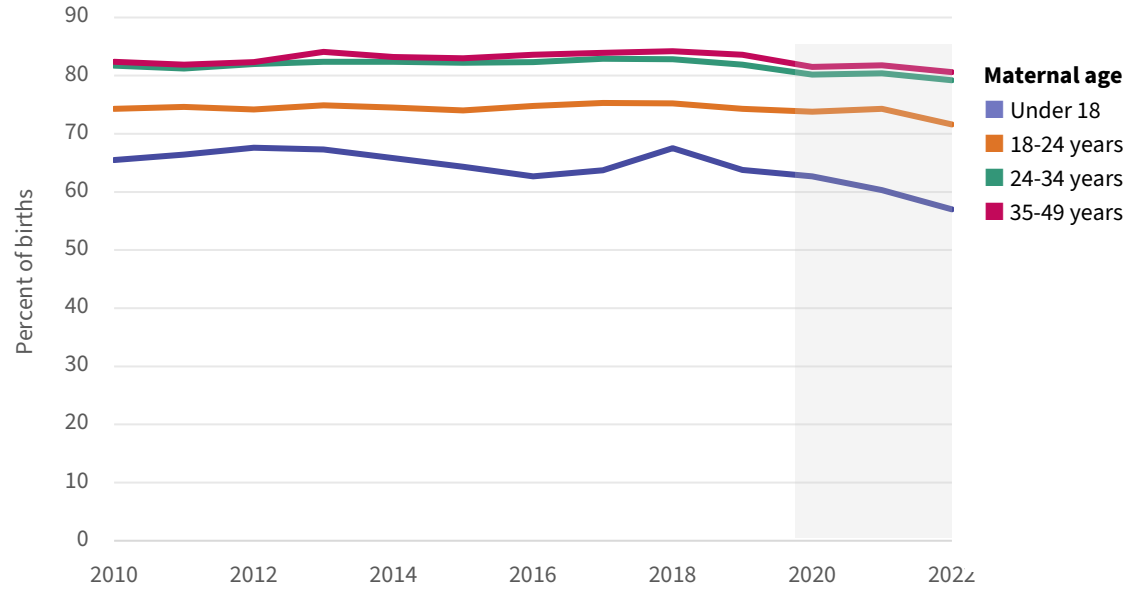
Figure 2.5 Adequacy of prenatal care utilization by maternal race, Washington state, 2010-2022



Data source: WA-birth certificate data

Adequacy of prenatal care utilization varied by maternal age. Since 2010, older women (above 25 years of age) have consistently demonstrated higher rates (80% or more) of adequate prenatal care utilization compared to women under 25 years of age (less than 75%). Notably, pregnant women under 18 years old are the least likely to receive adequate prenatal care, followed by women aged 18 to 24 years (Figure 2.6 and Table 1). These trends are reflected at the national level, where more than three out of four pregnant women (76%–80%) aged 25 and over had adequate prenatal care compared with one in five to one in three pregnant women under 25 years who had adequate prenatal care utilization in 2016 (20).

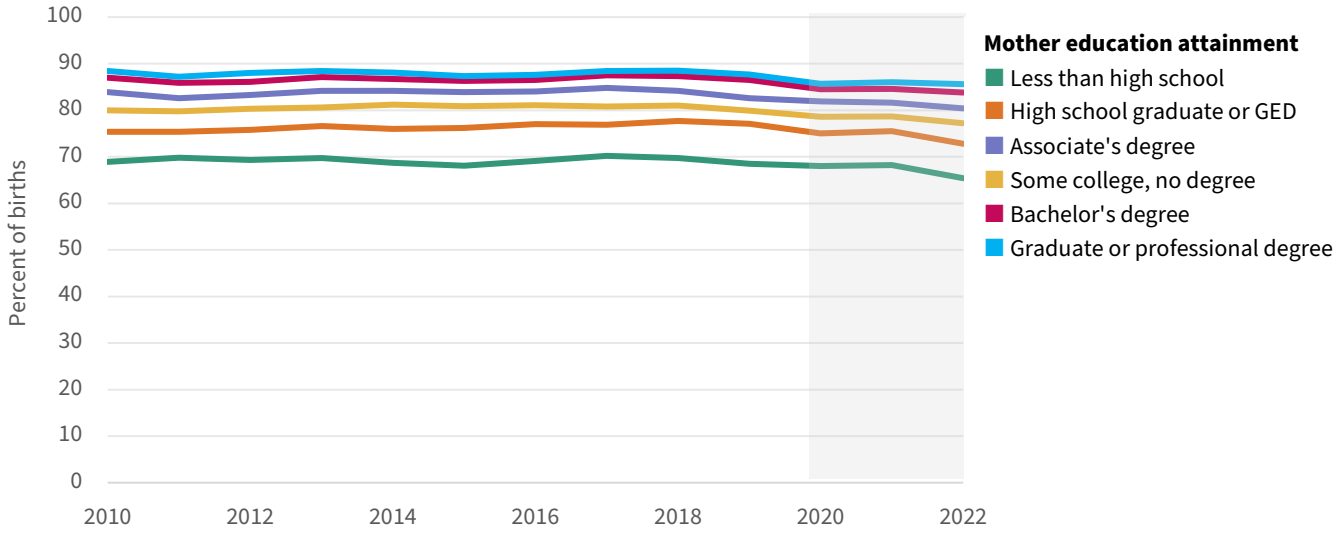
Figure 2.6 Adequacy of prenatal care utilization by maternal age, Washington state, 2010-2022



Data source: WA-birth certificate data

Adequacy of prenatal care utilization in Washington varied based on maternal educational attainment. Since 2010, women with higher educational attainment consistently exhibit higher rates of adequate prenatal care utilization compared to those with lower educational attainment. Specifically, approximately 85% of women with graduate or professional degrees and over 80% of women with bachelor's degrees have received adequate prenatal care. Conversely, women who have attained less than a high school education demonstrated the lowest likelihood of receiving adequate prenatal care, less than 70% (Figure 2.7 and Table 1). This trend mirrors the national rate observed in 2016, wherein 84% of women with a bachelor's degree or higher received at least adequate prenatal care, in contrast to 63% of women with less than a high school education (Figure 2.7) (20).

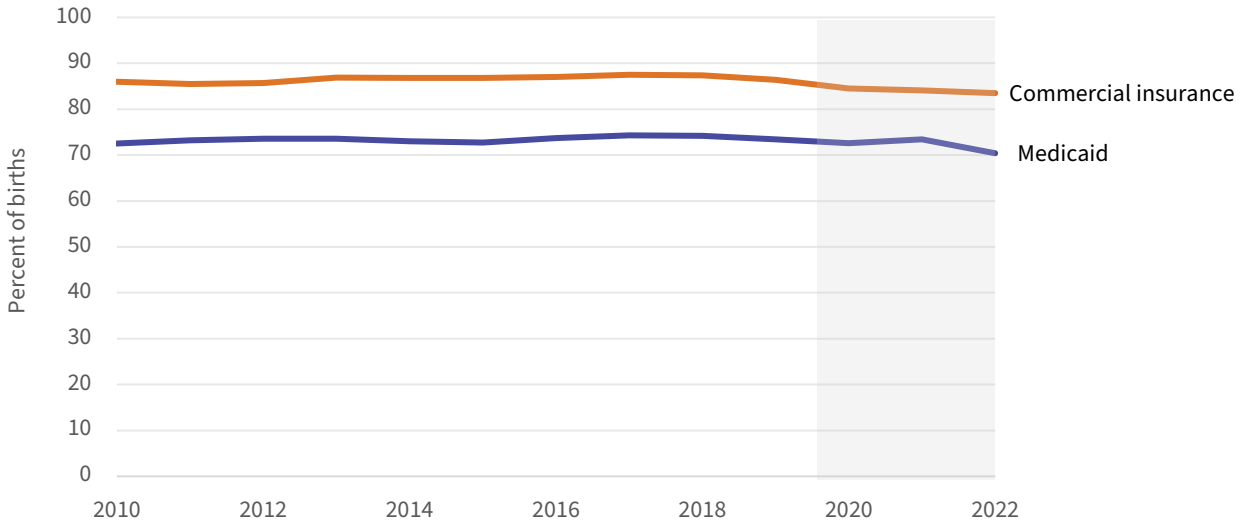
Figure 2.7 Adequacy of prenatal care utilization by maternal education attainment, Washington state, 2010-2022



Data source: WA-birth certificate data

Adequacy of prenatal care utilization also varied by type of health insurance payer. Since 2010, pregnant women with commercial insurance have consistently demonstrated higher rates of adequate prenatal care utilization compared to those with Medicaid coverage. Specifically, more than 85% of women with commercial insurance receive adequate prenatal care each year, whereas less than 75% of women with Medicaid coverage have adequate prenatal care utilization (Figure 2.8 and Table 1). This disparity reflects the national trend observed in 2016, where 84% of women with commercial insurance received at least adequate prenatal care compared to 69% of women with Medicaid insurance (Figure 2.8) (20).

Figure 2.8 Adequacy of prenatal care by birth payer, Washington state, 2010-2022



Data source: WA-birth certificate data

Women who are NH/PI, under 18 years of age, have less than a high school education, or with Medicaid insurance coverage, experience a high level of inadequate prenatal care utilization (Table 1).

Table 1 Adequate vs inadequate prenatal care utilization

Characteristic	Adequate (%)		Inadequate (%)	
	2010	2022	2010	2022
Race				
American Indian/Alaska Native	75	76	25	24
Asian	80	81	20	19
Black	72	71	28	29
Mexican/Chicano/Hispanic	73	75	27	25
Native Hawaiian and Pacific Islander	60	54	40	46
White	82	80	18	20
Age (years)				
Under 18	66	57	34	43
18 – 24	74	72	26	28
25 – 34	82	79	18	21
35 - 49	82	81	18	19
Education attainment				
Less than high school	69	65	31	35
High school graduate	75	73	25	27

Table 1 Adequate vs inadequate prenatal care utilization (continued)

Characteristic	Adequate (%)		Inadequate (%)	
Some college, no degree	80	77	20	23
Associate's degree	84	80	16	20
Bachelor's degree	87	84	13	16
Graduate or professional degree	88	86	12	14
Birth payer				
Medicaid	72	70	28	30
Commercial insurance	86	83	14	17

Data source: WA-birth certificate data

Discussion and Conclusion for Prenatal Care Utilization

We demonstrate the persistent differences in the timing of prenatal care initiation and adequacy of prenatal care by race. NH/PI women consistently had the lowest percentages in first-trimester initiation of prenatal care and adequacy of prenatal care utilization. This was followed by Black women. Evidence indicates that disparities in prenatal care are associated with institutional barriers such as implicit bias and racism (23–25) and structural barriers including availability, cost, and language (26). In Washington, 89.8% of the NH/PI community has lower rates of health insurance coverage compared with other racial groups (27), with those from the Marshallese group having the lowest rate of coverage (79.6%) among the NH/PI community (27). There is a possibility that women from the Republic of the Marshall Islands, the Federated State of Micronesia, and the Republic of Palau may be unfamiliar with the Compact of Free Association (COFA) Islander programs that provide health and dental coverage for eligible COFA islanders [1] (information provided by Dr. Robin Narruhn, September 20, 2024). In addition, there may be inadequate knowledge of health care access or distrust of the health care system in the Marshallese community (information provided by Dr. Robin Narruhn, September 20, 2024). A study examining perceived barriers to prenatal care for one NH/PI community in Arkansas found transportation and lack of health insurance prevented women from accessing prenatal care (28). Additionally, a recent qualitative study of NH/PI women's experiences during the prenatal period revealed that microaggressions, such as dismissiveness toward their physical experiences and birth plans and feeling "lost and undereducated about prenatal care and birth," led NH/PI to avoid their care providers (29).

Implicit bias and racism in health care can discourage Black women from seeking prenatal care, creating an "unsafe" environment that exacerbates disparities in maternal morbidity and mortality regardless of their socioeconomic status (30,31). Black patients were 2.54 times more likely than White patients to have at least one negative descriptor (e.g., "resistant" or "non-compliant") in their electronic health records. Black women insured by Medicaid experience barriers to engaging in early prenatal care, obtaining adequate support, and effectively communicating with their health care providers (32). Additionally, there is often a lack of coordination between clinical and community-based services, making it challenging to access prenatal care for women with multiple health conditions and those living in difficult life circumstances.

[1] COFA Islander programs | Washington State Health Care Authority

Hence, Medicaid-insured Black women struggle to access pregnancy-related services across clinical and community settings, putting them at a disadvantage in receiving quality care. Another study found that Black women who self-pay for delivery are also among the least likely to receive prenatal care in the first trimester, with only 50.8% doing so (33). Although insurance coverage is critical to ensuring prenatal care utilization, it is not a guarantee for favorable birth outcomes (33).

Hispanic women also experience challenges initiating prenatal care in the first trimester. The challenges include lack of health care coverage due to immigrant status, prenatal care literacy, transportation, inadequate interpretation services, mental health distress, and the complexity of the Medicaid application (34). Social support, connectedness, appropriate interpretation services, language-concordant providers, empathetic non-verbal communication, access to prenatal care, and pregnancy prevention education facilitate first-trimester prenatal care and prenatal care utilization (34).

We found that women under 18 years old and those with less than high school educational attainment were more likely to enter prenatal care after the first trimester and had a lower percentage of individuals with adequate prenatal care utilization compared with women 18 years or older and those with more years of educational attainment. These findings are supported by other studies (35,36) which reported that late prenatal care initiation and inadequate prenatal care among adolescents under 18 years of age were associated with lower educational attainment, unemployment, sexual inexperience, and prior births.

Women aged 35 and older are more likely to enter prenatal care early and have adequate prenatal care utilization compared with those under 35 years old. Studies demonstrate that pregnancy in older individuals is associated with increased risks of adverse pregnancy outcomes for both the pregnant mother and the fetus, and this might differ from a younger pregnant population, even in individuals who are healthy and do not have co-occurring medical conditions. The Association of Obstetrics and Gynecology has provided evidence-based clinical recommendations for minimizing adverse outcomes with anticipated delivery at an advanced maternal age (37).

For all women, regardless of race, age, educational attainment, or insurance type, the number of those who initiated prenatal care in the first trimester and the adequacy of prenatal care utilization decreased at the start of 2020. This finding aligns with research indicating that the COVID-19 pandemic and related social distancing mandates resulted in reduced prenatal care utilization. Contributing factors include difficulties accessing medical care, fears of virus exposure, decreased social support from partners and family members, and increased anxiety and mistrust in the health care system (33,38,39).

Conclusion - Disparities in first-trimester prenatal care initiation persist across maternal race, age, educational attainment, and birth payer. Black and NH/PI pregnant women, those under 18 years of age, with less than high school education, or with Medicaid coverage were particularly less likely to have prenatal care in the first trimester and adequate prenatal care utilization. Additionally, pregnant women under the age of 18, those identified as NH/PI, those with less than high school education attainment, and those with Medicaid coverage had the lowest likelihood of receiving adequate prenatal care. These disparities underscore the urgent need for focused interventions to ensure equitable access to care and improve maternal and infant health outcomes. Our findings indicate an upward trend in births among women 35 years and older and those with higher educational attainment. As maternal age increases, there is a

corresponding rise in prenatal care utilization, particularly among women with higher educational attainment, highlighting the need for tailored strategies that address the specific needs of vulnerable populations.

d. Prenatal care costs

We describe prenatal care utilization and costs for singleton live births that occurred between 2017 and 2021 using the WA-APCD. An estimated 350,000 to 400,000 claims for prenatal care had been filed annually for singleton live births between 2017 and 2021 in Washington. During this same period, we estimated that each pregnant woman had about nine prenatal care visits on average in each year.

All estimated costs were adjusted using the medical consumer price index for 2023. We present costs that were paid by Medicaid and commercial insurers. The average cost for a prenatal care visit was determined by adding the bundle cost for each visit and dividing it by the number of visits.

Table 2 Prenatal care utilization costs

	2017	2021
Total prenatal care costs ($ millions)	24.5	17.9
Average prenatal care cost ($) per visit	176	171
Average prenatal care cost ($) per pregnancy	1,636	1,613

Data source: WA-APCD cohort

There were 14,987 and 11,080 singleton births in this prenatal cohort in 2017 and 2021, respectively. The annual total cost of prenatal care in Washington declined from an estimated cost of $24.5 million in 2017 to $17.9 million in 2021. The average cost for a prenatal care visit in Washington state for a pregnancy resulting in a singleton live birth ranged between $176 in 2017 to $167 in 2019. This cost increased to about $171 in 2021. Between 2017 and 2020, the average prenatal cost per pregnancy resulting in a singleton live birth in Washington ranged from $1,636 to $1,534. However, in 2021, it increased to around $1,613 (Table 2).

