

## Access in Brief: Pregnant Women and Medicaid

Medicaid has long played an important role in providing maternity-related services for pregnant women, paying for nearly half of all births in the United States (NGA 2014). Birth costs also constitute a sizeable share of hospitalization-related Medicaid spending; in 2012, deliveries and newborn care accounted for about one quarter (27 percent) of total Medicaid spending for inpatient hospital care (AHRQ 2014).

In recent years, maternal mortality rates and preterm births have risen nationally (Martin and Osterman 2018, CDC 2016).<sup>1</sup> Although most births occur without adverse outcomes, women with Medicaid coverage are more likely to have preterm births and low-birthweight infants, both key indicators of birth outcomes, compared to privately insured women (CMS 2016).<sup>2</sup> Women with low incomes tend to experience more chronic conditions and related risk factors that can negatively affect maternal health and birth outcomes (Singh et al. 2017, Bombard et al. 2012).

Timely prenatal care can help identify, treat, and manage health conditions that complicate pregnancy and reduce the risk of poor birth outcomes. However, because Medicaid eligibility for many women with low incomes is tied to pregnancy, their source of insurance coverage may be unstable, affected by their pregnancy status, income, and state eligibility rules. As a result, they may experience interrupted care and delayed access to services (Daw et al. 2017).

To examine access to prenatal care and differences between the likelihood of cesarean delivery, and preterm and low-birthweight births for women with Medicaid, private insurance, and those who were uninsured, we analyzed data from 33 states participating in the Pregnancy Risk Assessment Monitoring System (PRAMS) from 2012 through 2014. Our analysis also considers the sources of coverage for pregnant women at different stages in their pregnancies, as well as their demographic characteristics and underlying health conditions.

Our analysis found that Medicaid covered about four in ten women for prenatal care and delivery although this varied among states. In general, women with Medicaid were less likely to begin prenatal care in the first trimester and were less likely to receive adequate prenatal care compared to privately insured women; however, there were no differences in maternal or birth outcomes. When compared to uninsured women, women with Medicaid were more likely to receive adequate prenatal care, but they were also more likely to have cesarean sections and low-birthweight babies.

