

# IMPACT OF GESTATIONAL AGE MEASURE ON DISPARITIES IN PRETERM BIRTH AMONG HISPANIC SUBGROUPS

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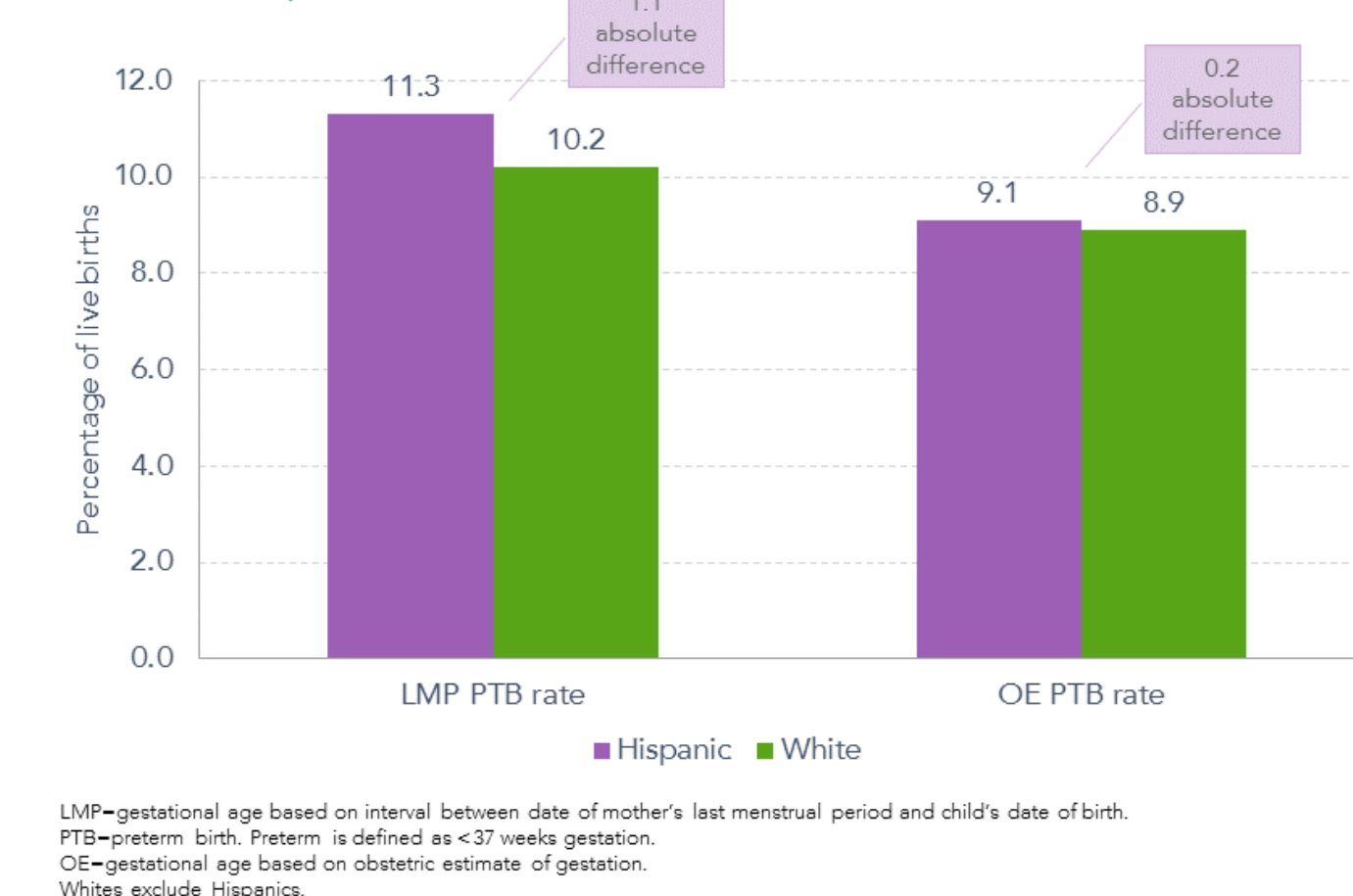
## BACKGROUND

