

Trends in Low-risk Cesarean Delivery in the United States, 1990–2013

by Michelle J.K. Osterman, M.H.S.; and Joyce A. Martin, M.P.H., Division of Vital Statistics

Abstract

Objectives—This report describes trends in low-risk cesarean delivery rates in the United States from 1990 through 2013. Trends in low-risk cesarean delivery by state of residence, gestational age, age of mother, and race and Hispanic origin of mother are examined.

Methods—Low-risk cesarean delivery is defined as a cesarean delivery among term (37 or more completed weeks), singleton, vertex (head first) births to women giving birth for the first time. Data for 1990–2012 are based on 100% of low-risk births to residents of all states and the District of Columbia. Data for 2013 are preliminary, and are based on nearly 100% of low-risk births in the United States.

Results—The low-risk cesarean delivery rate reached a low of 18.4% in 1997 and then rose steadily to a high of 28.1% in 2009. The rate decreased from 2009 through 2013, reaching 26.9%. Declines were widespread during this time. Low-risk cesarean delivery rates were down for more than one-half of states. Rates declined for all term gestational ages (37 or more completed weeks); the largest decline was at 38 weeks, down 9%. Rates for all maternal age groups and race and Hispanic origin groups were also down. The largest declines were for women under 40 (6%–8%) and for non-Hispanic white women (6%); rates for these groups decreased at all term gestational ages.

Keywords: method of delivery • age of mother • race and Hispanic origin • gestational age

Introduction

The overall cesarean delivery rate in the United States increased 60% from 1996 through 2009, from 20.7% to 32.9% (1). Since 2009, the cesarean delivery rate has declined slightly, to 32.7% in 2013; however, nearly one-third of births continue to be delivered by cesarean every year (2).

There has been considerable effort in recent years to reduce the occurrence of nonmedically indicated cesarean delivery and induction

of labor, with particular attention focused on deliveries under 39 completed weeks of gestation. Efforts to reduce such deliveries include new guidelines from the American Congress of Obstetricians and Gynecologists (ACOG), initiatives to improve the quality of perinatal care, changes in hospital policies to disallow elective delivery before 39 weeks, and public education campaigns (3–11). A recent report on

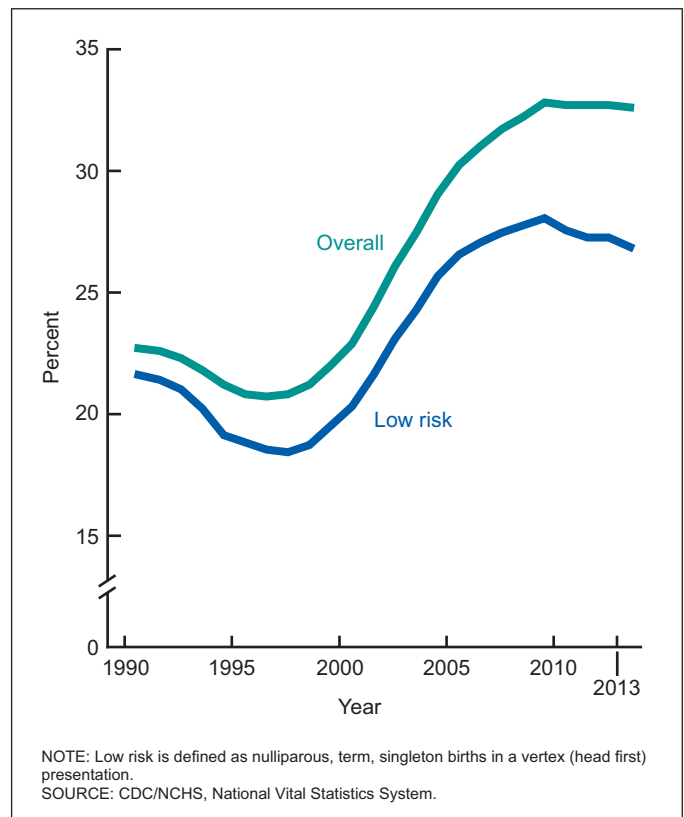


Figure 1. Overall cesarean delivery and low-risk cesarean delivery: United States, final 1990–2012 and preliminary 2013

cesarean delivery by gestational age shows recent declines in overall cesarean deliveries before 39 weeks (12).

Primary cesarean deliveries (a first cesarean delivery regardless of the number of previous deliveries) account for approximately 60% of all cesareans (13). Following the first cesarean, there is a very low probability (about 10%) of a subsequent vaginal delivery (13). Accordingly, the U.S. Department of Health and Human Services established a Healthy People 2010 objective to reduce the low-risk [term, singleton, vertex (head first) presentation] cesarean delivery rate among women with no prior cesarean (14). Similarly, in 2009 The Joint Commission's National Quality Core Measures for hospitals included an objective to reduce the nulliparous, term, singleton, vertex (NTSV) cesarean delivery rate; that is, the rate of cesarean deliveries among term (37 or more completed weeks of gestation), singleton (one fetus), vertex (head first) births to women giving birth for the first time (15). The NTSV rate is used at the hospital level as a quality control measure to reduce the use of elective obstetric procedures before term (16).

It is important to note that these definitions of low risk and the definition used in this report (see Methods) exclude births with some of the more common risk factors for cesarean delivery (i.e., multiple births, breech presentation, prior cesarean delivery, and preterm gestation). Use of this term, however, is not meant to imply that a cesarean delivery may not be medically necessary for low-risk women. There are several medical risk factors and circumstances that make a cesarean delivery the safest choice for the health of the low-risk mother and infant (17–19).

This report explores trends in low-risk cesarean delivery at a national level, with particular focus on changes from 2009 through 2013. Trends are examined by state of residence, gestational age, age of mother, and race and Hispanic origin of mother. An earlier report based on birth certificate data, using a slightly different definition, explored low-risk trends from 1990 through 2003 (20).

Methods

Data for 1990–2012 are based on 100% of the birth certificates filed in all states and the District of Columbia (DC). Data for 2013 are preliminary and are based on more than 99.8% of 2013 births (2).

A low-risk birth is defined as nulliparous (first birth), term (37 or more completed weeks of gestation), singleton (one fetus), and vertex (head first); for differences between the definition of NTSV and the definition used in this report, see the Discussion section. The low-risk cesarean (LRC) delivery rate is the number of low-risk births delivered by cesarean per 100 low-risk births. Data are based on both the 2003 (revised) and 1989 (unrevised) U.S. Standard Certificate of Live Birth. See [Technical Notes](#) for differences in the definition of vertex presentation between revisions.

The low-risk population comprised about one-third of the total number of women giving birth in a given year during the study period (see [Technical Notes](#)). In 1990, 1,380,902 of the 4,158,212 total births were low risk (33.2%). This proportion increased to 34.7% in 1995 and then declined to 32.4% in 2013.

References to rate increases or decreases indicate statistically significant differences unless otherwise noted. Computations exclude records with missing data.

Results

- The LRC rate reached a low of 18.4% in 1997 and then rose steadily to a high of 28.1% in 2009 ([Table A](#) and [Figure 1](#)). Since 2009, the rate has decreased nearly every year, declining a total of 4%, to 26.9% in 2013.
- Compared with the trend in overall cesarean delivery, the annual increase in the LRC rates from 2006 through 2009 was less pronounced, but the decline in the LRC rates since 2009 has been steeper than the decline for overall cesarean ([Table A](#)).
- The proportion of all cesarean deliveries that are low risk declined from nearly one in three deliveries (32.5%) in 1990 to just over one in four (26.5%) in 2013.

State of residence

- State-specific trends in LRC rates were similar to the national trend: Rates trended upward from 1997 through 2009 and downward from 2009 through 2013 ([Table 1](#) and [Figure 2](#)).
- Increases in state-specific LRC rates were observed from 1997 through 2009 for all states and the District of Columbia. Increases of at least 50% were reported for 35 states during this period.
- Since 2009, LRC rates for 30 states have decreased. Rates in Hawaii, Massachusetts, and Virginia declined 15% or more during this time.

