# 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**

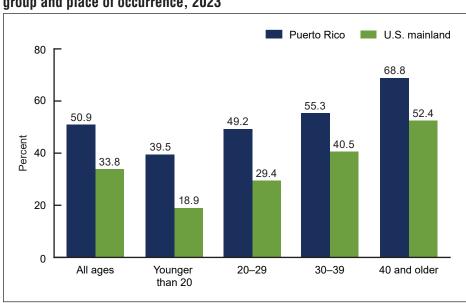
## Data from the National Vital Statistics System

- 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 Rican 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.

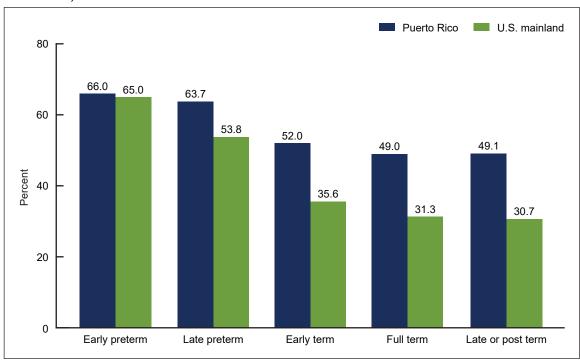


- The cesarean delivery rate for Puerto Rican mothers in Puerto Rico was 50.9% in 2023, 51% higher than that for Puerto Rican mothers in the U.S. mainland (33.8%) (Figure 1, Table 1).
- Cesarean delivery rates in each maternal age group for Puerto Rican mothers in Puerto Rico were higher than for Puerto 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



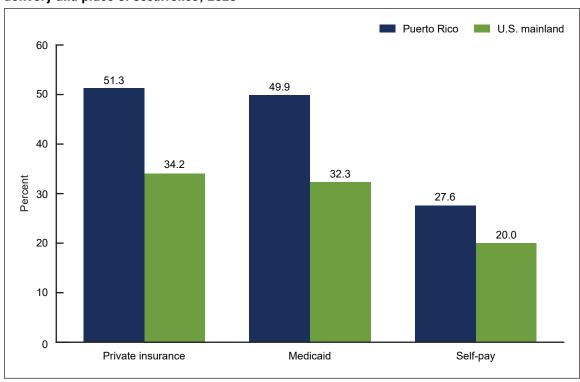
NOTES: All differences between Puerto Rico and the U.S. mainland are statistically significant at p < 0.05 except for early preterm. Gestational age is based on the obstetric estimate. Early preterm is less than 34 completed weeks of gestation; late preterm is 34–36 completed weeks; full term is 39–40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

• 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

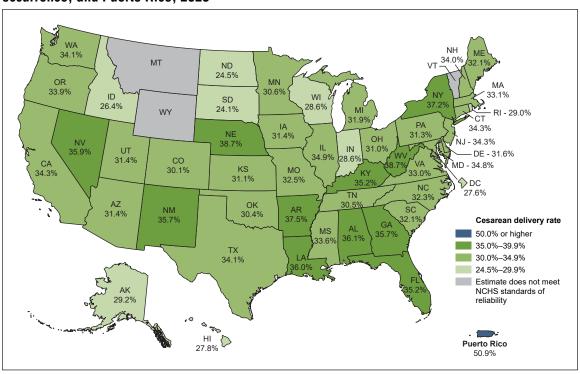


NOTE: All differences between Puerto Rico and the U.S. mainland are statistically significant at p < 0.05. SOURCE: National Center for Health Statistics, National Vital Statistics System, natality data file.

# 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 Rica 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 Rica 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**

<u>Cesarean delivery</u>: 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.

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

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

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

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

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

<u>Principal source of payment for the delivery</u>: 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:

<u>Private insurance</u>: Includes providers such as Blue Cross Blue Shield and Aetna.

Medicaid: Includes state programs comparable with Medicaid.

<u>Self-pay</u>: 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

Michelle J.K. Osterman is with the National Center for Health Statistics, Division of Vital Statistics. Maria M. Juiz Gallego is with the Puerto Rico Department of Health Demographic Registry, Quality of Vital Statistics Division.

