



BlueCross.  
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**bhi**  
Blue Health Intelligence

**THE HEALTH  
OF AMERICA**  
REPORT

**CESAREAN  
BIRTH TRENDS:**

WHERE YOU LIVE SIGNIFICANTLY  
IMPACTS HOW YOU GIVE BIRTH



## BLUE CROSS BLUE SHIELD, THE HEALTH OF AMERICA REPORT

### EXECUTIVE SUMMARY

The likelihood that an expectant mother will have a cesarean delivery<sup>1</sup> is determined in large part by where she lives. An analysis of Blue Cross and Blue Shield (BCBS) companies' data taken from 3 million deliveries by BCBS commercially-insured members shows that the rate of cesarean deliveries is more than twice as high in some parts of the country than in other parts and that even rates by U.S. Census Division vary by as much as 35 percent.

While geographic variation in cesarean deliveries is stark, the trend nationally may be shifting back toward vaginal deliveries. During a five-year period between July 2010 and June 2015, the cesarean rate decreased slightly each year within the BCBS population, to 33.7 percent from 35.2 percent.

The five-year average rate of cesarean delivery is 34.7 percent, slightly higher than the 32.7 percent rate for the general population as of 2013, based on [National Center for Health Statistics](#) data. The contrast likely reflects differences in demographic factors, such as age, associated with the commercially insured and the general population. In this study, mothers insured through BCBS companies are, on average, 30 years old.<sup>2</sup> Among the U.S. population, the average age of mothers giving birth is approximately 1.6 years younger, or 28.4 years old, based on NCHS data.

One potential avenue in lowering cesarean rates entails emphasizing vaginal deliveries for as many first-time mothers as possible. When a mother's first child is delivered by cesarean, the chance is 89 percent that subsequent deliveries will be done by cesarean, based on calculations using [NCHS](#) data. About [half of the increase in cesarean rates](#) reflect this. Cesarean delivery remains the safest route for breech or multiple births for mother and baby.



#### STUDY FOUND...

##### Cesarean rates within BCBS population

- can be twice as high in some parts of the country
- indicates a slight decrease nationally each year over a five-year period, 2010-2015

Cesarean rates by U.S. Census Division vary by as much as

**35%**



1. A cesarean delivery is an abdominal surgery in which a doctor creates incisions through skin, the abdominal wall, muscle and the uterus to deliver a baby. Recovery after a cesarean section is typically longer than that of a vaginal birth. Mothers who have cesarean deliveries may experience as much as six weeks of post-operation pain and bleeding versus bleeding and vaginal discharge for two to four weeks after a vaginal birth.