Table 3 Average prenatal care cost per visit and pregnancy by maternal race, Washington state, 2017-2021

	Average prenatal care cost per visit ($)		Average prenatal care cost per pregnancy ($)	
	2017	2021	2017	2021
American Indian/Alaska Native	158	176	1,471	1,668
Asian	151	136	1,405	1,362
Black	171	164	1,710	1,213
Native Hawaiian and Pacific Islander	173	143	1,625	1,475
White	148	153	1,409	1,476

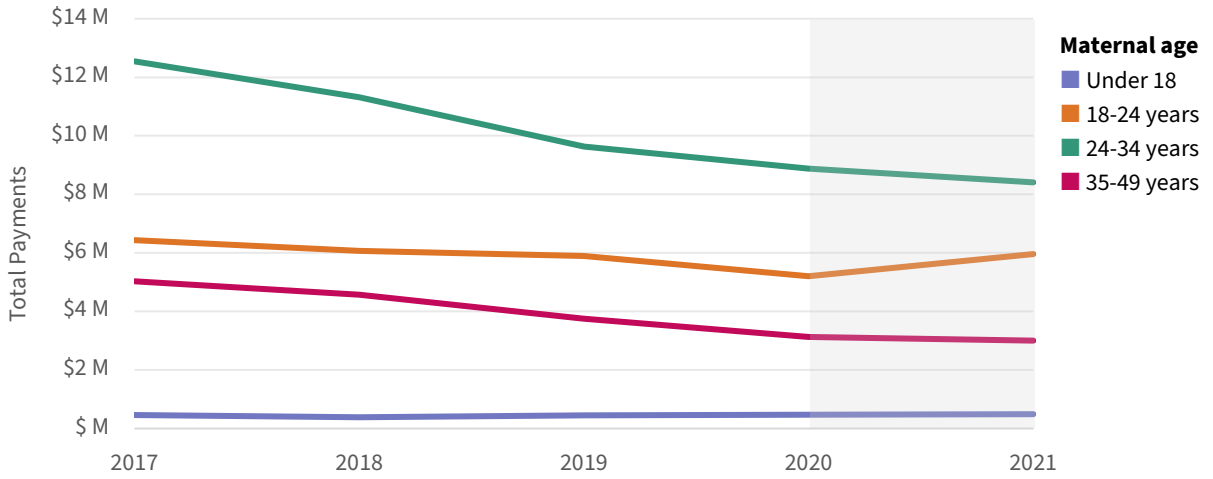
Data source: WA-APCD cohort

Among all races, the average prenatal care cost per visit was between $130 to $180 during the period 2017 to 2021. The average prenatal care cost per visit for NH/PI women was the highest ($173) in 2017, while the average prenatal care cost per visit for AI/AN women was the highest ($176) in 2021 compared with the other racial groups (Table 3).

Differences exist in the average prenatal care costs per pregnancy by maternal race from 2017 to 2021 (between $1,200 and $1,800). Specifically, the average cost of prenatal care visits for Black pregnant women was the highest ($1,710) in 2017, while the average cost of prenatal care visits for AI/AN women was the highest ($1,668) in 2021 compared with the other racial groups (Table 3).

Prenatal care costs for women 25-34 years, the age group that has the highest number of pregnancies, ranged from $12.5 million in 2017 to $8.4 million in 2021 (Figure 2.9).

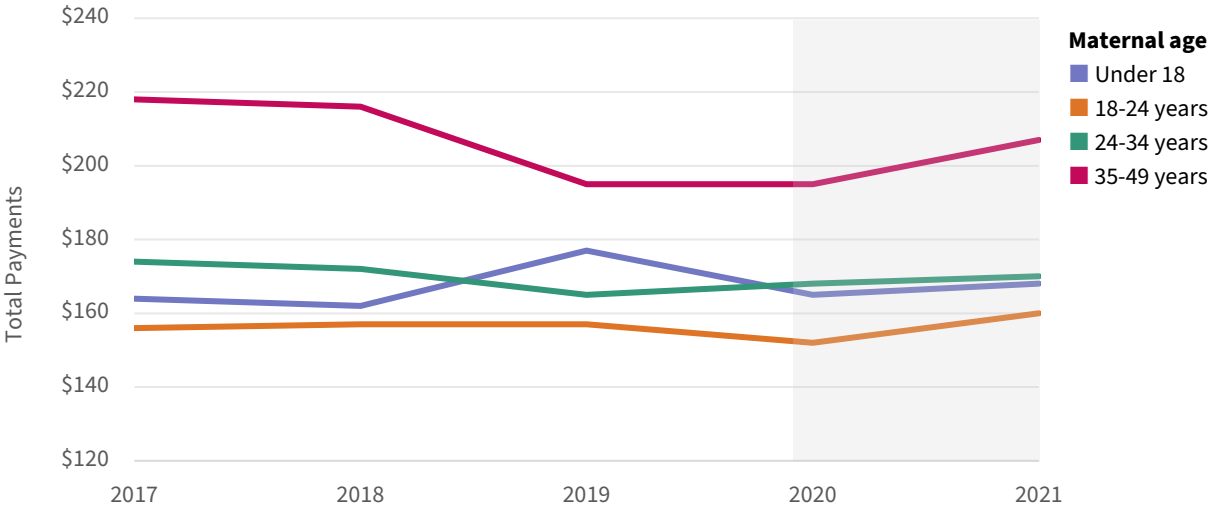
Figure 2.9 Prenatal care costs by maternal age, Washington state, 2017-2021



Data source: WA-APCD cohort

There is variation in the average prenatal care cost per visit across maternal age groups, between $150 and $220 (Figure 2.10). Pregnant women aged 35 to 49 who gave birth to singleton live births consistently incurred the highest average cost per prenatal visit, from about $220 in 2017 to about $210 in 2021. In 2021, all age groups experienced an increase in average prenatal costs which could be due to COVID-19 pandemic.

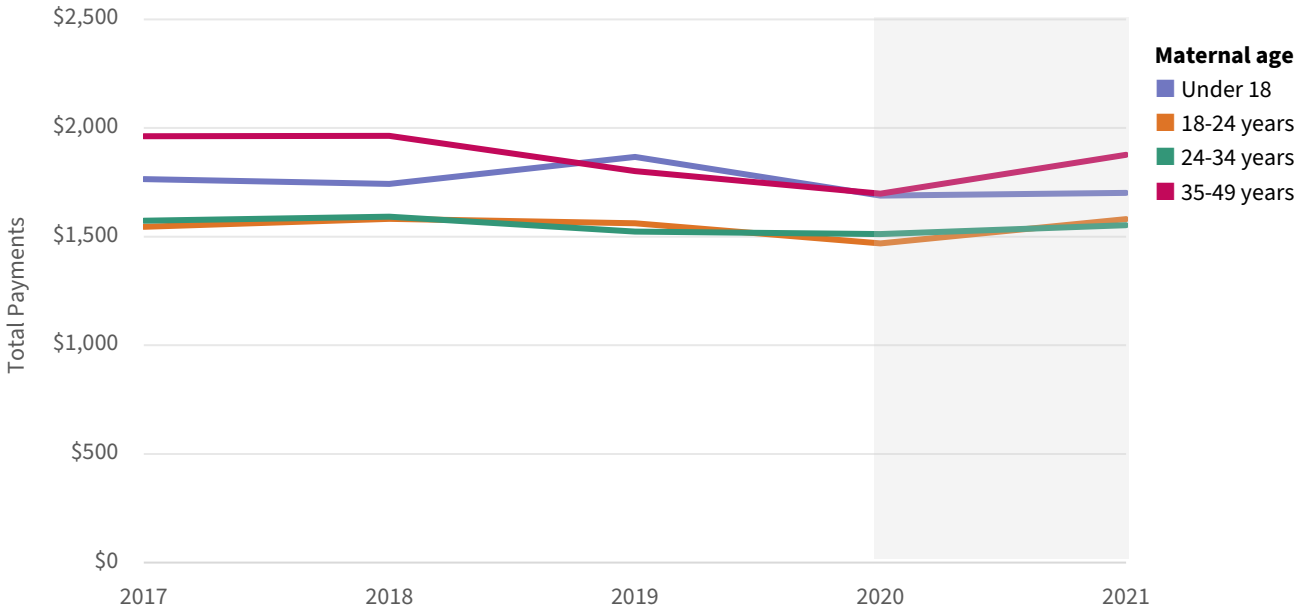
Figure 2.10 Average prenatal care cost per visit by maternal age, Washington state, 2017-2021



Data source: WA-APCD cohort

The average prenatal care cost per pregnancy varied across maternal age groups between $1,400 and $2,000. Pregnant women aged 35 to 49 who gave birth to singleton live births consistently incurred the highest average costs for prenatal care per pregnancy, from around $2,000 in 2017 to around $1,900 in 2021, followed by women under 18 years old. In 2021, all age groups experienced an increase in average prenatal costs per pregnancy, which could be attributed to the COVID-19 pandemic (Figure 2.11).

Figure 2.11 Average prenatal care cost per pregnancy by maternal age, Washington state, 2017-2021



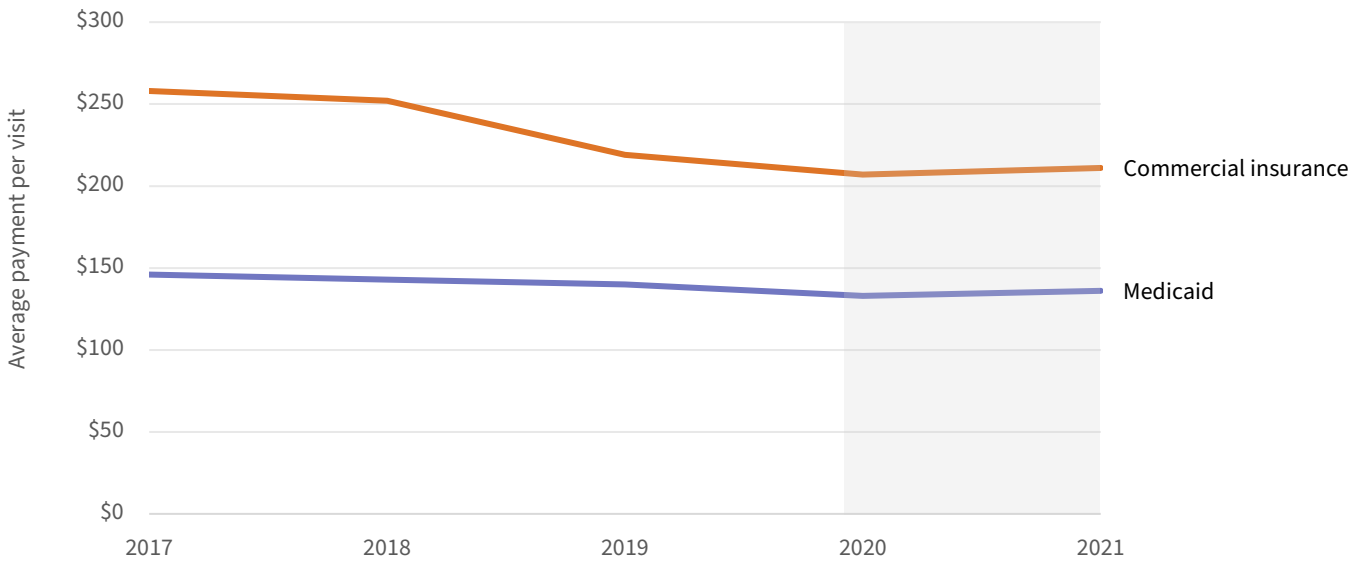
Data source: WA-APCD cohort

In this cohort of women, an estimated 61% to 65% of prenatal care costs for women who delivered in Washington state between 2017 and 2021 were covered by Medicaid, while 35% to 39% were covered by commercial insurance (Figure 2.12). Even though the data reflects that Medicaid covered most births, it could be because the WA-APCD does not include all commercial insurance plans in Washington state.

On average, Medicaid-enrolled pregnant women who had singleton live births between 2017 and 2021 had a higher number of prenatal care visits (around 9 visits) compared to commercially insured women (around 7 visits).

Between 2017 and 2021, the average cost per prenatal care visit paid by commercial insurance was consistently higher (greater than $200) compared to that paid by Medicaid (less than $150). The amount paid by both Medicaid and commercial insurers declined from 2017 to 2020, with a steeper decline in payments for commercial insurers, and a slight increase from 2020 to 2021 (Figure 2.12).

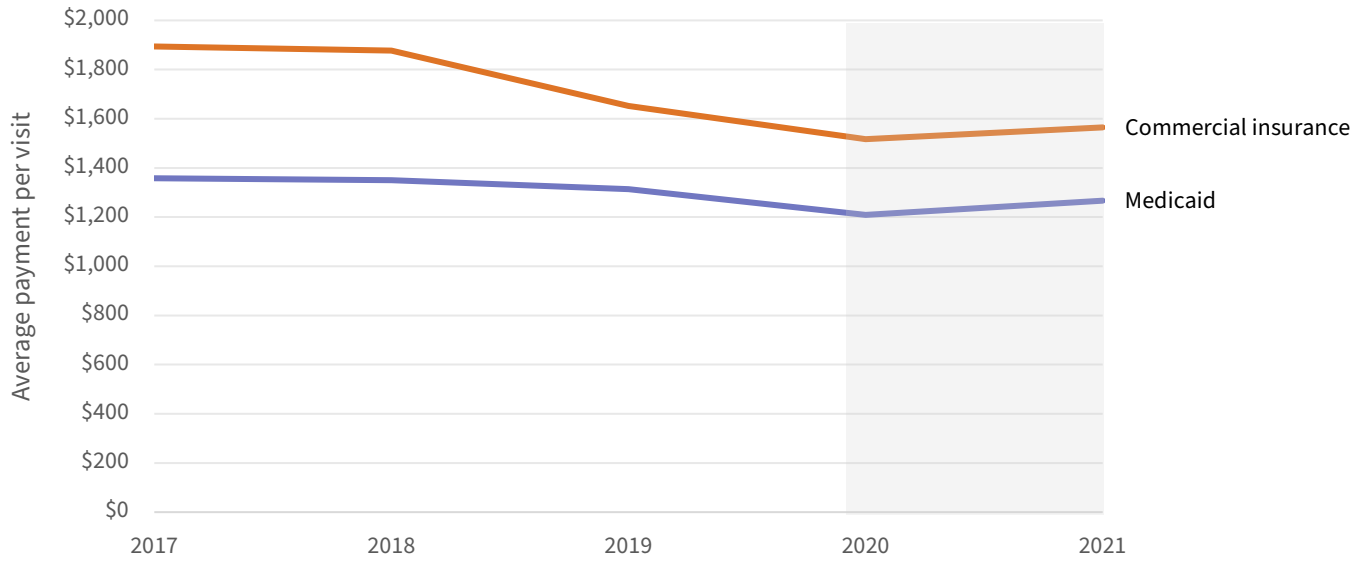
Figure 2.12 Average prenatal care cost per visit by birth payer, Washington state, 2017-2021



Data source: WA-APCD cohort

Between 2017 and 2021, the average prenatal care costs per pregnancy paid by commercial insurance in this cohort (about $1,900 in 2017 and $1,600 in 2021) are consistently higher than those paid by Medicaid (about $1,400 in 2017 and $1,300 in 2021). The amount paid by both Medicaid and commercial insurers declined from 2017 to 2020, with a steeper decline in payments for commercial insurers, and a slight increase from 2020 to 2021 (Figure 2.13). It is unclear if the trend will continue as we move away from the COVID-19 pandemic years.

Figure 2.13 Average prenatal care cost per pregnancy by birth payer, Washington state, 2017-2021



Data source: WA-APCD cohort

Discussion and Conclusion on Prenatal Care Costs

Overall, maternity claims are among the most expensive health care costs for employers (40). Prenatal care is important in managing complications. An analysis estimated that, between 2018 and 2020, pregnant women aged 15 to 49 years enrolled in large group health plans incur an average of $18,865 more in health care costs than women who do not give birth. This additional spending is associated with pregnancy, delivery, and postpartum care, including both the amount paid by insurance (an average of $16,011) and the out-of-pocket paid by the enrollee (an average of $2,854). Costs varied significantly by type of delivery and location. This analysis did not control for the health status of women before pregnancy (40).

Prenatal care costs have generally declined from 2017 to 2021, potentially reflecting trends such as a decrease in birth rates or changes in reimbursement structures, such as caps on bundled payment models.