#### References

- 1. Yang Q, Wen SW, Oppenheimer L, Chen XK, Black D, Gao J, Walker MC. Association of caesarean delivery for first birth with placenta praevia and placental abruption in second pregnancy. BJOG 114(5):609–13. 2007.
- 2. Kuklina EV, Meikle SF, Jamieson DJ, Whiteman MK, Barfield WD, Hills SD, Posner SF. Severe obstetric morbidity in the United States: 1998–2005. Obstet Gynecol 113(2 Part 1):293–9. 2009.
- 3. Liston FA, Allen VM, O'Connell CM, Jangaard KA. Neonatal outcomes with cesarean delivery at term. Arch Dis Child Fetal Neonatal Ed 93(3):F176–82. 2008.
- 4. Osterman MJK, Juiz Gallego MM. Trends in cesarean delivery in Puerto Rico, 2018–2022. NCHS Data Brief, no 486. Hyattsville, MD: National Center for Health Statistics. 2024. DOI: https://dx.doi.org/10.15620/cdc:134515.
- 5. Centers for Disease Control and Prevention. Rates of cesarean delivery among Puerto Rican women—Puerto Rico and the U.S. mainland, 1992–2002. MMWR Morb Mortal Wkly Rep 55(3):68–71. 2006.
- 6. National Center for Health Statistics. Birth data files. Published annually. Available from: https://www.cdc.gov/nchs/data\_access/vitalstatsonline.htm.
- 7. Osterman MJK, Hamilton BE, Martin JA, Driscoll AK, Valenzuela CP. Births: Final data for 2023. National Vital Statistics Reports; vol 74, no 1. Hyattsville, MD: National Center for Health Statistics. 2025 [Forthcoming].