Table A. Cesarean delivery and low-risk cesarean delivery: United States, final 1990–2012 and preliminary 2013

Year	Number		Percent	
	Total	Low risk ¹	Total	Low risk ¹
2013	1,291,071	341,532	32.7	26.9
2012	1,296,070	350,877	32.8	27.3
2011	1,293,267	354,700	32.8	27.3
2010	1,309,182	363,143	32.8	27.6
2009	1,353,572	382,896	32.9	28.1
2008	1,369,273	384,090	32.3	27.8
2007	1,367,340	384,212	31.8	27.5
2006	1,321,054	369,944	31.1	27.1
2005	1,248,815	359,016	30.3	26.6
2004	1,190,210	347,051	29.1	25.7
2003	1,119,388	330,185	27.5	24.3
2002	1,043,846	306,148	26.1	23.1
2001	978,411	287,030	24.4	21.6
2000	923,991	274,017	22.9	20.3
1999	862,086	255,900	22.0	19.5
1998	825,870	245,548	21.2	18.7
1997	799,033	241,734	20.8	18.4
1996	797,119	246,475	20.7	18.5
1995	806,722	253,567	20.8	18.8
1994	830,517	258,640	21.2	19.1
1993	861,987	272,587	21.8	20.2
1992	888,622	282,543	22.3	21.0
1991	905,077	290,670	22.6	21.4
1990 ²	914,096	296,917	22.7	21.6

¹Low risk is defined as singleton, term (37 or more weeks of gestation), vertex (head first) cesarean deliveries to women having a first birth per 100 women delivering singleton, term, vertex first births.

²Excludes data for Oklahoma, which did not report method of delivery.

NOTE: Denominators are shown in Table I in Technical Notes.

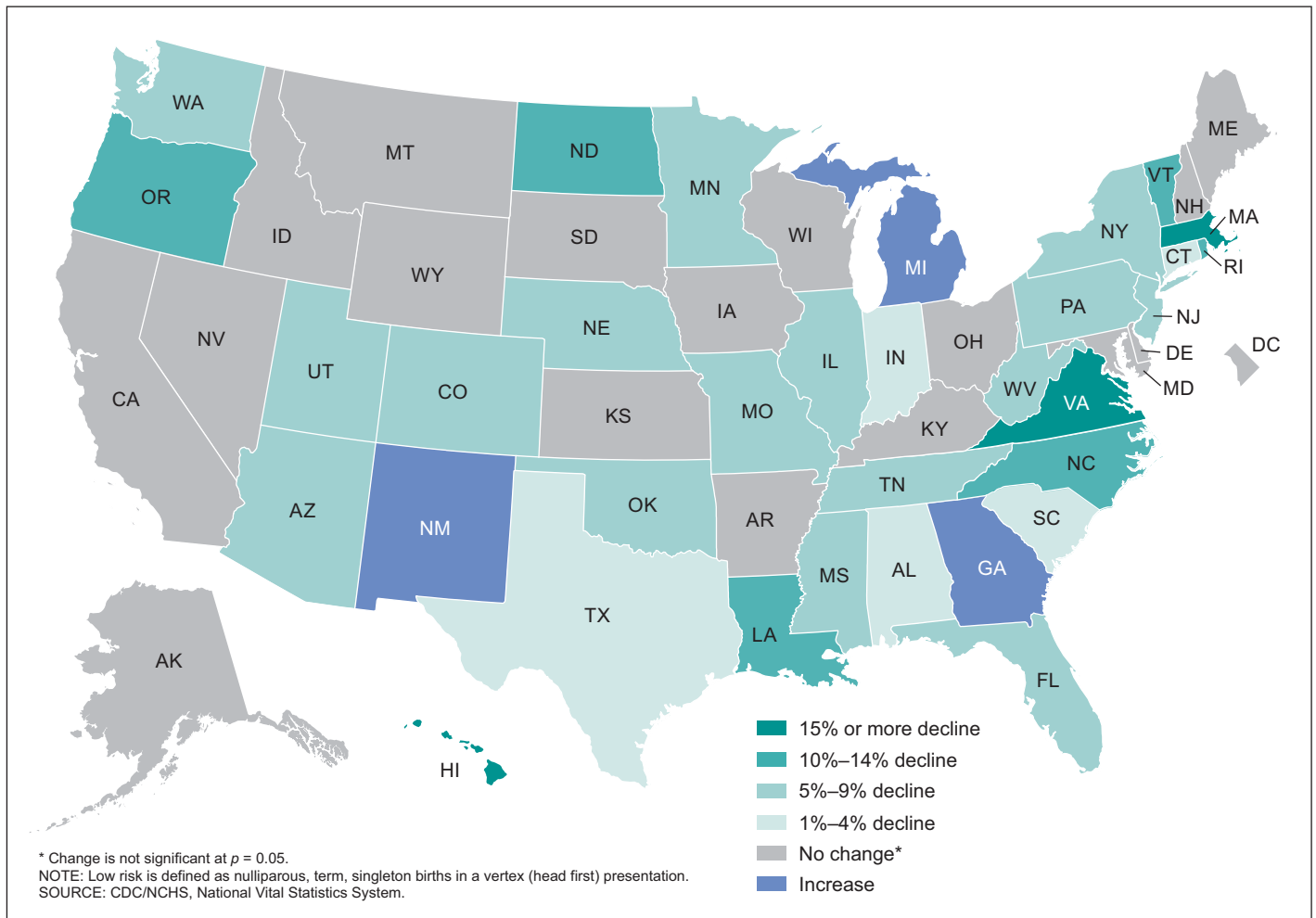


Figure 2. Percent change in low-risk cesarean delivery, by state: final 2009 and preliminary 2013

- LRC rates for Georgia, Michigan, and New Mexico were higher in 2013 than in 2009. Of these three states, rates for Michigan and New Mexico appear to have stopped increasing in 2012 (data not shown).
- Since 2009, LRC rates have declined for all age groups. Rates were down at least 6% for all age groups under 40 and by 2% among women aged 40 and over (Table B and Figure 4).

Gestational age

- LRC rates increased at least 40% for all term gestational ages (each completed week 37–41 and 42 weeks or more) from 1997 through 2009 (Table 2). Rates increased more than 60% for each week 37 through 39 during this time.
- Declines of at least 2% in LRC rates were seen for all gestational ages since 2009 (Table 2, Table B, and Figure 3). The largest decline was at 38 weeks, down 9%, from 26.6% in 2009 to 24.3% in 2013.

Age of mother

- LRC rates increased at least 40% for all maternal age groups from 1997 through 2009 (Table 3). The largest increases were for women under 20, with rates rising more than 60% during this time (12.1% to 19.9%).

- LRC rates were down among women under 40 at each gestational week 37–41 and at 42 weeks or more (Table 4).
- LRC rates decreased at 38 and 41 weeks for women aged 40 and over (Table 4).

Race and Hispanic origin

- LRC rates increased approximately 50% from 1997 through 2009 for each of the three largest groups: non-Hispanic white, non-Hispanic black, and Hispanic women (Table 3). From 2009 through 2013, rates for all three groups declined (Table B).
- Among non-Hispanic white women, LRC rates decreased 6% (from 27.7% to 25.9%).
- Rates were down at each gestational age (each completed week 37–41 and 42 weeks or more); the largest decline for non-Hispanic white women was at 38 weeks (down 11%) (Table 4 and Figure 5).

Table B. Low-risk cesarean delivery, by gestational age, by age of mother, and by race and Hispanic origin of mother: final 2009 and preliminary 2013

Characteristic	2013	2009	Percent change 2009 and 2013
Gestational age			
	Percent		
Early term	25.0	26.7	-6
37 weeks	26.5	27.1	-2
38 weeks	24.3	26.6	-9
Full term	26.6	27.8	-4
39 weeks	26.5	27.3	-3
40 weeks	26.8	28.3	-5
Late term ¹	30.6	31.5	-3
Postterm ²	28.6	30.1	-5
Age of mother			
Under 20	18.3	19.9	-8
20–24	23.6	25.3	-7
25–29	27.0	29.2	-8
30–34	31.7	34.2	-7
35–39	40.8	43.6	-6
40 and over	53.5	54.5	-2
Race and Hispanic origin of mother			
Non-Hispanic white	25.9	27.7	-6
Non-Hispanic black	30.8	31.1	-1
Hispanic	26.6	27.0	-1

¹Late term is 41 completed weeks.²Postterm is 42 or more completed weeks.

NOTE: Low risk is defined as singleton, term (37 or more weeks of gestation), vertex (head first) cesarean deliveries to women having a first birth per 100 women delivering singleton, term, vertex first births.

- Among non-Hispanic black and Hispanic women, LRC rates declined 1% from 2009 through 2013.
 - For both groups, the largest decline was at 38 weeks of gestation (down 6%) (Table 4 and Figure 5).

Discussion

Following consistent increases from the mid-1990s through 2009, the low-risk cesarean delivery rate began to decline in 2010. The rate continued the downward trend in 2013, to 26.9%, the lowest rate since 2005. Although the increasing trends for both LRC and overall cesarean delivery slowed down in 2006, the increasing trend for LRC tapered off faster than for overall cesarean, and LRC rates have declined at a faster pace since 2010. Declines in LRC rates were widespread: Rates declined from 2009 through 2013 for a majority of states, for all maternal age groups, for each of the three largest race and Hispanic origin groups, and for all gestational ages. The largest and most consistent declines in low-risk cesarean delivery were among non-Hispanic white women and at 38 weeks of gestational age.