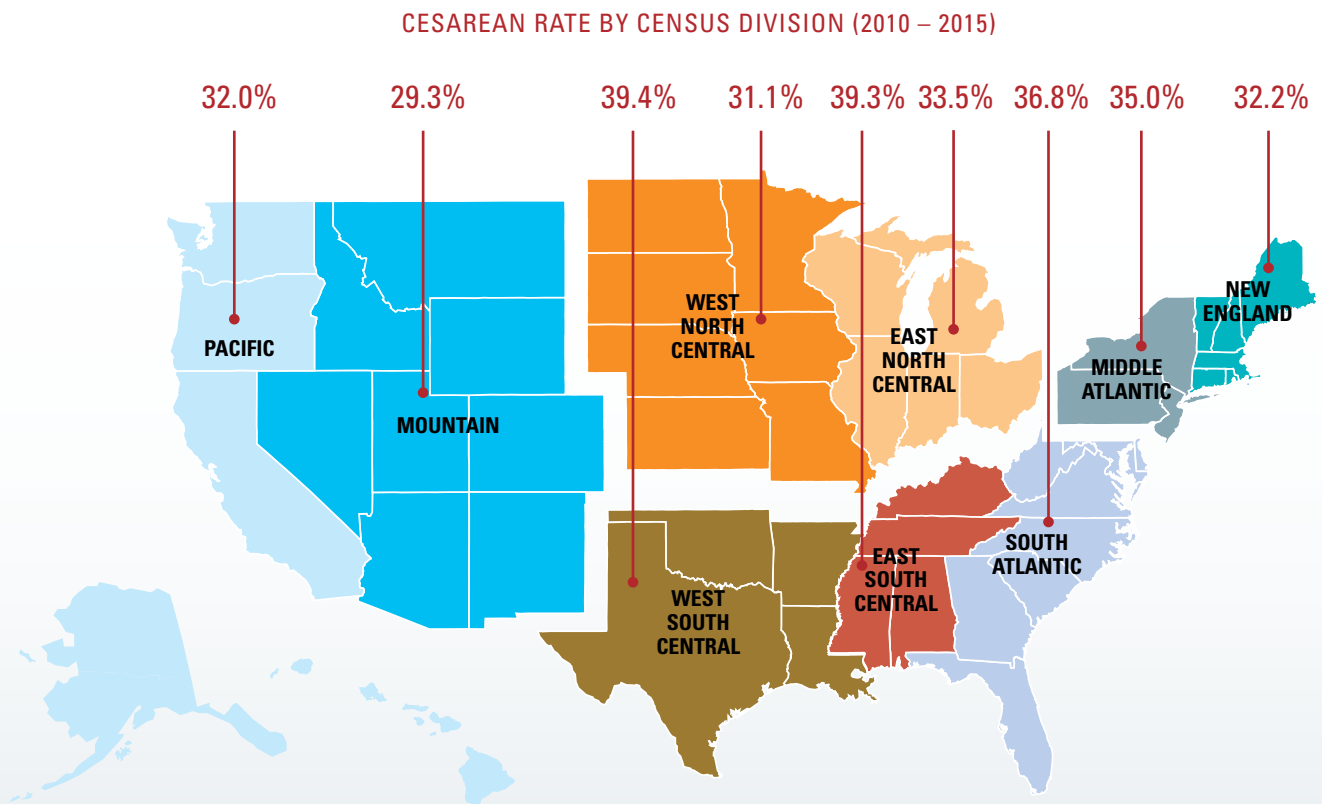
2. The average age remained stable during each of the five years of this study.

## U.S. Cesarean Rates Vary Significantly by Census Division<sup>3</sup>

While an analysis of five years of data from July 2010 to June 2015<sup>4</sup> shows a slight reversal in the decades-long rise in the rate of cesarean births in the U.S., many areas still experience extremely high rates of cesarean deliveries.<sup>5</sup>

In Miami, Florida, and Jackson, Mississippi, for instance, rates are twice as high as in Albuquerque, New Mexico, and Iowa City, Iowa, even after adjusting for age, multiple births and the rate of breech deliveries. Since populations in markets of this size record similar rates of complicated births, other factors (e.g., local practice patterns and malpractice laws) may drive differences in cesarean rates.

One explanation for varying cesarean rates: Each division has a different distribution of ages of delivering mothers and different rates of clinical conditions associated with cesarean deliveries, such as breech delivery or multiple births. However, even after adjusting each division to match the national average age distribution and prevalence of breech and multiple births, nearly all of the variation at the census division level remained — from a cesarean rate of 39.4 percent in the West South Central division to 29.3 percent in the Mountain division.