- Recent studies have shown gestational age calculated using obstetric estimate (OE) is more accurate than age calculated using date of mother's last menstrual period (LMP). National Center for Health Statistics (NCHS) transitioned to OE-based gestational age with 2014 US birth data.
- United States (US) racial/ethnic disparities in LMP-preterm birth (PTB) rates are well documented, with higher rates among Hispanics compared to non-Hispanic whites. However, OE-PTB rates are lower than LMP-PTB rates for the US overall and for all race/ethnicity groups.
- Little is known about the diversity of risk of PTB using OE among US Hispanics and whether risk differs by Hispanic subgroup and state of residence.

## METHODS

- We analyzed the 2013 NCHS natality file for US births with known LMP- and OE-based gestational age between 17 and 47 weeks.
- We calculated LMP- and OE-PTB rates (<37 weeks of gestation) among US non-Hispanic whites (whites) and Hispanics.
- Among Hispanics, we stratified PTB rates by mother's specific Hispanic origin (subgroup) as reported on the birth certificate, and calculated relative risks (RR) using whites and Mexicans as reference groups (Mexicans had the lowest LMP-PTB rate among all Hispanic subgroups).
  - If a mother indicates she is Hispanic on the birth certificate, she is asked to further classify her origin by selecting 1 of 5 specific Hispanic origins: Mexican, Puerto Rican, Cuban, Central or South American, and Other and Unknown Hispanic. Other and Unknown Hispanic includes women that did not list their specific Hispanic origin, selected multiple specific origins, or listed a different specific origin than those above.
- We evaluated differences between LMP- and OE-PTB rates among Hispanics by mother's state of residence for states with at least 25% of births that were to Hispanic women.
- We tested differences using a chi-square test with significance at  $P < 0.05$ .

**Figure 1. Preterm birth rates among Hispanics and whites by gestational age measure**  
United States, 2013



## RESULTS- PRETERM BIRTH RATES BY US HISPANIC SUBGROUP

- In 2013, the US Hispanic LMP-PTB rate was 1.1 percentage points (PP) higher than the rate among whites (11.3% vs. 10.2%,  $P < 0.001$ ), while the Hispanic OE-PTB rate was 0.2 PP higher than among whites (9.1% vs. 8.9%,  $P < 0.001$ ) (Figure 1).
- The largest discrepancy between LMP- and OE-PTB rates occurred among Cubans (37.3%,  $P < 0.001$ ), followed by Central/South Americans (25.6%,  $P < 0.001$ ) (Table 1).
- The ranking of OE-PTB rates among subgroups differed from the LMP rankings; using OE, Puerto Ricans replaced Cubans as the group with the highest PTB rate (10.9%) (Table 1).

**Table 1. Preterm birth rates by Hispanic subgroup and gestational age measure**  
United States, 2013

Hispanic subgroup	LMP PTB rate (Rank)	OE PTB rate (Rank)	Absolute difference	Percent difference
Cuban	14.2 (1)	8.9 (3)	-5.3	-37.3
Puerto Rican	13.0 (2)	10.9 (1)	-2.1	-16.2
Central or South American	11.7 (3)	8.7 (5)	-3.0	-25.6
Other and Unknown Hispanic	11.7 (3)	9.7 (2)	-2.0	-17.1
Mexican	10.8 (5)	8.8 (4)	-2.0	-18.5
Total Hispanic	11.3 (n/a)	9.1 (n/a)	-2.2	-19.5

Specific Hispanic origin (subgroup) as reported by the mother on the birth certificate.  
LMP=gestational age based on interval between date of mother's last menstrual period and child's date of birth.  
PTB=preterm birth. Preterm is defined as <37 weeks gestation.  
OE=gestational age based on obstetric estimate of gestation.  
Differences are statistically significant at  $P < 0.05$  unless otherwise noted.

