STATE OF IOWA DEPARTMENT OF

Health AND Human

SERVICES

DIVISION OF IOWA MEDICAID – BIRTH CERTIFICATE LINK TO PAID CLAIMS REPORT

Selected health indicators to monitor maternal and newborn health among Iowa resident births by Medicaid status, 2017 through 2021

DECEMBER, 2022

Acknowledgements

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INTRODUCTION

Report purpose: The purpose of this report is to highlight key health indicators to monitor maternal and newborn health among Iowa resident births by Medicaid reimbursement for delivery compared to mothers' delivery costs were not reimbursed by Medicaid.

Background: Medicaid is a state/federal program that provides health insurance for groups of low-income people, including pregnant women. The Iowa Department of Health and Human Services administers the Division of Iowa Medicaid. In Iowa, pregnant women are eligible for Medicaid if their income is 375% of the federal poverty level or below.

Data Sources: Data for this report were derived from a matched file of the birth certificate and Medicaid paid claims for calendar years 2017 through 2021. Medicaid status was based on a paid claim for a delivery relevant diagnostic related group. This record was then linked to a birth certificate. Birth certificate data were used to determine maternal demographic characteristics (age, race, and ethnicity), health conditions and cigarette smoking during pregnancy, prenatal care adequacy, and infant birth outcomes. See Appendix A for an explanation of how race and ethnicity are categorized for this report.

Data for calculation of the severe maternal morbidity rate was derived from Iowa's Inpatient Hospital Discharge data file.

Data Access and Use: Access to the data used to complete this report are authorized pursuant to Contract Number MED-17-006 (Maternal and Child And Adolescent Health Omnibus), as amended, between the Iowa Department of Public Health (IDPH) and the Iowa Department of Human Services and Data Sharing Agreement number 588DSA2021-06 with the IDPH Bureau of Health Statistics.

Report Structure: This report is organized around key maternal and newborn health indicators developed by Healthy People (HP) 2030[1]. HP 2030 provides measureable data-driven objectives as well as evidence-based strategies to take actions that address maternal and newborn health indicators. Each indicator can be viewed as a stand-alone 3-page fact sheet.

For each indicator, we present the national baseline result, the most recent national data, the indicator's target rate and desired direction, and a summary and rationale for each indicator. We then present Iowa specific results overall and disaggregated by maternal racial groups, ethnicity, and age. To conclude the indicator presentation, we discuss strategies to address the indicator.

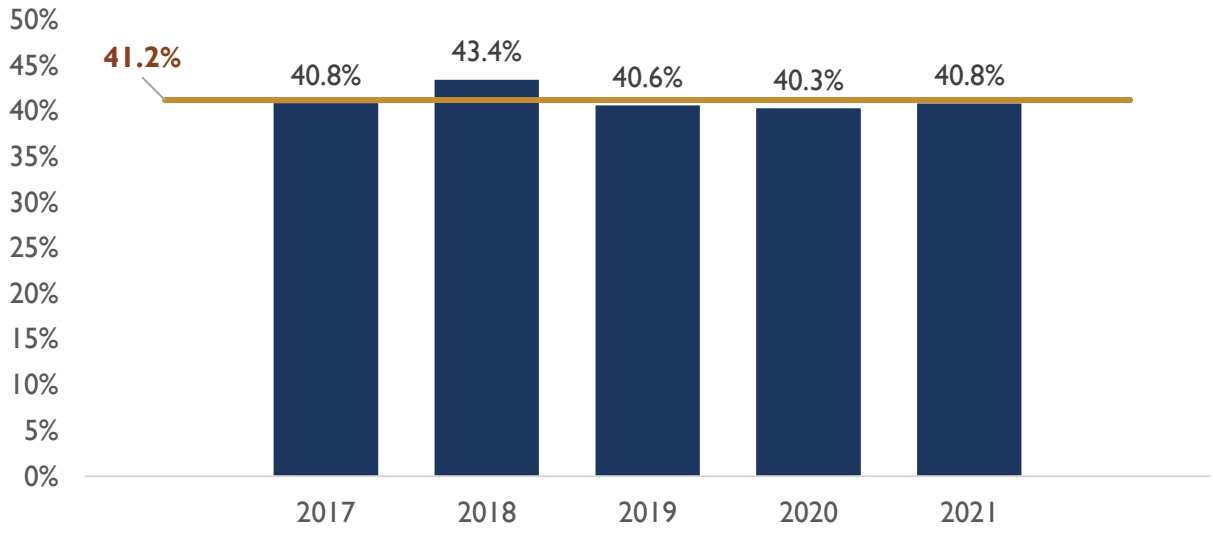
MEDICAID REIMBURSED BIRTHS CALENDAR YEARS 2017 – 2021

Table 1. Number, percent of Medicaid reimbursed births, and State total births, 2017 - 2021, Iowa resident births

	Medicaid[2]		Non-Medicaid[3]	State Total[4]
Year	Number	%	Number	Number
2021	15,027	40.8	21,759	36,786
2020	14,530	40.3	21,528	36,058
2019	15,255	40.6	22,342	37,597
2018	16,367	43.4	21,342	37,709
2017	15,683	40.8	22,725	38,408

Figure 1.The percent of Medicaid reimbursed births did not significantly change from 2020 to 2021

Medicaid is an important reimbursement source for maternal and newborn care in Iowa. The average percent of Medicaid reimbursed births was 41.2% from 2017 through 2021. In 2021, 40.8% (n=15,027) of births to Iowa residents were reimbursed by Medicaid (Table 1).



MEDICAID REIMBURSED BIRTHS BY SELECTED DEMOGRAPHICS – RESIDENT BIRTHS – CALENDAR YEAR 2021

Figure 2. Maternal race and ethnicity by Medicaid reimbursement status

In calendar year 2021, Medicaid reimbursed a higher proportion of births among women who self-identified as Black, Native Hawaiian, Hispanic, multiple races, or American Indian/Native American compared to women who self-identified as White and Asian.

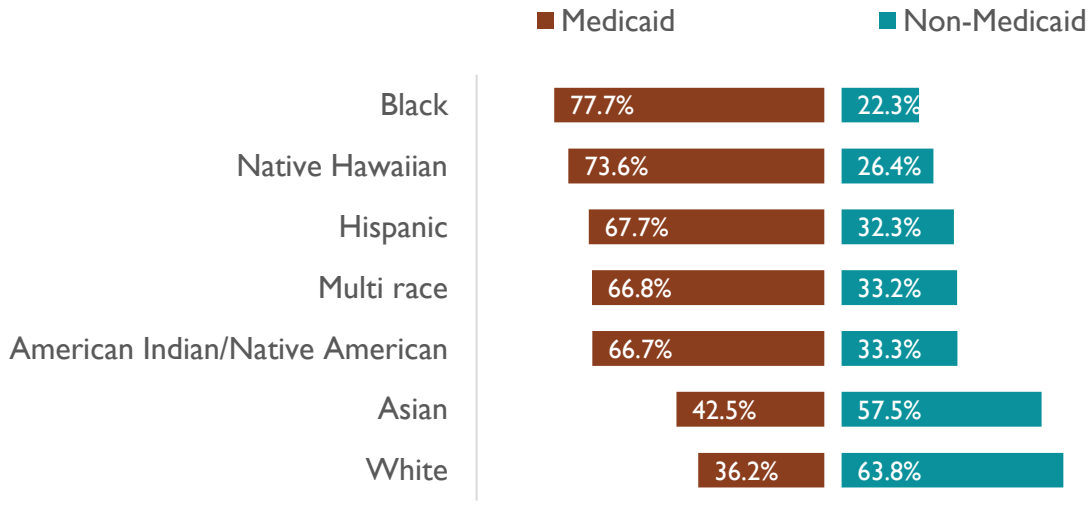
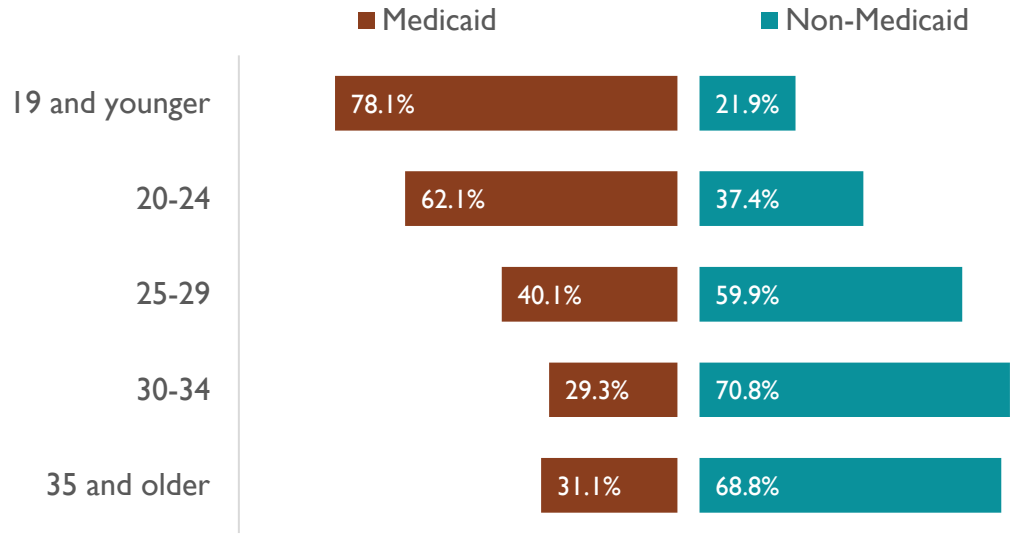


Figure 3. Maternal age by Medicaid reimbursement status

In calendar year 2021, the percent of Medicaid reimbursed births was inversely related to maternal age among births to Iowa residents.



