

Differences in Cesarean Delivery Rates for Puerto Rican Mothers in Puerto Rico and the U.S. Mainland, 2023

Michelle J.K. Osterman, M.H.S., and Maria M. Juiz Gallego, M.P.H.E., C.H.E.S.

Key findings

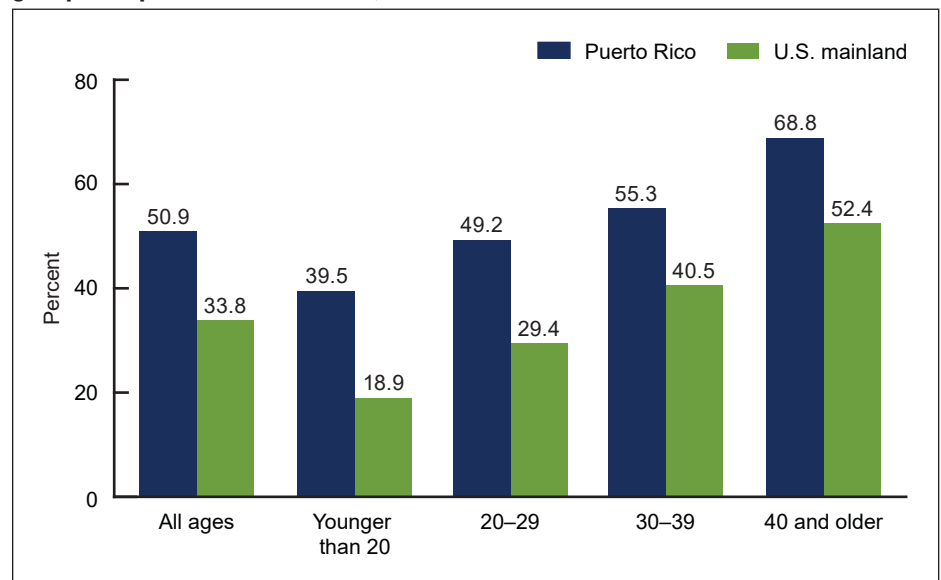
Data from the National Vital Statistics System

- The cesarean delivery rate for Puerto Rican mothers in Puerto Rico was 50.9% in 2023, 51% higher than that for Puerto Rican mothers in the U.S. mainland, 33.8%.
- In 2023, cesarean delivery rates for Puerto Rican mothers in Puerto Rico were higher for all maternal age groups than rates for Puerto Rican mothers in the U.S. mainland.
- Cesarean delivery rates for most gestational age categories were higher for Puerto Rican mothers in Puerto Rico than in the U.S. mainland in 2023.
- Cesarean delivery rates for Puerto Rican mothers in Puerto Rico were higher than in the U.S. mainland for all source of payment categories.
- The cesarean delivery rate for Puerto Rican mothers in Puerto Rico was higher than for Puerto Rican mothers in nearly all states and the District of Columbia.

Cesarean delivery is major surgery associated with higher costs and adverse outcomes compared with vaginal delivery (1–3). For the first time, in 2022 more than one-half of births in Puerto Rico were delivered by cesarean (50.5%) (4). In recent decades, cesarean delivery rates in Puerto Rico have been 40%–70% higher than rates in the U.S. mainland and up to 78% higher than rates for Hispanic mothers in the U.S. mainland (5,6). This report explores differences between the cesarean delivery rates for Puerto Rican mothers giving birth in Puerto Rico and the U.S. mainland in 2023, by maternal age, gestational age, source of payment for the delivery, and state of occurrence.

The cesarean delivery rates for Puerto Rican mothers in Puerto Rico were higher than rates for Puerto Rican mothers in the U.S. mainland overall and for all maternal age groups.

Figure 1. Cesarean delivery rate for Puerto Rican mothers, by maternal age group and place of occurrence, 2023