#### 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

## 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

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

onnecticut         34.3         1,370           eleware         31.6         136           strict of Columbia         27.6         21           orida         35.2         4,479           eorgia         35.7         501           awaii         27.8         234           aho         26.4         19           nois         34.9         682           diana         28.6         156           wa         31.4         49           ansas         31.1         61           sansas         31.1         61           sutisiana         36.0         63           aine         32.1         27           aryland         34.8         227           assachusetts         33.1         1,277           chichigan         31.9         141           innesota         30.6         72           assachusetts         33.1         1,277           chichigan         31.9         141           innesota         30.6         72           assachusetts         33.1         1,277           chichigan         31.9         43           aserica<	Area	Percent	Number
aska         29.2         33           tizona         31.4         189           kansas         37.5         45           allfornia         34.3         688           blorado         30.1         170           onnecticut         34.3         1,370           elaware         31.6         136           strict of Columbia         27.6         21           orida         35.7         501           awaii         27.8         234           aho         26.4         19           nois         34.9         682           dana         28.6         156           wa         31.1         61           antucky         35.2         94           wa         31.1         61           nutucky         35.2         94           nutucky         35.2	Alahama	36.1	96
120na   31.4   188   188   187   5   45   45   45   45   45   45   45			
kansas         37.5         45           alifornia         34.3         688           obrado         30.1         170           onnecicut         34.3         1,370           sleware         31.6         136           strict of Columbia         27.6         21           orida         35.2         4,479           eorgia         35.7         501           awal         27.8         234           aho         26.4         19           nois         34.9         682           diana         28.6         156           wa         31.4         49           ansas         31.1         61           nutucky         35.2         94           nutsiana         36.0         63           aine         32.1         27           assachusetts         33.1         1,277           chiqan         34.8         227           assachusetts         33.1         1,277           chiqan         31.9         141           innesota         30.6         72           assissippi         33.6         42           sissispipi			
alifornia         34.3         688           bornecticut         30.1         170           ponnecticut         34.3         1,370           plaware         31.6         136           strict of Columbia         27.6         21           orda         35.2         4,479           eorgia         35.7         501           awaii         27.8         234           aho         26.4         19           nois         34.9         682           diana         28.6         156           wa         31.4         49           ansas         31.1         61           attucky         35.2         94           vulsiana         36.0         63           aine         32.1         27           aryland         34.8         227           assachauetts <t< td=""><td></td><td></td><td></td></t<>			
aborado         30.1         170           anneciciut         34.3         1,370           eleware         31.6         136           strict of Columbia         27.6         21           orida         35.2         4,479           eorgia         35.7         501           awaii         27.8         234           aho         26.4         19           nois         34.9         682           diana         28.6         156           wa         31.1         49           ansas.         31.1         61           entucky         35.2         94           ubisian         36.0         63           aine         32.1         27           aryland         34.8         227           assachusetts         33.1         1,277           chigan         31.9         141           innesota         30.6         72           assachusetts         33.1         1,277           chigan         31.9         141           innesota         30.6         72           assissisripi         33.6         42           issouri			
onnecticut         34.3         1,370           elaware         31.6         136           strict of Columbia         27.6         21           orida         35.2         4,479           eorgia         35.7         501           awai         27.8         234           aho         26.4         19           nois         34.9         682           diana.         28.6         156           wa         31.4         49           ansas.         31.1         61           entucky         35.2         94           ubuisiana         36.0         63           aine         32.1         27           aryland         34.8         227           asyland         35.9         141           innesota         36.4         42           issouri         35.7 <td>alifornia</td> <td>34.3</td> <td>688</td>	alifornia	34.3	688
elaware         31.6         136           strict of Columbia         27.6         21           orida         35.2         4,479           eorgia         35.7         501           awaii         27.8         234           aho         26.4         19           nois         34.9         682           diana         28.6         156           wa         31.4         49           ansas         31.1         61           antucky         35.2         94           ulsiana         36.0         63           aine         32.1         27           assachusetts         33.1         1,277           ichigan         31.9         141           innesota         30.6         72           ississippi         33.6         42           ississippi         33.6         42           ississippi         33.6         42           ississipi         33.6         42           ississipi         33.6         42           issisvir         32.5         88           ontana         *         *           ew Hampshire         3	olorado	30.1	170
elaware         31.6         136           strict of Columbia         27.6         21           orida         35.2         4,479           eorgia         35.7         501           awaii         27.8         234           aho         26.4         19           nois         34.9         682           diana         28.6         156           wa         31.4         49           ansas         31.1         61           antucky         35.2         94           ulsiana         36.0         63           aine         32.1         27           assachusetts         33.1         1,277           ichigan         31.9         141           innesota         30.6         72           ississippi         33.6         42           ississippi         33.6         42           ississippi         33.6         42           ississipi         33.6         42           ississipi         33.6         42           issisvir         32.5         88           ontana         *         *           ew Hampshire         3	Connecticut	34.3	1.370