HP 2030 - INCREASE THE PROPORTION OF PREGNANT WOMEN WHO RECEIVE EARLY AND ADEQUATE PRENATAL CARE — MICH-08

Baseline: 76.7 percent of pregnant women received early and adequate prenatal care (2019)[5]

Most recent national level data: 74.7 percent of pregnant women received early and adequate prenatal care[6] (2020)

Most recent Iowa data: 84.6 percent (2021)

Target: 80.5 percent

Desired Direction: Increase

State Level Data Source: Iowa Certificate of Live Birth linked to Medicaid paid claims

Summary and Rationale:
Women who obtain early and adequate prenatal care have the opportunity to be screened for conditions and risk factors that may lead to pregnancy and birth complications[7]. These conditions include hypertension and gestational diabetes. Early prenatal care also provides pregnant women with the opportunity for education and counseling to address modifiable risk factors for adverse outcomes such as smoking cessation and health weight gain during pregnancy. Prenatal care also provides pregnant women with educational opportunities to learn about self-care and monitoring during pregnancy as well as newborn care. Early access to prenatal care is also a Title V MCH Block Grant National Outcome Measure as well as a part of the Core Set of Maternal and Perinatal Health Measures for Medicaid, CHIP, and the National Committee for Quality Assurance's Healthcare Effectiveness Data and Information Set (HEDIS).

Iowa proportion of pregnant women who received early and adequate prenatal care
Overall, pregnant women in 2021, Iowa has surpassed the Healthy People 2030 target for early and adequate prenatal care, at 84.3% (Figure 4 & Table 2). However, disparities in early and adequate prenatal care are evident among pregnant women with Medicaid reimbursed births (84.3% vs. 78.6%) overall, and by race, ethnicity (Figure 5), and age (Figure 6).

Strategies to support pregnant women's access to early and adequate prenatal care in Iowa
The Iowa Department of Health and Human Services employs several strategies to support pregnant women's' access to early and adequate prenatal care. The Division of Medicaid offers presumptive eligibility (PE) Insurance. PE is temporary Medicaid coverage that assists pregnant women to obtain prenatal care while they wait to find out if they have been approved for ongoing Medicaid coverage. The Bureau of Family Health (BFH) has developed a Doula Project to serve Black women in four Iowa counties. Doulas work with their clients to access and obtain timely prenatal care. The BFH provides funding to Title V Maternal Health agencies. These agencies provide support and referrals for pregnant women to access prenatal care. Also housed in the BFH, the Title X Family Planning Program refers pregnant women to Title V Maternal Health agencies.

Figure 4. Percent of pregnant women who obtained adequate or adequate plus prenatal care by Medicaid status and the State percent, 2017 - 2021, Iowa resident births

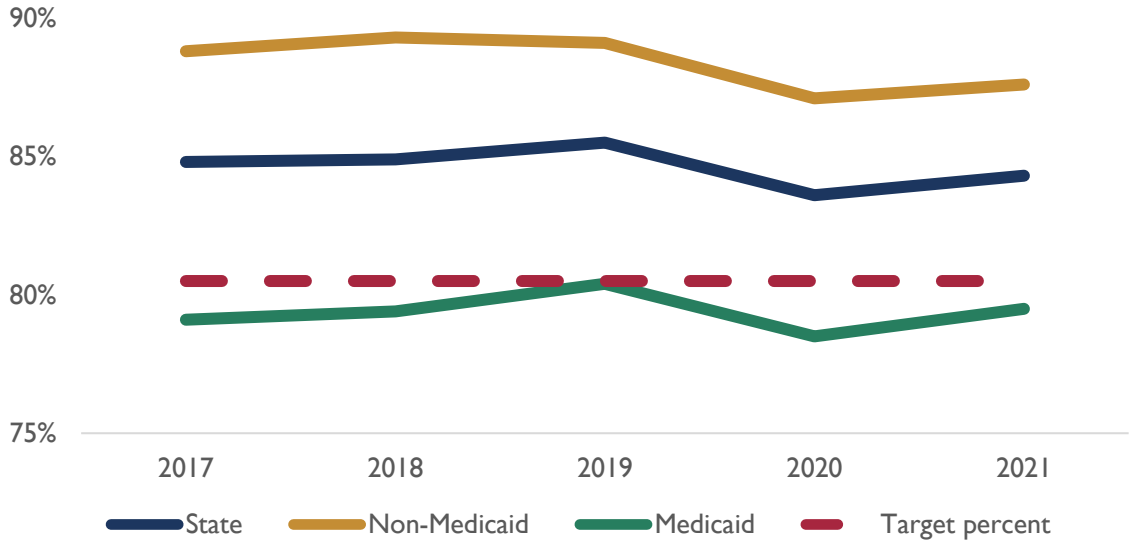


Table 2. Number and percent of women who obtained adequate or adequate plus prenatal care by Medicaid status and State Total, 2017 - 2021, Iowa resident births[8]

	Medicaid		Non-Medicaid		State Total	
Year	Number	%	Number	%	Number	%
2021	11,507	79.5	17,811	87.6	29,318	84.3
2020	10,945	78.5	17,499	87.1	28,444	83.6
2019	11,740	80.4	18,600	89.1	30,340	85.5
2018	12,433	79.4	17,782	89.3	30,215	84.9
2017	11,934	79.1	18,869	88.8	30,803	84.8

Figure 5. In calendar year 2021 among pregnant women with a Medicaid reimbursed birth, the percent of pregnant women who obtained early and adequate prenatal care varied by maternal racial group and her ethnicity

The lowest percentages of those who obtained early and adequate prenatal care were among Native Hawaiian mothers followed by Native American/American Indian, and Black mothers.