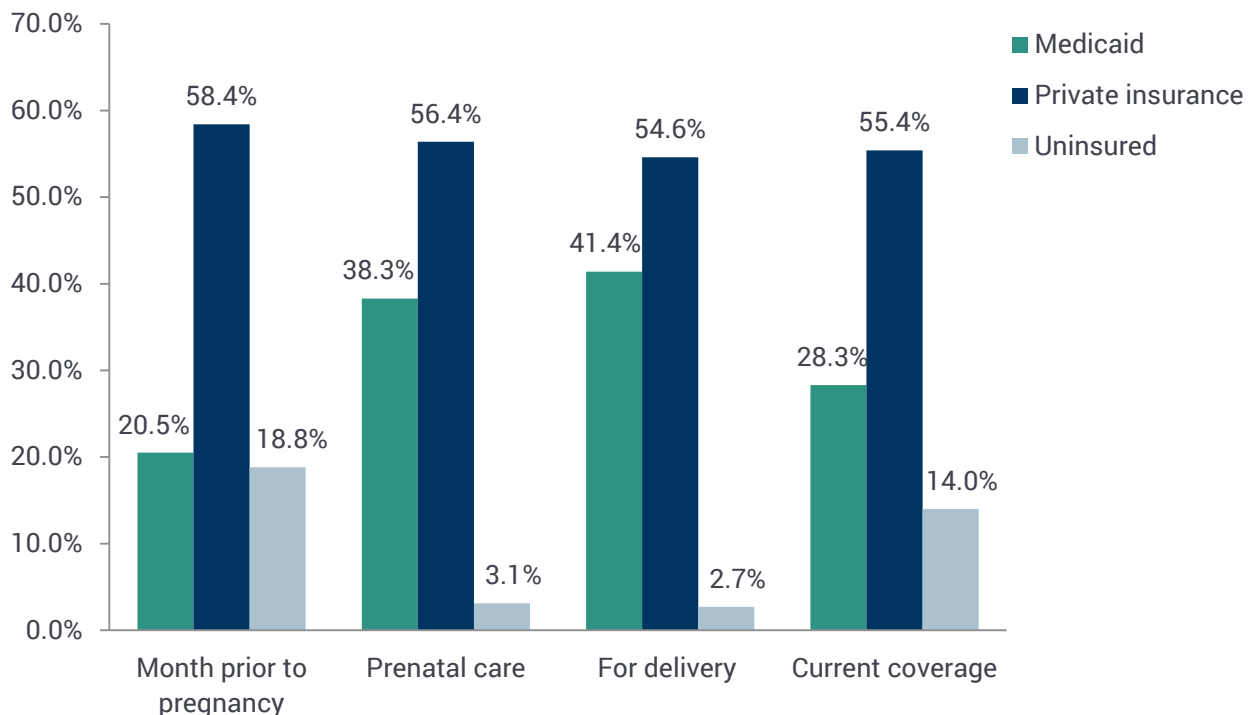


## Health Insurance Status among Pregnant Women

In many states, low-income women do not qualify for Medicaid until they are pregnant (Daw et al. 2017). All state Medicaid programs are federally mandated to cover prenatal care, labor, and delivery for most pregnant women with incomes below 133 percent of the federal poverty level (FPL) through 60 days postpartum (§ 1902(a)(10)(A)(i)(IV) of the Social Security Act (the Act)).<sup>3</sup> States have the option to exceed those standards, and all but four states extend coverage to pregnant women above the minimum threshold (MACPAC 2017).<sup>4</sup> Women who are already parents or those who reside in the states that expanded Medicaid eligibility under the Patient Protection and Affordable Care Act (ACA, P.L. 111-148, as amended) may enroll in Medicaid if they meet the income eligibility criteria, whether they are pregnant or not.<sup>5</sup> Once enrolled, they receive coverage for all pregnancy-related services and other medical care as needed.<sup>6</sup>

We found that rates of Medicaid coverage fluctuated when measured at the different stages of pregnancy, as women who were previously ineligible or uninsured gain eligibility and enroll in Medicaid. Nearly one in five women reported being uninsured in the month leading up to pregnancy, but only 3 percent of women were uninsured for delivery. Twenty percent of women reported having Medicaid coverage prior to pregnancy and around 40 percent had Medicaid coverage for delivery. After pregnancy, 28 percent of women reported they were currently covered by Medicaid, while 14 percent reported they were uninsured (Figure 1).<sup>7</sup> By contrast, the share of women with private coverage did not change substantially at different points in their pregnancies.

**FIGURE 1.** Health Insurance Status Before, During, and After Pregnancy, 2012–2014



**FIGURE 1. (continued)**

**Notes:** Excludes women who had twins or other multiple births. Coverage data include data from 33 states, with the exception of coverage for delivery in five states (Arkansas, Connecticut, Hawaii, New Jersey, and Rhode Island) where this data was not available. The following hierarchy was used to assign individuals with multiple coverage sources to a primary source: Medicare, private, Medicaid or CHIP, other, uninsured. Other is not shown here.

Percent calculations exclude individuals with missing or unknown values.

**Source:** MACPAC analysis of the 2012–2014 Pregnancy Risk Assessment Monitoring System (PRAMS) data, 2017.

Medicaid coverage rates for women varied by state (Appendix A). In six states—Alabama, Delaware, New Mexico, Oklahoma, Tennessee, and West Virginia—Medicaid covered at least half of all pregnant women at delivery. The share of women reporting being uninsured at delivery also varied by state, from 0.5 percent in Massachusetts to 7.3 percent in New Mexico.

## Characteristics of Pregnant Women

The demographic and health characteristics of pregnant women varied considerably by insurance status (Table 1 and Table 2). Pregnant women with Medicaid were more likely to have lower incomes than those who had private insurance or were uninsured. Moreover, compared to privately insured women, they were more likely to have certain health and behavioral conditions such as obesity and a history of smoking that pose risks during pregnancy.

### Demographic characteristics of pregnant women, by insurance status

Nearly three-quarters of women with Medicaid at delivery reported incomes below 138 percent FPL. Women covered by Medicaid at delivery were also younger and less likely to be married than those covered by private insurance or the uninsured. Compared to women with private insurance at delivery, those covered by Medicaid were more likely to have been black or Hispanic, and have had fewer years of education. Compared to women uninsured at delivery, women covered by Medicaid were less likely to be Hispanic or white.

**TABLE 1. Demographic Characteristics of Pregnant Women at Delivery, by Insurance Status, 2012–2014**

Characteristic	Health insurance status			
	Total	Medicaid	Private insurance	Uninsured
<b>Total</b>	<b>100.0%</b>	<b>41.4%</b>	<b>54.6%</b>	<b>2.7%</b>
<b>Maternal age</b>				
≤ 19	6.4	11.9	2.3*	4.9*
20–34	78.7	79.0	78.4	79.5
35 or older	14.8	9.1	19.2*	15.6*