The average prenatal care costs per visit and pregnancy were higher for Black mothers than other racial groups between 2017 and 2019. The reasons for this trend are not fully understood but may include pre-existing medical conditions, the lack of insurance coverage before pregnancy that led to challenges in accessing care, and other structural barriers including discrimination, bias, and racism. Births with complications cost twice as much as uncomplicated births (41).

The average prenatal care cost per visit and per pregnancy is higher for women aged 35 years and older compared to those under 35. This finding is supported by Geiger et al. (42) who found that pregnant women around 35 years of age receive a higher receipt for prenatal care. This increased cost reflects the more intensive prenatal monitoring often recommended for older pregnant women, which includes additional visits, ultrasound scans, and antepartum surveillance. This suggests that the advanced maternal age designation may lead to more thorough clinical decision-making, which can enhance maternal and fetal survival. The American College of Obstetrics and Gynecology recommends genetic screening, diagnostic testing, fetal anatomic ultrasonogram, and other antenatal fetal surveillance for women of advanced maternal age (37).

The average payment per visit and pregnancy is consistently higher for commercially insured women than for Medicaid-paid women. Medicaid has lower reimbursement rates for prenatal care, which may affect the sustainability of health care providers who accept Medicaid patients.

Conclusion – In this cohort, the average inflation-adjusted cost for prenatal care per visit and pregnancy declined slightly from 2017 to 2020 with a slight increase in 2021. Differences exist in average prenatal care cost by maternal race and age, with higher average cost for Black, AI/AN, and NH/PI women and women with advanced maternal age (aged 35 to 49). On average, Medicaid-enrolled women had a higher number of prenatal care visits (around 9 visits) compared with commercially insured women (around 7 visits). Commercial insurance paid higher amounts for prenatal care per visit and pregnancy compared with Medicaid.

III. Delivery

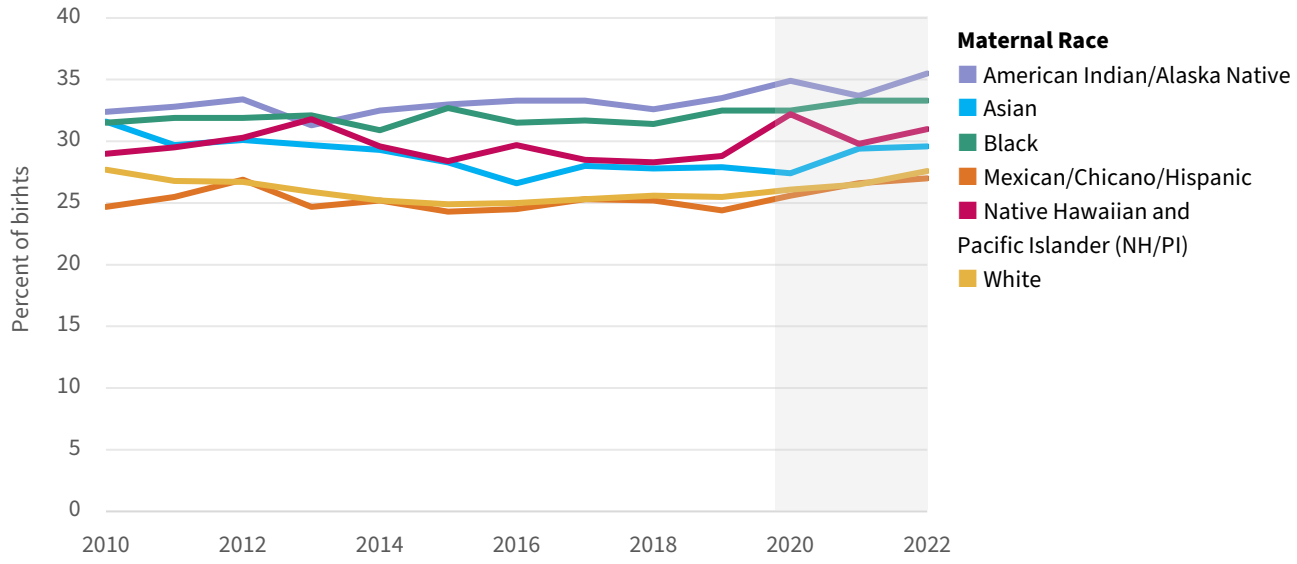
Cesarean delivery (hereafter referred to as C-section) is abdominal surgery with short- and long-term risks and consequences, such as surgical complications, admission of the infant to neonatal intensive care, and higher costs, compared with vaginal delivery (43). The overall C-section rate is comprised of both the primary C-section rate, that is C-section among women who have not had a previous C-section, and the repeat C-section rate. The primary C-section rate influences repeat C-sections because more than four out of five women with a primary C-section will have C-sections for subsequent births (NCHS birth data file, 2016-2020). C-section rates increase recovery time, extend hospital stays, and cost approximately 50% more than vaginal births; although there have been efforts to align payments, C-sections usually require a longer hospital stay which could increase costs (40). Therefore, it is important to examine and describe C-section trends (44). We describe C-sections by maternal race, age, educational attainment, and birth payer.

a. Mode of delivery

There is a 'U-shape' trend in cesarean deliveries over time, with a decline in C-section rate from 2010 to around 2015 and then an increase in rate from 2016. From 2010 to 2022, there was an overall decline in C-sections from 28% in 2010 to 26% in 2016 and an increasing trend after 2016 to 29% in 2022. This mirrors the national trend with C-sections 33% in 2010, 32% in 2016, and 32% in 2022 (15).

Disparities in C-section rates exist by maternal race. American Indian or Alaska Native women consistently had the highest percentage of C-sections, from 32% in 2010 to 36% in 2022, followed by Black women with an estimated 32% in 2010 to 33% in 2022. Mexican/Chicano/Hispanic women had the lowest proportion of C-sections among racial groups, with an estimated 25% in 2010 to 27% in 2022 (Figure 3.1).

Figure 3.1 Cesarean section deliveries by maternal race, Washington state, 2010-2022

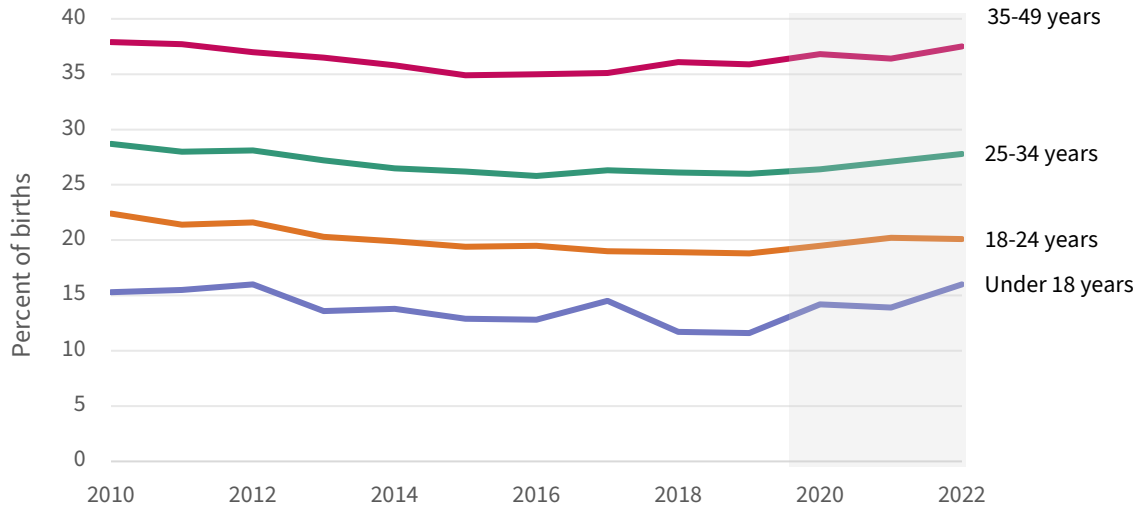


Data source: WA-birth certificate data

Differences exist in C-sections based on maternal age. C-section rates increase with older age groups. Women of advanced maternal age (35-49 years) consistently had the highest cesarean section rates, from 38% in 2010 to dipping slightly in subsequent years and then back up to 38% in 2022, while teenage women

(<18 years) consistently had the lowest C-section rates, from 15% in 2010 to 16% in 2022. Findings indicate that women of advanced maternal age were more than twice as likely to deliver by C-section than women younger than age 18 (Figure 3.2).

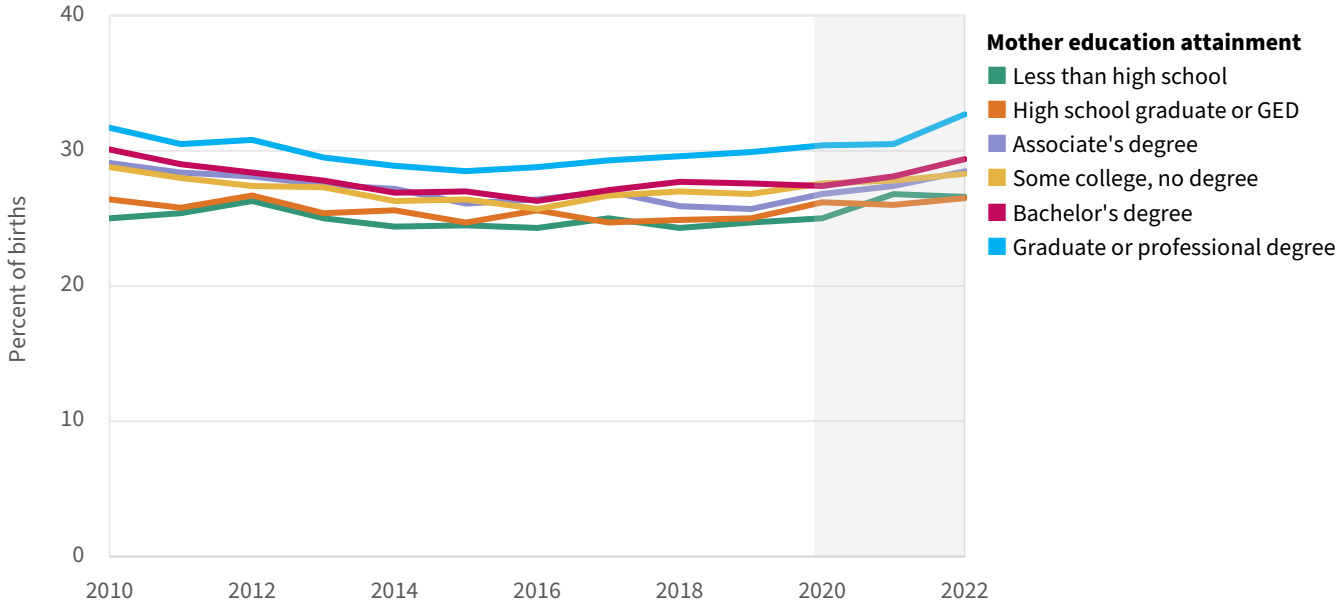
Figure 3.2 Cesarean section deliveries by maternal age, Washington state, 2010-2022



Data source: WA-birth certificate data

Disparities in C-section rates exist based on maternal educational attainment. In general, women with more years of education consistently had higher cesarean section rates; for example, in 2010, 32% of women with graduate or professional degrees had C-sections compared with 25% of women with less than high school education, while the percentages were 33% and 27% in 2022, respectively (Figure 3.3). Women with higher educational attainment tend to be older than those with less than high school education and age could be driving these trends.

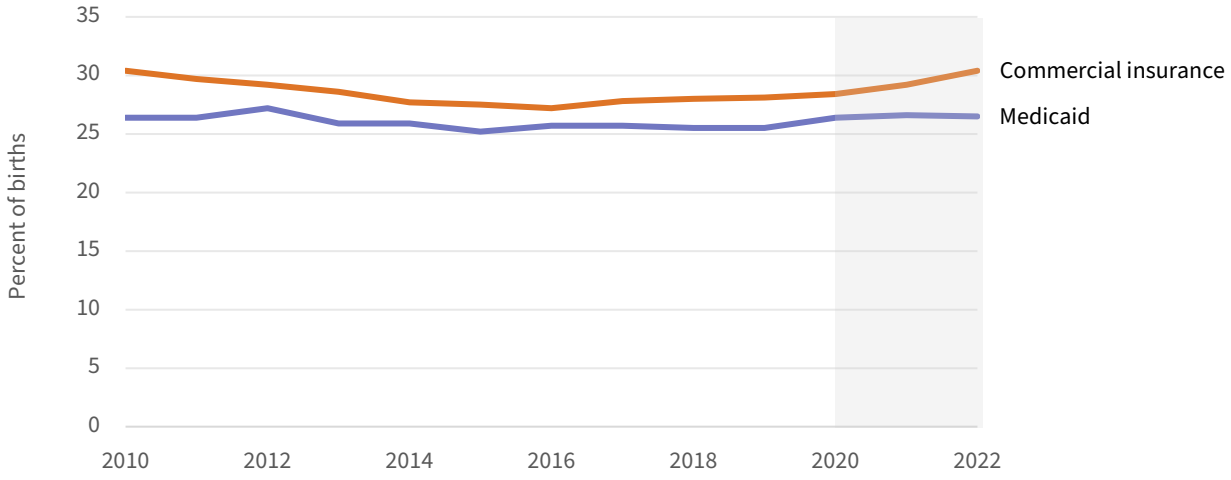
Figure 3.3 Cesarean section deliveries by maternal educational attainment, Washington state, 2010-2022



Data source: WA-birth certificate data

Among commercially insured women, approximately 30% had C-sections in 2010 and 2022, and 27% had C-sections in 2016. This is contrasted by only 26% among Medicaid-enrolled women both in 2010 and 2022. Commercially insured women have consistently had a higher rate of C-sections compared with Medicaid-enrolled women during this period (Figure 3.4).

Figure 3.4 Cesarean section deliveries by birth payer, Washington state, 2010-2022



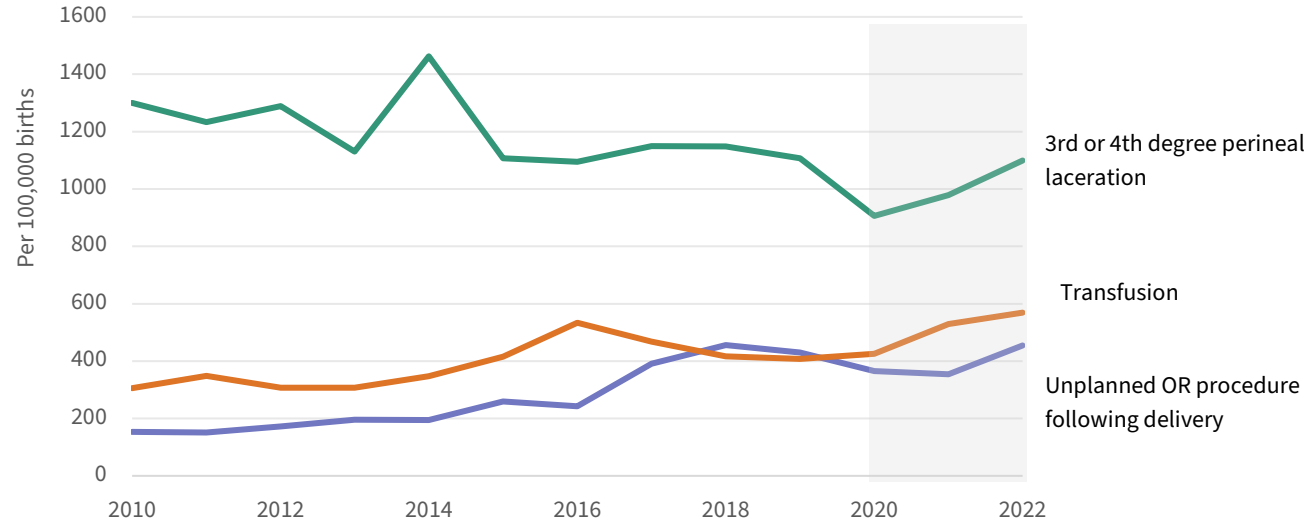
Data source: WA-birth certificate data

b. Delivery complications

Complications during delivery can occur. Sometimes these complications result in longer recovery times and can put the health of both the baby and mother at risk. While this section only briefly describes complications, it is a topic that will be explored in future reports.

Relatively, the most common delivery complications are 3rd or 4th-degree perineal laceration, followed by blood transfusion, and unplanned operating room procedure following delivery (Figure 3.5). Ruptured uterus and unplanned hysterectomy are not shown in the figure as they are relatively uncommon compared with the other delivery complications.