strict of Columbia         27.6         21           orida         35.2         4,479           eeorgia         35.7         501           awaii         27.8         234           aho         26.4         19           nois         34.9         682           diana         28.6         156           wa         31.4         49           ansas         31.1         61           antucky         35.2         94           ubuisiana         36.0         63           aine         32.1         27           aryland         34.8         227           assaschusetts         33.1         1,277           tchigan         31.9         141           innesota         30.6         72           sississispip         33.6         42           sissouri         32.5         88           ontana         *         *           vebraska         38.7         43           evada         35.9         142           ev Hampshire         34.3         1,700           ew Hampshire         34.3         1,700           ew Mexico			•
orida         35.2         4,479           eorgia         35.7         501           awaii         27.8         234           aho         26.4         19           nois         34.9         682           diana         22.6         156           wa         31.4         49           ansas         31.1         61           entucky         35.2         94           ulsiana         36.0         63           aine         32.1         27           aryland         34.8         227           assachusetts         33.1         1,277           cicipan         31.9         141           innesota         30.6         72           ississippi         33.6         42           ississippi         33.6         42           ississippi         33.6         42           ississippi         33.6         42           ississipi         33.6         42           ississipi         33.7         43           eva Hampshire         36.0         66           ew Jersey         34.3         1,700           ew Mexico         <			
seorgia         35.7         501           awaii         27.8         234           aho         26.4         19           nois         34.9         682           diana         28.6         156           wa         31.4         49           ansas         31.1         61           entucky         35.2         94           pulsiana         36.0         63           aine         32.1         27           aryland         34.8         227           aryland         34.8         2			
awaii 27.8 234 aho 26.4 19 nois 34.9 662 diana. 28.6 156 wa 31.4 49 nasas. 31.4 49 nasas. 31.1 61 entucky 35.2 94 noisiana 36.0 63 aine 32.1 27 aryland 34.8 227 assachusetts 33.1 1,277 childingan 31.9 141 innesota 36.0 67 22 issouri 36.0 67 22 issouri 36.0 67 22 issouri 37.0 67 28.5 88 noitana \$7.5 88.5 88.7 43 abvada \$7.5 88.7 43 a	lorida	35.2	4,479
aho         26.4         19           nois         34.9         682           diana         28.6         156           wa         31.4         49           ansas         31.1         61           entucky         35.2         94           pulsiana         36.0         63           airie         32.1         27           aryland         34.8         227           assachusetts         33.1         1,277           ichigan         31.9         141           innesota         30.6         72           ississippi         33.6         42           ississippi         33.6         42           ississippi         33.6         42           ississippi         33.7         43           ontana         *         *           ebraska         38.7         43           evada         35.9         142           aw Hampshire         34.0         66           aw Jersey         34.3         1,700           aw Mexico         35.7         35           aw Mexico         35.7         35           aw Mexico         35	Georgia		
inois         34.9         682           diana         28.6         156           wa         31.4         49           ansas         31.1         61           entucky         35.2         94           pulsiana         36.0         63           aine         32.1         27           aryland         34.8         227           assachusetts         33.1         1,277           tchigan         31.9         141           innesota         30.6         72           ississispipi         33.6         42           issouri         32.5         88           ontana         *         *           beraska         38.7         43           ew Harsphire         34.0         66           ew Jersey         34.3         1,700           ew Mexico         35.7         35           ew Versey         34.3         1,700           ew Mexico         35.7         35           aw York         37.2         3,203           parth Carolina         32.3         664           orth Dakota         24.5         13           hio.	lawaii	27.8	234
diana.         28.6         156           wa.         31.4         49           ansas.         31.1         61           entucky.         35.2         94           ubisiana.         36.0         63           aine.         32.1         27           aryland.         34.8         227           assachusetts.         33.1         1,277           Ichigan.         31.9         141           innesota.         30.6         72           ississippi.         33.6         42           issouri.         32.5         88           ontana.         *         *           ebraska.         38.7         43           ew Hampshire.         34.0         66           ew Jersey.         34.3         1,700           ew Mexico.         35.7         35           ew York.         37.2         3,203           orth Carolina.         32.3         664           orth Dakota.         24.5         13           holo.         31.0         613           klahoma.         30.4         73           regon.         33.9         74           a	laho	26.4	19
diana.         28.6         156           wa.         31.4         49           ansas.         31.1         61           entucky.         35.2         94           ubisiana.         36.0         63           aine.         32.1         27           aryland.         34.8         227           assachusetts.         33.1         1,277           ichigan.         31.9         141           innesota.         30.6         72           ississippi.         33.6         42           issouri.         32.5         88           ontana.         *         *           ebraska.         38.7         43           evada         35.9         142           ew Hampshire.         34.0         66           ew Jersey.         34.3         1,700           ew Mexico.         35.7         35           ew York.         37.2         3,203           orth Carolina.         32.3         664           orth Dakota.         24.5         13           hib.         31.0         613           klahoma.         30.4         73           re	inois	34 9	682
wa         31.4         49           ansas.         31.1         61           entlucky         35.2         94           usisiana         36.0         63           aire         32.1         27           asyland         34.8         227           assachusetts         33.1         1,277           ichigan         31.9         141           innesota         30.6         72           ississispipi         33.6         42           issouri         32.5         88           ontana         *         *         *           ebraska         38.7         43           evada         35.9         142           ew Hampshire         34.0         66           ew Jersey         34.3         1,700           ew Mexico         35.7         35           ew York         37.2         3,203           parth Carolina         32.3         664           porth Dakota         24.5         13           hio.         31.0         613           klahoma         30.4         7.3           regon.         33.9         74           <			