**TABLE 1.** (continued)

Characteristic	Total	Health insurance status		
		Medicaid	Private insurance	Uninsured
<b>Maternal race</b>				
Hispanic	<b>13.6%</b>	22.0%	6.6%*	24.9%*
White, non-Hispanic	<b>65.0</b>	48.5	77.9*	62.4*
Black, non-Hispanic	<b>13.0</b>	21.1	7.2*	5.4
Other, non-white, non-Hispanic	<b>8.3</b>	8.4	8.3	7.4
<b>Income relative to the federal poverty level (FPL)</b>				
≤ 138% FPL	<b>38.3</b>	73.9	12.8*	47.8*
139–199% FPL	<b>11.3</b>	14.2	9.1*	15.0
200–399% FPL	<b>26.5</b>	10.2	37.9*	27.1*
≥ 400% FPL	<b>23.9</b>	1.7	40.1*	10.1*
<b>Maternal years of education</b>				
0–8 years	<b>3.1</b>	4.8	0.6*	24.7
9–11 years	<b>10.5</b>	20.6	2.6*	14.0*
12 years	<b>23.6</b>	37.0	13.4*	21.4*
12–15 years	<b>29.1</b>	30.2	28.7*	19.5
≥ 16 years	<b>33.8</b>	7.4	54.7*	20.4*
<b>Marital status</b>				
Married	<b>61.4</b>	34.0	81.7*	71.4*
Other	<b>38.6</b>	66.0	18.3*	28.6*

**Notes:** Excludes women who had twins or other multiple births. Data on characteristics come from 28 states. The following hierarchy was used to assign individuals with multiple coverage sources to a primary source: Medicare, private, Medicaid or CHIP, other, uninsured. Total includes individuals with other insurance status. Other not shown here.

Percent calculations exclude individuals with missing or unknown values.

\* Difference from Medicaid is statistically significant at the 0.05 level.

**Source:** MACPAC analysis of the 2012–2014 Pregnancy Risk Assessment Monitoring System (PRAMS) data, 2017.

## Women's health factors related to pregnancy, by insurance status

Maternal and birth outcomes may be affected by a woman's underlying health conditions and behaviors (CDC 2016). For example, obesity and diabetes can place pregnant women at a higher risk for preterm birth, cesarean delivery, or other complications such as preeclampsia (CDC 2017).

Compared to women with private insurance, women with Medicaid coverage were more likely to report that they had preexisting diabetes and were obese in the months prior to pregnancy (Table 2).<sup>8</sup>



In addition, women with Medicaid were more likely than those with private insurance to have had a prior preterm birth, a low-birthweight baby, or both, which increases the odds of a similar subsequent birth (CMS 2016). We also found that women with Medicaid were more likely than privately insured women to report a history of smoking, but were less likely to report that they consumed alcohol during pregnancy.<sup>9, 10</sup>

Although diagnostic, screening, and preventive services are optional benefits under Medicaid, the ACA gave states financial incentives to cover certain preventive services without cost sharing.<sup>11</sup> The ACA also requires all states to cover tobacco smoking cessation services for pregnant women; previously, 45 states covered such services for pregnant and non-pregnant Medicaid enrollees (KFF 2012).

**TABLE 2.** Health Conditions of Pregnant Women, by Insurance Status, 2012–2014

Characteristic	Total	Health insurance status		
		Medicaid	Private insurance	Uninsured
<b>History of prior births</b>				
None	<b>41.3%</b>	38.3%	44.2%*	30.4%
Not low birthweight or preterm	<b>49.1</b>	48.7	48.8	60.1
Low birthweight	<b>3.0</b>	4.3	1.8*	4.4
Preterm	<b>3.3</b>	4.2	2.8*	1.5
Low birthweight and preterm	<b>3.3</b>	4.5	2.3*	3.6
<b>Body mass index</b>				
Underweight	<b>10.5</b>	11.1	10.0*	12.4
Normal	<b>49.1</b>	43.0	53.3*	55.7*
Overweight	<b>13.9</b>	14.5	13.4*	13.2
Obese	<b>26.5</b>	31.5	23.2*	18.7
<b>Diabetes</b>				
Yes	<b>5.6</b>	6.1	5.4*	3.1
No	<b>94.4</b>	93.9	94.6*	96.9
<b>Hypertension</b>				
Yes	<b>6.4</b>	6.5	6.5	3.3
No	<b>93.6</b>	93.5	93.5	96.7
<b>Alcohol use during pregnancy</b>				
Yes	<b>57.3</b>	44.9	67.9*	35.8
No	<b>42.7</b>	55.1	32.1*	64.2
<b>Cigarette smoking three months prior to pregnancy or during pregnancy</b>				
Yes	<b>10.9</b>	19.0	5.0*	5.9*
No	<b>89.1</b>	81.0	95.0*	94.1*



**TABLE 2.** (continued)

**Notes:** Excludes women who had twins or other multiple births. Prior births indicates prior live births. Insurance status is at the point of delivery. Data on characteristics come from 28 states. \* Difference from Medicaid is statistically significant at the 0.05 level.

**Source:** MACPAC analysis of the 2012–2014 Pregnancy Risk Assessment Monitoring System (PRAMS) data, 2017.

## Access to Prenatal Care

Receiving prenatal care early can identify potential complications and reduce the risk of birth defects and complications during pregnancy and delivery (HRSA 2011). Although insurance coverage does not guarantee use of care, it can facilitate access to prenatal care.