Limitations

Information on vertex presentation is collected somewhat differently on the 1989 and 2003 revisions of the U.S. Standard Certificate of Live Birth. For data based on the 2003 revision (revised), vertex

delivery is defined as cephalic and other presentations (21). For data based on the 1989 revision (unrevised), vertex presentation is defined as a non-breech presentation (22); that is, any record for which breech presentation is not reported is classified as a vertex presentation. Analysis of data from both the revised and unrevised reporting areas, however, indicate that the national declines in low-risk cesarean delivery for 2009–2013 described in this report are not an artifact of the changes in reporting areas during the study period. See [Technical Notes](#) for details.

The definition of low risk used in this report follows the NTSV definition (nulliparous, term, singleton, vertex) prescribed by the professional obstetric community (16), with one difference. For this study, vertex includes all non-breech births, rather than being limited to cephalic presentations only (see [Technical Notes](#) for details). The result is a slightly larger low-risk population due to the inclusion of other presentations, which account for about 2% of the low-risk population (data not shown; see [Technical Notes](#) for details).

Data quality

Recent research suggests that cephalic presentation and cesarean delivery are well reported on the birth certificate (23). In a two-state study of the validity of the medical and health items on the 2003 revision of the birth certificate, exact agreement with medical records for cephalic presentation was more than 90% in both states (23). Sensitivity—the likelihood that cephalic presentation will be indicated on the birth certificate if it is in the medical record—was also more than 95% in both states (23). There were not enough records to assess other presentations (23). Likewise, cesarean delivery was well reported, with both exact agreement and sensitivity more than 95% for both states (23).

Conclusions

This report and other recent reports that document changes in total and primary cesarean delivery, induction of labor, and in the gestational age distribution of births suggest a recent shift in labor and delivery management among singleton births in the United States (1,12,24,25). There have been substantial reductions in cesarean delivery and labor induction before 39 weeks (particularly at 38 weeks), as well as declines in rates of labor induction and primary cesareans (including low-risk cesareans) for births after 39 weeks, which may be associated with the shift toward longer pregnancies (1,12,24,25).

Efforts to reduce cesarean deliveries continue. In the latest editions, Healthy People 2020 and The Joint Commission's National Quality Core Measures for hospitals (2014) renewed the objectives to reduce LRC rates, and a recent ACOG consensus report outlines strategies for preventing the first cesarean delivery (26–28). Future research will determine the impact of these initiatives on cesarean delivery trends and maternal and infant health outcomes.

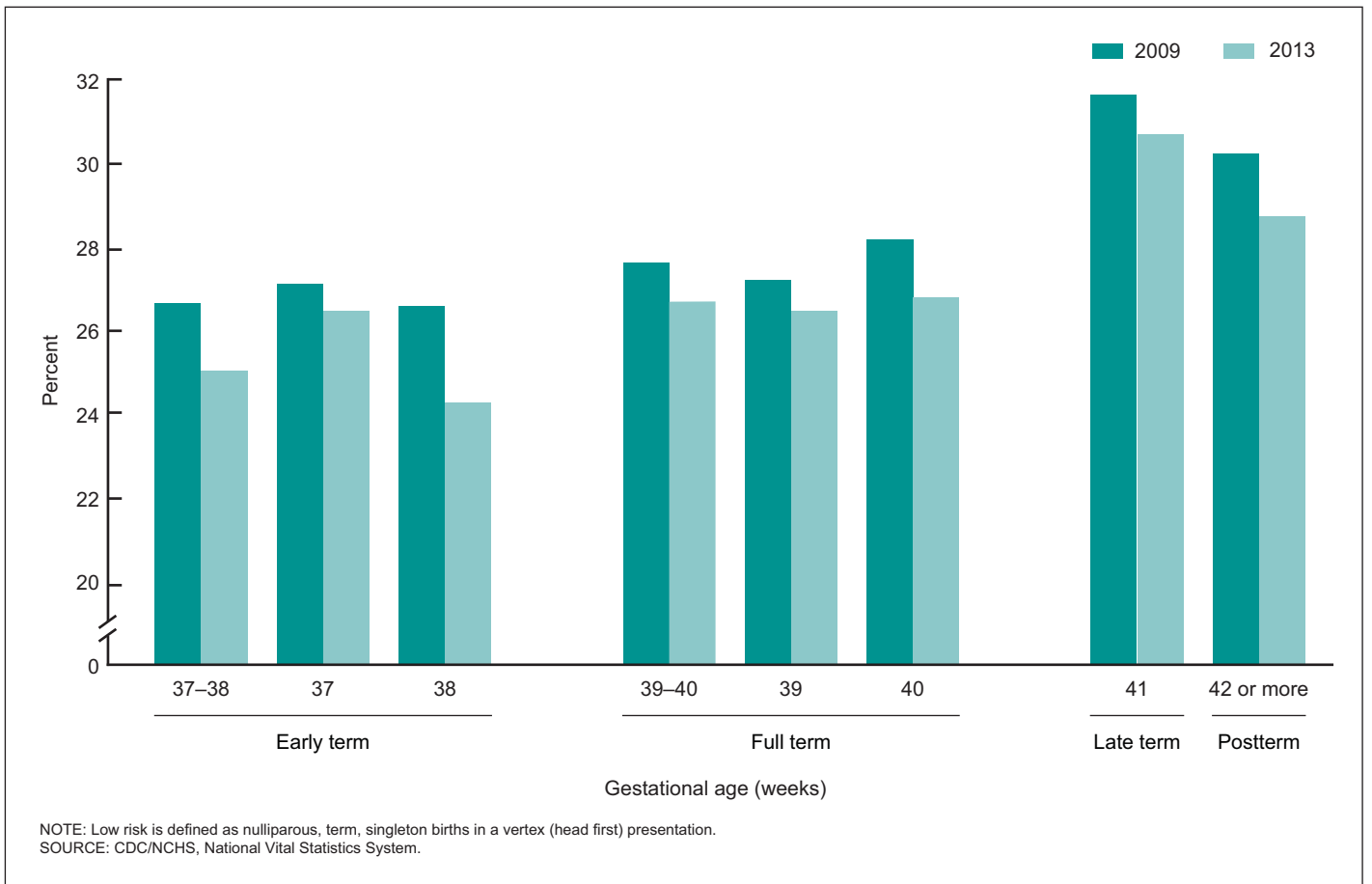


Figure 3. Low-risk cesarean delivery, by gestational age: United States, final 2009 and preliminary 2013