ansas.     31.1     61       entucky     35.2     94       buislana     36.0     63       aine     32.1     27       aryland     34.8     227       assachusetts     33.1     1,277       ichigan     31.9     141       innesota     30.6     72       ississippi     33.6     42       issouri     32.5     88       ontana     *     *       ebraska     38.7     43       evada     35.9     142       ew Hampshire     34.0     66       ew Jersey     34.3     1,700       ew Mexico     35.7     35       orth Carolina     32.3     664       orth Dakota     24.5     13       hio     31.0     613       klahoma     30.4     73       regon.     33.9     74       ennsylvania     31.3     2,212       node Island     29.0     199       outh Dakota     24.1     14       ath     30.5     165       oxas     34.1     1,016       atah     31.4     60       arrmont     *     *       riginia     33.0			
entucky         35.2         94           ubisiana         36.0         63           aine         32.1         27           aryland         34.8         227           assachuselts         33.1         1,277           ichigan         31.9         141           innesota         30.6         72           ississippi         33.6         42           issouri         32.5         88           ontana         *         *           ebraska         38.7         43           evada         35.9         142           ew Hampshire         34.0         66           ew Jersey         34.3         1,700           ew Mexico         35.7         35           ew York         37.2         3,203           orth Carolina         32.3         664           orth Dakota         24.5         13           hio         31.0         613           klahoma         30.4         73           regon         33.9         74           ennsylvania         31.3         2,212           node Island         29.0         199           outh C			
buisiana         36.0         63           aine         32.1         27           aryland         34.8         227           assachusetts         33.1         1,277           ichigan         31.9         141           innesota         30.6         72           ississispipi         33.6         42           issouri         32.5         88           ontana         *         *           ebraska         38.7         43           evada         35.9         142           ew Hampshire         34.0         66           ew Jersey         34.3         1,700           ew Mexico         35.7         35           ew York         37.2         3,203           orth Carolina         32.3         664           orth Dakota         24.5         13           hio         31.0         613           klahoma         30.4         73           regon.         33.9         74           annsylvania         31.3         2,212           node Island         29.0         199           buth Carolina         32.1         209	ansas		
aine     32.1     27       aryland     34.8     227       assachusetts     33.1     1,277       ichigan     31.9     141       innesota     30.6     72       ississippi     33.6     42       issouri     32.5     88       ontana.     *     *       * *     *     *       abraska     38.7     43       ewada     35.9     142       ew Hampshire     34.0     66       ew Jersey     34.3     1,700       ew Mexico     35.7     35       ew York     37.2     3,203       orth Carolina     32.3     664       orth Dakota     24.5     13       nio     31.0     613       klahoma     30.4     73       regon     33.9     74       ennsylvania     31.3     2,212       node Island     29.0     199       buth Carolina     32.1     209       buth Dakota     24.1     14       ennessee     30.5     165       exas     34.1     1,016       tah     31.4     60       ermont     *     *       riginia     33.0	entucky	35.2	94
aryland     34.8     227       assachusetts     33.1     1,277       ichigan     31.9     141       innesota     30.6     72       ississispipi     33.6     42       issouri     32.5     88       ontana.     *     *       ebraska     38.7     43       evada     35.9     142       ew Hampshire     34.0     66       ew Jersey     34.3     1,700       ew Mexico     35.7     35       ew York     37.2     3,203       orth Carolina     32.3     664       orth Dakota     24.5     13       hio     31.0     613       klahoma     30.4     73       regon.     33.9     74       ennsylvania     31.3     2,212       node Island     29.0     199       buth Dakota     24.1     14       emessee     30.5     165       exas     34.1     1,016       tah     31.4     60       erront     *     *       riginia     33.0     417       ashington     34.1     161       est Virginia     38.7     29       isconsin     <	ouisiana	36.0	63
assachusetts.     33.1     1,277       ichigan     31.9     141       innesota     30.6     72       ississispipi     33.6     42       issouri     32.5     88       ontana.     *     *       * ebraska     38.7     43       evada     35.9     142       ew Hampshire     34.0     66       ew Jersey     34.3     1,700       ew Mexico     35.7     35       orth Carolina     32.3     664       orth Dakota     24.5     13       hio     31.0     613       klahoma     30.4     73       regon     33.9     74       ennsylvania     31.3     2,212       houth Carolina     32.1     209       buth Dakota     24.1     14       ennessee     30.5     165       exas     34.1     1,016       tah     31.4     60       ermont     *     *       riginia     33.0     417       ashington     34.1     161       est Virginia     38.7     29       isconsin     28.6     294       yoming     *     *	laine	32.1	27
assachusetts.     33.1     1,277       ichigan     31.9     141       innesota     30.6     72       ississispipi     33.6     42       issouri     32.5     88       ontana.     *     *       * ebraska     38.7     43       evada     35.9     142       ew Hampshire     34.0     66       ew Jersey     34.3     1,700       ew Mexico     35.7     35       orth Carolina     32.3     664       orth Dakota     24.5     13       hio     31.0     613       klahoma     30.4     73       regon     33.9     74       ennsylvania     31.3     2,212       houth Carolina     32.1     209       buth Dakota     24.1     14       ennessee     30.5     165       exas     34.1     1,016       tah     31.4     60       ermont     *     *       riginia     33.0     417       ashington     34.1     161       est Virginia     38.7     29       isconsin     28.6     294       yoming     *     *	larvland	34.8	227
ichigan       31.9       141         innesota       30.6       72         ississispi       33.6       42         ississispi       32.5       88         ontana       *       *       *         sbraska       38.7       43         evada       35.9       142         ew Hampshire       34.0       66         ew Jersey       34.3       1,700         ew Mexico       35.7       35         ew York       37.2       3,203         orth Carolina       32.3       664         orth Dakota       24.5       13         hio       31.0       613         klahoma       30.4       73         regon       33.9       74         ennsylvania       31.3       2,212         node Island       29.0       199         outh Dakota       24.1       14         ennessee       30.5       165         exas       34.1       1,016         tah       31.4       60         ermont       *       *         riginia       33.0       417         assington       34.1	· ·		