Overall, women with Medicaid were more likely to experience timely and adequate prenatal care compared to women who were uninsured, but less likely when compared to women with private insurance. Over three-fourths of pregnant women covered by Medicaid started prenatal care in the first trimester, and almost two-thirds received adequate prenatal care throughout their pregnancy (Table 3).<sup>12</sup> Comparatively, rates for adequate prenatal care and starting that care in the first trimester were significantly lower for uninsured women, and significantly higher for women with private insurance.

As discussed above, women with Medicaid coverage differ from women with private insurance and the uninsured across income, race, and other factors that can influence health outcomes for pregnant women (Tables 1 and 2) (ACOG 2018, Kothari et al. 2016). However, we found that when controlling for these differences, pregnant women with Medicaid for prenatal care and delivery still were more likely to experience adequate and timely care compared to those who were uninsured, but less likely compared to those with private insurance.<sup>13</sup>

**TABLE 3.** Access to Prenatal Care, by Insurance Status

Measure of prenatal care	Health insurance status		
	Medicaid for prenatal care and delivery	Private insurance for prenatal care and delivery	Uninsured for prenatal care and delivery
Adequate prenatal care	64.2%	84.1%*	35.7%*
Less than 9 prenatal care visits	23.1	10.9*	48.6*
Started prenatal care in first trimester	78.6	93.8 *	49.2*
Late prenatal care (beginning 28 weeks or later)	1.3	0.3*	6.4*

**Notes:** Adequate prenatal care is defined by the Kessner index as initiation of prenatal care in the first trimester and 9 or more visits (Kessner 1973). The measures reported here are not adjusted to reflect the demographic and health characteristics of pregnant women.

\* Difference from Medicaid is statistically significant at the 0.05 level.

**Source:** MACPAC analysis of the 2012–2014 Pregnancy Risk Assessment Monitoring System (PRAMS) data, 2017.



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## Maternal and Birth Outcomes

Pregnant women in the United States are increasingly experiencing adverse maternal and birth outcomes.<sup>14</sup> The rate of preterm births rose for the second year in a row in 2016, particularly among black and Hispanic women, and overall one in ten infants is born preterm (Martin and Osterman 2018). Low birthweight—which affects 8 percent of infants—is also on the rise (Martin et al. 2018). Infants born preterm or with low birthweight are at an increased risk for experiencing physical disabilities and developmental impairments along the lifespan (Colicchia and Simran 2016).

Adverse maternal health outcomes have also increased in the United States; severe complications at delivery increased by 45 percent from 2006 to 2015 (HCUP 2018). It is estimated that more than 50,000 women per year experience severe complications during pregnancy, with an additional 700 women dying each year from pregnancy-related causes (CDC 2016).

In addition, while cesarean sections are beneficial under some circumstances, many are performed without medical indication, contributing to the high rates of cesarean deliveries in the United States compared to other developed countries (Betran et al. 2016). Cesarean deliveries also increase the risk of maternal mortality and morbidity, including cardiac arrest, infections, and blood clots, and can lead to complications requiring surgery (Curtin et al. 2015 and Liu et al. 2007).

In our analysis, women with Medicaid for prenatal care and delivery were more likely to have a low-birthweight baby and more likely to have a cesarean section compared to women who were uninsured for prenatal care and delivery (Table 4). Less than 10 percent of women with Medicaid for prenatal care and delivery had a preterm birth; there was no significant difference when compared to women who were uninsured. Demographic characteristics and potentially complicating health factors can influence a woman's likelihood of having a preterm birth, low-birthweight baby, or a cesarean section. For example, a woman who has had a prior preterm birth is more likely to have a subsequent preterm birth (ACOG 2016). However, when controlling for these factors, women with Medicaid coverage still were more likely to experience a cesarean section or have a low-birthweight baby compared to women who were uninsured. There were no differences in these outcomes when comparing women with Medicaid to those with private insurance.

**TABLE 4.** Maternal and Birth Outcomes for Women with Medicaid or Uninsured

Measure of maternal and birth outcome	Health insurance status	
	Medicaid for prenatal care and delivery	Uninsured for prenatal care and delivery
Delivery prior to 37 weeks	9.0%	7.5%
Low birthweight	7.9	3.6*
Cesarean section	28.4	14.4*



**TABLE 4. (continued)**

**Notes:** Low birthweight is defined as less than 2,500 grams. The measures reported here are not adjusted to reflect the demographic and health characteristics of pregnant women.

\* Difference from Medicaid is statistically significant at the 0.05 level.

**Source:** MACPAC analysis of the 2012–2014 Pregnancy Risk Assessment Monitoring System (PRAMS) data, 2017.

## Data and Methods

### Data source

The data used in this analysis comes from the Pregnancy Risk Assessment Monitoring System (PRAMS), a joint surveillance system between the Centers for Disease Control (CDC) and participating states.<sup>15</sup> PRAMS combines survey data with birth certificate data to describe maternal characteristics, behaviors, and experiences. Annually between 1,300 and 3,400 women are randomly selected from their state’s birth certificate registry and surveyed within two to four months of their most recent delivery. Women who had twins or other multiple births were excluded. The survey has 56 common core questions; states may add additional questions from a list of 200 select questions. For more information regarding PRAMS and the methodology see <https://www.cdc.gov/prams/index.htm>.