- When compared to whites, LMP-RRs among all Hispanic subgroups were elevated, yet OE-RRs among most Hispanic subgroups deviated only slightly from 1.0 (Table 2).
  - The exception was the OE-RR among Puerto Ricans which remained elevated (RR=1.22,  $P < 0.001$ ) (Table 2).
- Among Hispanics, the OE-RR was 24% higher among Puerto Ricans compared to Mexicans (RR=1.24,  $P < 0.001$ ) (Table 2).

**Table 2. Relative risk in preterm birth rates by Hispanic subgroup and gestational age measure**  
United States, 2013

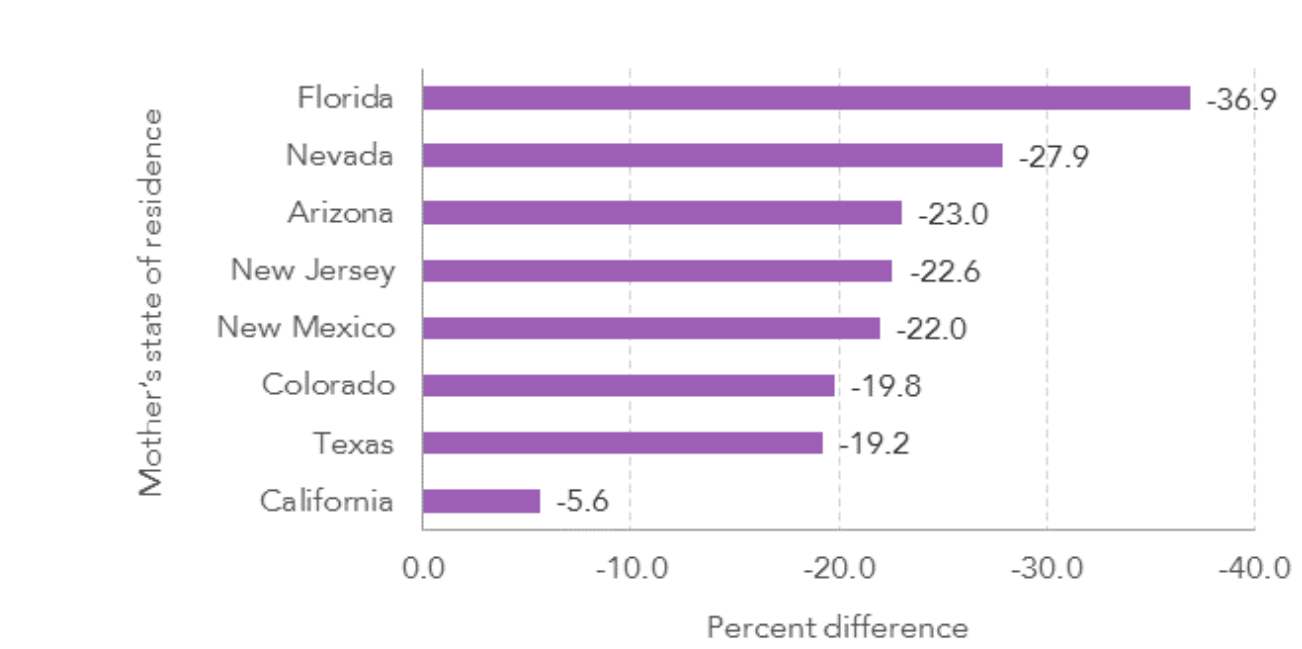
Hispanic subgroup	RR to whites (LMP)	RR to whites (OE)	RR to Mexicans (LMP)	RR to Mexicans (OE)
Cuban	1.39	1.00	1.31	1.01*
Puerto Rican	1.27	1.22	1.20	1.24
Central or South American	1.15	0.98	1.08	0.99*
Other and Unknown Hispanic	1.15	1.09	1.08	1.10
Mexican	1.06	0.99	Reference	Reference
Total Hispanic	1.11	1.02	--	--

Specific Hispanic origin (subgroup) as reported by the mother on the birth certificate.  
LMP=gestational age based on interval between date of mother's last menstrual period and child's date of birth.  
OE=gestational age based on obstetric estimate of gestation.  
RR=relative risk.  
Whites exclude Hispanics.  
RR are statistically significant at  $P < 0.05$  unless otherwise noted.