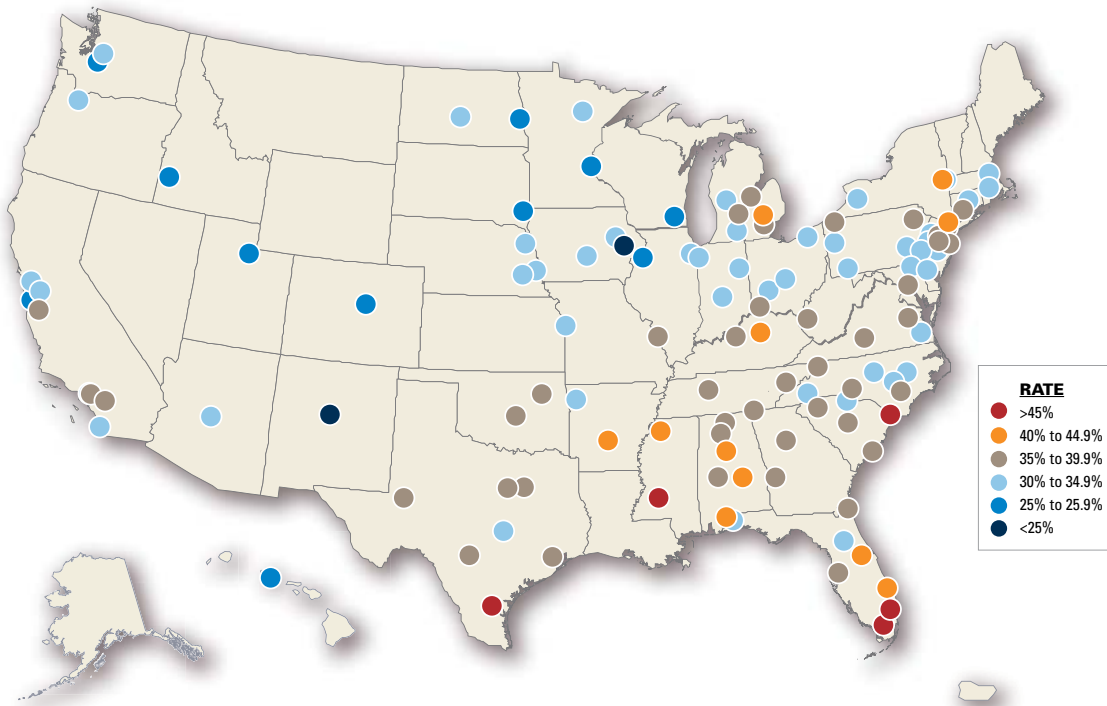
3. Census divisions map each state to one of the nine divisions described. Approximately 275,000 records (less than 9 percent of the total) were omitted from this analysis because they lacked geography information. Each census division was well-represented in the data, with the largest (South Atlantic) recording more than 530,000 deliveries and the smallest (Mountain) registering over 140,000.

4. Data from July 2014 through June 2015 include approximately 70 percent of BCBS medical claims for those 12 months.

5. Claims data cannot fully ascertain the NTSV (nulliparous, term, singleton, vertex) measure commonly used to document low-risk deliveries.

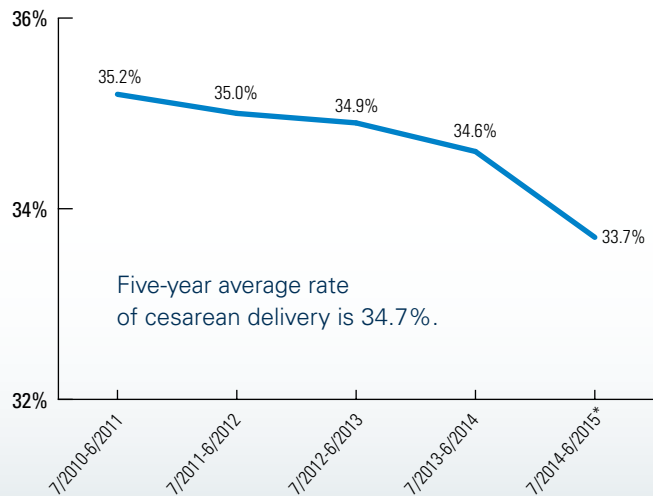
## Cesarean Rates Also Vary Significantly by Market Area

Mirroring divisional data, a small effect on the overall cesarean variation appeared after adjusting for the age and condition of each city to the national average. For instance, in markets that had at least 5,000 births, Miami, Florida, recorded the highest adjusted (49.6%) cesarean rates. Albuquerque, New Mexico, registered the lowest adjusted cesarean rates of 22.7 percent. As with the census divisions, almost all of the variation remained after adjusting for age, multiple births and breech births. This indicates that such factors as local practice patterns and malpractice laws are more important in determining the cesarean rate.