innesota       30.6       72         ississippi       33.6       42         ississippi       32.5       88         ontana.       *       *         sebraska       38.7       43         evada       35.9       142         ew Hampshire       34.0       66         ew Jersey       34.3       1,700         ew Jersey       34.3       1,700         ew Mexico       35.7       35         ew York       37.2       3,203         orth Carolina       32.3       664         orth Dakota       24.5       13         hio       31.0       613         klahoma       30.4       73         regon       33.9       74         ennsylvaria       31.3       2,212         node Island       29.0       199         buth Carolina       32.1       209         buth Dakota       24.1       14         ennessee       30.5       165         exas       34.1       1,016         tah       31.4       60         ermont       *       *         rginia       33.0       417			•
sississippi       33.6       42         sissouri       32.5       88         ontana.       *       *         bebraska       38.7       43         evada       35.9       142         ew Hampshire       34.0       66         ew Jersey       34.3       1,700         ew Mexico       35.7       35         ew York       37.2       3,203         orth Carolina       32.3       664         orth Dakota       24.5       13         nico       31.0       613         klahoma       30.4       73         regon       33.9       74         ennsylvania       31.3       2,212         node Island       29.0       199         buth Carolina       32.1       209         buth Dakota       24.1       14         ennessee       30.5       165         exas       34.1       1,016         stah       31.4       60         ermont       *       *         riginia       33.0       417         asshington       34.1       161         exet Virginia       38.7       2			
issouri     32.5     88       ontana     *     *       ebraska     38.7     43       evada     35.9     142       ew Hampshire     34.0     66       ew Jersey     34.3     1,700       ew Mexico     35.7     35       ew York     37.2     3,203       orth Carolina     32.3     664       orth Dakota     24.5     13       hio     31.0     613       klahoma     30.4     73       regon     33.9     74       enneylvania     31.3     2,212       hode Island     29.0     199       buth Carolina     32.1     209       buth Dakota     24.1     14       exas     30.5     165       exas     34.1     1,016       tah     31.4     60       ermont     *     *       riginia     33.0     417       ashington     34.1     161       test Virginia     38.7     29       isconsin     28.6     294       tyoning     *     *	Innesota		
contana         *         *           ebraska         38.7         43           eew dada         35.9         142           ew Hampshire         34.0         66           ew Jersey         34.3         1,700           ew Jersey         35.7         35           ew York         37.2         3,203           orth Carolina         32.3         664           orth Dakota         24.5         13           hio         31.0         613           klahoma         30.4         73           regon         33.9         74           eensylvania         31.3         2,212           node Island         29.0         199           outh Carolina         32.1         209           outh Dakota         24.1         14           eenessee         30.5         165           exas         34.1         1,016           tah         31.4         60           eermont         *         *           reginia         33.0         417           ashington         34.1         161           est Virginia         38.7         29	lississippi	33.6	42
ontaina       38.7       43         evada       35.9       142         ew Hampshire       34.0       66         ew Jersey       34.3       1,700         ew Mexico       35.7       35         ew York       37.2       3,203         orth Carolina       22.5       13         orth Dakota       24.5       13         hio       31.0       613         klahoma       30.4       73         regon       33.9       74         ennsylvania       31.3       2,212         hode Island       29.0       199         bouth Carolina       32.1       209         bouth Dakota       24.1       14         exas       34.1       1,016         stah       31.4       60         exmont       *       *         rginia       33.0       417         ashington       34.1       161         test Virginia       38.7       29         isconsin       28.6       294         tyoning       *       *	1issouri	32.5	
evada     35.9     142       ew Hampshire     34.0     66       ew Jersey     34.3     1,700       ew Mexico     35.7     35       ew York     37.2     3,203       orth Carolina     32.3     664       orth Dakota     24.5     13       hio     31.0     613       klahoma     30.4     73       regon.     33.9     74       ennsylvania     31.3     2,212       hode Island     29.0     199       outh Carolina.     32.1     209       outh Dakota     24.1     14       ennessee     30.5     165       exas     34.1     1,016       tah     31.4     60       ermont     *     *       reginia.     33.0     417       rashington     34.1     161       est Virginia     38.7     29       risconsin     28.6     294       ryoning     *     *	Montana	*	*
ew Hampshire       34.0       66         ew Jersey       34.3       1,700         ew Mexico       35.7       35         ew York       37.2       3,203         orth Carolina       32.3       664         orth Dakota       24.5       13         hio       31.0       613         klahoma       30.4       73         regon       33.9       74         ennsylvania       31.3       2,212         hode Island       29.0       199         buth Carolina       32.1       209         buth Dakota       24.1       14         ennessee       30.5       165         boxas       34.1       1,016         tah       31.4       60         ermont       *       *         reginia       33.0       417         qashington       34.1       161         est Virginia       38.7       29         fisconsin       28.6       294         tyoning       *       *	lebraska	38.7	43
ew Hampshire       34.0       66         ew Jersey       34.3       1,700         ew Mexico       35.7       35         ew York       37.2       3,203         orth Carolina       32.3       664         orth Dakota       24.5       13         hio       31.0       613         klahoma       30.4       73         regon       33.9       74         ennsylvania       31.3       2,212         hode Island       29.0       199         buth Carolina       32.1       209         buth Dakota       24.1       14         ennessee       30.5       165         boxas       34.1       1,016         tah       31.4       60         ermont       *       *         reginia       33.0       417         qashington       34.1       161         est Virginia       38.7       29         fisconsin       28.6       294         tyoning       *       *	levada	35.9	142
ew Mexico       35.7       35         ew York       37.2       3,203         orth Carolina       32.3       664         orth Dakota       24.5       13         hio       31.0       613         klahoma       30.4       73         regon       33.9       74         eennsylvania       31.3       2,212         hode Island       29.0       199         outh Carolina       32.1       209         outh Dakota       24.1       14         eennessee       30.5       165         exas       34.1       1,016         tah       31.4       60         ermont       *       *         rginia       33.0       417         ashington       34.1       161         est Virginia       38.7       29         visconsin       28.6       294         vyoming       *       *	lew Hampshire	34.0	66
ew Mexico       35.7       35         ew York       37.2       3,203         orth Carolina       32.3       664         orth Dakota       24.5       13         hio       31.0       613         klahoma       30.4       73         regon       33.9       74         eennsylvania       31.3       2,212         hode Island       29.0       199         outh Carolina       32.1       209         outh Dakota       24.1       14         eennessee       30.5       165         exas       34.1       1,016         tah       31.4       60         ermont       *       *         rginia       33.0       417         ashington       34.1       161         est Virginia       38.7       29         visconsin       28.6       294         vyoming       *       *	lew Jersey	34.3	1 700