## RESULTS- PRETERM BIRTH RATES BY STATE OF RESIDENCE

- The largest discrepancy between LMP- and OE-PTB rates among Hispanics occurred in Florida and Nevada (Figure 2).

**Figure 2. Percent difference between LMP- and OE-preterm birth rates among Hispanics by state of residence**  
United States, 2013



State of residence as reported by the mother on the birth certificate.  
LMP=gestational age based on interval between date of mother's last menstrual period and child's date of birth.  
OE=gestational age based on obstetric estimate of gestation.  
PTB=preterm birth. Preterm is defined as <37 weeks gestation.  
Differences are statistically significant at  $P < 0.05$  unless otherwise noted.

- In Florida, Puerto Ricans had the highest OE-PTB (10.4%), switching places with Cubans who had the highest LMP-PTB rate (15.5%) (Table 3a).
- In Nevada, Central/South Americans had both the highest LMP- and OE-PTB rates (13.7% and 11.1%). Cubans had the second highest OE-PTB rate (9.5%), switching places with Mexicans, who had the second highest LMP-PTB rate (12.9%) (Table 3b).

**Tables 3a and b. Preterm birth rates by Hispanic subgroup and gestational age measure**

**3a. Florida, 2013**

Hispanic subgroup	LMP PTB rate (Rank)	OE PTB rate (Rank)	Absolute difference	Percent difference
Cuban	15.5 (1)	8.6 (3)	-6.9	-44.5
Puerto Rican	14.6 (2)	10.4 (1)	-4.2	-28.8
Other and Unknown Hispanic	14.4 (3)	9.5 (2)	-4.9	-34.0
Central or South American	13.9 (4)	8.5 (4)	-5.4	-38.8
Mexican	12.2 (5)	8.1 (5)	-4.1	-33.6
Total Hispanic	14.1 (-)	8.9 (-)	-5.2	-36.9

**3b. Nevada, 2013**

Hispanic subgroup	LMP PTB rate (Rank)	OE PTB rate (Rank)	Absolute difference	Percent difference
Central or South American	13.7 (1)	11.1 (1)	-2.6	-19.0
Mexican	12.9 (2)	9.1 (4)	-3.8	-29.5
Puerto Rican	12.1 (3)	9.4 (3)	-2.7*	-22.3*
Other and Unknown Hispanic	11.5 (4)	8.5 (5)	-3.0*	-26.1*
Cuban	11.0 (5)	9.5 (2)	-1.5*	-13.6*
Total Hispanic	12.9 (-)	9.3 (-)	-3.6	-27.9

Specific Hispanic origin (subgroup) and state of residence as reported by the mother on the birth certificate.  
LMP=gestational age based on interval between date of mother's last menstrual period and child's date of birth.  
PTB=preterm birth. Preterm is defined as <37 weeks gestation.  
OE=gestational age based on obstetric estimate of gestation.  
Differences are statistically significant at  $P < 0.05$  unless otherwise noted.  
\*Not significant at  $P < 0.05$ .

## CONCLUSIONS

- Nationally, OE-PTB rates among Hispanics and whites are similar, yet disparities exist among Hispanics.
- Our understanding of US Hispanic subgroups at greatest risk of PTB has changed with the transition to OE-PTB rates, with Puerto Ricans having the highest risk of PTB based on OE, compared to Cubans based on LMP.
- Discrepancies between gestational age measures have also impacted our understanding of risk among Hispanic subgroups at the state level.
- These findings must be considered when targeting prematurity reduction strategies across Hispanic subgroups at national and state levels.

FOR ADDITIONAL INFORMATION CONTACT:

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