### Data methods

The data analysis was conducted with the State Health Access Data Assistance Center (SHADAC) at the University of Minnesota under contract with MACPAC. The purpose of the study was to explore access to pregnancy-related care and maternal health and birth outcomes for pregnant women, by insurance status. The analysis used PRAMS data from 2012 through 2014 for 33 states that had reportable data. The data on coverage at various stages of pregnancy comes from the questionnaire, with the exception of coverage for delivery, which is derived from birth certificates. Data for coverage at delivery was unavailable for five states (Arkansas, Connecticut, Hawaii, New Jersey, and Rhode Island).

The following hierarchy was used to assign individuals with multiple coverage sources to a primary source: Medicare, private (insurance paid by job, purchased from a company, or TRICARE/military health care), Medicaid or CHIP, other (insurance that is not Medicare, Medicaid, or private insurance), uninsured (including Indian Health Service and tribal programs). A woman’s health insurance status may change throughout pregnancy. Our reported data on insurance status at each stage of pregnancy does not follow a particular woman throughout pregnancy, but instead reflects overall insurance status of the sample of women at that stage of pregnancy.

Income relative to the FPL was calculated using income (12 months prior to birth) and family size (cases where family size was reported as greater than 20 were omitted). Because PRAMS collects income as a range, the income value was imputed by taking the mid-point of the income range from the survey. For example, an income range of \$15,001 to \$19,000 results in an income of \$17,000. All estimates shown in this report have a relative standard error of less than or equal to 30 percent. Demographic differences discussed in the text of this brief were computed using t-tests and are significant at the 0.05 level.





To analyze maternal health and birth outcomes for pregnant women based on insurance status, we controlled for other characteristics, such as demographics, census region, and complicating factors, using regression models. The outcomes for which there was a sufficient sample size were cesarean section or vaginal birth, delivery prior to 37 weeks, and low birthweight defined at less than 2,500 grams. Only results with significant findings in this analysis are included in this brief.

## Endnotes

<sup>1</sup> Preterm births are defined as births prior to 37 weeks of pregnancy. Infants born preterm are at greater risk of death, and are at greater risk for serious health complications, including breathing problems, developmental delays, and cerebral palsy (ACOG 2016).

<sup>2</sup> Low birthweight is defined as less than 2,500 grams or 5 pounds, 8 ounces (Martin et al. 2018).

<sup>3</sup> Federal law requires that states provide Medicaid coverage to pregnant women whose household income is the higher of 133 percent FPL or the income standard, up to 185 percent FPL, that the state had established as of December 19, 1989, for determining eligibility for pregnant women, or, as of July 1, 1989, had authorizing legislation to do so (42 CFR 435.116). As part of the modified adjusted gross income (MAGI)-based eligibility determinations for populations that include pregnant women, states are required to disregard income equal to 5 percentage points of the FPL. For this reason, mandatory income eligibility for pregnant women is often referred to at its effective level of 138 percent FPL, even though federal statute specifies 133 percent FPL.

<sup>4</sup> The four states that cover pregnant women at the minimum threshold of 133 percent FPL are Idaho, Louisiana, Oklahoma, and South Dakota.

<sup>5</sup> In states that did not expand Medicaid, the eligibility threshold for parents is lower than the threshold for pregnant women (MACPAC 2017).

<sup>6</sup> While states can also vary benefits offered to beneficiaries based on their eligibility pathway or limit services to pregnant women who qualified on the basis of pregnancy to maternity services, most states provide a similar scope of maternity care benefits to beneficiaries regardless of how they qualify. State variation in maternity services such as childbirth education services reflects the eligibility pathway qualifying a woman for Medicaid (Gifford et al. 2017).

<sup>7</sup> The questionnaires are mailed 2–4 months after a woman's delivery, ensuring that the 60-day postpartum period is complete.

<sup>8</sup> Obesity is defined by a body mass index greater than 29.

<sup>9</sup> Women who are considered to have smoked reported smoking at least one cigarette in the three months prior to pregnancy or during pregnancy.

<sup>10</sup> Findings on differences in diabetes, smoking, and obesity are consistent with earlier research (CDC 2016, D'Angelo et al. 2012, Salganicoff and An 2008).

<sup>11</sup> States can receive an additional one percentage point increase to their federal medical assistance percentage if they cover certain federally recommended preventive services without cost-sharing (CMS 2013).



<sup>12</sup> Adequate prenatal care is defined by the Kessner index as initiation of prenatal care in the first trimester and nine or more visits. Within the Kessner index, prenatal care can also be defined as intermediate or inadequate (Kessner et al. 1973).