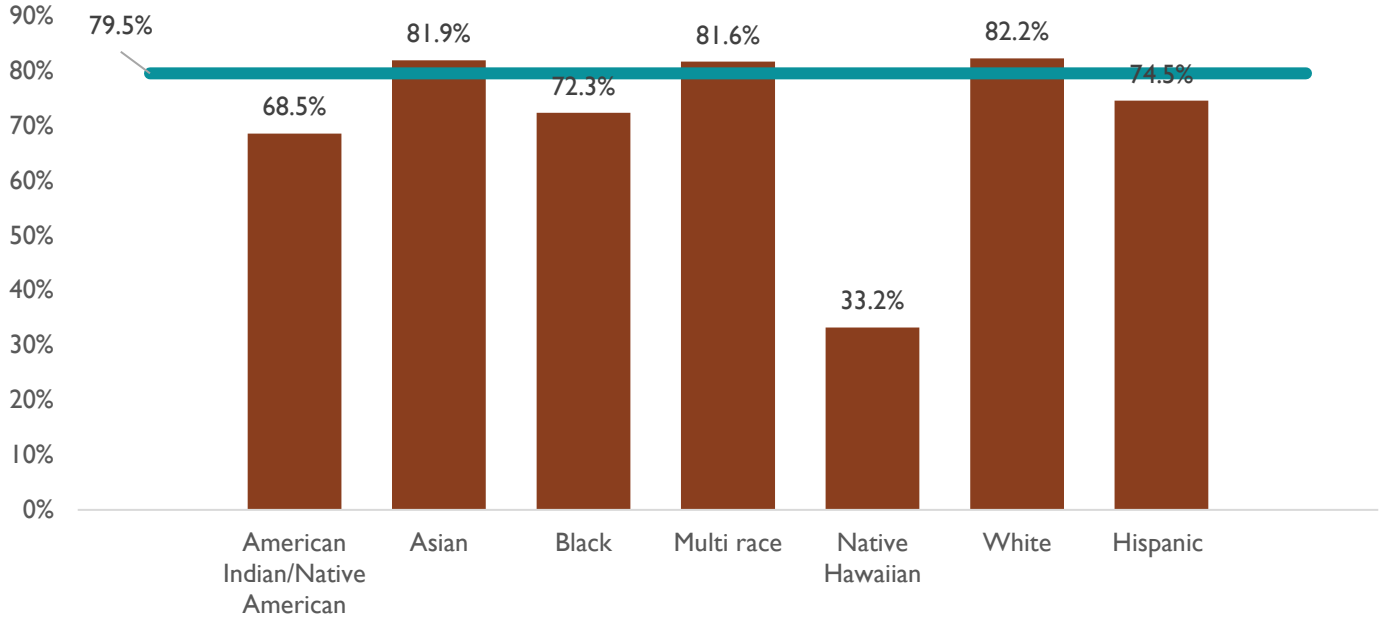
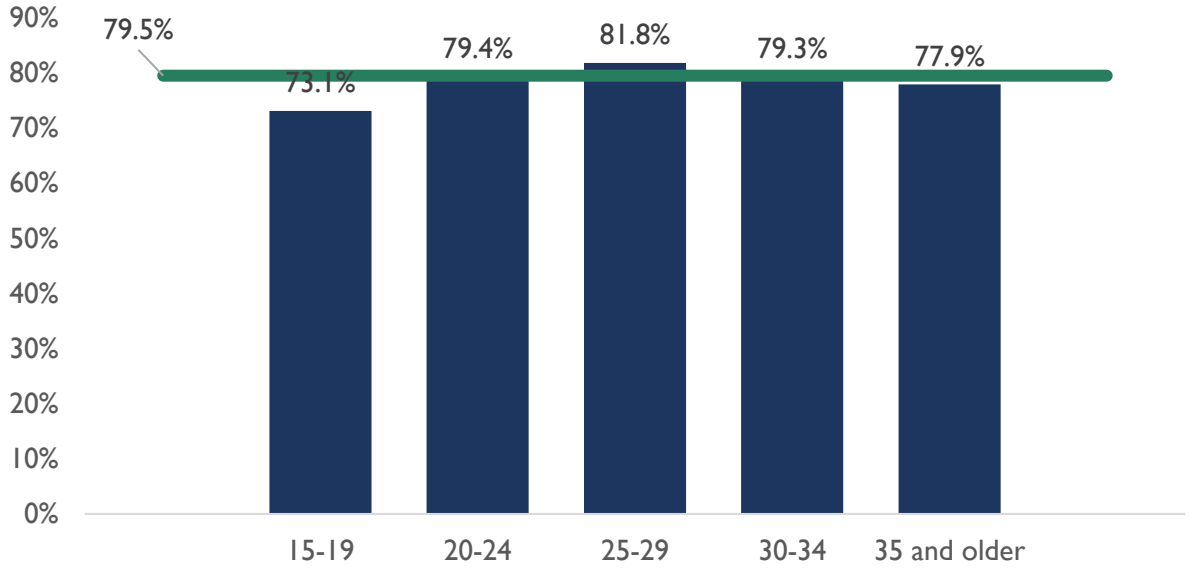


Figure 6. In calendar year 2021, the percent of pregnant women who obtained early and adequate prenatal care varied by maternal age

Pregnant women at younger ages (15 to 19) and those 35 and older obtained early and adequate prenatal care at a lower percentage than pregnant women of other age groups



HP 2030 - INCREASE THE PROPORTION OF WOMEN WHO HAD A HEALTHY WEIGHT BEFORE PREGNANCY — MICH-13

Baseline: 42.1 percent of women delivering a live birth in 2018 had a healthy weight prior to pregnancy[9]

Most recent national level data: 40.0 percent of women delivering a live birth in 2020 had a healthy weight prior to pregnancy

Most recent Iowa data: 37.1 percent (2021)

Target: 47.1percent

Desired Direction: Increase

State Level Data Source: Iowa Certificate of Live Birth linked to Medicaid paid claims

Summary and Rationale
Women who are overweight or obese before pregnancy are at increased risk for adverse health conditions such as preeclampsia, gestational diabetes, cesarean delivery, and hypertension[10,11].
Infants born to obese women obese are less likely to be breastfed and are at increased risk for being diagnosed with attention deficit disorder, autism or development delays, and depression or anxiety. Infants born to obese women may also become obese or overweight in childhood[12].

Iowa proportion of women with a healthy weight before pregnancy
In 2021, overall, 37.1% of women had a healthy weight before pregnancy. Among women with Medicaid reimbursed births in 2021, the percent was 32.6% compared to 41.5% among women without Medicaid reimbursed births. The trend in the proportion of women at healthy weight before pregnancy has been trending downwards since 2017 – opposite of the desired direction (Figure 7 & Table 3). Women with Medicaid reimbursed births are consistently at lower percent of being at a healthy pre-pregnancy weight compared to women with births reimbursed by private or other sources.

Among women with Medicaid reimbursed births in 2021, the percent of American Indian/Native American (AI/NA) with a healthy weight before pregnancy was equal to that of women with Medicaid reimbursed births overall (Figure 8). The percent of women of other racial groups and Hispanic women who had a healthy pre-pregnancy weight was lower than that of women with Medicaid reimbursed births overall. Women younger than 24 had the highest percentages of having a healthy weight before pregnancy (Figure 9).

Strategies to increase the proportion of women who have a healthy pre-pregnancy weight
The Iowa Department of Public Health, along with Iowa Healthiest State provide leadership and community funding to support the 5-2-1-0 Healthy Choices Count initiative[13]. The 5-2-1-0 Healthy Choices Count initiative is an evidence-based prevention framework to promote healthy habits. In the most recent 5-2-1-0 report, sites in 77 counties have made a commitment to increase physical activity and healthy eating through policy, systems, and environment change. These sites include schools, out-of-school programs, early care sites, workplaces, and health care clinics.

The Iowa Department of Public Health Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) provides nutritional information and education as well as supplemental food to pregnant women. WIC also promotes and supports breastfeeding among mothers and infants.

Figure 7. Percent of women at a healthy weight before pregnancy by Medicaid status and by the State percent, Iowa resident births 2017-2021

Regardless of Medicaid status, the trend for women with a healthy weight before pregnancy is moving down rather than in the desired direction of up. The target percent is 47.1%

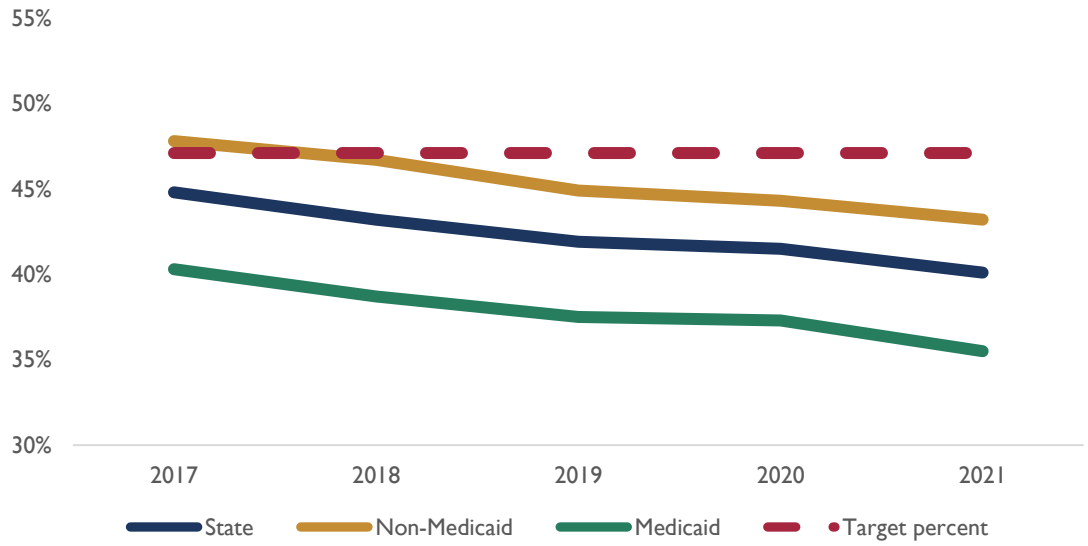


Table 3. Number and percent of women who had a healthy weight before pregnancy, by Medicaid status and State Total, 2017-2021, Iowa resident births

	Medicaid		Non-Medicaid		State Total	
Year	Number	%	Number	%	Number	%
2021	5,320	35.5	9,375	43.2	14,695	40.1
2020	5,412	37.3	9,499	44.3	14,911	41.5
2019	5,702	37.5	10,000	44.9	15,702	41.9
2018	6,319	37.8	9,931	46.7	16,250	43.2
2017	6,309	40.3	10,837	47.8	17,146	44.8