Figure 3.5 Delivery complications per 100,000 births, Washington state, 2010-2022



Data source: WA-birth certificate data

Discussion and conclusion about c-section and delivery complications

Our findings indicate that AI/AN women are most likely to undergo C-sections, followed by Black women, Asian women, and NH/PI women. This is in contrast with the recent reports noting that AI/AN women had the lowest prevalence of C-sections (29%) while Black women had the highest prevalence (37%) (45,46). It is important to understand the reasons that may explain the high C-section rates among AI/AN and Black women.

Research indicates that the higher prevalence of C-sections among Black women may be attributed to the cumulative stress caused by discrimination and racism experienced throughout their lives (47,48). A study found that pregnant Black women are more likely to report feeling pressured to undergo a C-section by clinicians compared to White women (49). High income and education, which typically are protective factors against poor birth outcomes following a C-section, are not observed in Black women (50).

Delivery complications although rare occurrences can be traumatic experiences. We were not able to stratify the data by maternal characteristics including race/ethnicity using birth certificate data because reporting such findings could introduce small sample bias. We suggest linking both birth certificate data with the Comprehensive Hospital Abstract Reporting System (CHARS) to examine delivery complications in further detail.

Conclusion - There was a decline in C-sections from 2010 to 2016, followed by an increasing trend after 2016. Disparities in C-section rates persist across maternal race, age, education attainment, and birth payer. From 2010 to 2022, the highest C-section rates were consistently observed among pregnant women identified as AI/AN, of advanced maternal age, with higher education attainment, and those with commercial insurance. Women of advanced maternal age are more likely to be induced or scheduled for a C-section due to higher-risk pregnancies and health care professionals recommend giving birth by 40 weeks of pregnancy by inducing labor or scheduling a C-section.

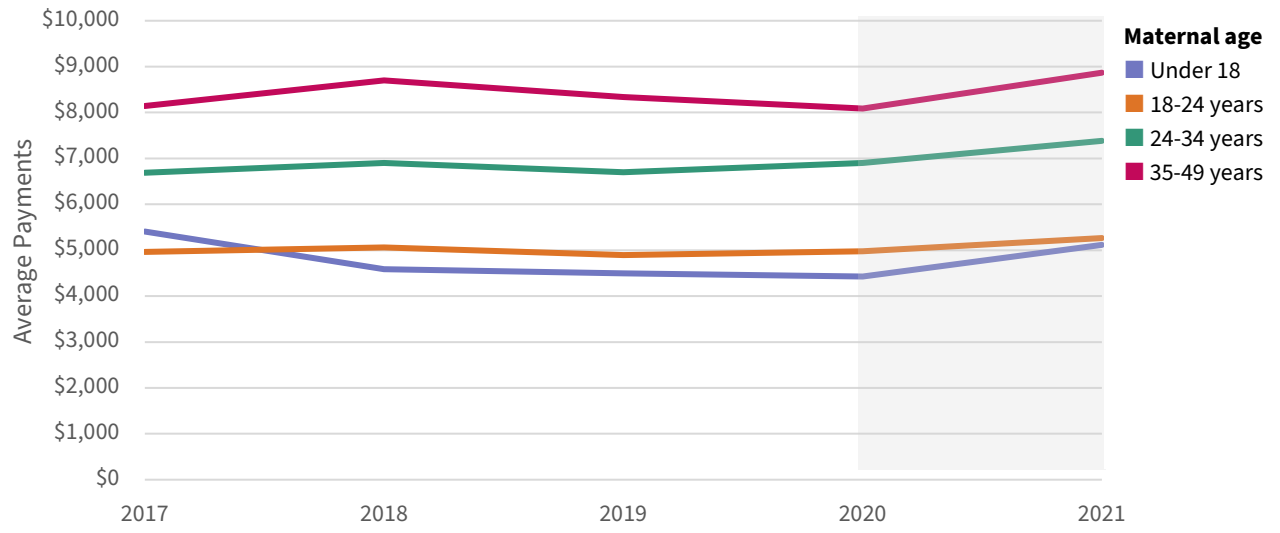
c. Delivery costs

Total delivery cost was estimated to be $289 million in 2017 and almost $300 million in 2021 (adjusted to the 2023 medical consumer price index), based on data from the WA-APCD. Average delivery costs in Washington state have increased from about $6,500 in 2017 to $7,000 in 2021. In 2020 and 2021, average delivery costs increased more than the previous years, possibly due to the COVID-19 pandemic.

There is not much variation in the average cost for delivery by maternal race from 2017-2020, but increases after 2020 may have affected women of different races due to changes in insurance coverage during the pandemic.

There are differences in the average costs of deliveries by maternal age in Washington state from 2017 to 2021 among the WA-APCD population that gave birth. The oldest age group has the highest average delivery cost. The average delivery cost for women aged 35 to 49 increased from about $8,100 in 2017 to $8,900 in 2021, while the average delivery cost for women under 35 years was less than $7,500 over the same period (Figure 3.8).

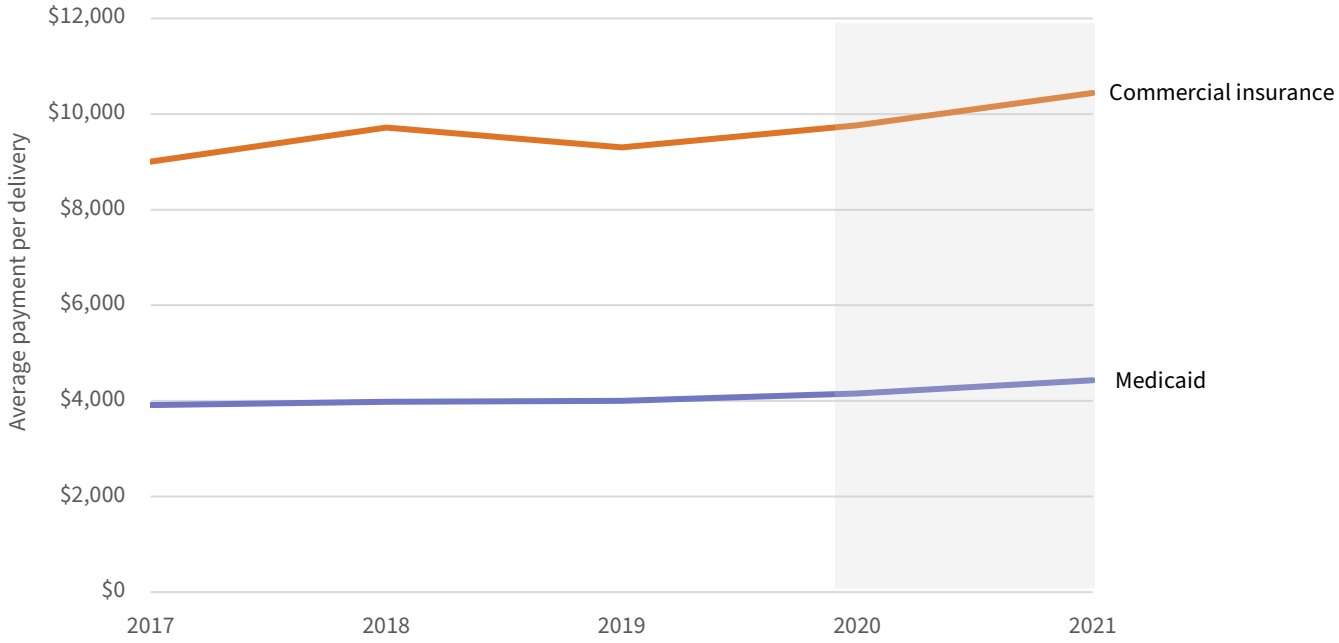
Figure 3.8 Average delivery cost by maternal age, Washington state, 2017-2021



Data source: WA-APCD

The average delivery cost for singleton births delivered between 2017 and 2021 paid by commercial insurance was higher when compared to Medicaid insurance. The average cost for delivery increased from about $9,000 in 2017 to $10,500 in 2021 for commercial insurance, while Medicaid paid around $4,000 to $4,500 per delivery (Figure 3.9).

Figure 3.9 Average delivery costs by birth payer, Washington state, 2017-2021



Data source: WA-APCD

Discussion and Conclusion on Delivery Costs

While there is not much variation in the average cost for delivery by maternal race, there is great variation by maternal age. The average cost for women with advanced maternal age (35-49 years) is the highest among all age groups. The American College of Obstetrics and Gynecology recommends proceeding with delivery in well-dated pregnancies at 39 weeks 0 days to 39 weeks 6 days of gestation for individuals 40 years and older due to the increasing rates of neonatal morbidity and stillbirth beyond this gestational age. This recommendation can lead to higher induction rates or elective C-sections, which may incur higher costs (37). We can only speculate that commercially insured women of advanced maternal age, have delivery complications, or can schedule their deliveries, contributing to these higher costs.

Conclusion - Average delivery costs in Washington have increased from about $6,500 in 2017 to $7,000 in 2021. Disparities in average costs of deliveries exist by maternal age, with the highest costs for women with advanced maternal age. The average delivery cost paid by birth payers was much higher for commercial insurance (around $9,000 in 2017 to $10,500 in 2021) compared to Medicaid insurance (around $4,000 in 2017 to $4,500 in 2021).

IV. Postpartum care

The postpartum period, after the birth, is a critical period to improve outcomes for severe maternal complications and pregnancy-related mortality. This is especially crucial when more than 80% of pregnancy-related deaths are preventable (51–53). Postpartum visits can assess the physical, social, and psychological well-being of the mother, including assessing mood and emotional well-being; infant care and feeding; sexuality, contraception, and birth spacing; sleep and fatigue; physical recovery from birth; chronic disease management; and health maintenance. Postpartum depression and anxiety, which can begin anytime in the year after birth, can be detected at these visits. Postpartum depression can last for months or years if left untreated. The Centers for Disease Control and Prevention and Maternal Mortality Review Committees estimate that over half of maternal deaths occur postpartum: 1 to 6 days postpartum (19 percent), 7 to 42 days postpartum (21 percent), and 43 to 365 days postpartum (12 percent). For Washington state, most pregnancy-related deaths occurred after the end of pregnancy, with 31 percent occurring 2–42 days after pregnancy and 31 percent occurring within 43 days to one year after pregnancy (52). Despite the increased risk of postpartum mortality and morbidity, postpartum care is underutilized in this country (54).

For this section, we will present findings on postpartum care while comparing them to the results from prenatal care access to highlight growing disparities. Most of the findings related to postpartum care were developed by creating a cohort of women in the WA-APCD who gave birth from 2017 to 2021 and then examining post-birth claims to identify postpartum visits. This is a different cohort than that used in the prenatal care analysis.

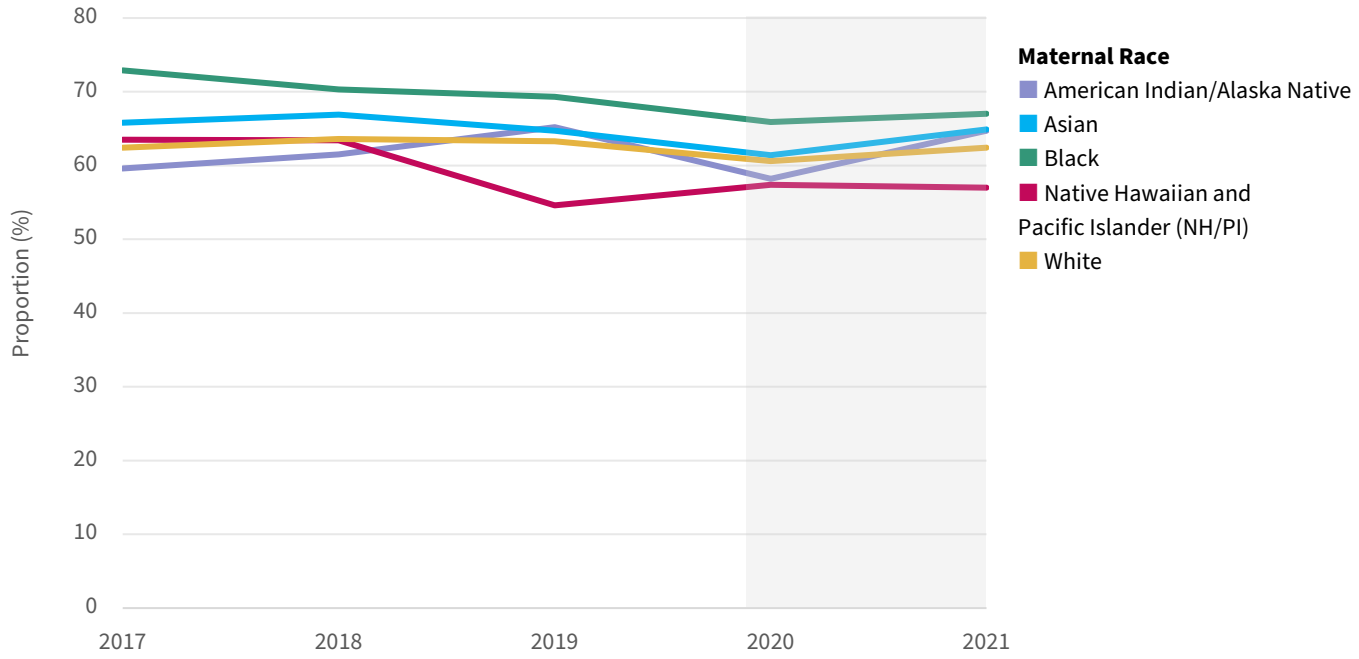
a. Postpartum care utilization

There were between 60,000 and 65,000 postpartum care visits in Washington among the 214,805 births included in our cohort. This trend mirrors what is seen at the national level.

Our results for women having at least one prenatal care visit had little variability across maternal racial/ethnic and age groups, and type of insurance. However, we found different results when examining postpartum care. Disparities exist by maternal race/ethnicity and age, and type of insurance in the utilization of at least one postpartum visit among women in our cohort who delivered a singleton live birth from 2017 to 2021.

There were overall declines in postpartum care attendance from 2017 to 2020 and an increase from 2020 to 2021 - during the pandemic. Black mothers consistently represent a higher proportion with at least one postpartum visit in our cohort, from 73% in 2017 to 67% in 2021 followed by Asian women. NH/PI women represent the lowest proportion with at least one postpartum visit, from 64% in 2017 to 57% in 2021 (Figure 4.1).

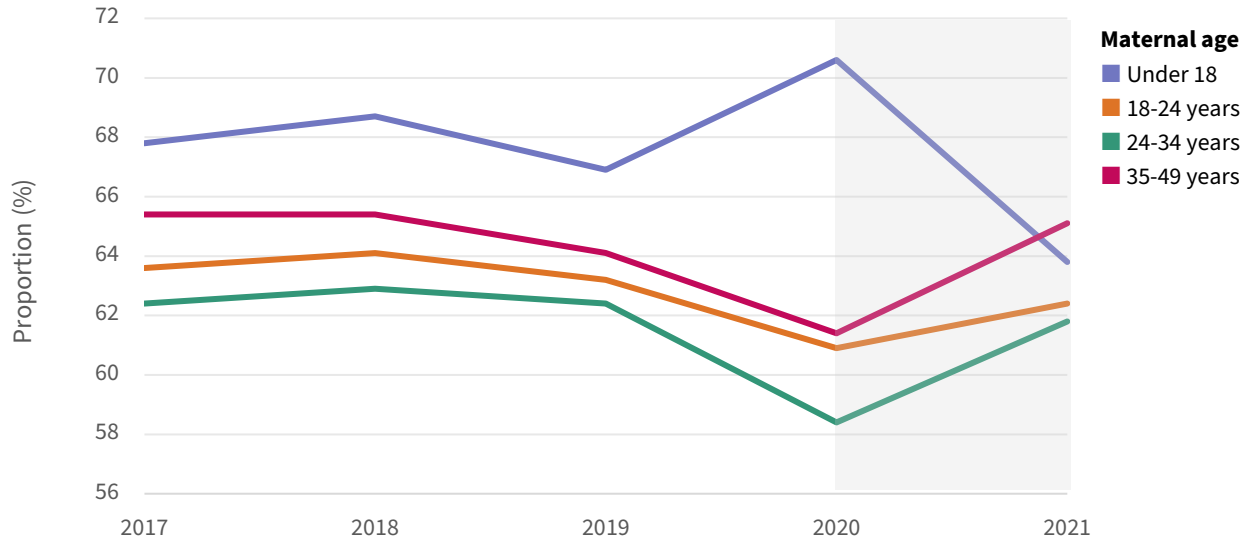
Figure 4.1 Proportion of women who delivered singleton live births that had at least one postpartum visit, by maternal race, Washington state, 2017-2021



Data source: WA-APCD cohort

Disparities also exist in postpartum visits by maternal age. Teen women under 18 years of age consistently had a higher proportion reporting at least one postpartum visit with 68% in 2017 and 64% in 2021, followed by women aged 35 to 49 years. In contrast, women aged 25 to 34 years had the lowest proportion of at least one postpartum visit. There was an increase in the proportion of women who had at least one postpartum visit from 2020 to 2021 for all age groups except for those under 18 years old (Figure 4.2).