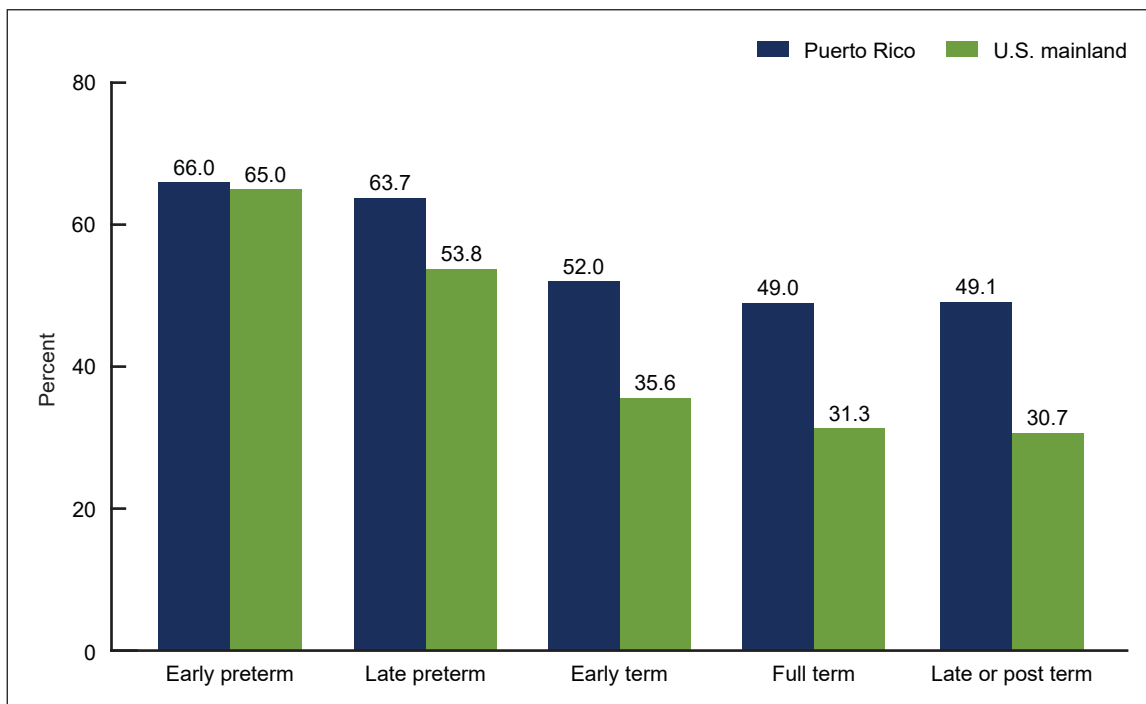
NOTE: All differences between Puerto Rico and the U.S. mainland are statistically significant at $p < 0.05$.
 SOURCE: National Center for Health Statistics, National Vital Statistics System, natality data file.

- The cesarean delivery rate for Puerto Rican mothers in Puerto Rico was 50.9% in 2023, 51% higher than that for Puerto Rican mothers in the U.S. mainland (33.8%) (Figure 1, Table 1).
- Cesarean delivery rates in each maternal age group for Puerto Rican mothers in Puerto Rico were higher than for Puerto Rican mothers in the U.S. mainland, but differences were larger among younger mothers: 39.5% compared with 18.9% for mothers younger than age 20 and 68.8% compared with 52.4% for mothers age 40 and older.
- Puerto Rican mothers in Puerto Rico were more likely to have a cesarean delivery compared with Puerto Rican mothers in the U.S. mainland among ages 20–29 (49.2% compared with 29.4%) and ages 30–39 (55.3% compared with 40.5%).

Cesarean delivery rates for Puerto Rican mothers in Puerto Rico were higher than rates for Puerto Rican mothers in the U.S. mainland for all gestational ages except early preterm.

- For late preterm, early term, full term, and late- or post-term births, 2023 cesarean delivery rates in Puerto Rico were higher than rates in the U.S. mainland (Figure 2, Table 2). Rates were essentially the same for early preterm births.
- Cesarean delivery rates in Puerto Rico ranged from 66.0% among early preterm births to 49.1% among late- or post-term births and 49.0% among full-term births.

Figure 2. Cesarean delivery rate for Puerto Rican mothers, by gestational age and place of occurrence, 2023