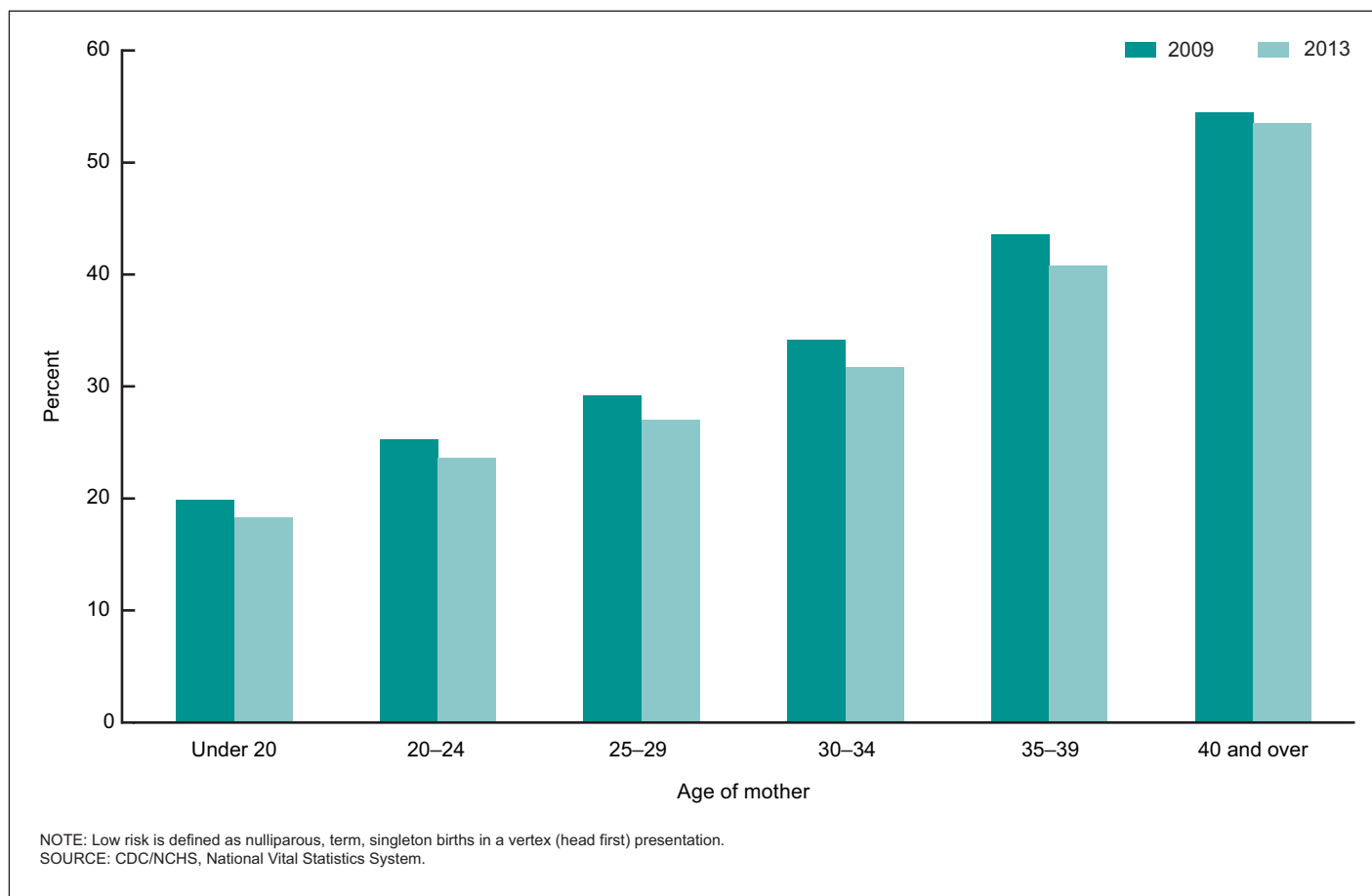


Figure 4. Low-risk cesarean delivery, by age of mother: United States, final 2009 and preliminary 2013

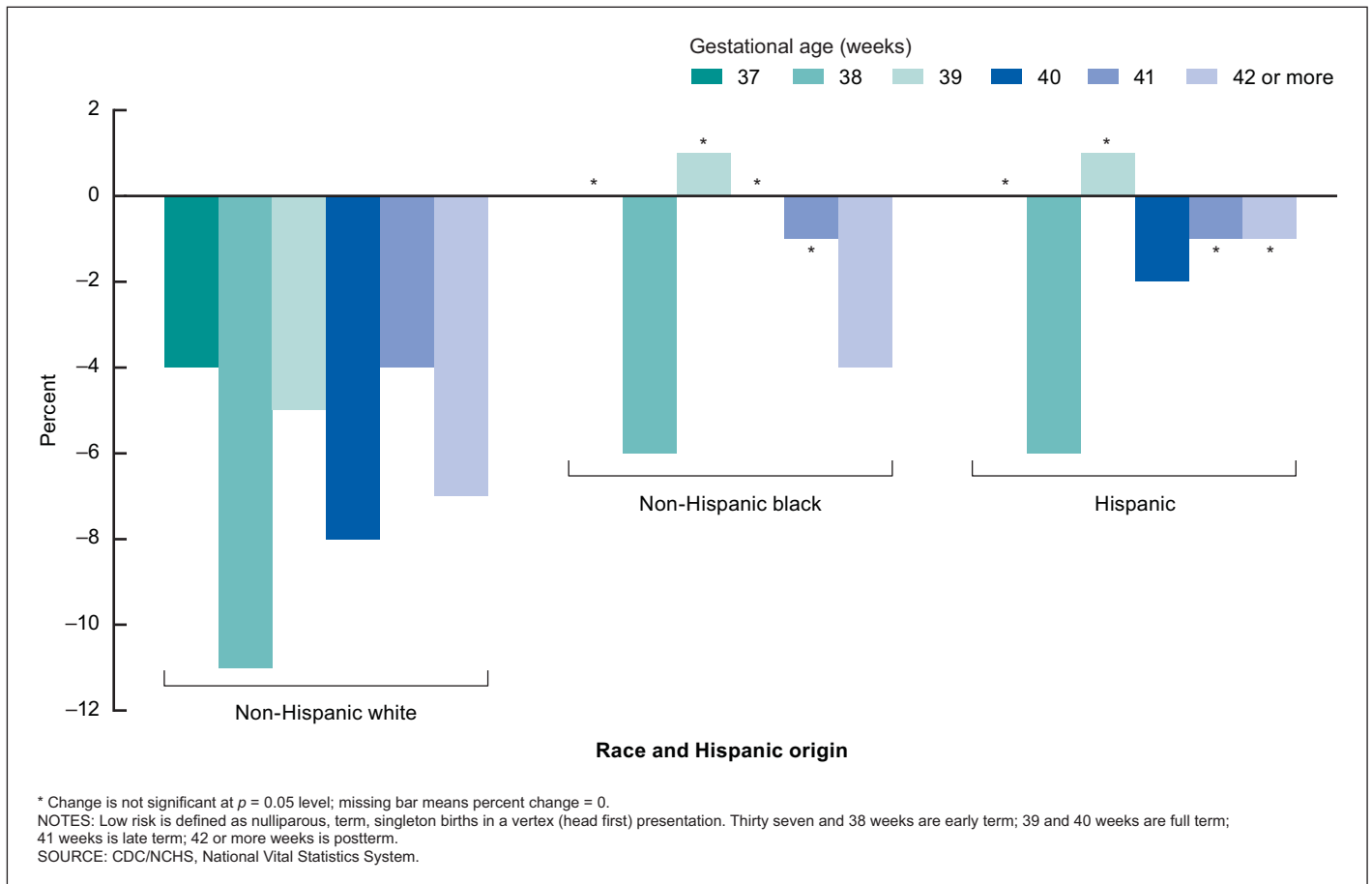


Figure 5. Change in low-risk cesarean delivery, by gestational age and race and Hispanic origin: United States, final 2009 and preliminary 2013

References

- Martin JA, Hamilton BE, Osterman MJK, et al. Births: Final data for 2012. National vital statistics reports; vol 62 no 9. Hyattsville, MD: National Center for Health Statistics. 2013. Available from: http://www.cdc.gov/nchs/data/nvsr/nvsr62/nvsr62_09.pdf.
- Hamilton BE, Martin JA, Osterman MJK, Curtin SC. Births: Preliminary data for 2013. National vital statistics reports; vol 63 no 2. Hyattsville, MD: National Center for Health Statistics. 2014. Available from: http://www.cdc.gov/nchs/data/nvsr/nvsr63/nvsr63_02.pdf.
- American College of Obstetricians and Gynecologists. ACOG Committee Opinion No. 394: Cesarean delivery on maternal request. *Obstet Gynecol* 110(6):1501. 2007.
- American College of Obstetricians and Gynecologists. ACOG Practice Bulletin No. 107: Induction of labor. *Obstet Gynecol* 114(2):386–97. 2009.
- Main E, Oshiro B, Chagolla B, Bingham D, Dang-Kilduff L, Kowalewski L. Elimination of non-medically indicated (elective) deliveries before 39 weeks gestational age. California Maternal Quality Care Collaborative, California Department of Public Health, and March of Dimes. 2010.
- Florida Perinatal Quality Collaborative. Think 39 weeks! Healthy babies are worth the wait. Available from: <http://www.39weeksf.com/>.
- Donovan EF, Lannon C, Bailit J, Rose B, Iams JD, Byczkowski T. A statewide initiative to reduce inappropriate scheduled births at 36(0/7)–38(6/7) weeks' gestation. *Am J Obstet Gynecol* 202(3):243.e1–8. 2010.
- American College of Obstetricians and Gynecologists. Patient Safety Checklist No. 5: Scheduling induction of labor. *Obstet Gynecol* 118(6):1473–4. 2011.
- Clark SL, Frye DR, Meyers JA, Belfort MA, Dildy GA, Kofford S, et al. Reduction in elective delivery <39 weeks of gestation: Comparative effectiveness of 3 approaches to change and the impact on neonatal intensive care admission and stillbirth. *Am J Obstet Gynecol* 203(5):449.e1–6. 2010.
- Association of Women's Health, Obstetric and Neonatal Nurses. 40 reasons to go the full 40. Available from: <http://www.health4mom.org/wp-content/uploads/2014/06/GoTheFull40-2014.pdf>.
- March of Dimes. Why at least 39 weeks is best for your baby. Available from: http://www.marchofdimes.com/pregnancy/getready_atleast39weeks.html.
- Osterman MJK, Martin JA. Changes in cesarean delivery rates by gestational age: United States, 1996–2011. NCHS data brief, no 124. Hyattsville, MD: National Center for Health Statistics. 2013.
- Data from the 2012 final natality file [unpublished]. Hyattsville, MD: National Center for Health Statistics. Available from: http://www.cdc.gov/nchs/data_access/vitalstatsonline.htm.
- U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion. Healthy People 2010. Washington, D.C. Available from: <http://www.healthypeople.gov/2010/>.
- The Joint Commission. Specifications manual for Joint Commission national quality measures (v2010A): PC-02 NTSV cesarean section.