Figure 8. Among women with Medicaid reimbursed births in 2021, overall, 35.5% had a healthy weight before pregnancy. Asian women had the highest percent of being at a healthy weight before pregnancy

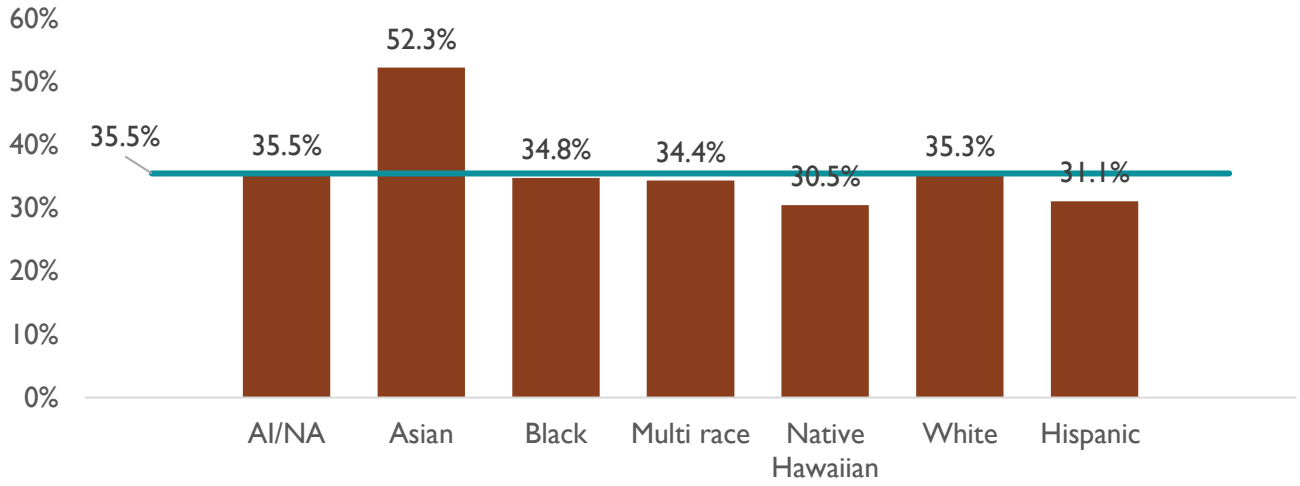
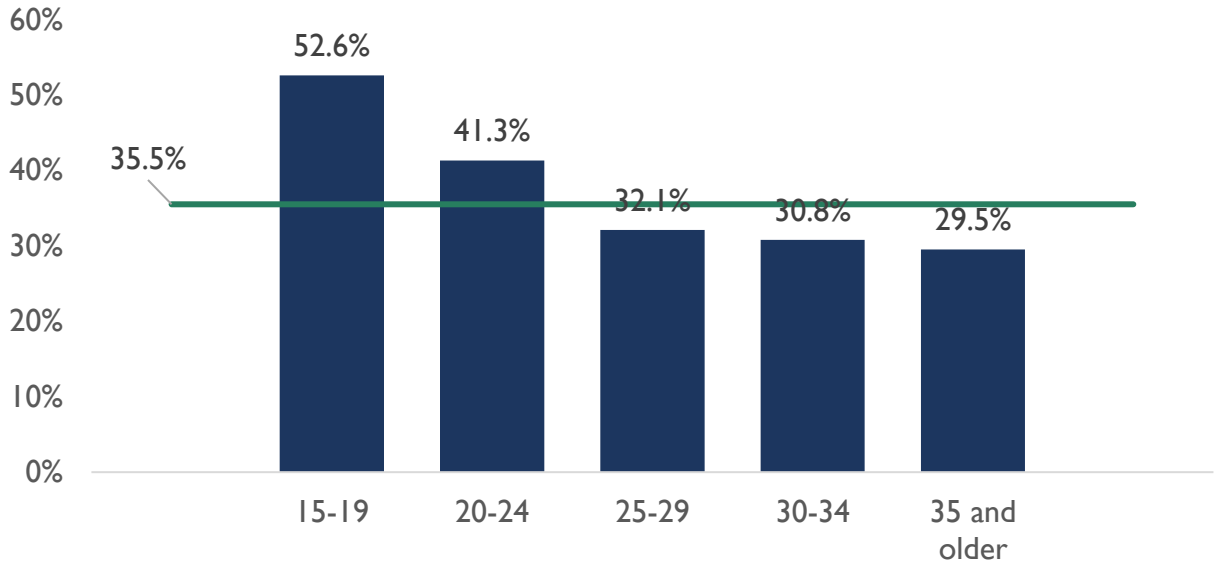


Figure 9. Among women with a Medicaid reimbursed birth in 2021, women younger than 24 had the higher percentage of having a healthy weight before pregnancy



HP 2030 - INCREASE ABSTINENCE FROM CIGARETTE SMOKING AMONG PREGNANT WOMEN — MICH-10

Baseline: 93.5 percent of women giving birth reported not smoking during pregnancy (2018)[14]

Most recent national level data: 94.5 percent of women giving birth reported not smoking during pregnancy

Most recent Iowa data: Overall, 91.3 percent of women abstained from cigarette smoking during their most recent pregnancy (2021).

Target: 95.7percent

Desired Direction: Increase

State Level Data Source: Iowa Certificate of Live Birth linked to Medicaid paid claims

Summary and Rationale
Women who smoke cigarettes during pregnancy are more likely to deliver their babies early. Babies who are born early are at increased risk for death and disability[15].

Iowa proportion of women who abstained from smoking cigarettes during their most recent pregnancy
In the past 5 years, the trend in the percentage of women who abstained from smoking cigarettes during their most recent pregnancy has been increasing (Figure 10 & Table 4). However, the percent of women who abstained from smoking cigarettes during their most recent pregnancy was consistently lower among women with Medicaid reimbursed births.

In calendar year 2021, among women with Medicaid reimbursed births, those women who identified as multiple races (78.3%), White (81.2%) and American Indian/Native American (83.3%) reported the lowest percentages of having abstained from cigarette smoking during their most recent pregnancy (Figure 11). Among women with Medicaid, reimbursed births during calendar year 2021, women ages 25 and older reported the lowest percentages of having abstained from cigarette smoking during their most recent pregnancy (Figure 12).

Strategies that support women to abstain from smoking cigarettes during pregnancy
Over the past year, Iowa Department of Public Health staff enhanced their work on a statewide level to link pregnant women with resources for smoking cessation assistance and prevention education through a multifaceted approach. IDPH maternal health staff worked closely with the Bureau of Tobacco Use Prevention and Control to develop a collaborative approach to support pregnant women who use tobacco products. Title V Maternal Health agencies received training about resources available from the Quitline Iowa program. The Division of Tobacco Use Prevention and Control expanded their Quitline Iowa incentive program for pregnant women to include monetary compensation for those completing the entire program, offering clients extended support through the postpartum period as well as a female coach if they desired one.

The birth certificate obtains information about cigarette smoking. We recognize that women use other methods of tobacco/nicotine delivery. To address the data gap, we have added questions about e-cigarettes and other tobacco/nicotine delivery systems to other data collection tools.

Figure 10. Regardless of Medicaid status, the percent of women who abstained from smoking cigarettes during pregnancy is trending upward, the desired direction

The percent of women with Medicaid reimbursed births who abstained from smoking during their most recent pregnancy consistently lags behind the state percent and the percent of women with births not reimbursed by Medicaid.