sew York       37.2       3,203         orth Carolina       32.3       664         orth Dakota       24.5       13         hio       31.0       613         klahoma       30.4       73         regon       33.9       74         eensylvania       31.3       2,212         hoode Island       29.0       199         outh Carolina       32.1       209         outh Dakota       24.1       14         eensesee       30.5       165         exas       34.1       1,016         tah       31.4       60         eermont       *       *         riginia       33.0       417         fashington       34.1       161         fest Virginia       38.7       29         risconsin       28.6       294         ryoming       *       *			· .
orth Carolina       32.3       664         orth Dakota       24.5       13         hio       31.0       613         klahoma       30.4       73         regon.       33.9       74         ennsylvania       31.3       2,212         hode Island       29.0       199         outh Carolina.       32.1       209         outh Dakota       24.1       14         ennessee       30.5       165         exas       34.1       1,016         tah       31.4       60         ermont       *       *         riginia.       33.0       417         qashington       34.1       161         vest Virginia       38.7       29         visconsin       28.6       294         vyoning       *       *			
orth Dakota     24.5     13       hio     31.0     613       klahoma     30.4     73       regon.     33.9     74       ennsylvania     31.3     2,212       hode Island     29.0     199       outh Carolina     32.1     209       outh Dakota     24.1     14       ennessee     30.5     165       exas     34.1     1,016       tah     31.4     60       ermont     *     *       reginia     33.0     417       lashington     34.1     161       lest Virginia     38.7     29       isconsin     28.6     294       yoming     *     *			•
hio       31.0       613         klahoma       30.4       73         regon.       33.9       74         ennsylvania       31.3       2,212         hode Island       29.0       199         buth Carolina       32.1       209         buth Dakota       24.1       14         ennessee       30.5       165         exas       34.1       1,016         tah       31.4       60         ermont       *       *         reginia       33.0       417         Jashington       34.1       161         lest Virginia       38.7       29         jisconsin       28.6       294         tyoming       *       *	orth Carolina	32.3	664
klahoma       30.4       73         regon.       33.9       74         ennsylvania       31.3       2,212         hode Island       29.0       199         buth Carolina       32.1       209         buth Dakota       24.1       14         ennessee       30.5       165         exas       34.1       1,016         tah       31.4       60         ermont       *       *         reginia       33.0       417         lashington       34.1       161         lest Virginia       38.7       29         risconsin       28.6       294         ryoming       *       *	orth Dakota	24.5	13
klahoma       30.4       73         regon.       33.9       74         ennsylvania       31.3       2,212         hode Island       29.0       199         buth Carolina       32.1       209         buth Dakota       24.1       14         ennessee       30.5       165         exas       34.1       1,016         tah       31.4       60         ermont       *       *         reginia       33.0       417         lashington       34.1       161         lest Virginia       38.7       29         risconsin       28.6       294         ryoming       *       *	Phio	31.0	613
regon       33.9       74         ennsylvania       31.3       2,212         hode Island       29.0       199         buth Carolina       32.1       209         buth Dakota       24.1       14         ennessee       30.5       165         exas       34.1       1,016         tah       31.4       60         ermont       *       *         reginia       33.0       417         lashington       34.1       161         lest Virginia       38.7       29         risconsin       28.6       294         yoming       *       *		30.4	73
gennsylvania       31.3       2,212         hode Island       29.0       199         buth Carolina       32.1       209         buth Dakota       24.1       14         gennessee       30.5       165         sxas       34.1       1,016         tah       31.4       60         germont       *       *         reginia       33.0       417         lashington       34.1       161         lest Virginia       38.7       29         lisconsin       28.6       294         yoming       *       *			
mode Island       29.0       199         puth Carolina       32.1       209         puth Dakota       24.1       14         pennessee       30.5       165         person       34.1       1,016         tah       31.4       60         permont       *       *         reginia       33.0       417         reshington       34.1       161         lest Virginia       38.7       29         risconsin       28.6       294         ryoming       *       *			
buth Carolina     32.1     209       buth Dakota     24.1     14       bennessee     30.5     165       betas     34.1     1,016       bath     31.4     60       betas     *     *       reginia     33.0     417       reshington     34.1     161       lest Virginia     38.7     29       risconsin     28.6     294       ryoming     *     *			•
buth Dakota     24.1     14       ennessee     30.5     165       exas     34.1     1,016       tah     31.4     60       ermont     *     *       rginia     33.0     417       ashington     34.1     161       fest Virginia     38.7     29       risconsin     28.6     294       ryoming     *     *	hode Island	29.0	199
ennessee     30.5     165       exas     34.1     1,016       tah     31.4     60       ermont     *     *       rginia     33.0     417       ashington     34.1     161       fest Virginia     38.7     29       isconsin     28.6     294       yoming     *     *	outh Carolina	32.1	209
ennessee     30.5     165       exas     34.1     1,016       tah     31.4     60       ermont     *     *       rginia     33.0     417       ashington     34.1     161       fest Virginia     38.7     29       isconsin     28.6     294       yoming     *     *	outh Dakota	24.1	14
exas     34.1     1,016       tah     31.4     60       ermont     *     *       rginia     33.0     417       ashington     34.1     161       fest Virginia     38.7     29       risconsin     28.6     294       yoming     *     *			165
tah     31.4     60       ermont     *     *       rginia     33.0     417       ashington     34.1     161       fest Virginia     38.7     29       risconsin     28.6     294       yoming     *     *			
rginia			,
rginia.       33.0       417         /ashington       34.1       161         /est Virginia       38.7       29         /isconsin       28.6       294         /yoming       *       *		31.4 *	6U *
ashington       34.1       161         lest Virginia       38.7       29         lisconsin       28.6       294         lyoming       *       *		33 N	117
/est Virginia     38.7     29       /isconsin     28.6     294       /yoming     *     *	. <del></del>		
'isconsin	· ·		
'yoming * * *	/est Virginia	38.7	29
	/isconsin	28.6	294
uerto Rico	/yoming	*	*
30.3 9,179	uerto Rico	50.9	9 179
	401011100		5,175