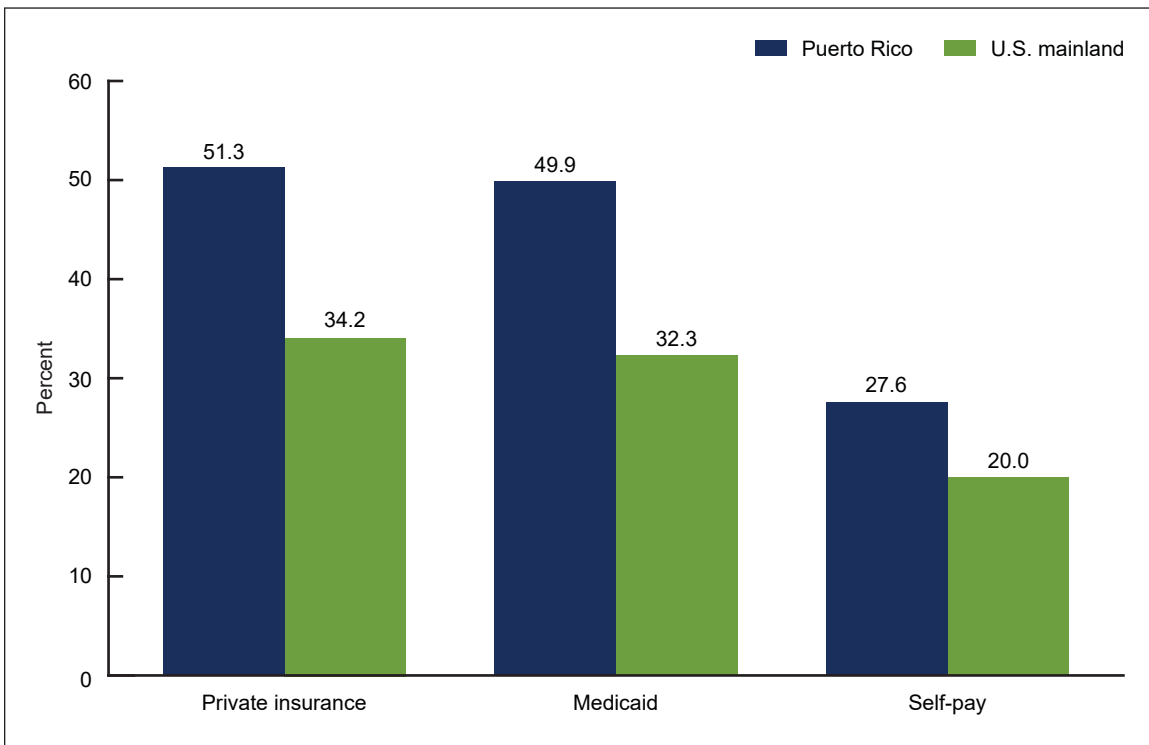
NOTES: All differences between Puerto Rico and the U.S. mainland are statistically significant at $p < 0.05$ except for early preterm. Gestational age is based on the obstetric estimate. Early preterm is less than 34 completed weeks of gestation; late preterm is 34–36 completed weeks; full term is 39–40 completed weeks; and late or post term is 41 completed weeks or more.
 SOURCE: National Center for Health Statistics, National Vital Statistics System, natality data file.

- In comparison, rates in the U.S. mainland ranged from 65.0% among early preterm births to 30.7% among late- or post-term births.

Cesarean delivery rates for Puerto Rican mothers in Puerto Rico were higher than rates for Puerto Rican mothers in the U.S. mainland for all sources of payment for the delivery.

- In 2023, the cesarean delivery rate for Puerto Rican mothers covered by private insurance in Puerto Rico was 51.3% compared with 34.2% for Puerto Rican mothers in the U.S. mainland (Figure 3, Table 3).
- For Puerto Rican mothers with Medicaid, the cesarean delivery rate in Puerto Rico was 49.9% compared with 32.3% for Puerto Rican mothers in the U.S. mainland.
- In Puerto Rico, 27.6% of Puerto Rican mothers who self-paid for delivery had a cesarean delivery compared with 20.0% of Puerto Rican mothers in the U.S. mainland.

Figure 3. Cesarean delivery rate for Puerto Rican mothers, by primary source of payment for delivery and place of occurrence, 2023