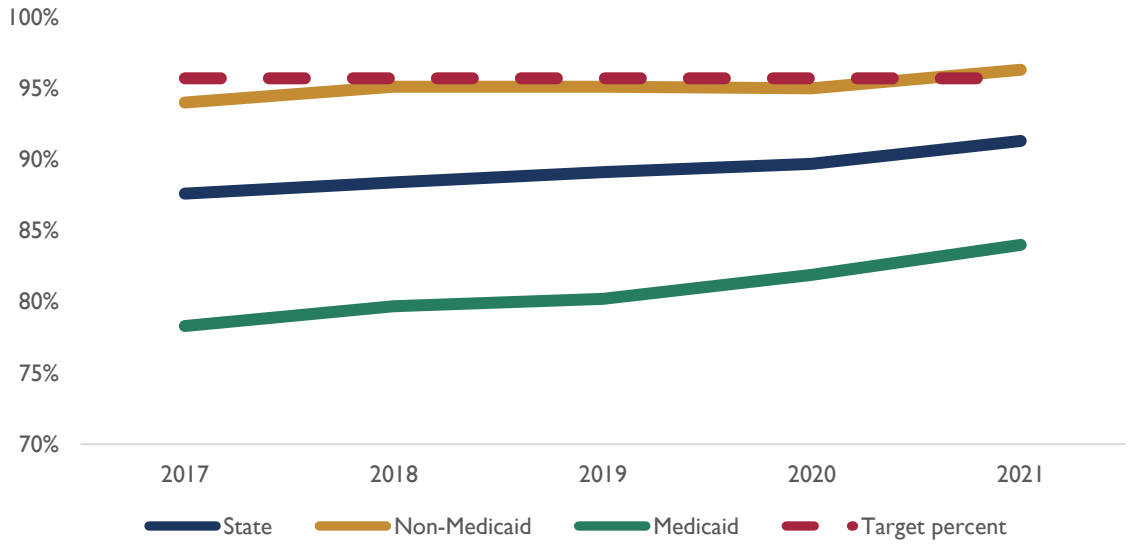


Table 4. Number and percent of women who abstained from smoking during their most recent pregnancy by Medicaid status, 2017-2021, Iowa resident births

	Medicaid		Non-Medicaid		State Total	
Year	Number	%	Number	%	Number	%
2021	12,607	84.0	20,940	96.3	33,547	91.3
2020	11,888	81.9	20,436	95.0	32,324	89.7
2019	12,229	80.2	21,218	95.1	33,447	89.1
2018	13,025	79.7	20,284	95.1	33,309	88.4
2017	12,281	78.3	21,361	94.0	33,642	87.6

Figure 11. In calendar year 2021, among women with Medicaid reimbursed births, the Asian and Native Hawaiian women reported the highest percentages of having abstained from cigarette smoking during their most recent pregnancy

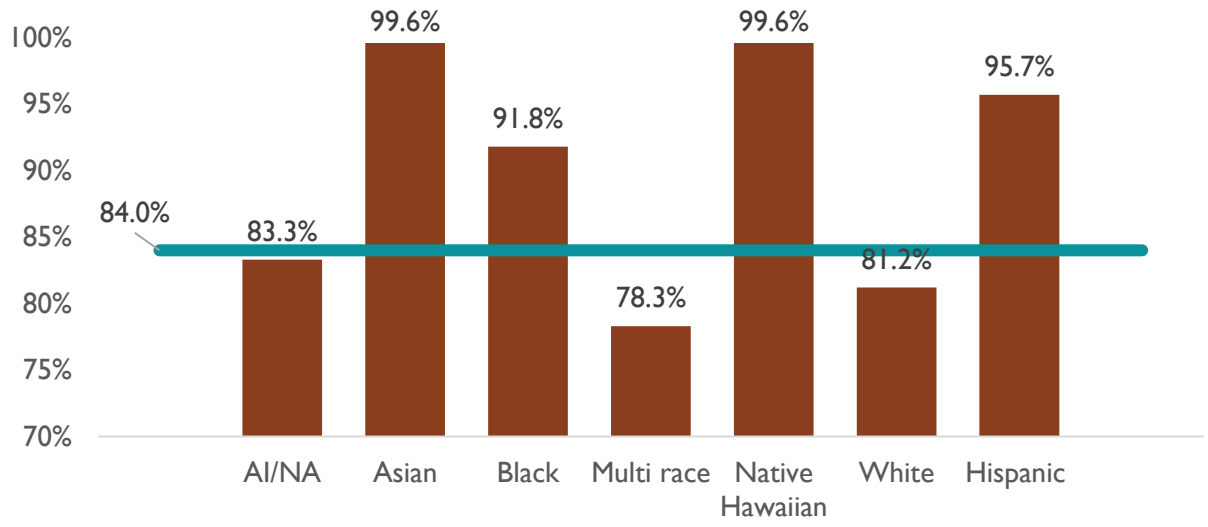
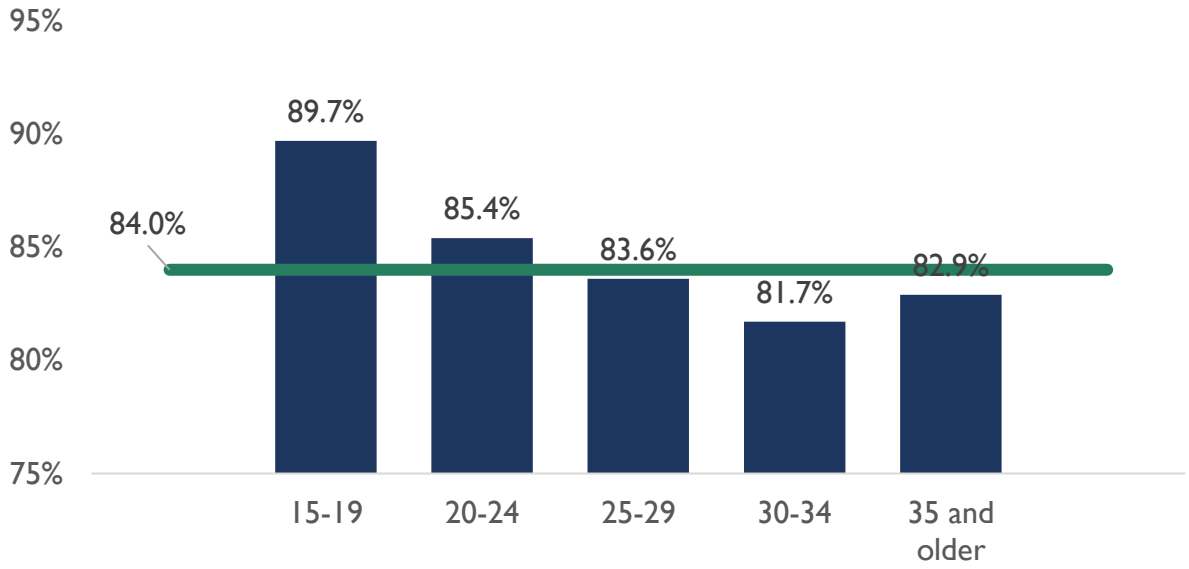


Figure 12. In calendar year 2021, among women with Medicaid reimbursed births, those younger than 24 reported the highest percentages of having abstained from cigarette smoking during their most recent pregnancy



HP 2030 - REDUCE CESAREAN BIRTHS AMONG LOW-RISK WOMEN WITH NO PRIOR BIRTHS — MICH-06

Baseline: 25.9 percent (2018)[16]

Most recent national level data: 26.3 percent (2021)

Most recent Iowa data: 23.5 percent (2021)

Target: 23.6 percent

Desired Direction: Decrease

State Level Data Source: Iowa Certificate of Live Birth linked to Medicaid paid claims

Summary and Rationale
This measure is commonly referred to as the Nulliparous, Term, Singleton, and Vertex (NTSV) Cesarean Rate. It measures the percent of live infants born at or after 37 weeks gestation to women in their first pregnancy, that are singleton (not twins or beyond), and are in the vertex position (not breech or transverse position). There are many maternal and newborn indications for cesarean deliveries. However, cesarean deliveries may put women at increased risk for infections, blood clots and other serious adverse health outcomes (e.g. placenta acreta and previa, uterine rupture, hemorrhage and adhesions). For these reasons, it is important that cesarean deliveries in low-risk women be reduced.

Iowa NTSV rates
Over the past five years, Iowa's NTSV rate has fluctuated. Most recently, the rate decreased from 24.9% in 2020 to 23.5% in 2021. The largest drop in the NTSV rate was among women with Medicaid reimbursed births from 2020 (26.0%) to 2021 (23.3%). This rate surpasses the HP 2030 target rate. However, among women with Medicaid reimbursed births, there are disparities by race and ethnicity for the NTSV rate.

Strategies to address NTSV rates
The Iowa Department of Public Health enrolled in the Alliance for Innovation on Maternal Health[17] (AIM) in October 2020. The program launched its first initiative Safe Reduction of Primary Cesarean Births, in May of 2021 and concluded the initiative in August of 2022. As noted, for calendar year 2021, Iowa's NTSV rate has decreased overall and by Medicaid status. Provisional 2022 data suggests that the initiative continues contribute to a NTSV rate.