2009. Available from: <https://manual.jointcommission.org/releases/archive/TJC2010A/MIF0167.html>.

16. Main EK, Moore D, Farrell B, Schimmel LD, Altman RJ, Abrahams C, et al. Is there a useful cesarean birth measure? Assessment of the nulliparous term singleton vertex cesarean birth rate as a tool for obstetric quality improvement. *Am J Obstet Gynecol* 194(6):1644–51. 2006.
17. Barber EL, Lundsberg LS, Belanger K, Pettker CM, Funai EF, Illuzzi JL. Indications contributing to the increasing cesarean delivery rate. *Obstet Gynecol* 118(1):29–38. 2011.
18. Kahn EB, Berg CJ, Callaghan WM. Cesarean delivery among women with low-risk pregnancies: A comparison of birth certificates and hospital discharge data. *Obstet Gynecol* 113(1):33–40. 2009.
19. Dobie SA, Baldwin LM, Rosenblatt RA, Fordyce MA, Andrilla CH, Hart LG. How well do birth certificates describe the pregnancies they report? The Washington State experience with low-risk pregnancies. *Matern Child Health J* 2(3):145–54. 1998.
20. Menacker F. Trends in cesarean rates for first births and repeat cesarean rates for low-risk women: United States, 1990–2003. *National vital statistics reports*; vol 54 no 4. Hyattsville, MD: National Center for Health Statistics. 2005.
21. National Center for Health Statistics. User guide to the 2012 natality public use file. Hyattsville, MD. Annual product 2014. Available from: ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Dataset_Documentation/DVS/natality/UserGuide2012.pdf.
22. National Center for Health Statistics. User guide to the 2010 natality public use file. Hyattsville, MD. Annual product 2012. Available from: ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Dataset_Documentation/DVS/natality/UserGuide2010.pdf.
23. Martin JA, Wilson EC, Osterman MJK, et al. Assessing the quality of medical and health data from the 2003 birth certificate revision: Results from two states. *National vital statistics reports*; vol 62 no 2. Hyattsville, MD: National Center for Health Statistics. 2013.
24. Osterman MJK, Martin JA. Primary cesarean delivery rates, by state: Results from the revised birth certificate, 2006–2012. *National vital statistics reports*; vol 63 no 1. Hyattsville, MD: National Center for Health Statistics. 2014.
25. Osterman MJK, Martin JA. Recent declines in induction of labor by gestational age. *NCHS data brief*, no 155. Hyattsville, MD: National Center for Health Statistics. 2014.
26. U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion. *Healthy People 2020: Maternal, infant, and child health*. Washington, DC. Available from: <http://www.healthypeople.gov/2020/topicsobjectives2020/objectiveslist.aspx?topicId=26>.
27. The Joint Commission. Specifications manual for Joint Commission national quality measures (v2014A1): PC-02 NTSV cesarean section. 2014. Available from: <https://manual.jointcommission.org/releases/TJC2014A1/MIF0167.html>.
28. American Congress of Obstetricians and Gynecologists; Society for Maternal-Fetal Medicine. *Obstetric Care Consensus No. 1: Safe prevention of the primary cesarean delivery*. *Obstet Gynecol* 123(3):693–711. 2014.
29. National Center for Health Statistics. U.S. Standard Certificate of Live Birth. 2003. Available from: <http://www.cdc.gov/nchs/data/dvs/birth11-03final-ACC.pdf>.
30. National Center for Health Statistics. Report of the Panel to Evaluate the U.S. Standard Certificates. 2000.
31. National Center for Health Statistics. Guide to completing the facility worksheets for the certificate of live birth and report of fetal death (2003 revision). 2006. Available from: <http://www.cdc.gov/nchs/data/dvs/GuidetoCompleteFacilityWks.pdf>.

32. American Congress of Obstetricians and Gynecologists. ACOG Committee Opinion No. 579: Definition of term pregnancy. *Obstet Gynecol* 122(5):1139–40. 2013.
33. U.S. Office of Management and Budget. Race and ethnic standards for federal statistics and administrative reporting. *Statistical Policy Directive* 15. 1977.

List of Detailed Tables

1. Low-risk cesarean delivery: United States, each state, and the District of Columbia, final 1997 and 2009 and preliminary 2013 . . .	9
2. Low-risk cesarean delivery, by gestational age: final 1997–2012 and preliminary 2013	10
3. Low-risk cesarean delivery, by age and race and Hispanic origin of mother: final 1997–2012 and preliminary 2013.	11
4. Low-risk cesarean delivery, by gestational age and by age and race and Hispanic origin of mother: United States, final 2009 and preliminary 2013	12

Table 1. Low-risk cesarean delivery: United States, each state, and the District of Columbia, final 1997 and 2009 and preliminary 2013

[By place of residence. Data are based on a continuous file of records received from the states]

Area	Number			Percent			Percent change	
	2013	2009	1997	2013	2009	1997	1997 and 2009	2009 and 2013
United States	341,532	382,896	241,734	26.9	28.1	18.4	53	-4
Alabama	6,016	6,940	4,664	31.2	32.4	21.5	51	-4
Alaska	713	680	503	20.7	19.6	15.7	25	*
Arizona	5,964	6,822	3,557	22.3	23.6	14.3	65	-6
Arkansas	3,718	3,927	2,737	29.4	29.2	21.4	36	*
California	43,919	43,676	32,165	26.6	26.6	19.0	40	*
Colorado	4,640	5,194	2,715	20.6	21.9	12.9	70	-6
Connecticut	3,943	4,521	2,116	29.7	31.0	16.9	83	-4
Delaware	932	869	647	25.9	26.5	17.6	51	*
District of Columbia	1,033	1,038	569	29.8	29.0	23.2	25	*
Florida	23,147	25,819	13,446	31.9	33.6	19.9	69	-5
Georgia	11,191	10,002	8,079	28.9	28.0	18.5	51	3
Hawaii	1,244	1,532	756	19.6	23.4	16.5	42	-16
Idaho	1,336	1,438	724	19.8	19.5	12.8	52	*
Illinois	12,941	15,601	10,101	25.3	27.2	16.8	62	-7
Indiana	6,614	7,161	5,102	24.3	25.1	17.9	40	-3
Iowa	3,027	3,283	1,931	24.3	25.2	16.0	58	*
Kansas	2,965	3,329	1,897	24.2	24.8	15.5	60	*
Kentucky	5,782	6,303	3,431	30.7	31.5	19.1	65	*
Louisiana	5,910	7,821	5,264	31.4	35.6	23.1	54	-12
Maine	1,125	1,307	819	24.5	25.2	16.6	52	*
Maryland	7,495	8,043	4,671	30.6	30.4	19.8	54	*
Massachusetts	5,303	8,091	5,008	22.9	28.2	16.8	68	-19
Michigan	10,522	10,250	7,651	28.1	27.2	17.4	56	3
Minnesota	4,737	5,385	2,992	21.4	23.0	14.6	58	-7
Mississippi	3,538	4,545	3,324	30.7	32.9	23.5	40	-7
Missouri	6,039	7,054	4,132	24.9	27.0	16.8	61	-8
Montana	1,004	1,022	573	25.1	24.3	15.9	53	*
Nebraska	1,822	2,050	1,254	23.4	25.4	16.4	55	-8
Nevada	3,265	3,301	1,711	30.2	29.2	19.3	51	*
New Hampshire	1,126	1,328	837	25.0	26.6	16.4	62	*
New Jersey	11,541	13,413	8,618	33.1	35.7	22.6	58	-7
New Mexico	1,481	1,475	1,297	17.9	16.2	14.2	14	10
New York	25,136	27,737	18,771	29.6	31.2	20.9	49	-5
North Carolina	9,832	11,892	7,365	24.2	27.2	18.9	44	-11
North Dakota	733	686	401	20.8	23.4	14.6	60	-11
Ohio	11,694	12,443	8,359	25.7	26.2	16.2	62	*
Oklahoma	4,430	4,960	2,233	25.9	27.9	20.1	39	-7
Oregon	3,529	4,291	2,360	22.5	25.9	15.2	70	-13
Pennsylvania	12,552	13,909	8,259	26.3	27.6	17.0	62	-5
Rhode Island	968	1,149	706	26.0	29.3	17.1	71	-11
South Carolina	5,461	6,164	3,830	29.0	30.2	20.4	48	-4
South Dakota	727	784	503	20.0	21.2	15.5	37	*
Tennessee	6,998	7,813	5,394	26.8	28.5	20.0	43	-6
Texas	33,469	36,724	22,795	29.1	29.7	20.1	48	-2
Utah	2,371	2,714	1,672	16.7	18.1	12.1	50	-8
Vermont	523	597	344	22.4	24.8	14.3	73	-10
Virginia	4,575	11,898	6,633	26.3	30.9	20.0	55	-15
Washington	7,177	7,981	3,895	23.7	25.4	15.4	65	-7
West Virginia	2,138	2,362	1,630	29.3	30.9	21.3	45	-5
Wisconsin	4,631	4,966	2,993	21.6	21.9	13.5	62	*
Wyoming	555	606	300	22.4	23.2	13.7	69	*

* Change is not significant at $p = 0.05$.