<sup>13</sup> See data and methods section for more information on regression models that control for demographic and health factors to analyze maternal and birth outcomes by insurance status.

<sup>14</sup> Outcomes examined include cesarean section or vaginal birth, pre-term births, and low birthweight. Other outcomes were not included due to insufficient sample size or lack of statistically significant findings.

<sup>15</sup> California, Idaho, and Ohio do not participate.

## References

Agency for Healthcare Research and Quality (AHRQ). 2018. *Healthcare Cost and Utilization Project Statistical Brief # 243: Trends and Disparities in Delivery Hospitalizations Involving Severe Maternal Morbidity, 2006-2015*. Rockville, MD: AHRQ. [https://hcup-us.ahrq.gov/reports/statbriefs/sb243-Severe-Maternal-Morbidity-Delivery-Trends-Disparities.jsp?utm\\_source=ahrq&utm\\_medium=en-2&utm\\_term=&utm\\_content=2&utm\\_campaign=ahrq\\_en9\\_4\\_2018](https://hcup-us.ahrq.gov/reports/statbriefs/sb243-Severe-Maternal-Morbidity-Delivery-Trends-Disparities.jsp?utm_source=ahrq&utm_medium=en-2&utm_term=&utm_content=2&utm_campaign=ahrq_en9_4_2018)

Agency for Healthcare Research and Quality (AHRQ). 2014. *Statistical brief no. 181: Costs for hospital stays in the United States, 2012*. Rockville, MD: AHRQ. <https://www.hcup-us.ahrq.gov/reports/statbriefs/sb181-Hospital-Costs-United-States-2012.pdf>.

American College of Obstetricians and Gynecologists (ACOG). 2017. *ACOG committee opinion: Importance of social determinants of health and cultural awareness in the delivery of reproductive health care*. January 2018. Washington, DC: ACOG. <https://www.acog.org/Clinical-Guidance-and-Publications/Committee-Opinions/Committee-on-Health-Care-for-Underserved-Women/Importance-of-Social-Determinants-of-Health-and-Cultural-Awareness-in-the-Delivery-of-Reproductive>.

American College of Obstetricians and Gynecologists (ACOG). 2016. *Frequently asked questions: Preterm (premature) labor and birth*. Washington, DC: ACOG. <https://www.acog.org/Patients/FAQs/Preterm-Premature-Labor-and-Birth#is>.

Betran, A., J. Ye, A.B. Moller, J. Zhang, A. Gulmezoglu, and M. Torloni. 2016. The increasing trend in caesarean section rates: global, regional and national estimates: 1990-2014. February 5, 2016. *PLoS One* 11(2): e0148343.

Bombard, J., P. Dietz, C. Galavotti et al. 2012. Chronic diseases and related risk factors among low-income mothers. January 2012. *Maternal and Child Health Journal* 16(1): 60-71.

Centers for Disease Control (CDC), U.S. Department of Health and Human Services. 2017. *Type 1 or Type 2 Diabetes and pregnancy. Problems of diabetes in pregnancy*. Atlanta, GA: CDC. <https://www.cdc.gov/pregnancy/diabetes-types.html>

Centers for Disease Control (CDC), U.S. Department of Health and Human Services. 2016. *Advancing the health of mothers in the 21<sup>st</sup> century*. Atlanta, GA: CDC. <https://www.cdc.gov/chronicdisease/resources/publications/aag/maternal.htm>.

Centers for Medicare and Medicaid Services (CMS), U.S. Department of Health and Human Services. 2016. *Perinatal Care in Medicaid and CHIP*. <https://www.medicare.gov/medicaid/quality-of-care/downloads/secretarys-report-perinatal-excerpt.pdf>

Centers for Medicare and Medicaid Services (CMS), U.S. Department of Health and Human Services. 2013. Letter from Cindy Mann to State Medicaid Directors regarding "Affordable Care Act Section 4106 (Preventive Services)." February 1, 2013. <https://www.medicare.gov/Federal-Policy-Guidance/Downloads/SMD-13-002.pdf>

Colicchia, L.C., and H.N. Simhan. 2016. Optimizing subsequent pregnancy outcomes for women with a prior preterm birth. *American Journal of Perinatology*. 33(03): 267-275. <https://www.thieme-connect.com/products/ejournals/abstract/10.1055/s-0035-1571143>