Figure 13. From calendar year 2020 to 2021, the percent of NTSV cesarean deliveries reversed its trend and decreased. In 2021, women with Medicaid reimbursed births surpassed the HP 2030 target rate

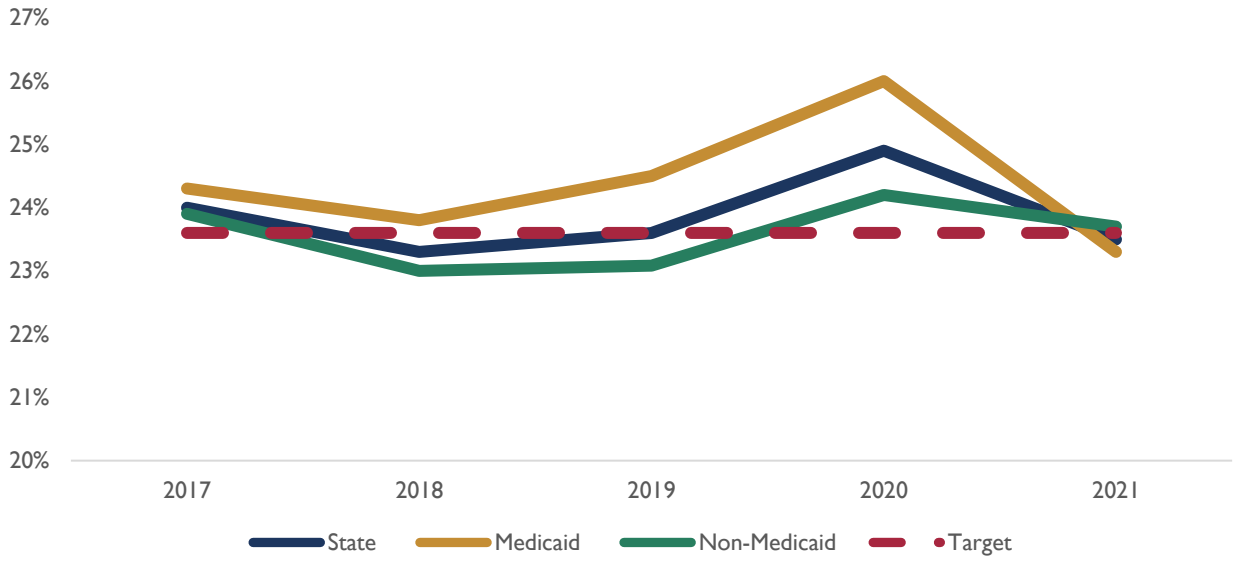


Table 5. Number and percent of NTSV cesarean deliveries by Medicaid status, 2017-2021, Iowa resident births

	Medicaid		Non-Medicaid		State Total	
Year	Number	%	Number	%	Number	%
2021	911	23.3	1,575	23.7	2,486	23.5
2020	1,000	26.0	1,594	24.2	2,594	24.9
2019	961	24.5	1,570	23.1	2,531	23.6
2018	1,039	23.8	1,463	23.0	2,502	23.3
2017	1,013	24.3	1,650	23.9	2,663	24.0

Figure 14. In calendar year 2021, among women with Medicaid reimbursed births, Non-Hispanic Black women and Non-Hispanic women of other races experienced higher rates of NTSV deliveries compared to Non-Hispanic White women and Hispanic women

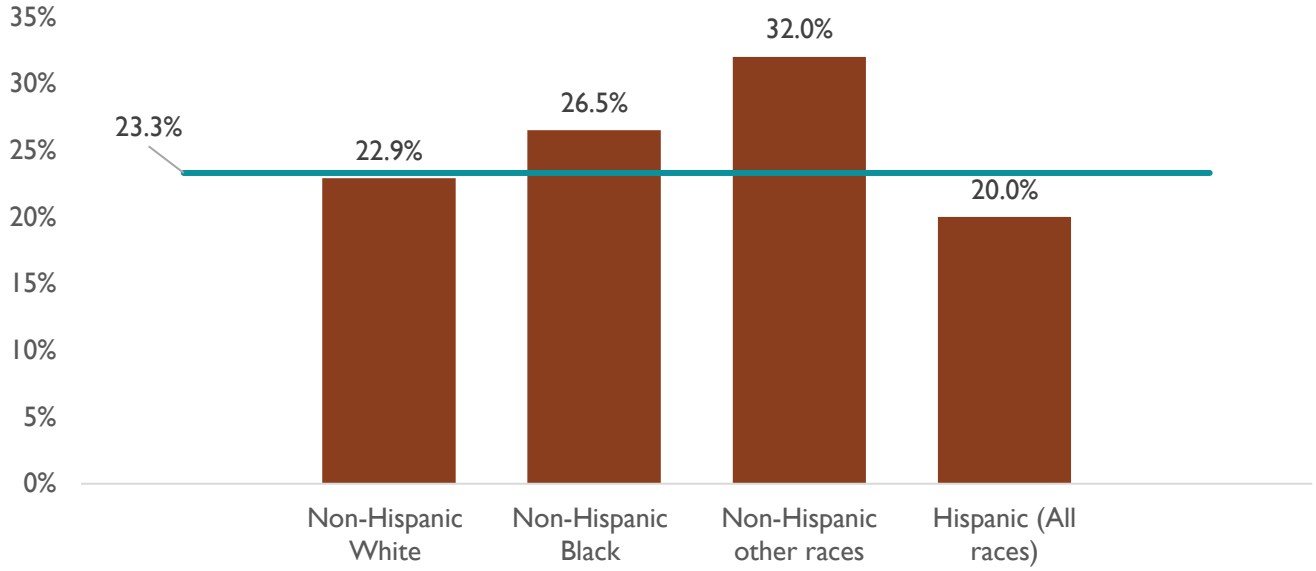
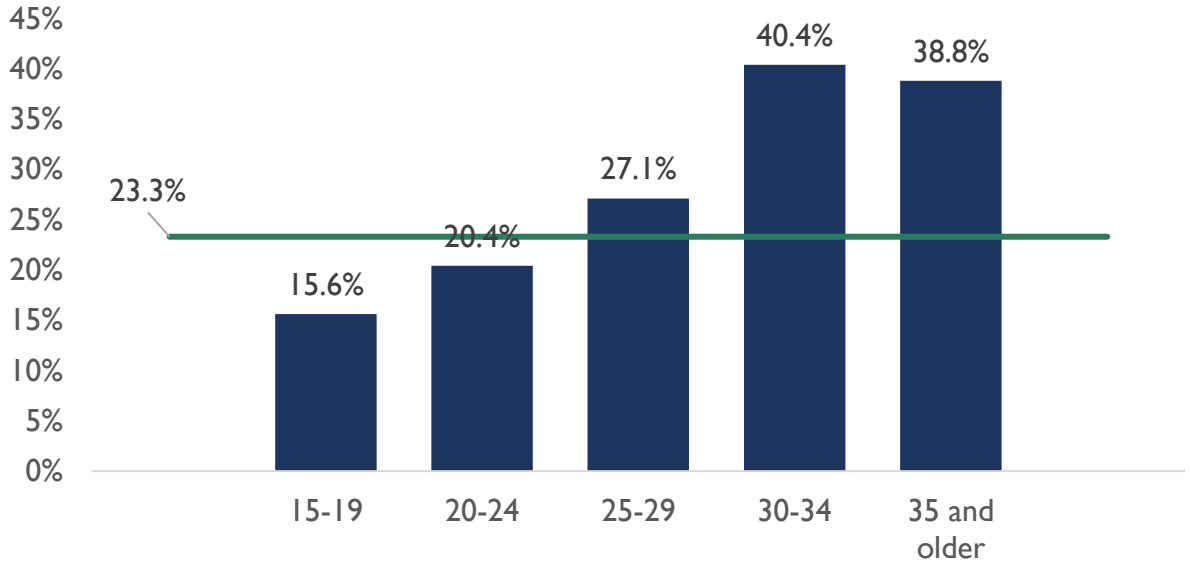


Figure 15. In calendar year 2021, among women with Medicaid reimbursed births the percent of NTSV cesarean deliveries increased with age.



HP 2030 - REDUCE SEVERE MATERNAL COMPLICATIONS IDENTIFIED DURING DELIVERY HOSPITALIZATIONS — MICH-05

Baseline: 68.7 per 10,000 delivery hospitalizations (2017)[18]

Most recent national level data: 68.7 per 10,000 delivery hospitalizations (2017)

Most recent Iowa data: 61.3 per 10,000 delivery hospitalizations (2019-2021)

Target: 61.8 per 10,000 delivery hospitalizations

Desired Direction: Decrease

State Level Data Source: Iowa Hospital Discharge Date[19]

Summary and Rationale

Severe maternal morbidity (SMM) includes unexpected labor and delivery outcomes that can cause significant short- and long-term consequences to a woman's health[20], including kidney problems and stroke. The SMM definition includes, but is not limited to conditions such as acute renal failure, disseminated intravascular coagulation, eclampsia, and pulmonary edema[21]. The SMM rate has been increasing nationally and in Iowa. The reasons behind this increase are not clear. Some researchers have suggested that overall population health factors[22] such as increasing maternal age, pre-existing chronic conditions, pre-pregnancy obesity, and cesarean deliveries may be contributing factors.