<sup>\*</sup> Estimate does not meet National Center for Health Stastistics standards of reliability.

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

Centers for Disease Control and Prevention National Center for Health Statistics 3311 Toledo Road, Room 4551, MS P08 Hyattsville, MD 20782–2064

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, \$300

For more NCHS Data Briefs, visit: https://www.cdc.gov/nchs/products/databriefs.htm.



NCHS Data Brief ■ No. 523 ■ January 2025

Keywords: method of delivery • gestational age • age of mother • National Vital Statistics System

#### **Suggested citation**

Osterman MJK, Juiz Gallego MM. Differences in cesarean delivery rates for Puerto Rican mothers in Puerto Rico and the U.S. mainland, 2023. NCHS Data Brief, no 523. Hyattsville, MD: National Center for Health Statistics. 2025. DOI: https://dx.doi.org/10.15620/cdc/174574.

FIRST CLASS MAIL

POSTAGE & FEES PAID CDC/NCHS

PERMIT NO. G-284

#### **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

Brian C. Moyer, Ph.D., *Director* Amy M. Branum, Ph.D., *Associate Director for Science* 

# Division of Vital Statistics Paul D. Sutton, Ph.D., Director Andrés A. Berruti, Ph.D., M.A., Associate Director for Science

For e-mail updates on NCHS publication releases, subscribe online at: https://www.cdc.gov/nchs/updates/.

For questions or general information about NCHS: Tel: 1–800–CDC–INFO (1–800–232–4636)

TTY: 1–888–232–6348

Internet: https://www.cdc.gov/nchs

Online request form: https://www.cdc.gov/info

ISSN 1941–4927 Print ed. ISSN 1941–4935 Online ed.

CS356675