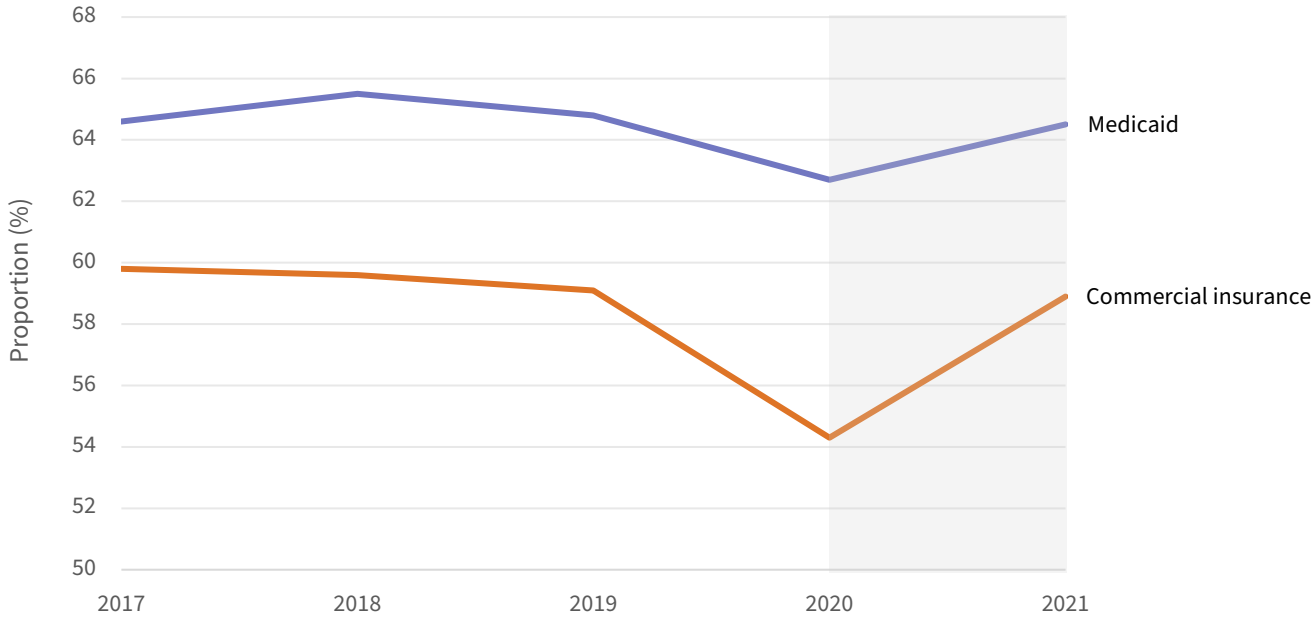
Figure 4.2 Proportion of women who delivered singleton live births that had at least one postpartum visit, by maternal age, Washington state, 2017-2021



Data source: WA-APCD cohort

Smaller disparities exist when examining the proportion of women getting at least one postpartum care visit by health insurance status. While between 62% and 65% of Medicaid-enrolled women had at least one postpartum visit over this period, fewer than 60% of commercially insured women had at least one postpartum visit (Figure 4.3).

Figure 4.3 Proportion of women who delivered singleton live births that had at least one postpartum visit, by birth payer, Washington state, 2017-2021



Data source: WA-APCD cohort

b. Timing of postpartum visit

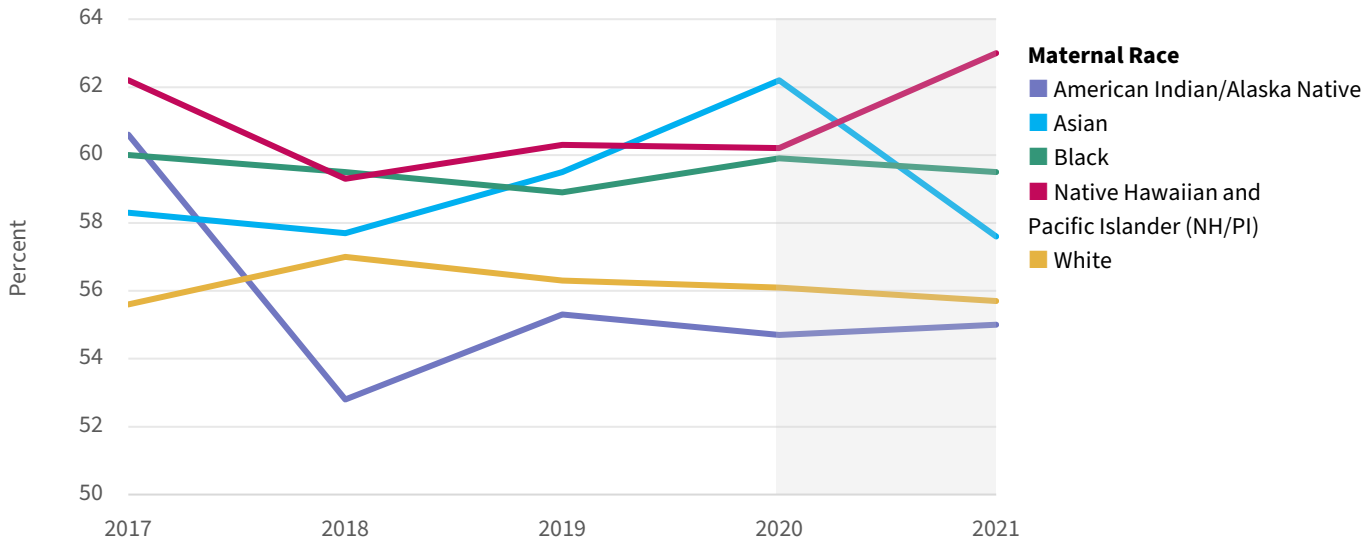
As with prenatal care, the initiation and timing of postpartum visits are critical for the health and welfare of the mother and baby. The ACOG (2018) (55) recommends the initial postpartum visit within 3 weeks of birth with continued care culminating with a comprehensive postpartum visit centered on the mother's needs *no later than* 12 weeks after the birth. Postpartum care is not one single visit.

Six weeks, or 42 days postpartum, is an important indicator in that it is when many women transition their postpartum care from pregnancy-related providers back to their primary or family physician. The six-week postpartum exam is an important appointment for assessing a person's health. Care after 42 days tends to transition to a focus on infant health and less attention to maternal health. The World Health Organization also uses the 42-day postpartum time frame in its definition of maternal death.

We describe trends in postpartum care for women by race, age, and birth payer. Overall, around 58% of women who had singleton live births initiated postpartum visits within 42 days of the birth. The average number of postpartum care visits per woman remained relatively constant over the years at approximately 2.4 visits per woman, from 2017 to 2021.

From 2017 to 2021, the proportion of women who delivered singleton live births and who initiated postpartum care within 42 days of the delivery was highest among NH/PI women (between 59% and 63%) followed by Black (between 59% and 60%) and Asian women (between 57% and 63%). As compared to other racial groups, AI/AN women had a lower rate of initiating postpartum care within 42 days of the delivery (Figure 4.4).

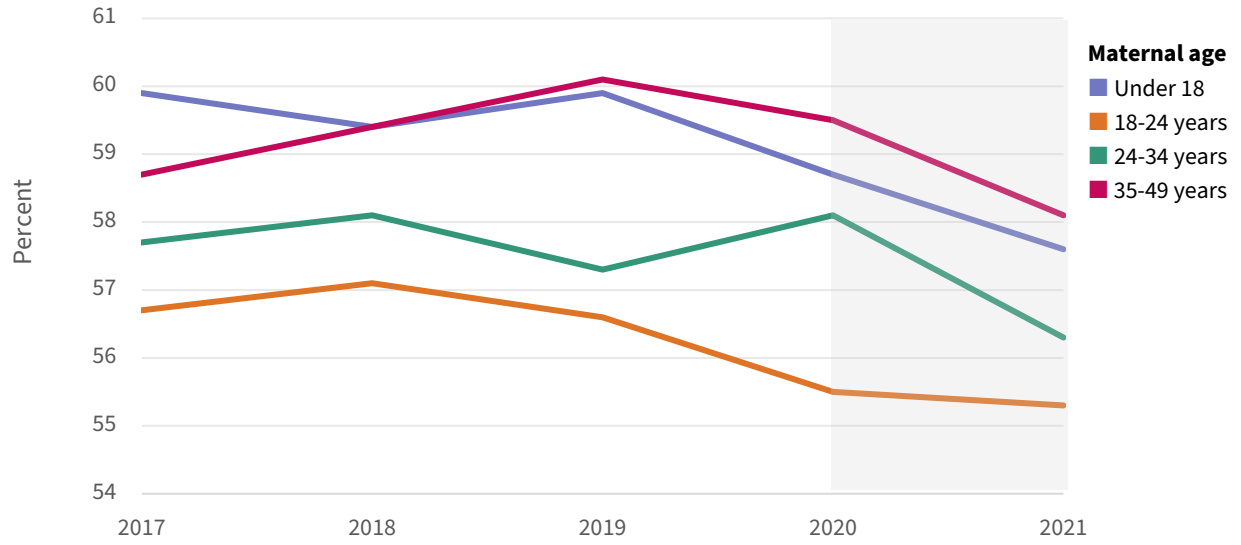
Figure 4.4 Proportion of women who delivered singleton live births that initiated postpartum care within 42 days of birth, by maternal race, Washington state, 2017-2021



Data source: WA-APCD cohort

Higher proportions of women of advanced maternal age (35-49 years) (about 59% in 2017 and 58% in 2021) and those with ages under 18 years (about 60% in 2017 and 58% in 2017) initiated postpartum care within 42 days after the birth compared with women between 18 and 34 years old (Figure 4.5).

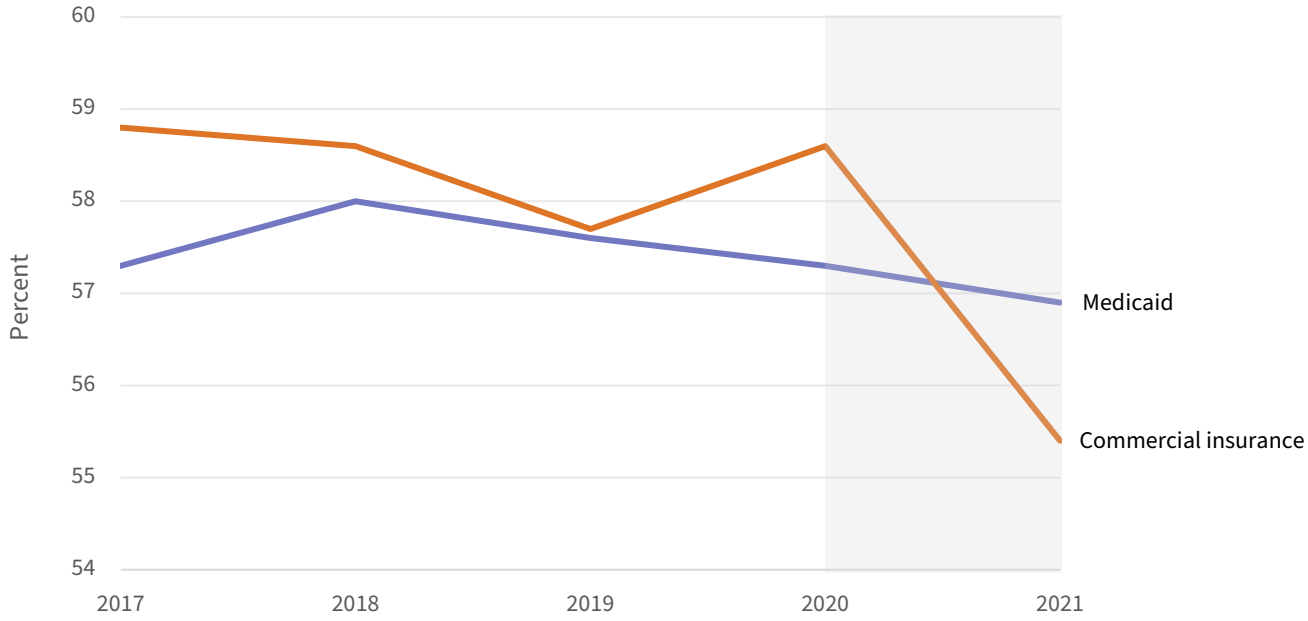
Figure 4.5 Proportion of women who delivered singleton live births that initiated postpartum care within 42 days of birth, by maternal age, Washington state, 2017-2021



Data source: WA-APCD cohort

The proportion of commercially insured women who initiated postpartum care within 42 days after birth was higher than Medicaid-enrolled women from 2017 to 2020. There were declines in all women initiating postpartum care from 2020 to 2021, a pandemic year, with the steepest decline for commercially insured women (Figure 4.6).

Figure 4.6 Proportion of women who delivered singleton live births that initiated postpartum care within 42 days of birth, by birth payer, Washington state, 2017-2021



Data source: WA-APCD cohort

Discussion and Conclusion on Postpartum Care

The proportion of NH/PI women who had singleton live births and had any postpartum care was disproportionately lower than other racial groups. They represent the highest proportion initiating postpartum care within 42 days of the birth. The youngest women (less than 18 years) and women who were of advanced maternal age (35-49 years) had higher percentages of initiating postpartum care within 42 days after birth. Interrante et al. (2023) (56) found that maternal age, prenatal care use, co-morbid conditions, and birth complications are strong independent predictors of postpartum care.

Studies have shown that about half of postpartum individuals in the U.S. do not receive routine postpartum care (57–59). Among those who access postpartum care, care may be limited by payment models that provide variable coverage for key services. The increasing use of global reimbursement models whereby health care providers receive bundled payments for postpartum care regardless of the number of postpartum visits may act as a disincentive to adequate postpartum care (60,61). A systematic review of studies in the U.S. suggests that more comprehensive health insurance coverage may be associated with greater attendance at postpartum visits (62). Another study (63) found that Medicaid expansion (i.e., more comprehensive insurance coverage) was associated with greater postpartum visit attendance and fewer hospitalizations.

Conclusion - Disparities exist in the utilization of at least one postpartum visit among women who delivered singleton live births in Washington from 2017 to 2021 based on maternal race, age, and birth payer. NH/PI women and women aged 25 to 34 years were disproportionately affected by having the lowest proportion with at least one postpartum visit. Overall, about 58% of women who had singleton live births initiated postpartum visits within 42 days of the birth. The average number of postpartum care visits per woman remained relatively constant over the years at approximately 2.4 visits per woman. Women who identified as AI/AN, women between the ages of 18 to 34 years, and Medicaid-enrolled women represent lower proportions of those who initiate postpartum care within 42 days of the delivery.

c. Postpartum utilization and costs

The total annual postpartum care expenses in Washington for mothers who delivered singleton live births increased from $12.8 million in 2017 to $13.5 million in 2021. The average postpartum utilization cost per visit increased from about $193 for women who delivered singleton live births in 2017 to about $210 in 2021 (Table 4).

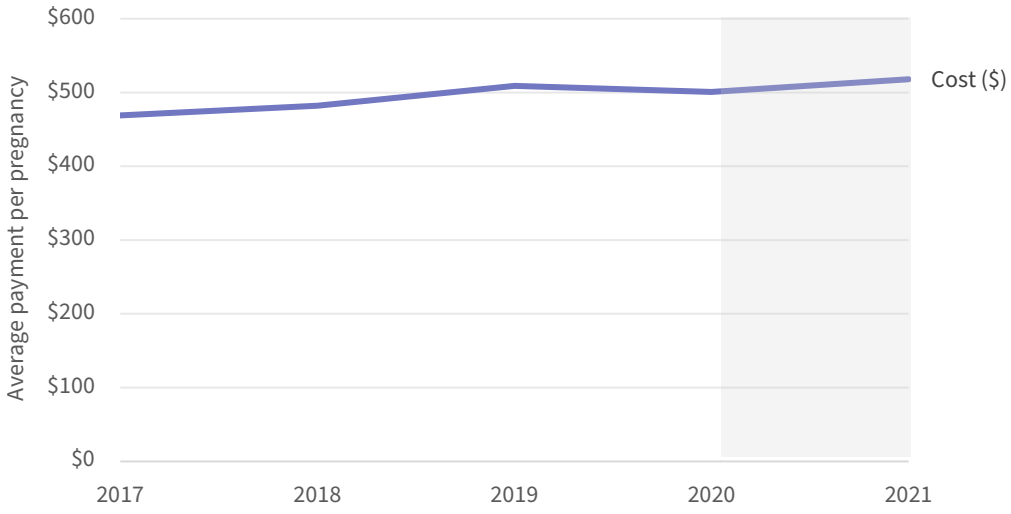
Table 4 Postpartum care costs, Washington state, 2017-2021

	2017	2021
Total postpartum care costs ($ millions)	12.8	13.5
Average postpartum care cost ($) per visit	193	210
Average postpartum care cost ($) per pregnancy	469	518

Data source: WA-APCD cohort

There were 27,290 and 25,993 singleton live births in this postpartum cohort in 2017 and 2021, respectively. The average postpartum care cost per pregnancy increased from around $470 in 2017 to about $518 in 2021 (Figure 4.7).