There are significant disparities by race and ethnicity[23]. Women with publically reimbursed health care also have a higher rate of SMM compared to women with privately reimbursed health care. Ensuring that all women have access to timely and high-quality health care before, during, and after pregnancy can reduce the SMM rate. Severe maternal morbidity is also a Title V MCH Services Block Grant National Outcome Measure.

Iowa SMM rates

Iowa's SMM rate is lower than the national baseline rate (61.3 vs 68.7) and has achieved the HP 2023 target rate (61.3 vs 61.8). However, Iowa's SMM rate has increased by nearly 18% in the time from 2017-2019 (Figure 16). The rate of SMM also is higher among Black women compared to White women (Figure 17) and among those with publicly reimbursed deliveries (Figure 18).

Strategies to address SMM in Iowa

The Iowa Department of Public Health enrolled in the Alliance for Innovation on Maternal Health[24] (AIM) in October 2020. The program launched its first initiative Safe Reduction of Primary Cesarean Births, in May of 2021 and concluded the initiative in August of 2022. Provisional results suggest that the initiative was successful in reducing the rate of low-risk cesarean delivery overall and among mothers with Medicaid reimbursed births. Cesarean deliveries place mothers and newborns are risk for adverse outcomes such as severe maternal morbidity. Iowa's second AIM initiation will address Obstetric Hemorrhage, a key contributor to maternal morbidity. The Obstetric Hemorrhage initiative began in October of 2022 and will continue through spring of 2023. All 56 of Iowa's birthing facilities are participating in the Obstetric Hemorrhage initiative.

Figure 16. Iowa's Severe Maternal Morbidity (SMM) rate has increased by nearly 18% from 2017-2019 to 2019-2021

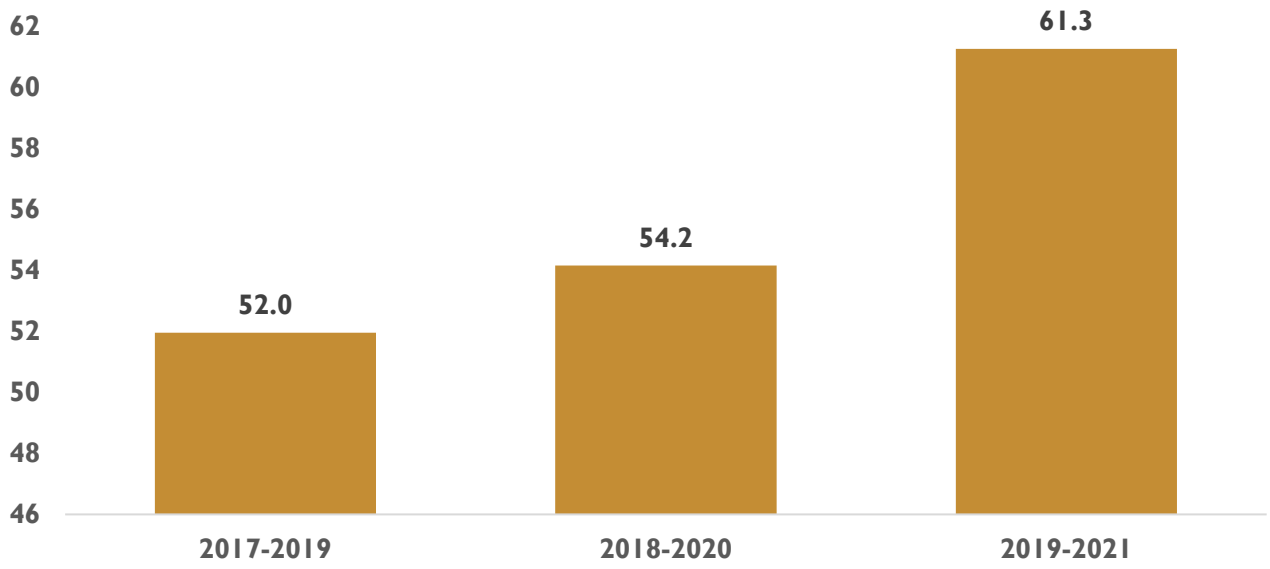


Figure 17. The SMM rate among Black mothers was consistently higher than that of White mothers from 2017-2019 to 2019-2021

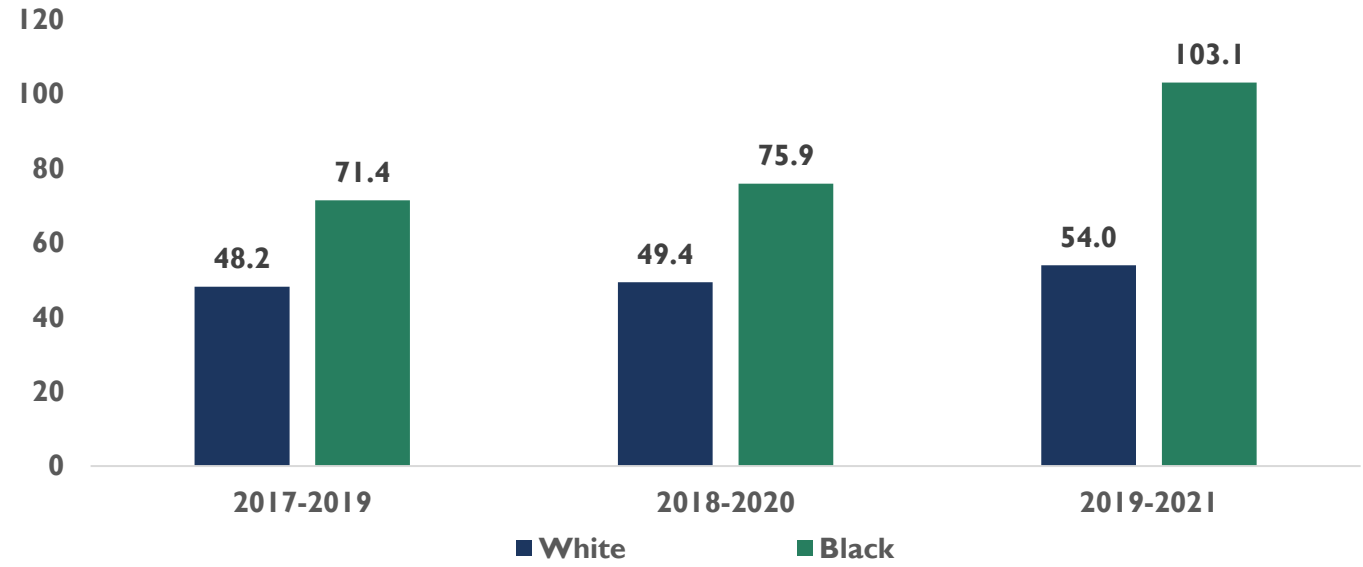
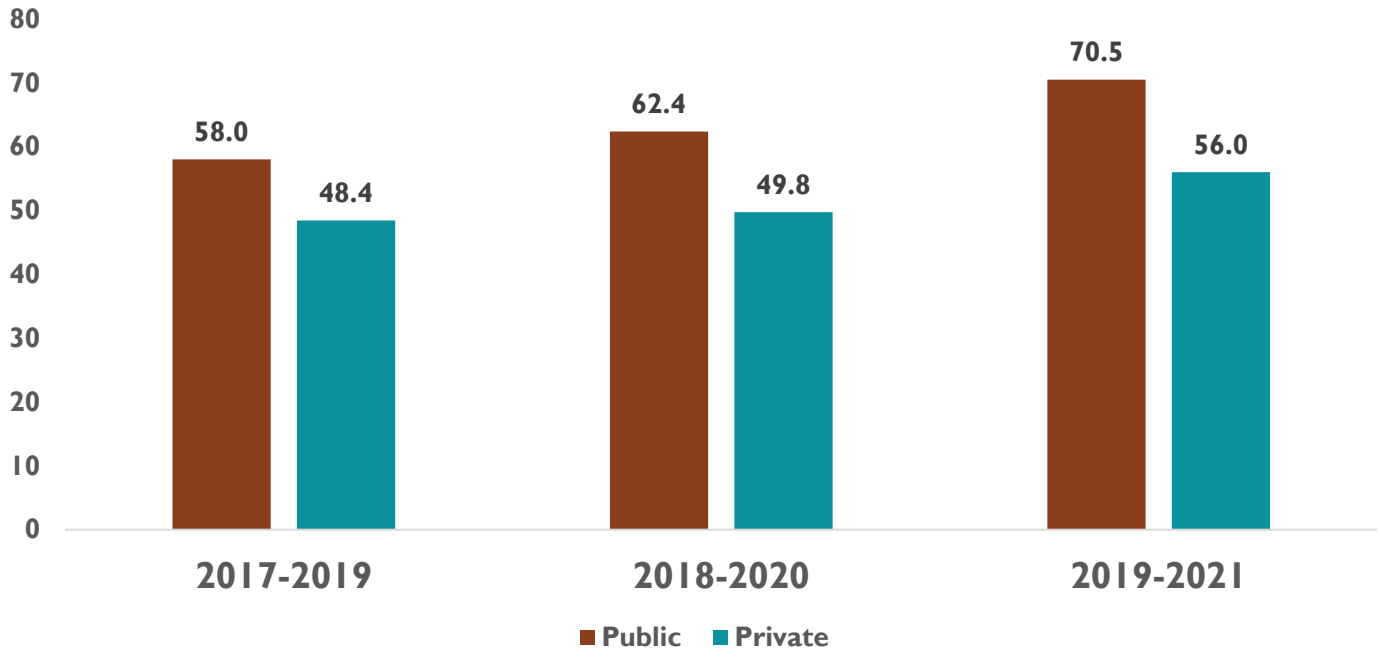