### CESAREAN RATE **DECREASED SLIGHTLY** EACH YEAR WITHIN BCBS POPULATION

While geographic variation in cesarean deliveries is stark, the trend nationally may be shifting back toward vaginal deliveries. During a five-year period between July 2010 and June 2015, the cesarean rate decreased slightly each year within the BCBS population, to 33.7 percent from 35.2 percent. While small, this decline is consistent for all five years and reverses 20 years of increasing cesarean rates. A 1.5 percentage point decrease represents approximately 36,000 vaginal deliveries compared with cesarean sections in the same period.



\*Includes a subset, or approximately 70 percent, of BCBS medical claims.

## Cesarean Rate Increases Steadily with Age

Each delivery record contained the mother’s age, which allowed for analysis of results by age bands for mothers ages 18 through 49. Not surprisingly, the cesarean rate steadily increases with age, with mothers ages 18 through 24 recording the lowest cesarean rate (26.8%) and those 45 through 49 showing the highest rate (62.6%). Mothers under 20 represent a small fraction of total deliveries, and mothers ages 25-29 and 30-34 comprise the two largest age groups by total deliveries. Again, a prior cesarean delivery strongly associates with having [future cesarean deliveries](#).



**CESAREAN RATE BY AGE GROUP  
(2010 – 2015)**

AGE GROUP	CESAREAN RATE (%)
18-24	26.8
25-29	31.1
30-34	35.9
35-39	42.9
40-44	50.5
45-49	62.6

## Cesarean Delivery Strongly Preferred for Breech and Multiple Births

In addition to age, certain obstetrical conditions associate strongly with cesarean deliveries. In particular, breech and multiple births (twins, triplets, etc.) have a strong effect on cesarean rates. Often, a cesarean delivery is the safest route for breech or multiple births for mother and baby, so their strong association with cesarean delivery is appropriate and expected.



**CESAREAN RATE BY PARTICULAR CONDITION (2010 – 2015)**

<b>All Deliveries</b>	<b>34.7%</b>
<b>Breech</b>	<b>94.8%</b>
<b>Multiple Births</b>	<b>75.6%</b>

## CONCLUSION AND DISCUSSION

This study reveals that cesarean rates by U.S. local market vary from 25 to 50 percent. This variation is not driven substantially by differences in the ages or rates of breech and multiple births. Many factors shape these differences. Additional research should be conducted to assess the effect of variations in local practice patterns, the legal malpractice environment and other factors.

The Centers for Disease Control and Prevention has developed a measure of severe maternal complications during and after delivery called Severe Maternal Morbidity, or SMM. These complications include heart attack, renal failure, eclampsia, internal injuries, hysterectomy or the need for a blood transfusion or ventilation. In this data, SMMs occurred in 2.9 percent of cesarean deliveries and only 0.8 percent of vaginal deliveries.<sup>6</sup> The interplay, though, is complex between SMMs and cesarean deliveries. Cesareans might contribute to SMMs, and women at higher risk of SMMs may deliver by cesarean more often.

Besides higher complications, cesareans that are not medically necessary also add cost to the health care system. For commercial BCBS members, the average cost difference between cesarean and vaginal deliveries, adjusted for risk, exceeds \$4,000 – \$17,482 vs. \$13,325.<sup>7</sup>

### METHODOLOGY NOTES

This report examines the medical claims of more than 3 million deliveries for Blue Cross and Blue Shield commercially-insured members from July 2010 through June 2015 to assess the trend in overall cesarean rates nationally and differences in the rate across regions and markets. It also looks at the interaction of age and key conditions of birth on the rate and makes adjustments to the geographic variation to account for these factors.

This is the eighth study of the Blue Cross Blue Shield, The Health of America Report<sup>SM</sup> series, a collaboration between the Blue Cross Blue Shield Association and Blue Health Intelligence, which uses a market-leading claims database to uncover key trends and insights into health care affordability and access to care.

6. The overall prevalence rate of SMMs in this data was 1.5 percent—very close to the national rate of approximately 1.6 percent most recently reported by the CDC.

7. The cost of the episode includes all of the costs associated with the hospital stay during the delivery, including physicians, facility and anesthesia fees.