Figure 4.7 Average postpartum utilization cost per pregnancy, Washington state, 2017-2021

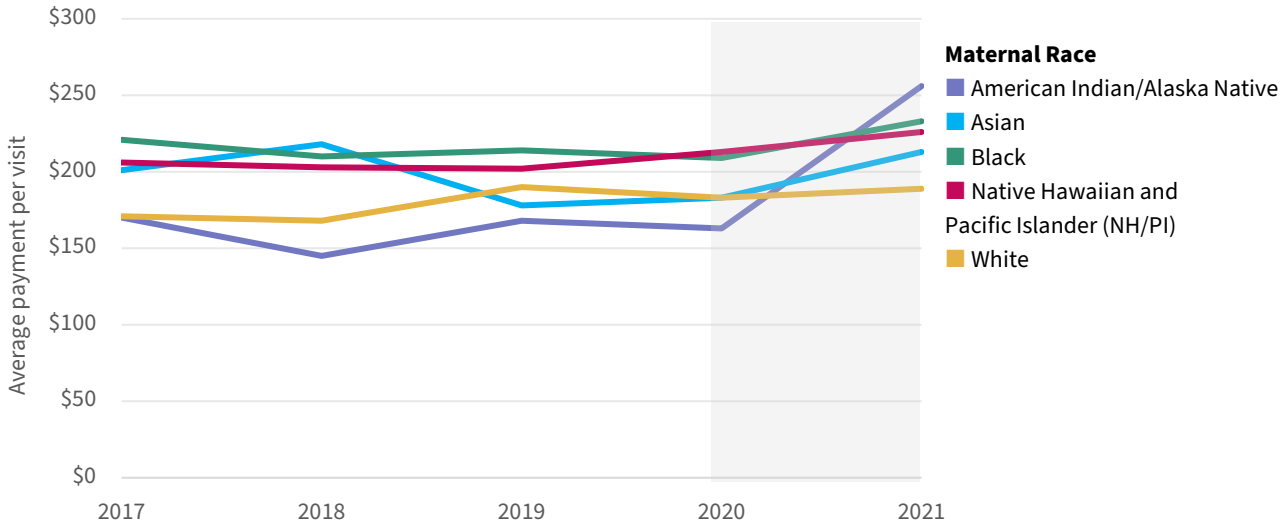


Data source: WA-APCD cohort

There is no significant difference in the rates of postpartum care utilization, which ranged from 2 to 3 visits, among women who gave birth to singleton live births in Washington from 2017 to 2021 by maternal race or age.

The average postpartum cost per visit varied across racial groups ranging from $150 and $250 from 2017 through 2021. The average postpartum cost per visit ranged between $200 and $225 for AI/AN and NH/PI women, respectively, for the period 2017 to 2020 (Figure 4.8).

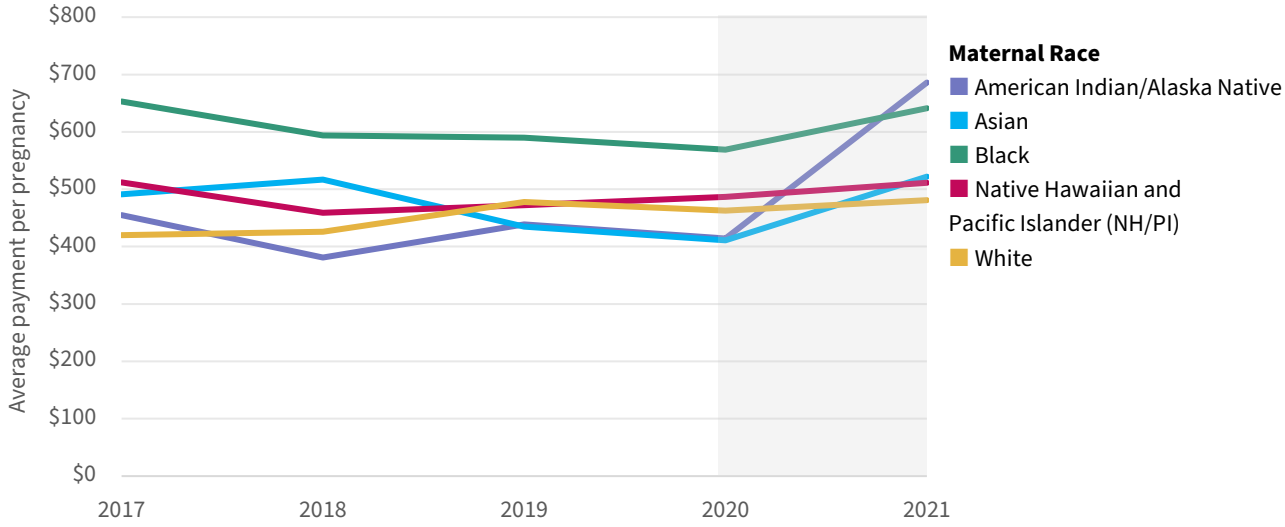
Figure 4.8 Average postpartum utilization cost per visit by maternal race, Washington state, 2017-2021



Data source: WA-APCD cohort

The average postpartum utilization cost per pregnancy across racial groups ranged between $420 to $650 in 2017 to $481 to $685 in 2021. Black women have the highest average postpartum utilization cost per pregnancy ($653 in 2017 to $641 in 2021) compared with the other racial groups (Figure 4.9)

Figure 4.9 Average postpartum utilization cost per pregnancy by maternal race, Washington state, 2017-2021

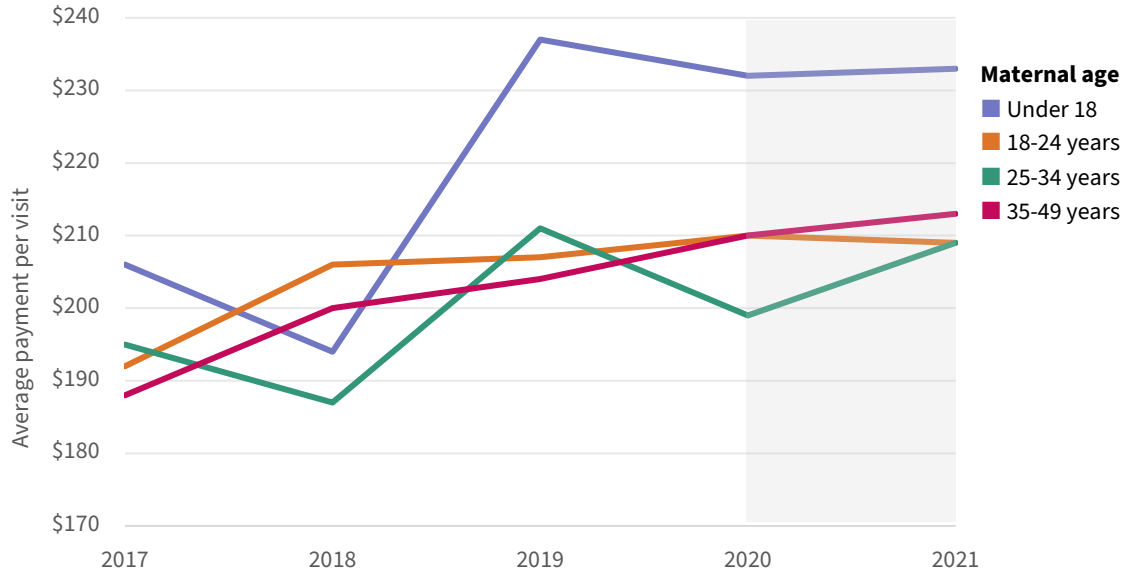


Data source: WA-APCD cohort

There was no significant difference in the rates of postpartum care utilization, which ranged from 2 to 3 visits, among women of different age groups who had singleton live births from 2017 to 2021.

The average postpartum utilization cost varied between $180 to $240 across age groups. There was an increase in the average postpartum visit cost for teen mothers from around $200 in 2018 to $240 in 2019 (Figure 4.10).

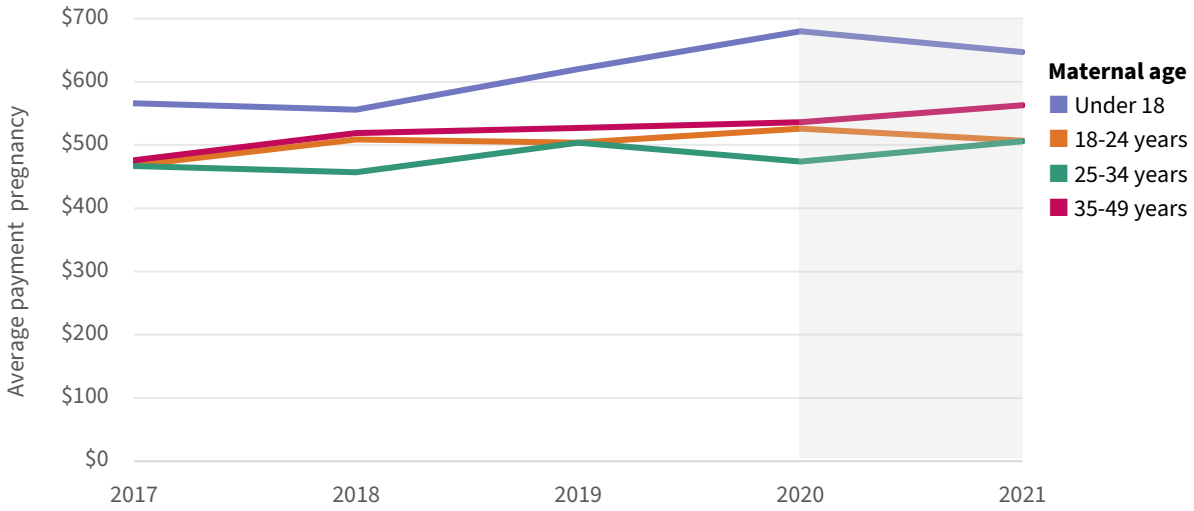
Figure 4.10 Average postpartum utilization cost per visit by maternal age, Washington state, 2017-2021



Data source: WA-APCD cohort

The average postpartum utilization cost per pregnancy was between $467 to $647 across age groups. groups. The average postpartum visit cost per pregnancy for teen mothers is the highest among all age groups from around $566 in 2017 to $647 in 2021 (Figure 4.11).

Figure 4.11 Average postpartum utilization cost per pregnancy by maternal age, Washington state, 2017-2021

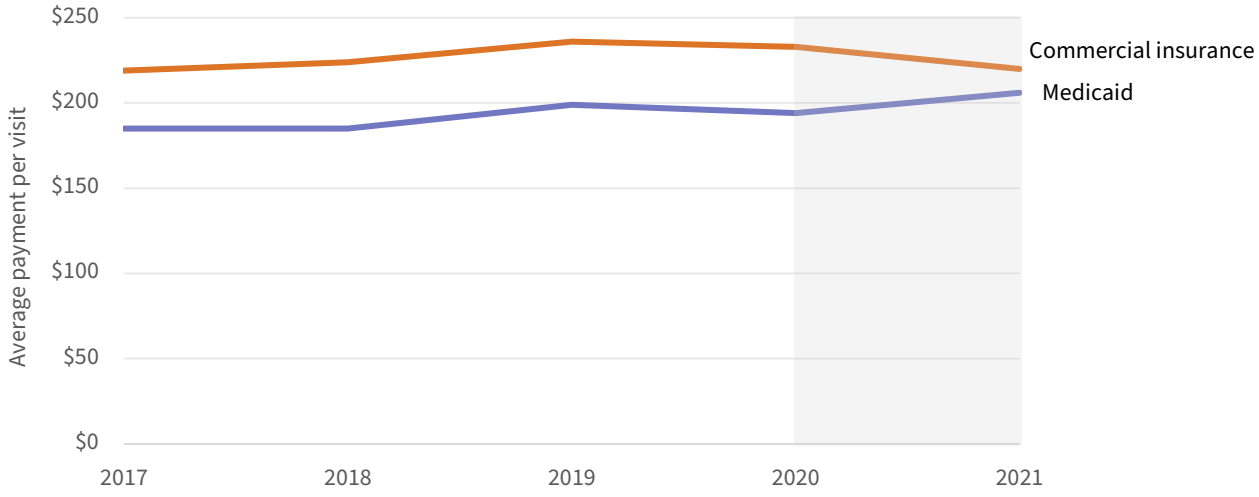


Data source: WA-APCD cohort

The average number of postpartum care visits varies between 2 and 3 visits depending on the payer type (Medicaid vs. commercial insurance). Medicaid-enrolled women who had singleton live births had slightly higher postpartum care visits than commercially insured women from 2017 through 2021.

In this cohort, the average postpartum cost per visit for women who had singleton live births paid by commercial insurance ($217 in 2017 and $220 in 2021) is consistently higher than the cost paid by Medicaid ($185 in 2017 to $206 in 2021) (Figure 4.12).

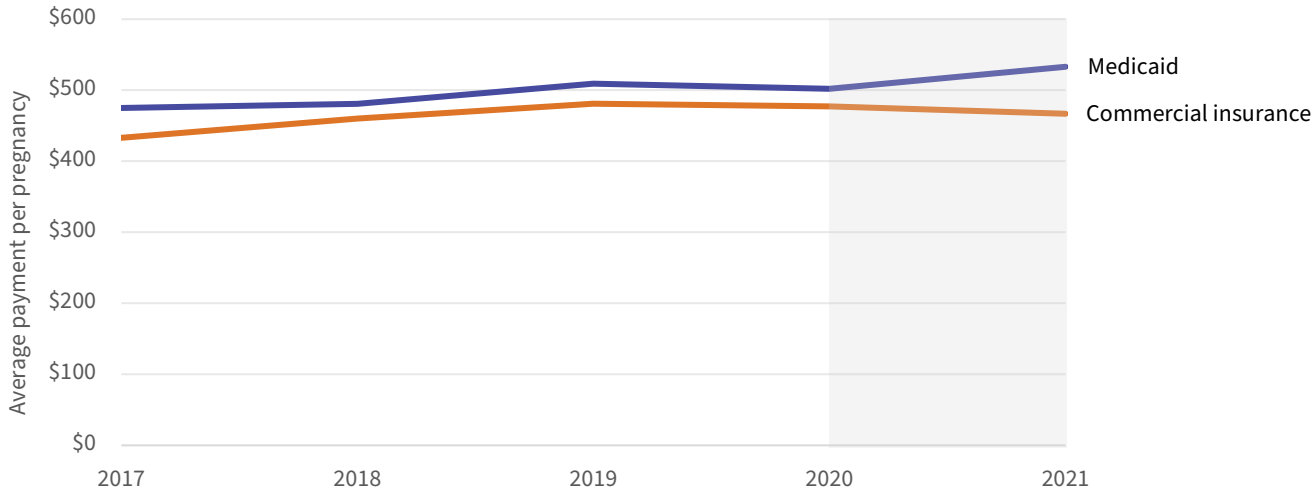
Figure 4.12 Average postpartum utilization costs per visit by birth payer, Washington state, 2017-2021



Data source: WA-APCD cohort

In this cohort, the average postpartum care cost per pregnancy for women who had singleton live births from 2017 to 2021 has been increasing over time and varied by payer type ($475 in 2017 - $533 in 2021 for Medicaid and $433 in 2017 - $467 in 2021 for commercial insurance). Medicaid consistently paid higher amounts for postpartum care per pregnancy compared to commercial insurance (Figure 4.13).