- Curtin, S., K. Gregory, L. Korst, and S. Uddin. 2015. *Maternal morbidity for vaginal and cesarean deliveries, according to previous cesarean history: new data from the birth certificate, 2013*. Hyattsville, MD: National Vital Statistics Reports, Centers for Disease Control and Prevention. [https://www.cdc.gov/nchs/data/nvsr/nvsr64/nvsr64\\_04.pdf](https://www.cdc.gov/nchs/data/nvsr/nvsr64/nvsr64_04.pdf).
- D'Angelo, D.V., L. Williams, L Harrison, I. B. Ahluwalia. 2012. Health status and health insurance coverage of women with live-born infants: an opportunity for preventive services after pregnancy. *Maternal and Child Health Journal*. 16(0 2): 222–230.
- Daw, J. R., L.A. Hatfield, K. Swartz, and B. Sommers. 2017. Women in the United States experience high rates of coverage 'churn' in months before and after childbirth. April 2017. *Health Affairs* vol. 36, no.4.
- Gifford, K., J. Walls, U. Ranji, A. Salganicoff, I. Gomez. 2017. *Medicaid Coverage of Pregnancy and Perinatal Benefits: Results from a State Survey*. San Francisco, CA: Kaiser Family Foundation and Health Management Associates. <http://files.kff.org/attachment/Report-Medicaid-Coverage-of-Pregnancy-and-Perinatal-Benefits>.
- Health Resources and Services Administration (HRSA). U.S. Department of Health and Human Services. 2011. *Prenatal–First Trimester Care Access*. Bethesda, MD: HRSA. <https://www.hrsa.gov/sites/default/files/quality/toolbox/pdfs/prenatalfirsttrimestercareaccess.pdf>
- Kaiser Family Foundation (KFF). 2012. *Medicaid Benefits: Tobacco Cessation Services for Pregnant Women*. San Francisco, CA: KFF. <https://www.kff.org/other/state-indicator/medicaid-benefits-tobacco-cessation-services-for-pregnant-women/?currentTimeframe=0&sortModel=%7B%22colId%22:%22Benefit%20Covered%22,%22sort%22:%22asc%22%7D>
- Kessner, D., J. Singer, C. Kalk, E. Schlesinger. 1973. Infant death: an analysis by maternal risk and health care. Washington, D.C.: *Institute of Medicine and National Academies of Sciences*, Vol 1.
- Kothari, C.L., R. Paul, B. Dormitorio, et al. 2016. The interplay of race, socioeconomic status and neighborhood residence upon birth outcomes in a high black infant mortality community. *Population Health* 2, 859-867.
- Liu, S., R. Liston, K.S. Joseph, et al. 2007. Maternal mortality and severe morbidity associated with low-risk planned cesarean delivery versus planned vaginal delivery at term. February 13, 2007. *Canadian Medical Association Journal*, 176, no4: 455-460.
- Martin, J. and M. Osterman. 2018. *Describing the increase in preterm birth in the United States, 2014-2016*. Hyattsville, MD: National Center for Health Statistics. <https://www.cdc.gov/nchs/data/databriefs/db312.pdf>.
- Martin, J., B. E Hamilton, M. J.K. Osterman, et al. 2018. *Birth Data for 2016*. National Vital Statistics Report vol. 67, no. 1 Atlanta, GA: Division of Vital Statistics, Centers for Disease Control and Prevention. [https://www.cdc.gov/nchs/data/nvsr/nvsr67/nvsr67\\_01.pdf](https://www.cdc.gov/nchs/data/nvsr/nvsr67/nvsr67_01.pdf).
- Medicaid and CHIP Payment and Access Commission (MACPAC). 2017. *Medicaid income eligibility levels as a percentage of the FPL for non-aged, non-disabled, non-pregnant adults by state*. Washington, DC: MACPAC. <https://www.macpac.gov/publication/medicaid-income-eligibility-levels-as-a-percentage-of-the-federal-poverty-level-for-non-aged-non-disabled-non-pregnant-adults-by-state/>
- National Governors Association (NGA). 2014. *2014 Maternal and child health update: States are using Medicaid and CHIP to improve health outcomes for mothers and children*. Washington, DC: NGA. <https://www.nga.org/files/live/sites/NGA/files/pdf/MCHUPDATE2014.PDF>
- Salganicoff, A., and J. An. 2008. Making the Most of Medicaid. *Women's Health Issues* 18, no.6:41-46. [https://www.whijournal.com/article/S1049-3867\(08\)00106-0/abstract](https://www.whijournal.com/article/S1049-3867(08)00106-0/abstract).
- Singh G., G. Daus, M. Allender et al. 2017. Social determinants of health in the United States: Addressing major health inequality trends for the nation, 1935-2016. *International Journal of Maternal and Child Health and AIDS* 6, no. 2: 139-164.