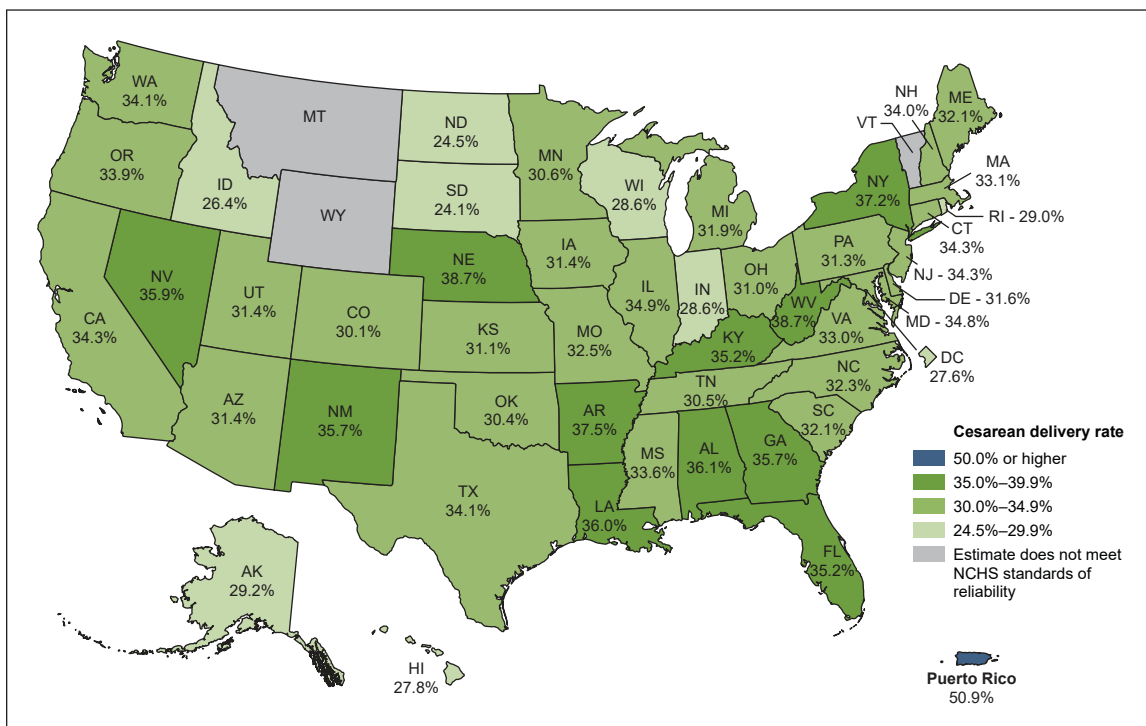


NOTE: All differences between Puerto Rico and the U.S. mainland are statistically significant at $p < 0.05$.
 SOURCE: National Center for Health Statistics, National Vital Statistics System, natality data file.

The cesarean delivery rate for Puerto Rican mothers in Puerto Rico was higher than the rate for Puerto Rican mothers in most states and the District of Columbia.

- The cesarean delivery rate for Puerto Rican mothers in Puerto Rico (50.9%) was higher than the rate for Puerto Rican mothers in most states and the District of Columbia (D.C.) in 2023 (data for Montana, Vermont, and Wyoming did not meet reliability criteria) (Figure 4, Table 4).
- Cesarean delivery rates among Puerto Rican mothers in the United States ranged from 24.1% in South Dakota to 38.7% in Nebraska and West Virginia.

Figure 4. Cesarean delivery rate for Puerto Rican mothers in U.S. mainland, by state of occurrence, and Puerto Rico, 2023



NOTES: All differences between each state or the District of Columbia and Puerto Rico are statistically significant at $p < 0.05$. NCHS is National Center for Health Statistics. No states had cesarean delivery rates at 40.0%-49.9%. SOURCE: National Center for Health Statistics, National Vital Statistics System, natality data file.

Summary

In 2023, more than one-half of births to Puerto Rican mothers in Puerto Rico were delivered by cesarean delivery (50.9%) compared with just over one-third of births to Puerto Rican mothers in the U.S. mainland (33.8%). Cesarean delivery rates for Puerto Rican mothers in Puerto Rico were higher than rates in the U.S. mainland for all maternal age groups, all gestational ages except early preterm, all sources of payment for the delivery (private insurance, Medicaid, and self-pay), and all states with statistically reliable data and D.C.

The cesarean delivery rate for non-Puerto Rican mothers in Puerto Rico was also higher than non-Puerto Rican mothers in the U.S. mainland (45.1% and 32.3%, respectively) in 2023, as was the low-risk cesarean delivery rate (49.4% compared with 28.3%) (6,7). Additionally, among Puerto Rican mothers in the U.S. mainland, rates were similar between those born in Puerto Rico (34.5%) and those born in the 50 states or D.C. (33.6%) (6).

Definitions

Cesarean delivery: Extraction of the infant, placenta, and membranes through an incision in the maternal abdominal and uterine walls.

Cesarean delivery rate: Number of births delivered by cesarean per 100 births.

Early preterm: Births delivered at less than 34 completed weeks of gestation based on the obstetric estimate.

Late preterm: Births delivered at 34 to 36 completed weeks of gestation based on the obstetric estimate.

Early term: Births delivered at 37 to 38 completed weeks of gestation based on the obstetric estimate.

Full term: Births delivered at 39 to 40 completed weeks of gestation based on the obstetric estimate.

Late or post term: Births delivered at 41 completed weeks or more of gestation based on the obstetric estimate.