Figure 4.13 Average postpartum utilization costs per pregnancy, by birth payer, Washington state, 2017-2021



Data source: WA-APCD cohort

Discussion and Conclusion on Postpartum Utilization Costs

The average postpartum care costs per visit and pregnancy were the highest for teen mothers. This may be due to the higher risk of birth complications or adverse pregnancy outcomes. The average overall postpartum utilization cost per birth is higher for Medicaid-enrolled women than commercially insured women. However, the average postpartum utilization cost per visit is higher for commercially insured women than Medicaid-enrolled women. Commercial insurance most probably reimbursed the postpartum visits at a higher rate than Medicaid.

According to a recent study, postpartum health improvement associated with Medicaid postpartum extension resulted in a 17% decline in hospitalizations within the first 60 days postpartum (63). In addition, Medicaid expansion has been proposed as an approach to address health inequities (64).

Conclusion - The average postpartum utilization cost per visit and pregnancy increased from 2017 to 2021. There is no significant difference in the rates of postpartum care utilization, which ranged from 2 to 3 visits, among women who gave birth to singleton live births in Washington from 2017 to 2021 by maternal race, age, and birth payer. The average postpartum utilization cost per visit was consistently higher for AI/AN and NH/PI women, while the average postpartum utilization cost per pregnancy was the highest for Black women compared with the other racial groups. The average postpartum utilization cost per visit and pregnancy were highest for women under 18 years compared with other age groups. The average postpartum utilization cost per visit paid by commercial insurance is consistently higher than the cost paid by Medicaid. However, the average postpartum utilization cost per pregnancy paid by Medicaid is higher than that paid by commercial insurance.

CHAPTER 4: RECOMMENDATIONS AND LIMITATIONS

Recommendations

Our findings underscore the persistent disparities across the perinatal period between maternal race, education, and health care coverage. To close these gaps and improve birth outcomes, especially among Black, AI/AN, NH/PI, and Asian women, we recommend the following steps:

1. Improve prenatal, labor and delivery, and postpartum care access and quality

    1.1. Measure prenatal, labor and delivery, and postpartum care quality: Our findings indicate that disparities in maternal access to perinatal care exist even though women have health insurance coverage. Measuring patients' experiences of care related to respect, bias, racism, and discrimination is an important step that can help guide the development of provider- and facility-level interventions that seek to improve care experiences and health outcomes. Patient-centered respectful maternity care, where patients are treated with respect and dignity in a safe and trusting environment is needed.

    1.2 Ensure timely and adequate prenatal and postpartum care: Investigate and understand barriers that lead to delayed initiation of prenatal and postpartum care, inadequate prenatal care, and lack of postpartum care among BIPOC women, teenagers, women with less than high school education, and Medicaid recipients. Develop interventions with communities that are disproportionately affected by delayed and lack of access to prenatal and postpartum care and providers of care to reduce these barriers. Deve

2. Advance health equity and eliminate disparities both during and beyond the perinatal period

    2.1 Policy and decision-makers should focus on developing meaningful power-sharing relationships with BIPOC communities experiencing the most inequities: Invite community members to the table to listen to their concerns and hopes for the health and well-being of their members. Engage them in community-based participatory approaches and qualitative data collection methods to help identify nuances and structural, institutional, and individual-level factors that are root causes of health inequities, that are not explained by quantitative data alone. Use findings to inform policies that champion maternal and child health.

    2.2. Invest in community-tailored successful interventions or strategies: Communities are experts in their experiences and those who have been living with the impacts of systemic racism know the gaps in current practice. Invest in communities that are disproportionately affected by inequities, systemic racism, bias, and discrimination to design and implement community-led interventions that would be successful in increasing access to and utilization of health care and eliminating health inequities. Recognize, accept, and integrate community-designed evidence practices to improve culturally appropriate and responsive care.

3. Promote women's health across the life course

3.1 Integrate preventive and continuity of care: It is important to keep women healthy at every life stage. Focus on maintaining women's health across their reproductive years, including pre-conception, pregnancy, postpartum, and interpregnancy. Treat women with illness instead of waiting to treat them when they attend prenatal care.

3.2. Increase access to community-based support: There is a need to meet women and their families where they are. Invest in perinatal community health workers and doulas, particularly those from cultural and linguistic backgrounds that align with Black, Indigenous, and NH/PI women, and other women of color. These professionals provide essential support, improve health literacy, and assist with navigating health-related social needs including, stable housing, economic stability, and food security throughout the life course. This analysis did not include services provided by community health workers, doulas, and other similar roles. Collecting data on their services and impact could offer valuable insights.

4. Improve data access and collection:

4.1. Enhance data integration and accessibility: Address data sharing and privacy challenges across state-level agencies that host data systems through robust agreements and dedicated funding. Increase accessibility to linked data, e.g., hospital discharge data, birth and death certificate data, fetal death, All Payer Claims data, and Pregnancy Risk Assessment Monitoring System to provide a comprehensive view of maternal health throughout pregnancy.

4.2. Collect disaggregated race and ethnicity data consistently: Collect disaggregated race and ethnicity data to ensure that the heterogeneity in culture, socioeconomic status, risk factors, and health needs are captured and not masked. Implement categories that describe the full spectrum of racial and ethnic identities, including multiracial individuals.

4.3. Collect community-level data: Institute community-level data collection in communities disproportionately affected by adverse maternal and child health outcomes to understand the underlying reasons or processes that contribute to the observed patterns/trends of adverse outcomes. Use both quantitative and qualitative data collection methods to understand community-specific health needs. The combination of patterns of women's health and processes that underlie patterns provides a more complete picture of women's health to help inform policy and action.

5. Support women in their choice of birthing settings, e.g., community-based birth settings and hospitals:

Ensure that support structures and policies are in place to allow women the ability to choose where they desire to deliver. For example, having safety standards and protocols for community-based birth settings, including home and birthing centers, and emphasizing seamless coordination and collaboration between community-based birth settings and health care facilities. Coordinate with facilities with a higher level of physician-led care to ensure that women with rising medical needs have access to safe continuity of care.

Limitations to the current report

a. Race and ethnicity are not consistently measured across data sources.

b. The WA-APCD claims are based on what is billed and do not include details from the electronic health record. Additionally, The APCD does not include self-funded, Veteran Administration data, active-duty military and dependents, and federal employee plans and so may be missing a large proportion of pregnancies outside of those included in the database.

c. Claims data such as the WA APCD for maternity services may not have included all relevant visits and services because of bundled payments.

d. Structural racism, system-level barriers to access, and quality of care influence pregnancy outcomes and are not measured with current data sources.

e. Birth certificates include information about the birth payer. However, there is an undercount of Medicaid coverage of births by about 20% on birth certificates (unpublished data). In this report, we provide results of analyses on birth payers using both birth certificate data and WA APCD.

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APPENDIX

Table 1 Number of singleton live births per 1,000 women, Washington state, 2010-2022

Year	Number of births per 1,000 women
2010	51.2
2011	51.7
2012	52.0
2013	51.5
2014	52.5
2015	52.4
2016	52.6
2017	50.1
2018	48.5
2019	47.2
2020	44.3
2021	44.5
2022	43.4

Data source: WA-birth certificate data

Table 2 Number of singleton live births per 1,000 women by race/ethnicity, Washington state, 2010-2022

	Maternal race				
Year	American Indian/Alaska Native	Asian	Black	Native Hawaiian/Pacific Islander	White
2010	134.3	55.0	64.9	120.6	42.9
2011	143.8	54.9	68.3	117.6	43.7
2012	144.7	57.4	71.3	124.2	44.3
2013	149.2	52.2	73.1	124.8	44.0
2014	155.6	53.5	74.2	128.0	46.1
2015	156.5	52.6	72.6	122.3	46.2
2016	160.7	54.3	75.1	126.5	46.0
2017	157.4	50.4	73.7	123.5	43.6
2018	154.8	48.1	71.4	118.8	42.4
2019	149.4	47.0	69.6	117.7	41.0
2020	136.6	42.2	67.3	111.3	39.0
2021	142.0	42.1	65.0	106.6	39.1
2022	139.8	42.3	65.6	112.9	37.5

Data source: WA-birth certificate data

Table 3 Number of singleton live births per 1,000 by Hispanic ethnicity, Washington state, 2010-2022

	Maternal ethnicity	
Year	**Non-Hispanic**	**Hispanic**
2010	43.2	81.5
2011	43.7	79.0
2012	44.8	75.4
2013	44.4	72.2
2014	45.6	71.7
2015	45.5	71.4
2016	45.4	70.8
2017	42.7	74.1
2018	40.2	71.4
2019	38.5	70.7
2020	35.8	64.2
2021	35.0	64.2
2022	34.6	66.6

Data source: WA-birth certificate data

Table 4 Number of singleton live births per 1,000 women by age, Washington state, 2010-2022

	Maternal age			
Year	**Under 18 years**	**18-24 years**	**25-34 years**	**35-49 years**
2010	13.0	69.7	99.2	18.3
2011	11.7	68.4	100.5	18.7
2012	10.8	65.6	102.3	19.3
2013	8.8	62.3	101.7	19.9
2014	8.3	60.4	104.5	21.0
2015	7.1	56.5	105.1	22.1
2016	6.5	54.0	106.4	22.7
2017	5.5	50.5	99.4	23.2
2018	4.7	47.1	96.0	23.5
2019	4.5	45.4	92.1	23.6
2020	4.2	42.3	84.9	22.7
2021	3.7	41.0	86.3	23.4
2022	3.2	39.1	84.6	23.7

Data source: WA-birth certificate data

Table 5 Number of singleton live births per 1,000 women by education attainment, Washington state, 2010-2022

	Maternal education attainment					
Year	Less than high school	High school graduate or GED	Associate's degree	Some college, no degree	Bachelor's degree	Graduate or professional degree
2010	85.9	54.2	44.6	38.6	48.5	54.9
2011	80.1	55.6	42.2	40.3	50.1	57.1
2012	76.2	53.2	48.5	40.6	50.0	64.1
2013	68.2	56.7	49.8	40.2	48.7	59.7
2014	72.0	57.0	47.2	42.9	49.1	60.7
2015	69.8	54.3	49.0	44.7	48.3	59.7
2016	66.0	56.9	49.2	46.5	48.3	54.1
2017	65.2	54.2	44.5	43.7	45.1	54.8
2018	61.6	54.6	42.8	42.1	44.6	48.8
2019	58.1	47.5	44.5	42.9	43.5	48.8
2020	57.2	45.3	41.3	39.9	39.8	46.5
2021	56.9	43.5	41.7	39.8	39.8	46.8
2022	51.9	42.3	40.5	41.4	37.4	46.6

Data source: WA-birth certificate data

Table 6 Percentage of total births by parity, Washington 2010-2022

	Maternal parity		
Year	Nulliparous	Primiparous	Multiparous
2010	42.1	31.3	26.7
2011	41.9	31.2	27.0
2012	41.4	31.6	27.0
2013	40.6	32.0	27.3
2014	40.1	32.6	27.3
2015	39.6	32.3	28.1
2016	40.5	32.3	27.2
2017	40.4	32.2	27.5
2018	40.0	32.4	27.6
2019	40.1	32.5	27.4
2020	40.4	32.2	27.4
2021	40.1	32.6	27.4
2022	40.6	32.2	27.3

Data source: WA-birth certificate data

Table 7 Birth rate (number of births per 1,000 women) by Washington counties, 2010, 2016 and 2022

	Number of births per 1,000 women		
County	2010	2016	2022
Adams	139.7	106.8	82.0
Asotin	na	0.5	0.7
Benton	99.4	109.3	89.2
Chelan	96.2	99.2	85.5
Clallam	48.3	47.4	32.9
Clark	51.2	52.7	44.4
Columbia	na	4.9	na
Cowlitz	43.0	37.3	32.5
Douglas	0.1	0.4	0.3
Ferry	1.5	2.4	0.9
Franklin	21.7	1.0	0.9
Garfield	na	na	na
Grant	60.8	54.5	45.9
Grays Harbor	45.0	34.8	22.6
Island	37.0	37.6	13.7
Jefferson	30.0	29.8	24.7
King	55.7	55.2	46.4
Kitsap	48.0	55.0	39.6
Kittitas	33.0	31.9	29.8
Klickitat	14.8	2.2	3.9
Lewis	46.1	49.6	41.6
Lincoln	1.6	1.7	2.6
Mason	21.0	27.0	30.9
Okanogan	65.6	58.2	41.6
Pacific	0.3	1.6	1.1
Pend Oreille	28.2	19.6	9.2
Pierce	54.1	60.1	49.9
San Juan	1.1	1.2	3.6
Skagit	69.2	67.8	56.0
Skamania	0.4	1.8	1.8
Snohomish	31.6	36.9	30.9
Spokane	54.9	57.3	49.5
Stevens	31.1	32.5	24.4
Thurston	47.0	50.2	39.5
Wahkiakum	na	na	1.4
Walla Walla	46.8	45.2	34.3
Whatcom	44.2	44.6	36.5
Whitman	26.0	24.0	23.9
Yakima	73.0	67.2	48.3

* na, not available due to small numbers; Data source: WA-birth certificate data

Table 8 Percent of total births at a birth center or home, Washington, 2010-2022

	Delivery facility		
Year	**Birth center**	**Home**	**Other**
2010	1.1	1.9	0.1
2011	1.1	1.9	0.1
2012	1.4	2.0	0.1
2013	1.5	2.2	0.1
2014	1.5	2.4	0.2
2015	1.6	2.4	0.1
2016	1.6	2.2	0.2
2017	1.6	2.2	0.1
2018	1.6	2.2	0.1
2019	1.5	2.1	0.1
2020	1.7	2.7	0.1
2021	1.9	2.6	0.1
2022	2.0	2.6	0.1

Data source: WA-birth certificate data

Table 9 Prenatal care initiation in the first trimester by maternal race, Washington state, 2010-2022

	Maternal race					
Year	**American Indian/Alaska Native**	**Asian**	**Black**	**Mexican/ Chicano/ Hispanic**	**Native Hawaiian/Pacific Islander**	**White**
2010	77.8	81.8	74.6	74.5	62.3	83.5
2011	77.6	81.9	75.3	75.8	63.4	83.3
2012	78.6	82.8	74.4	75.6	60.9	83.7
2013	78.8	83.0	74.1	77.8	65.0	83.8
2014	79.1	82.0	73.2	76.4	57.6	82.9
2015	78.0	82.5	74.3	77.0	62.9	83.2
2016	79.2	82.1	74.1	78.6	63.9	83.3
2017	80.4	83.3	75.2	79.3	62.3	83.9
2018	81.4	83.3	74.7	77.8	62.7	84.0
2019	80.5	83.0	73.4	77.8	59.6	84.1
2020	82.4	83.8	75.4	78.9	63.4	84.2
2021	81.6	84.3	75.3	79.2	63.2	83.9
2022	80.2	83.2	73.8	76.4	59.5	82.7

Data source: WA-birth certificate data

Table 10 Prenatal care initiation in the first trimester by maternal age, Washington state, 2010-2022

	Maternal age			
Year	Under 18 years	18-24 years	25-34 years	35-49 years
2010	65.9	75.2	83.8	84.0
2011	65.8	76.2	83.3	83.8
2012	67.2	75.8	83.8	83.9
2013	65.2	75.6	84.0	85.2
2014	65.9	73.8	83.0	84.7
2015	63.8	74.7	83.2	84.3
2016	63.5	75.1	83.0	84.8
2017	64.1	75.9	83.7	84.5
2018	64.0	75.7	83.5	84.5
2019	64.2	75.6	83.5	84.3
2020	66.9	77.1	83.5	84.2
2021	67.2	77.0	83.4	83.6
2022	59.6	74.4	81.7	82.3

Data source: WA-birth certificate data

Table 11 Prenatal care initiation in the first trimester by maternal education attainment, Washington state, 2010-2022

	Maternal education attainment					
Year	Less than high school	High school graduate or GED	Associate's degree	Some college, no degree	Bachelor's degree	Graduate or professional degree
2010	70.9	76.8	85.3	81.4	88.9	90.5
2011	71.4	77.2	84.1	81.5	88.1	90.3
2012	70.5	76.9	84.7	81.9	88.4	90.4
2013	71.8	76.6	84.7	81.9	88.7	90.8
2014	70.6	75.7	84.0	80.8	87.4	90.0
2015	70.9	76.9	84.1	81.1	87.3	89.1
2016	71.0	77.7	84.1	80.8	87.1	88.7
2017	72.6	77.5	85.0	81.1	87.6	89.3
2018	72.0	77.5	83.7	81.5	87.6	89.2
2019	72.6	78.0	84.0	80.9	87.2	88.8
2020	72.5	78.4	83.9	81.4	87.5	88.6
2021	72.5	78.7	83.4	81.0	86.5	88.5
2022	69.3	76.1	81.7	79.4	85.6	87.6