## Appendix

**TABLE A-1.** Health Insurance Coverage at Various Stages of Pregnancy, by State, 2012–2014

State	Coverage a month prior to pregnancy			Coverage for prenatal care			Coverage for delivery		
	Medicaid	Private insurance	Uninsured	Medicaid	Private insurance	Uninsured	Medicaid	Private insurance	Uninsured
<b>Total</b>	<b>20.5%</b>	<b>58.4%</b>	<b>18.8%</b>	<b>38.3%</b>	<b>56.4%</b>	<b>3.1%</b>	<b>41.4%</b>	<b>54.6%</b>	<b>2.7%</b>
Alaska	19.0	56.8	22.7*	35.7*	56.2	7.2*	38.4*	51.0*	7.2*
Alabama	15.8*	57.5	24.0*	46.0*	49.7*	3.1	54.0*	43.5*	2.0
Arkansas	18.4	46.3*	33.0*	53.0*	41.2*	4.4	N/A	N/A	N/A
Colorado	16.7*	61.5*	19.7	33.8*	60.7*	2.7	38.6*	58.7*	2.5
Connecticut	24.6*	61.6*	13.2*	34.1*	60.9*	3.3	N/A	N/A	N/A
Delaware	34.2*	52.0*	11.6*	45.6*	50.2*	2.6	50.5*	47.3*	1.0*
Georgia	12.6*	49.8*	36.9*	45.4*	45.6*	7.9*	47.4*	44.6*	3.5
Hawaii	25.3*	67.6*	5.8*	32.0*	66.0*	0.8*	N/A	N/A	N/A
Iowa	16.6*	69.0*	12.7*	29.8*	66.4*	2.7	36.6*	60.9*	2.4
Illinois	24.1*	55.4*	19.5	45.6*	52.6*	1.3*	46.8*	51.1*	1.0*
Massachusetts	29.6*	63.0*	4.5*	35.4*	62.2*	0.5*	31.0*	68.5*	0.5*
Maryland	16.9*	59.4	19.1	31.0*	56.8	5.5*	37.5*	57.8*	2.7
Maine	32.1*	52.8*	13.7*	44.9*	52.2*	2.0*	45.8*	50.8	2.8
Michigan	24.8*	56.8	16.5*	42.8*	55.3	0.9*	43.7*	55.0	0.9*
Minnesota	18.8	67.4*	11.5*	29.4*	67.1*	1.2*	29.4*	66.5*	1.5*
Missouri	17.0*	57.3	24.0*	40.1	55.0	3.6	44.0*	50.6*	3.5*
Nebraska	12.2*	66.8*	19.7	33.3*	63.1*	2.7	33.1*	62.3*	4.1*
New Hampshire	11.3*	69.9*	17.0	27.5*	69.4*	1.5*	29.4*	67.2*	1.6*
New Jersey	20.2	61.5*	16.5*	34.4*	61.0*	2.9	N/A	N/A	N/A
New Mexico	31.9*	37.2*	28.1*	55.8*	34.2*	7.5*	67.6*	23.3*	7.3*
New York	26.2*	58.0	13.0*	37.9	57.6	2.1*	37.4*	60.3*	1.4*
Ohio	25.3*	57.9	14.8*	38.4	56.1	3.5	41.6	53.9	3.7*
Oklahoma	19.3	49.4*	30.2*	52.6*	44.7*	2.1*	57.5*	36.1*	2.1
Oregon	17.6*	58.4	22.6*	40.0	56.7	2.1*	44.3	53.6	2.1
Pennsylvania	17.4*	60.0	18.1	28.9*	60.0*	5.6*	32.4*	59.5*	5.8*
Rhode Island	22.9*	57.4	16.8*	37.9	56.4	1.6*	N/A	N/A	N/A
Tennessee	25.4*	51.8*	20.2	47.5*	48.8*	1.9*	53.6*	45.3*	1.0*
Utah	6.7*	71.9*	19.5	19.5*	70.7*	8.0*	27.3*	65.8*	6.1*
Vermont	32.0*	57.0	9.0*	41.4*	56.1	0.9*	43.1	53.9	0.9*

State	Coverage a month prior to pregnancy			Coverage for prenatal care			Coverage for delivery		
	Medicaid	Private insurance	Uninsured	Medicaid	Private insurance	Uninsured	Medicaid	Private insurance	Uninsured
Washington	12.6*	62.5*	21.8*	33.9*	60.4*	1.3*	42.5	55.0	2.5
Wisconsin	23.9*	61.4*	12.9*	37.1	59.9*	2.2*	38.3*	57.7*	2.7
West Virginia	24.9*	46.3*	27.5*	55.2*	42.6*	1.2*	57.7*	40.4*	0.7*
Wyoming	8.4*	65.5*	23.8*	32.4*	61.6*	3.6	34.2*	60.0*	5.6*

**Notes:** Excludes women who had twins or other multiple births. Coverage data include data from 33 states, with the exception of coverage for delivery in five states (Arkansas, Connecticut, Hawaii, New Jersey, and Rhode Island) where this data was not available. The following hierarchy was used to assign individuals with multiple coverage sources to a primary source: Medicare, private, Medicaid or CHIP, other, uninsured. Other is not shown here.

Percent calculations exclude individuals with missing or unknown values.

\* Difference from Medicaid is statistically significant at the 0.05 level.

N/A indicates estimate not available in the state.

**Source:** MACPAC analysis of the 2012–2014 Pregnancy Risk Assessment Monitoring System (PRAMS) data, 2017.