NOTE: Low risk is defined as singleton, term (37 or more weeks of gestation), vertex (head first) cesarean deliveries to women having a first birth per 100 women delivering singleton, term, vertex first births.

Table 2. Low-risk cesarean delivery, by gestational age: final 1997–2012 and preliminary 2013

Year	Gestational age							
	Early term			Full term			Late term	Postterm
	Total	37 weeks	38 weeks	Total	39 weeks	40 weeks	41 weeks	42 or more weeks
	Percent							
2013	25.0	26.5	24.3	26.6	26.5	26.8	30.6	28.6
2012	25.5	26.7	24.9	27.0	27.0	27.1	30.9	28.9
2011	25.7	26.5	25.3	27.0	26.8	27.3	30.7	29.2
2010	26.2	26.8	25.9	27.3	27.0	27.7	30.9	29.5
2009	26.7	27.1	26.6	27.8	27.3	28.3	31.5	30.1
2008	26.7	27.0	26.5	27.2	26.6	27.8	31.2	30.1
2007	26.5	26.5	26.5	27.0	26.3	27.7	31.1	29.6
2006	26.1	26.1	26.1	26.4	25.7	27.2	30.7	28.8
2005	25.6	25.7	25.5	25.9	25.2	26.7	30.4	28.8
2004	24.3	24.3	24.3	25.0	24.1	25.9	29.8	28.2
2003	23.0	23.4	22.9	23.5	22.7	24.4	28.4	26.8
2002	21.3	21.3	21.3	22.3	21.4	23.2	27.3	26.0
2001	19.8	19.8	19.7	20.8	19.9	21.7	25.9	24.5
2000	18.4	18.5	18.4	19.5	18.6	20.3	24.3	23.7
1999	17.5	17.7	17.5	18.6	17.6	19.6	23.7	22.6
1998	16.7	16.8	16.7	17.7	16.7	18.7	23.0	22.5
1997	16.3	16.3	16.3	17.4	16.4	18.3	22.4	22.3
	Number							
2013	75,705	27,048	48,657	190,683	99,914	90,769	49,667	25,478
2012	78,403	27,509	50,894	194,721	102,282	92,439	50,959	26,794
2011	82,391	28,206	54,185	195,305	102,401	92,904	49,673	27,331
2010	87,431	29,662	57,769	198,286	103,056	95,230	50,015	27,411
2009	94,645	31,628	63,017	206,330	106,342	99,988	52,381	29,540
2008	96,728	32,192	64,536	202,827	103,251	99,576	54,084	30,451
2007	99,275	32,761	66,514	201,611	101,719	99,892	53,364	29,962
2006	97,478	32,185	65,293	192,167	96,586	95,581	51,601	28,698
2005	92,338	30,803	61,535	185,547	92,440	93,107	52,193	28,938
2004	85,214	28,353	56,861	177,621	86,981	90,640	54,294	29,922
2003	80,772	27,425	53,347	167,735	81,400	86,335	52,427	29,251
2002	71,240	23,956	47,284	155,126	74,275	80,851	50,897	28,885
2001	65,192	21,890	43,302	144,343	68,511	75,832	49,607	27,888
2000	59,415	20,076	39,339	135,933	63,736	72,197	49,619	29,050
1999	55,575	18,885	36,690	126,640	58,633	68,007	46,893	26,792
1998	51,730	17,658	34,072	119,950	54,761	65,189	46,554	27,314
1997	49,252	16,755	32,497	116,920	52,732	64,188	46,993	28,569

NOTE: Low risk is defined as singleton, term (37 or more weeks of gestation), vertex (head first) cesarean deliveries to women having a first birth per 100 women delivering singleton, term, vertex first births.

Table 3. Low-risk cesarean delivery, by age and race and Hispanic origin of mother: final 1997–2012 and preliminary 2013

Year	Age of mother						Race and Hispanic origin of mother		
	Under 20	20–24	25–29	30–34	35–39	40 and over	Non-Hispanic white	Non-Hispanic black	Hispanic
	Percent								
2013.	18.3	23.6	27.0	31.7	40.8	53.5	25.9	30.8	26.6
2012.	19.0	24.1	27.7	32.4	41.7	53.3	26.5	31.0	26.8
2011.	19.0	24.2	27.9	32.7	41.6	52.8	26.6	30.9	26.6
2010.	19.3	24.6	28.4	33.5	42.6	54.3	27.0	31.0	26.7
2009.	19.9	25.3	29.2	34.2	43.6	54.5	27.7	31.1	27.0
2008.	19.7	24.8	28.8	34.4	43.6	54.5	27.5	30.7	26.2
2007.	19.5	24.5	28.8	34.4	43.2	53.4	27.4	30.5	26.0
2006.	19.1	23.9	28.1	33.8	42.9	53.6	27.0	30.1	25.3
2005.	18.6	23.3	27.6	33.5	41.9	52.3	26.4	29.8	25.1
2004.	17.8	22.4	26.7	32.3	40.6	50.7	25.4	28.8	24.6
2003.	16.7	21.0	25.2	30.8	39.5	48.3	24.0	27.4	23.2
2002.	15.5	19.9	24.3	29.5	37.8	46.9	22.8	25.9	21.9
2001.	14.5	18.7	23.0	27.8	35.8	44.1	21.4	24.3	20.6
2000.	13.4	17.7	21.9	26.3	34.0	42.5	20.1	23.0	19.4
1999.	12.8	16.9	20.9	25.7	33.0	40.6	19.2	21.9	18.7
1998.	12.3	16.3	20.3	24.7	31.7	38.9	18.3	21.4	18.3
1997.	12.1	16.4	19.7	24.2	31.0	38.6	18.1	20.8	18.0
	Number								
2013.	34,546	90,031	94,323	78,812	33,989	9,831	189,433	52,921	67,237
2012.	39,621	93,034	96,977	77,779	33,763	9,703	196,344	54,113	67,686
2011.	42,771	94,345	98,755	75,910	33,167	9,752	200,314	55,068	68,519
2010.	47,664	97,392	99,248	74,897	34,015	9,927	205,598	56,034	70,795
2009.	54,511	104,571	103,551	75,192	35,401	9,670	215,283	58,863	76,779
2008.	56,567	105,416	102,502	74,155	36,049	9,401	216,194	58,736	77,291
2007.	56,872	106,130	102,026	73,563	36,619	9,002	216,928	58,103	77,971
2006.	54,353	102,184	96,709	71,327	36,375	8,996	211,370	56,102	73,520
2005.	51,617	96,393	92,875	73,186	35,785	9,160	205,046	52,695	72,444
2004.	49,613	91,736	88,608	73,463	34,720	8,911	199,440	50,475	69,503
2003.	46,583	85,640	83,579	72,481	33,508	8,394	192,639	48,002	64,137
2002.	44,315	80,169	77,647	66,442	30,080	7,495	179,204	45,213	58,910
2001.	42,887	74,511	73,114	61,725	28,100	6,693	169,282	43,129	54,036
2000.	41,456	69,729	72,388	57,394	26,717	6,333	163,365	41,534	49,399
1999.	39,895	64,079	68,726	53,007	24,585	5,608	155,117	38,873	44,230
1998.	39,071	60,644	67,405	50,145	23,153	5,130	149,022	38,568	41,799
1997.	38,698	60,494	66,570	49,154	21,962	4,856	147,764	37,310	40,370

NOTE: Low risk is defined as singleton, term (37 or more weeks of gestation), vertex (head first) cesarean deliveries to women having a first birth per 100 women delivering singleton, term, vertex first births.