Data source: WA-birth certificate data

Table 12 Prenatal care initiation in the first trimester by birth payer, Washington state, 2010-2022

	Birth payer	
Year	Medicaid	Commercial insurance
2010	73.2	88.1
2011	73.9	87.8
2012	73.4	88.1
2013	73.2	88.6
2014	72.1	87.8
2015	73.6	87.7
2016	74.3	87.8
2017	75.2	88.1
2018	74.8	87.9
2019	74.7	87.7
2020	75.6	87.3
2021	76.7	86.1
2022	73.8	84.9

Data source: WA-birth certificate data

Table 13 Adequacy of prenatal care utilization by maternal race, Washington state, 2010-2022

	Maternal race					
Year	American Indian/Alaska Native	Asian	Black	Mexican/ Chicano/ Hispanic	Native Hawaiian/ Pacific Islander	White
2010	74.7	80.3	72.3	73.1	60.2	81.8
2011	74.5	79.8	73.3	73.8	61.3	81.4
2012	73.9	80.3	72.5	75.1	57.3	82.1
2013	74.6	81.7	71.7	77.0	63.2	82.9
2014	75.7	80.6	71.8	75.4	59.9	82.9
2015	74.5	81.3	71.8	74.8	59.2	82.8
2016	76.3	81.0	72.1	78.0	60.2	83.1
2017	78.0	82.9	74.2	76.9	63.7	83.6
2018	78.3	82.3	73.6	77.4	61.3	83.9
2019	77.8	81.3	71.5	76.5	58.1	83.5
2020	76.6	79.6	72.1	76.3	57.4	81.6
2021	77.6	81.0	73.2	77.1	54.5	81.6
2022	76.1	80.6	71.1	74.6	54.0	80.5

Data source: WA-birth certificate data

Table 14 Adequacy of prenatal care utilization by maternal age, Washington state, 2010-2022

	Maternal age			
Year	Under 18 years	18-24 years	25-34 years	35-49 years
2010	65.5	74.3	81.7	82.4
2011	66.4	74.6	81.2	81.9
2012	67.6	74.2	82.0	82.3
2013	67.3	74.9	82.4	84.1
2014	65.8	74.5	82.4	83.2
2015	64.3	74.0	82.2	83.0
2016	62.7	74.8	82.3	83.6
2017	63.7	75.3	82.9	83.9
2018	67.5	75.2	82.8	84.2
2019	63.8	74.3	81.9	83.6
2020	62.7	73.8	80.2	81.5
2021	60.3	74.3	80.4	81.8
2022	57.0	71.6	79.2	80.6

Data source: WA-birth certificate data

Table 15 Adequacy of prenatal care utilization by maternal education attainment, Washington, State, 2010-2022

	Maternal education attainment					
Year	Less than high school	High school graduate or GED	Associate's degree	Some college, no degree	Bachelor's degree	Graduate or professional degree
2010	68.9	75.4	83.9	80.0	87.0	88.4
2011	69.8	75.4	82.6	79.8	85.9	87.2
2012	69.3	75.8	83.3	80.3	86.1	88.0
2013	69.7	76.6	84.2	80.6	87.1	88.4
2014	68.7	76.0	84.2	81.2	86.7	88.1
2015	68.1	76.2	83.9	80.9	86.3	87.3
2016	69.1	77.0	84.0	81.1	86.5	87.6
2017	70.2	76.9	84.8	80.8	87.5	88.4
2018	69.7	77.7	84.2	81.0	87.3	88.5
2019	68.5	77.1	82.6	79.9	86.5	87.7
2020	68.0	75.0	81.9	78.6	84.5	85.7
2021	68.2	75.5	81.6	78.7	84.6	86.0
2022	65.4	72.8	80.4	77.2	83.8	85.6

Data source: WA-birth certificate data

Table 16 Adequacy of prenatal care by birth payer, Washington state, 2010-2022

	Birth payer	
Year	Medicaid	Commercial insurance
2010	72.5	86.0
2011	73.2	85.5
2012	73.6	85.7
2013	73.6	86.9
2014	73.0	86.8
2015	72.7	86.8
2016	73.7	87.0
2017	74.3	87.5
2018	74.2	87.4
2019	73.4	86.4
2020	72.6	84.5
2021	73.4	84.1
2022	70.4	83.5

Data source: WA-birth certificate data

Table 17 Prenatal care costs ($) by maternal age, Washington state, 2017-2021

	Maternal age			
Year	Under 18 years	18-24 years	25-34 years	35-49 years
2017	465,954	6,435,251	12,544,896	5,030,047
2018	385,221	6,070,499	11,317,501	4,570,114
2019	447,984	5,893,719	9,631,129	3,752,244
2020	467,951	5,203,661	8,883,376	3,128,002
2021	490,093	5,956,003	8,410,420	3,003,425

Data source: WA-APCD cohort

Table 18 Average prenatal care cost ($) per visit by maternal age, Washington state, 2017-2021

	Maternal age			
Year	Under 18 years	18-24 years	25-34 years	35-49 years
2017	164	156	174	218
2018	162	157	172	216
2019	177	157	165	195
2020	165	152	168	195
2021	168	160	170	207

Data source: WA-APCD cohort

Table 19 Average prenatal care cost ($) per pregnancy by maternal age, Washington state, 2017-2021

	Maternal age			
Year	**Under 18 years**	**18-24 years**	**25-34 years**	**35-49 years**
2017	1,765	1,545	1,573	1,962
2018	1,743	1,582	1,592	1,964
2019	1,867	1,562	1,524	1,801
2020	1,689	1,469	1,512	1,698
2021	1,702	1,581	1,553	1,877

Data source: WA-APCD cohort

Table 20 Average prenatal care cost ($) per visit by birth payer, Washington state, 2017-2021

	Birth payer	
Year	**Medicaid**	**Commercial insurance**
2017	146	258
2018	143	252
2019	140	219
2020	133	207
2021	136	211

Data source: WA-APCD cohort

Table 21 Average prenatal care cost ($) per pregnancy by birth payer, Washington state, 2017-2021

	Birth payer	
Year	**Medicaid**	**Commercial insurance**
2017	1,358	1,894
2018	1,350	1,877
2019	1,314	1,652
2020	1,209	1,517
2021	1,267	1,565

Data source: WA-APCD cohort

Table 22 Cesarean section deliveries by maternal race, Washington state, 2010-2022

	Maternal race					
Year	American Indian/ Alaska Native	Asian	Black	Mexican/ Chicano/ Hispanic	Native Hawaiian/ Pacific Islander	White
2010	32.4	31.6	31.5	24.7	29.0	27.7
2011	32.8	29.7	31.9	25.5	29.5	26.8
2012	33.4	30.1	31.9	26.9	30.3	26.7
2013	31.3	29.7	32.1	24.7	31.8	25.9
2014	32.5	29.3	30.9	25.2	29.6	25.2
2015	33.0	28.3	32.7	24.3	28.4	24.9
2016	33.3	26.6	31.5	24.5	29.7	25.0
2017	33.3	28.0	31.7	25.3	28.5	25.3
2018	32.6	27.8	31.4	25.2	28.3	25.6
2019	33.5	27.9	32.5	24.4	28.8	25.5
2020	34.9	27.4	32.5	25.6	32.2	26.1
2021	33.7	29.4	33.3	26.6	29.8	26.5
2022	35.5	29.6	33.3	27.0	31.0	27.6

Data source: WA-birth certificate data

Table 23 Cesarean section deliveries by maternal age, Washington state, 2010-2022

	Maternal age			
Year	Under 18 years	18-24 years	25-34 years	35-49 years
2010	15.3	22.4	28.7	37.9
2011	15.5	21.4	28.0	37.7
2012	16.0	21.6	28.1	37.0
2013	13.6	20.3	27.2	36.5
2014	13.8	19.9	26.5	35.8
2015	12.9	19.4	26.2	34.9
2016	12.8	19.5	25.8	35.0
2017	14.5	19.0	26.3	35.1
2018	11.7	18.9	26.1	36.1
2019	11.6	18.8	26.0	35.9
2020	14.2	19.5	26.4	36.8
2021	13.9	20.2	27.1	36.4
2022	16.0	20.1	27.8	37.5

Data source: WA-birth certificate data

Table 24 Cesarean section deliveries by maternal education attainment, Washington state, 2010-2022

	Maternal education attainment					
Year	Less than high school	High school graduate or GED	Associate's degree	Some college, no degree	Bachelor's degree	Graduate or professional degree
2010	25.0	26.4	29.1	28.8	30.1	31.7
2011	25.4	25.8	28.4	28.0	29.0	30.5
2012	26.3	26.7	28.1	27.4	28.4	30.8
2013	25.0	25.4	27.5	27.3	27.8	29.5
2014	24.4	25.6	27.2	26.3	26.9	28.9
2015	24.5	24.7	26.1	26.4	27.0	28.5
2016	24.3	25.6	26.4	25.7	26.3	28.8
2017	25.0	24.7	27.0	26.7	27.1	29.3
2018	24.3	24.9	25.9	27.0	27.7	29.6
2019	24.7	25.0	25.7	26.8	27.6	29.9
2020	25.0	26.2	26.8	27.6	27.4	30.4
2021	26.8	26.0	27.4	27.8	28.1	30.5
2022	26.6	26.5	28.5	28.3	29.4	32.7

Data source: WA-birth certificate data

Table 25 Cesarean section deliveries by birth payer, Washington state, 2010-2022

	Birth payer	
Year	Medicaid	Commercial insurance
2010	26.4	30.4
2011	26.4	29.7
2012	27.2	29.2
2013	25.9	28.6
2014	25.9	27.7
2015	25.2	27.5
2016	25.7	27.2
2017	25.7	27.8
2018	25.5	28.0
2019	25.5	28.1
2020	26.4	28.4
2021	26.6	29.2
2022	26.5	30.4

Data source: WA-birth certificate data

Table 26 Delivery complications per 100,000 births, Washington state, 2010-2022

	Delivery complications		
Year	Unplanned OR procedure following delivery	Transfusion	3rd or 4th degree perineal laceration
2010	152.9	305.7	1,300.6
2011	151.1	348.6	1,233.4
2012	172.6	307.6	1,288.7
2013	196.0	307.5	1,130.7
2014	194.3	346.9	1,462.5
2015	258.9	415.7	1,106.9
2016	242.1	533.4	1,094.9
2017	390.5	467.6	1,149.7
2018	455.9	416.7	1,148.4
2019	429.8	407.5	1,106.8
2020	364.8	425.8	906.2
2021	354.3	529.6	978.4
2022	454.4	569.0	1,099.8

Data source: WA-birth certificate data

Table 27 Average delivery cost ($) by maternal age, Washington state, 2017-2021

	Maternal age			
Year	Under 18 years	18-24 years	25-34 years	35-49 years
2017	5,407	4,966	6,688	8,143
2018	4,587	5,058	6,898	8,701
2019	4,497	4,894	6,701	8,337
2020	4,427	4,979	6,901	8,087
2021	5,113	5,265	7,383	8,868

Data source: WA-APCD cohort

Table 28 Average delivery cost ($) by birth payer, Washington state, 2017-2021

	Birth payer	
Year	Medicaid	Commercial insurance
2017	3,913	9,005
2018	3,983	9,718
2019	4,003	9,300
2020	4,157	9,767
2021	4,432	10,442

Data source: WA-APCD cohort

Table 29 Proportion of women who delivered singleton live births that had at least one postpartum visit, by maternal race, Washington state, 2017-2021

	Maternal race				
Year	American Indian/ Alaska Native	Asian	Black	Native Hawaiian/ Pacific Islander	White
2017	59.6	65.8	72.9	63.5	62.4
2018	61.5	66.9	70.3	63.4	63.6
2019	65.2	64.7	69.3	54.6	63.3
2020	58.2	61.4	65.9	57.4	60.6
2021	64.7	64.9	67.0	57.0	62.4

Data source: WA-APCD cohort

Table 30 Proportion of women who delivered singleton live births that had at least one postpartum visit, by maternal age, Washington state, 2017-2021

	Maternal age			
Year	Under 18 years	18-24 years	25-34 years	35-49 years
2017	67.8	63.6	62.4	65.4
2018	68.7	64.1	62.9	65.4
2019	66.9	63.2	62.4	64.1
2020	70.6	60.9	58.4	61.4
2021	63.8	62.4	61.8	65.1

Data source: WA-APCD cohort

Table 31 Proportion of women who delivered singleton live births that had at least one postpartum visit, by birth payer, Washington state, 2017-2021

	Birth payer	
Year	Medicaid	Commercial insurance
2017	64.6	59.8
2018	65.5	59.6
2019	64.8	59.1
2020	62.7	54.3
2021	64.5	58.9

Data source: WA-APCD cohort

Table 32 Proportion of women who delivered singleton live births that initiated postpartum care within 42 days of birth, by maternal race, Washington state, 2017-2021

	Maternal race				
Year	American Indian/ Alaska Native	Asian	Black	Native Hawaiian/ Pacific Islander	White
2017	60.6	58.3	60.0	62.2	55.6
2018	52.8	57.7	59.5	59.3	57.0
2019	55.3	59.5	58.9	60.3	56.3
2020	54.7	62.2	59.9	60.2	56.1
2021	55.0	57.6	59.5	63.0	55.7

Data source: WA-APCD cohort

Table 33 Proportion of women who delivered singleton live births that initiated postpartum care within 42 days of birth, by maternal age, Washington state, 2017-2021

	Maternal age			
Year	Under 18 years	18-24 years	25-34 years	35-49 years
2017	59.9	56.7	57.7	58.7
2018	59.4	57.1	58.1	59.4
2019	59.9	56.6	57.3	60.1
2020	58.7	55.5	58.1	59.5
2021	57.6	55.3	56.3	58.1

Data source: WA-APCD cohort

Table 34 Proportion of women who delivered singleton live births that initiated postpartum care within 42 days of birth, by birth payer, Washington state, 2017-2021

	Birth payer	
Year	Medicaid	Commercial insurance
2017	57.3	58.8
2018	58.0	58.6
2019	57.6	57.7
2020	57.3	58.6
2021	56.9	55.4

Data source: WA-APCD cohort

Table 35 Average postpartum utilization cost ($) per pregnancy, Washington state, 2017-2021

Year	Cost ($)
2017	469
2018	482
2019	509
2020	501
2021	518

Data source: WA-APCD cohort

Table 36 Average postpartum utilization cost ($) per visit by maternal race, Washington state, 2017-2021

	Maternal race				
Year	American Indian/ Alaska Native	Asian	Black	Native Hawaiian/ Pacific Islander	White
2017	170	201	221	206	171
2018	145	218	210	203	168
2019	168	178	214	202	190
2020	163	183	209	213	183
2021	256	213	233	226	189

Data source: WA-APCD cohort

Table 37 Average postpartum utilization cost ($) per pregnancy by maternal race, Washington state, 2017-2021

	Maternal race				
Year	American Indian/ Alaska Native	Asian	Black	Native Hawaiian/ Pacific Islander	White
2017	455	491	653	512	420
2018	381	517	594	459	426
2019	439	435	590	472	478
2020	414	411	569	487	463
2021	686	522	641	511	481

Data source: WA-APCD cohort

Table 38 Average postpartum utilization cost ($) per visit by maternal age, Washington state, 2017-2021

	Maternal age			
Year	Under 18 years	18-24 years	25-34 years	35-49 years
2017	206	192	195	188
2018	194	206	187	200
2019	237	207	211	204
2020	232	210	199	210
2021	233	209	209	213

Data source: WA-APCD cohort

Table 39 Average postpartum utilization cost ($) per pregnancy by maternal age, Washington state, 2017-2021

	Maternal age			
Year	Under 18 years	18-24 years	25-34 years	35-49 years
2017	566	468	467	476
2018	556	509	457	519
2019	620	504	504	527
2020	680	526	474	536
2021	647	507	506	563

Data source: WA-APCD cohort

Table 40 Average postpartum utilization cost ($) per visit by birth payer, Washington state, 2017-2021

	Birth payer	
Year	Medicaid	Commercial insurance
2017	185	219
2018	185	224
2019	199	236
2020	194	233
2021	206	220

Data source: WA-APCD cohort

Table 41 Average postpartum utilization cost ($) per pregnancy, by birth payer, Washington state, 2017-2021

	Birth payer	
Year	Medicaid	Commercial insurance
2017	475	433
2018	481	460
2019	509	481
2020	502	477
2021	533	467

Data source: WA-APCD cohort