Principal source of payment for the delivery: The principal form of payment for the delivery at the time of delivery. Four options are identified in a checkbox format on the U.S. Standard Certificate of Live Birth:

Private insurance: Includes providers such as Blue Cross Blue Shield and Aetna.

Medicaid: Includes state programs comparable with Medicaid.

Self-pay: No third-party payer identified; generally considered uninsured.

Other: Includes Indian Health Service, TRICARE (formerly known as CHAMPUS), other government programs, and miscellaneous payment sources.

Data source and methods

This report uses data from the National Vital Statistics System natality data file. Information for Puerto Rico is based on data from birth certificates and includes all births occurring in Puerto Rico to residents of Puerto Rico who self-reported Puerto Rican ethnicity (94.4% of births in Puerto Rico in 2023) with known method of delivery (17,547 births in 2023). Information for the U.S. mainland is based on data for births occurring in the 50 states and D.C. to residents of the 50 states and D.C. who self-reported Puerto Rican ethnicity (1.8% of U.S. births in 2023) with known method of delivery (66,186 births in 2023).

Differences noted in the text are statistically significant at the 0.05 level unless otherwise noted, based on a pairwise comparison that was assessed using a two-tailed *z* test.

About the authors

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Figure Tables

Data table for Figure 1. Cesarean delivery rate for Puerto Rican mothers, by maternal age group and place of occurrence, 2023

Age of mother	Puerto Rico	U.S. mainland
All ages	50.9	33.8
Younger than 20	39.5	18.9
20–29	49.2	29.4
30–39	55.3	40.5
40 and older	68.8	52.4

SOURCE: National Center for Health Statistics, National Vital Statistics System, natality data file.

Data table for Figure 2. Cesarean delivery rate for Puerto Rican mothers, by gestational age and place of occurrence, 2023

Gestational age	Puerto Rico	U.S. mainland
Early preterm	66.0	65.0
Late preterm	63.7	53.8
Early term	52.0	35.6
Full term	49.0	31.3
Late or post term	49.1	30.7

NOTES: Gestational age is based on the obstetric estimate. Early preterm is less than 34 completed weeks of gestation; late preterm is 34–36 completed weeks; full term is 39–40 completed weeks; and late or post term is 41 completed weeks or more.
 SOURCE: National Center for Health Statistics, National Vital Statistics System, natality data file.

Data table for Figure 3. Cesarean delivery rate for Puerto Rican mothers, by primary source of payment for delivery and place of occurrence, 2023

Primary source of payment for the delivery	Puerto Rico	U.S. mainland
Private insurance	51.3	34.2
Medicaid	49.9	32.3
Self-pay	27.6	20.0

SOURCE: National Center for Health Statistics, National Vital Statistics System, natality data file.

Data table for Figure 4. Cesarean delivery rate for Puerto Rican mothers in U.S. mainland, by state of occurrence, and Puerto Rico, 2023

Area	Percent	Number
Alabama	36.1	96
Alaska	29.2	33
Arizona	31.4	189
Arkansas	37.5	45
California	34.3	688
Colorado	30.1	170
Connecticut	34.3	1,370
Delaware	31.6	136
District of Columbia	27.6	21
Florida	35.2	4,479
Georgia	35.7	501
Hawaii	27.8	234
Idaho	26.4	19
Illinois	34.9	682
Indiana	28.6	156
Iowa	31.4	49
Kansas	31.1	61
Kentucky	35.2	94
Louisiana	36.0	63
Maine	32.1	27
Maryland	34.8	227
Massachusetts	33.1	1,277
Michigan	31.9	141
Minnesota	30.6	72
Mississippi	33.6	42
Missouri	32.5	88
Montana	*	*
Nebraska	38.7	43
Nevada	35.9	142
New Hampshire	34.0	66
New Jersey	34.3	1,700
New Mexico	35.7	35
New York	37.2	3,203
North Carolina	32.3	664
North Dakota	24.5	13
Ohio	31.0	613
Oklahoma	30.4	73
Oregon	33.9	74
Pennsylvania	31.3	2,212
Rhode Island	29.0	199
South Carolina	32.1	209
South Dakota	24.1	14
Tennessee	30.5	165
Texas	34.1	1,016
Utah	31.4	60
Vermont	*	*
Virginia	33.0	417
Washington	34.1	161
West Virginia	38.7	29
Wisconsin	28.6	294
Wyoming	*	*
Puerto Rico	50.9	9,179

* Estimate does not meet National Center for Health Statistics standards of reliability.

SOURCE: National Center for Health Statistics, National Vital Statistics System, natality data file.

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