Table 4. Low-risk cesarean delivery, by gestational age and by age and race and Hispanic origin of mother: United States, final 2009 and preliminary 2013

Age and race and Hispanic origin	37 weeks					38 weeks					39 weeks				
	Number		Percent		Percent change 2009 and 2013	Number		Percent		Percent change 2009 and 2013	Number		Percent		Percent change 2009 and 2013
	2013	2009	2013	2009		2013	2009	2013	2009		2013	2009	2013	2009	
All races and origins															
All ages	27,048	31,628	26.5	27.1	-2	48,657	63,017	24.3	26.6	-9	99,914	106,342	26.5	27.3	-3
Under 20.	2,937	4,769	17.0	18.4	-8	5,170	8,991	16.0	18.0	-11	9,738	14,443	17.3	18.8	-8
20-24	6,811	8,403	22.2	23.9	-7	12,525	16,858	20.7	23.6	-12	26,044	28,087	22.9	24.1	-5
25-29	6,931	8,048	26.8	28.5	-6	12,775	16,437	24.1	27.4	-12	27,430	29,180	26.6	28.3	-6
30-34	6,056	6,007	32.2	33.9	-5	10,859	12,207	29.1	32.9	-12	22,940	21,206	31.5	33.5	-6
35-39	3,142	3,342	42.4	44.0	-4	5,535	6,538	40.0	43.5	-8	10,517	10,469	41.7	43.5	-4
40 and over	1,170	1,059	56.6	54.8	*	1,795	1,986	53.0	56.3	-6	3,245	2,957	54.5	54.0	*
Non-Hispanic white															
All ages	14,220	17,064	26.4	27.6	-4	25,339	34,294	23.9	26.8	-11	55,166	60,137	25.8	27.2	-5
Under 20.	1,185	1,930	18.1	19.5	-7	2,018	3,618	16.4	18.5	-11	4,016	6,005	17.3	19.1	-9
20-24	3,189	4,212	21.5	23.7	-9	5,787	8,500	19.8	23.1	-14	12,957	14,697	21.9	23.3	-6
25-29	3,941	4,757	25.4	27.5	-8	7,253	9,887	22.8	26.6	-14	16,314	17,870	24.9	26.9	-7
30-34	3,506	3,626	30.5	32.8	-7	6,307	7,295	27.6	31.6	-13	13,968	13,299	29.7	32.2	-8
35-39	1,751	1,922	40.9	42.4	*	3,009	3,801	38.1	41.8	-9	6,048	6,428	39.6	42.5	-7
40 and over	648	617	55.7	52.8	*	963	1,193	51.2	55.3	-7	1,863	1,838	52.9	52.5	*
Non-Hispanic black															
All ages	5,016	5,901	29.1	29.0	*	8,518	10,559	26.7	28.3	-6	15,598	16,158	29.8	29.6	*
Under 20.	801	1,364	18.4	19.6	*	1,374	2,481	17.8	19.9	-11	2,418	3,750	20.3	21.1	*
20-24	1,698	1,981	25.2	26.8	-6	3,003	3,632	23.4	26.8	-13	5,781	5,715	26.7	28.4	-6
25-29	1,077	1,160	34.4	36.0	*	1,855	2,136	30.3	33.9	-11	3,621	3,426	34.5	35.6	*
30-34	852	764	43.8	44.8	*	1,315	1,285	38.0	40.9	-7	2,281	1,955	40.5	42.7	-5
35-39	410	471	50.3	56.3	-11	730	776	50.8	53.7	*	1,135	1,040	51.5	52.4	*
40 and over	177	161	64.6	63.4	*	241	249	62.0	64.5	*	361	272	61.8	54.4	14
Hispanic															
All ages	5,420	6,226	25.1	25.1	*	10,078	12,969	23.6	25.1	-6	19,675	20,748	25.8	25.6	*
Under 20.	858	1,344	15	16.7	-10	1,615	2,636	14.7	16.4	-10	3,068	4,242	16.1	17.0	-5
20-24	1,643	1,872	22.1	22.9	*	3,185	4,057	21.0	23.1	-9	6,183	6,456	22.6	23.3	-3
25-29	1,269	1,407	28.9	29.5	*	2,342	2,916	26.4	28.9	-9	4,773	4,924	29.9	30.7	*
30-34	928	902	35.9	36.8	*	1,709	2,035	33.7	38.1	-12	3,488	3,183	37.3	38.0	*
35-39	539	536	48.2	48.9	*	939	1,024	44.4	47.9	-7	1,696	1,510	46.3	46.7	*
40 and over	184	165	59.6	60.9	*	288	301	56.3	60.1	*	467	433	56.6	57.5	*

See footnotes at end of table.

Table 4. Low-risk cesarean delivery, by gestational age and by age and race and Hispanic origin of mother: United States, final 2009 and preliminary 2013—Con.

Age and race and Hispanic origin	40 weeks					41 weeks					42 weeks or more				
	Number		Percent		Percent change 2009 and 2013	Number		Percent		Percent change 2009 and 2013	Number		Percent		Percent change 2009 and 2013
	2013	2009	2013	2009		2013	2009	2013	2009		2013	2009	2013	2009	
All races and origins															
All ages	90,769	99,988	26.8	28.3	-5	49,667	52,381	30.6	31.5	-3	25,478	29,540	28.6	30.1	-5
Under 20	9,059	13,846	19.2	20.6	-7	4,538	7,274	21.6	23.1	-6	3,103	5,188	20.6	22.6	-9
20–24	23,925	27,197	24.0	25.7	-7	12,995	14,619	27.5	29.1	-5	7,731	9,407	25.9	28.0	-8
25–29	25,699	27,736	26.5	29.1	-9	14,345	14,429	30.6	32.5	-6	7,144	7,721	29.7	32.2	-8
30–34	21,501	20,279	30.9	33.8	-9	12,292	10,639	35.2	37.2	-5	5,164	4,854	34.6	37.8	-8
35–39	8,400	8,743	38.6	41.9	-8	4,557	4,441	42.6	46.3	-8	1,840	1,868	42.3	46.1	-8
40 and over	2,184	2,187	51.2	51.9	*	940	979	52.2	55.8	-6	497	502	55.6	58.6	*
Non-Hispanic white															
All ages	50,255	56,204	25.0	27.2	-8	29,324	30,402	28.8	30.1	-4	15,129	17,182	27.3	29.2	-7
Under 20	3,547	5,551	18.0	19.7	-9	1,950	3,051	20.5	21.9	-6	1,501	2,444	20.2	21.9	-8
20–24	11,561	13,876	21.6	23.7	-9	6,659	7,626	24.9	26.8	-7	4,198	5,258	23.9	26.7	-10
25–29	15,378	16,991	23.9	26.9	-11	8,903	9,071	27.7	30	-8	4,595	4,808	27.7	30.1	-8
30–34	13,338	12,881	28.5	31.8	-10	8,207	6,990	33	34.6	-5	3,393	3,143	32.5	36.1	-10
35–39	5,115	5,467	36.4	39.5	-8	2,991	2,988	40.4	44.6	-9	1,139	1,213	40.5	45.5	-11
40 and over	1,316	1,438	49.4	50.6	*	615	676	51.2	53.7	*	305	316	55.4	57.2	*
Non-Hispanic black															
All ages	13,623	14,725	32.8	32.7	*	6,512	7,219	37.0	37.2	*	3,655	4,301	33.5	34.8	-4
Under 20	2,225	3,527	23.2	24.3	-5	1,046	1,759	26.8	27.7	*	684	1,204	23.7	26.9	-12
20–24	5,217	5,451	31.0	32.5	-5	2,511	2,680	34.9	37	-6	1,485	1,632	32.5	35	-7
25–29	3,165	3,112	37.4	38.6	*	1,535	1,509	41.8	44.1	-5	817	810	40.6	42	*
30–34	2,055	1,729	43.1	44.3	*	983	854	48.1	51.2	*	449	421	45.6	48.8	*
35–39	735	721	48.3	49.9	*	352	343	53.2	56.7	*	172	170	48.2	50.9	*
40 and over	226	185	61.3	59.9	*	85	74	62.6	59.2	*	48	64	52.9	61	*
Hispanic															
All ages	18,014	20,278	27.2	27.8	-2	9,288	10,532	31.3	31.5	*	4,762	6,026	29.0	29.4	*
Under 20	2,991	4,322	18.6	19.6	-5	1,383	2,249	20.4	22.5	-9	829	1,372	20	21.4	*
20–24	6,083	6,629	24.9	25.9	-4	3,246	3,673	29.4	30.1	*	1,679	2,132	26.7	27.8	*
25–29	4,356	4,758	30.7	32.7	-6	2,409	2,452	36.2	36.7	*	1,146	1,436	33.4	36.2	-8
30–34	3,006	2,943	37.0	39.4	-6	1,527	1,485	41.3	44.8	-8	743	740	40.7	42	*
35–39	1,270	1,344	44.6	49.9	-11	599	555	48.4	51.6	*	287	271	49.1	47.3	*
40 and over	308	282	54.3	55.1	*	123	118	52.8	58.1	*	78	75	57.9	62.5	*

* Change is not significant at $p = 0.05$.