Figure 18. Iowa's SMM rate was consistently higher among mothers with publicly reimbursed deliveries compared to those with privately reimbursed deliveries from 2017-2019 to 2019-2021



APPENDIX A

Race and ethnicity categorizations for this report

This report uses the certificate of live birth to determine the mother's race and ethnicity. Race and ethnicity information are collected on the "Official Worksheet to Establish Legal Certification of Live Birth – Birth Mother's Worksheet". On this worksheet mothers self-report their race and ethnicity.

Ethnicity: For ethnicity, the mother is asked the following: Is the birth mother of Spanish/Hispanic/Latina origin? (Check Yes or No. If yes, *specify*). The response options are as follows: No, not Spanish/Hispanic/Latina or Yes with the option to select Mexican, Mexican American, Chicana, or Puerto Rican or Cuban, or other (*specify*). Ethnicity is then re-coded into two categories – Hispanic or non-Hispanic.

Race: For race, the mother is asked the following (she may select more than one race): Race that birth mother considers herself to be. The response options are as follows: White, Black or African American, American Indian or Alaska Native (*Specify*), Asian Indian, Chinese, Filipino, Japanese, Korean, Vietnamese, Other Asian (*Specify*), Native Hawaiian, Guamanian or Chamorro, Samoan, Other Pacific Islander (*Specify*) or Other (*Specify*).

Race is grouped as follows when reported in six categories:

1. American Indian/Native American
2. Asian (Asian Indian, Chinese, Filipino, Japanese, Korean, Vietnamese, Other Asian)
3. Black or African American
4. Multi race (American Indian/Native American, Asian or Pacific Islander, Black, or White)
5. Native Hawaiian (Native Hawaiian, Guamanian or Chamorro, Samoan, Other Pacific Islander)
6. White
7. Other

The category of "Other" contributed 2.3% (n=881) to the 2021 birth cohort. Women can refuse to complete this worksheet section. In 2021, approximately 2.4% (n=~934) of birth certificates were missing race information.

Combined race and ethnicity: To facilitate statistical testing we combined race and ethnicity into the following categories:

1. Non-Hispanic White
2. Non-Hispanic Black
3. Non-Hispanic other (includes all other races [1, 2, 4, & 5 from the list of races]
4. Hispanic (Of any race)

Endnotes

[1] https://health.gov/healthypeople (Accesses 12.13.22).
[2] Medicaid status was determined by a linkage between Medicaid paid claims and the certificate of live birth.
[3] Non-Medicaid status includes private insurance, self-pay, and other governmental payment sources.
[4] State total refers to the combined total of Medicaid reimbursed births plus those births reimbursed by another source.
[5] https://health.gov/healthypeople/objectives-and-data/browse-objectives/pregnancy-and-childbirth/increase-proportion-pregnant-women-who-receive-early-and-adequate-prenatal-care-mich-08 (Accessed 12.12.22)
[6] Adequate prenatal care is based on the Adequacy of Prenatal Care Utilization Index (APNCU). The APNCU is calculated using two parts: the month in which prenatal care is initiated and the number of prenatal visits from prenatal care initiation until delivery and then categorized into four outcome measures. "Inadequate" care is defined as either starting prenatal care after the 4th month of pregnancy or receiving less than 50% of expected visits based on the schedule of prenatal care visits recommended by American College of Obstetricians and Gynecologists (ACOG). "Intermediate" care is care begun by month 4 and with 50–79% of expected visits received; "adequate" care is that begun by month 4 and with 80–109% of expected visits received; "adequate plus" care is begun by month 4 and with 110% or more of expected visits received. In this report, adequate and adequate plus were combined for one measure.
[7] National Institute of Child Health and Human Development. What is prenatal care and why is it important? 2017 January 31. https://www.nichd.nih.gov/health/topics/pregnancy/conditioninfo/prenatal-care (Accessed 12.13.22).
[8] Prenatal care is not consistently reported for Iowa residents who deliver outside of Iowa. For that reason, this calculation excludes births to residents that occurred outside of Iowa.
[9] https://health.gov/healthypeople/objectives-and-data/browse-objectives/pregnancy-and-childbirth/increase-proportion-women-who-had-healthy-weight-pregnancy-mich-13 (Accessed 12.12.22).
[10] Rasmussen KM, Yaktine AL, Institute of Medicine (US) and National Research Council (US) Committee to Reexamine IOM Pregnancy Weight Guidelines, eds. Weight Gain During Pregnancy: Reexamining the Guidelines. Washington (DC): National Academies Press (US); 2009. doi: 10.17226/12584.
[11] Thunell L, Davis KE. Nutrition Counseling and Healthy Weight Gain During Pregnancy: A Systematic Review. Women's Health a dietetic practicegroup of the Academyof Nutritionand Dietetics. 2019;(2):1-7.
[12] https://www.cdph.ca.gov/Programs/CFH/DMCAH/NUPA/Pages/Healthy-Weight-for-Healthy-Birth-and-Beyond-Data-Brief.aspx (Accessed 12.19.22).
[13] https://idph.iowa.gov/5210 (Accessed 12.27.22).
[14] https://health.gov/healthypeople/objectives-and-data/browse-objectives/pregnancy-and-childbirth/increase-abstinence-cigarette-smoking-among-pregnant-women-mich-10 (Accessed 12.13.22).
[15] https://www.cdc.gov/tobacco/basic_information/health_effects/pregnancy/index.htm#:~:text=Smoking%20during%20pregnancy%20can%20cause,maternal%20smoking%20and%20cleft%20lip.&text=Studies%20also%20suggest%20a%20relationship%20between%20tobacco%20and%20miscarriage. (Assessed 12.28.22).
[16] https://health.gov/healthypeople/objectives-and-data/browse-objectives/pregnancy-and-childbirth/reduce-cesarean-births-among-low-risk-women-no-prior-births-mich-06 (Accessed 12.28.22).
[17] https://www.acog.org/practice-management/patient-safety-and-quality/partnerships/alliance-for-innovation-on-maternal-health-aim (Accessed 12.12.22).
[18] https://health.gov/healthypeople/objectives-and-data/browse-objectives/pregnancy-and-childbirth/reduce-severe-maternal-complications-identified-during-delivery-hospitalizations-mich-05 (Accessed 12.12.22).

[19] Three years of data were combined to produce stable rates relative to the low (~200) number of events annually.

[20] https://www.cdc.gov/reproductivehealth/maternalinfanthealth/severematernalmorbidity.html#:~:text=Severe%20maternal%20morbidity%20(SMM)%20includes,consequences%20to%20a%20woman%27s%20health. (Accessed 12.12.22).

[21] For a complete list of the conditions used to define delivery hospitalizations with SMM, see https://www.cdc.gov/reproductivehealth/maternalinfanthealth/smm/severe-morbidity-ICD.htm (Accessed 12.12.22).
[22] Centers for Disease Control and Prevention. Reproductive Health: Severe Maternal Morbidity in the United States. 2020 January 31. https://www.cdc.gov/reproductivehealth/maternalinfanthealth/severematernalmorbidity.html#rates (Accessed 12.13.22).
[23] Fingar KR, Hambrick MM, Heslin KC, Moore JE. Trends and disparities in delivery hospitalizations involving severe maternal morbidity, 2006-2015. Healthcare Cost and Utilization Project. 2018 Sept: Statistical Brief #243. https://www.hcup-us.ahrq.gov/reports/statbriefs/sb243-Severe-Maternal-Morbidity-Delivery-Trends-Disparities.pdf (Accessed 12.13.22).
[24] https://www.acog.org/practice-management/patient-safety-and-quality/partnerships/alliance-for-innovation-on-maternal-health-aim (Accessed 12.12.22).