NOTE: Low risk is defined as singleton, term (37 or more weeks of gestation), vertex (head first) cesarean deliveries to women having a first birth per 100 women delivering singleton, term, vertex first births.

Technical Notes

Sources of data

Data for 1990–2012 are based on 100% of the birth certificates filed in all states and the District of Columbia. Data for 2013 are preliminary and are based on more than 99.8% of 2013 births; see “Births: Preliminary Data for 2013” for more details (2). The data are provided to the Centers for Disease Control and Prevention’s National Center for Health Statistics through the Vital Statistics Cooperative Program.

1989 and 2003 revisions of the U.S. Standard Certificate of Live Birth

This report includes data on items that are collected on both the 1989 revision of the U.S. Standard Certificate of Live Birth (unrevised) and the 2003 revision of the U.S. Standard Certificate of Live Birth (revised). The 2003 revision is described in detail elsewhere (21,29,30). For information on the revised reporting areas for each year, see Table C in the “User Guide to the 2012 Natality Public Use File” (21).

Low-risk cesarean delivery

A low-risk cesarean delivery is a term (37 or more completed weeks of gestation), singleton (one fetus), vertex (head first) birth to a nulliparous (no prior live births) woman that is delivered by cesarean (16). The items used to compute the low-risk cesarean delivery rate include live-birth order, gestational age, plurality, fetal presentation, and method of delivery. Detailed instructions and definitions for these items are presented in the “Guide to Completing the Facility Worksheets for the Certificate of Live Birth and Report of Fetal Death (2003 Revision)” (31).

From 1990 through 2013, there were between 1.28 million (2013) and 1.40 million (2007) births to low-risk women (Table I). The low-risk proportion of the total population increased from 33.2% in 1990 to 34.7% in 1995 and has ranged from 32.4% to 33.4% since 1998, reaching its lowest point in 2013.

Live-birth order

Live-birth order indicates what number the present birth represents; for example, a baby born to a mother who has had two previous live births (even if one or both are not now living) has a live-birth order of three. Fetal deaths are excluded. For more detail, see the “User Guide to the 2012 Natality Public Use File” (21).

Gestational age

The primary measure used to determine the gestational age of the infant is the date that the last normal menses began (referred to as the last menstrual period or LMP). The date of birth of the infant is subtracted from the LMP date to get the gestational age of the newborn (21). Births occurring between 37 and 38 completed weeks are considered early term, between 39 and 40 completed weeks are full term, 41 completed weeks are late term, and 42 or more

Table I. Births and low-risk births: United States, final 1990–2012 and preliminary 2013

Year	Births		Percent low risk
	Total	Low risk ¹	
2013	3,957,577	1,281,379	32.4
2012	3,952,841	1,286,093	32.5
2011	3,953,590	1,300,824	32.9
2010	3,999,386	1,316,409	32.9
2009	4,130,665	1,364,371	33.0
2008	4,247,694	1,386,818	32.6
2007	4,316,233	1,398,746	32.4
2006	4,265,555	1,371,837	32.2
2005	4,138,349	1,352,914	32.7
2004	4,112,052	1,355,067	33.0
2003	4,089,950	1,362,879	33.3
2002	4,021,726	1,333,816	33.2
2001	4,025,933	1,333,227	33.1
2000	4,058,814	1,351,917	33.3
1999	3,959,417	1,318,633	33.3
1998	3,941,553	1,315,634	33.4
1997	3,880,894	1,318,344	34.0
1996	3,891,494	1,334,591	34.3
1995	3,899,589	1,354,193	34.7
1994	3,952,767	1,356,334	34.3
1993	4,000,240	1,355,770	33.9
1992	4,065,014	1,354,718	33.3
1991	4,110,907	1,368,083	33.3
1990 ²	4,158,212	1,380,902	33.2

¹Singleton, term (37 or more weeks of gestation), vertex (head first) births to women having a first birth.

²Excludes data for Oklahoma, which did not report method of delivery.

completed weeks are postterm. These distinctions are consistent with the American Congress of Obstetrics and Gynecology revised term definitions (32).

Plurality

Plurality is classified as single, twin, triplet, quadruplet, quintuplet, and higher-order births. Each record in the public-use natality file represents an individual birth. Records for which plurality is unknown are imputed as singletons (21).

Vertex presentation

Vertex presentation is defined somewhat differently on the 1989 and 2003 revisions of the U.S. Standard Certificate of Live Birth. For data based on the 2003 revision, vertex delivery is defined as cephalic and other presentations (21). For data based on the 1989 revision, vertex presentation is defined as a non-breech presentation (22); that is, any record for which breech presentation is not reported is classified as a vertex presentation.

To address the potential influence of the discontinuity in the vertex measure on the downward trend in national rates of low-risk delivery, low-risk cesarean rates for both the revised and unrevised reporting areas from 2009 through 2013 were examined. Rates declined for both reporting areas, and at a similar pace, indicating that the national declines in low-risk cesarean delivery for 2009–2013 described in this report are not an artifact of changes in the reporting of vertex presentations (data available upon request).

Method of delivery

Information on overall cesarean delivery is comparable across the 1989 and 2003 revisions of the birth certificate. Information based on the 2003 revision of the birth certificate on the “final route and method of delivery” is collected in a checkbox format with the following options: vaginal/spontaneous, vaginal/forceps, vaginal/vacuum, and cesarean. Information based on the 1989 version of the birth certificate on “method of delivery” is also collected in a checkbox format, but with different options: vaginal, vaginal birth after previous C-section, primary C-section, repeat C-section, forceps, and vacuum (21).

Among the low-risk population, unknown method of delivery has declined from 0.5% in the early 1990s to 0.1% in more recent years (2010–2013) (21).

Age of mother

Data are tabulated by age of mother, which is computed in most cases from the mother’s and infant’s dates of birth as reported on the birth certificate. Unknown mother’s age is imputed based on the age of the mother from the previous birth record of the same race and total-birth order (total of fetal deaths and live births) (21).

Hispanic origin and race

Data are tabulated by race and Hispanic origin of mother, which are reported separately on the birth certificate. Data for persons of Hispanic origin are not further classified by race (the majority of births to Hispanic women are reported as white). Data for non-Hispanic persons are classified according to the race of the mother. Race categories in this report are consistent with the 1977 Office of Management and Budget guidelines (21,33).

Random variation and significance testing for natality data

For information and discussion on random variation and significance testing for natality data, see the “User Guide to the 2012 Natality Public Use File” (21).

**U.S. DEPARTMENT OF
HEALTH & HUMAN SERVICES**

Centers for Disease Control and Prevention
National Center for Health Statistics
3311 Toledo Road, Room 5419
Hyattsville, MD 20782

FIRST CLASS MAIL
POSTAGE & FEES PAID
CDC/NCHS
PERMIT NO. G-284

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, \$300

For more NCHS NVSRs, visit:
<http://www.cdc.gov/nchs/products/nvsr.htm>.



National Vital Statistics Reports, Vol. 63, No. 6, November 5, 2014

Contents

Abstract	1
Introduction	1
Methods	2
Results	2
State of residence	2
Gestational age.	3
Age of mother	3
Race and Hispanic origin	3
Discussion	4
Limitations	4
Data quality	4
Conclusions	4
References	7
List of Detailed Tables	8
Technical Notes	14

Acknowledgments

This report was prepared under the general direction of Delton Atkinson, Director of the Division of Vital Statistics, and Amy M. Branum, Chief of the Reproductive Statistics Branch (RSB). Sharon Kirmeyer (RSB) provided content review. This report was edited and produced by NCHS Office of Information Services, Information Design and Publishing Staff: Jen Hurlburt edited the report; typesetting was done by Jacqueline M. Davis; and graphics were produced by Jessica Craney (contractor).

Suggested citation

Osterman MJK, Martin JA. Trends in low-risk cesarean delivery in the United States, 1990–2013. National vital statistics reports; vol 63 no 6. Hyattsville, MD: National Center for Health Statistics. 2014.

Copyright information

All material appearing in this report is in the public domain and may be reproduced or copied without permission; citation as to source, however, is appreciated.

National Center for Health Statistics

Charles J. Rothwell, M.S., M.B.A., *Director*
Jennifer H. Madans, Ph.D., *Associate Director
for Science*

Division of Vital Statistics

Delton Atkinson, M.P.H., M.P.H., P.M.P.,
Director

For e-mail updates on NCHS publication releases, subscribe online at: <http://www.cdc.gov/nchs/govdelivery.htm>.
For questions or general information about NCHS: Tel: 1–800–CDC–INFO (1–800–232–4636) • TTY: 1–888–232–6348
Internet: <http://www.cdc.gov/nchs> • Online request form: <http://wwwn.cdc.gov/dcs/RequestForm.aspx>