

Ethnicity and the Risk of Unwarranted Cesarean Birth in the United States

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Abstract

In keeping with research on racism and benevolent sexism, this report tested the hypothesis that rates of unnecessary birth by cesarean section would be higher for ethnic minority mothers than for White mothers. Analyses of 36 million recent U.S. births supported this prediction. The ethnic gap was largest when comparing White and African American mothers, followed by Latinas, Native American Indians, and Asians. These ethnic gaps were larger than usual for mothers who were at very low objective risk for birth by cesarean section (e.g., for very healthy mothers). The ethnic gap was robust across U.S. regions. Future studies should examine the role of attitudes about women and minorities across the 50 U.S. states to better pinpoint the reason for these biases. Given the health risks to both mothers and infants of unwarranted cesarean sections, this paper documents a public health care problem that is particularly worrisome for ethnic minority mothers.

Keywords: birth, cesarean section, ethnicity, medicalization

Ethnicity and the Risk of Unwarranted Cesarean Birth in the United States

There are large ethnic disparities in health and well-being in the United States. Discrimination appears to influence such disparities (Blair, Judd, & Chapleau, 2004; Eberhardt, Davies, Purdie-Vaughns, & Johnson, 2006; Maddox, 2004). This report tests the idea that the low social status of ethnic minority mothers puts them at elevated risk for giving birth via unwarranted cesarean sections. Of course, birth by cesarean is sometimes a medical necessity. But since 1970, cesarean births in the U.S. have increased from 5% to 33%, a needlessly high figure (WHO, 2015). Unnecessarily medicalized births harm both mothers and infants (Harper et al., 2006; Lydon-Rochelle, Holt, Martin, & Easterling, 2000; Sandall, Soltani, Gates, Shennan, & Devane, 2013). This report assesses whether ethnic minority mothers are at elevated risk for one kind of medicalized birth, namely birth by unwarranted cesarean section.

Why should *ethnic minority* mothers be at elevated risk for cesarean births? To answer this, we must acknowledge the uncomfortable fact that unnecessary cesarean sections are highly advantageous to hospitals. Cesarean births cost much more than vaginal births (Gibbons, Belizán, Lauer, Betrán, Merialdi, & Althabe, 2010). Further, hospitals that artificially shift births from weekends to weekdays (e.g., via labor induction and scheduled cesarean sections) may reduce costs such as overtime pay. In fact, American women today are 76% more likely to give birth on a Tuesday than on a Sunday. Further, the risk of giving birth by cesarean is about 50% greater on a weekday than on a weekend day (Pelham, 2018). If cesarean births are “*extremely* doctor-friendly” (Epstein, 2008) then they may be more common than usual for low status mothers.

Status matters. Research shows that women’s low social status makes it hard for them to negotiate what they want in groups (Bowles, Babcock, & Lai, 2007). Ethnic minorities also have

lower perceived social status than Whites (Jost, Pelham, & Carvallo, 2002; Kahn, Ho, Sidanius, & Pratto, 2009). On average, low status people are less likely to receive what is in their best interest. For example, Glaeser, Laibson, Scheinkman, and Soutter (1999) had Harvard students play a game in which they received investment money from another player. Recipients then received a great deal of interest on the money – and could return as much of the money (and interest) as they wished to a student investor. Half the students played the game with a same-race student, and half played it with a student of a different race. White participants very often returned little or no money to Asians or non-Americans. Such biases are probably unconscious.

Health care professionals often pressure mothers to accept medicalized births. A nationally-representative survey by Jou, Kozhimannil, Johnson, and Sakala (2000) revealed that 21.5% of women reported feeling pressure from health care professionals to have a cesarean section, a labor-induction technique, or both. Some women also felt more pressure than others. Younger mothers and first-time mothers were both about twice as likely as older or experienced mothers to report feeling pressured to have invasive procedures (Jou et al., 2000). This suggests that women with less power and less knowledge of birth are more likely to be encouraged to accept medicalized births.

A major impetus for this work is Braverman, Egerter, Edmonston, and Verdon's (1995) study of 200,000 California births. They found that Black mothers were 24% more likely than White mothers to give birth by cesarean section. Their results for other groups were more complex. Latinas were only at elevated risk for giving birth by cesarean if they were U.S.-born. This report will extend Braverman et al.'s work to a much larger and more recent sample. It will also extend that work by assessing whether ethnic gaps in cesarean section rates are larger than usual among women who are least likely to need cesareans.

Methods and Results

I harvested data using the CDC WONDER search tool for U.S. births, which are divided into three temporal windows. I limited analyses to mothers who gave birth in hospitals and whose births were attended by doctors. The most useful WONDER data set is the 2007-2014 set of 36.5 million birth records. The WONDER tool does not allow users to download microdata. Instead, users can generate cross-tabulations between two or more variables at a time. For example, one can independently cross ethnicity, maternal age group, education, and pregnancy-associated hypertension – to see if these four predictors are uniquely associated with cesarean birth rates. Users can only cross five variables at a time. However, users can hold a long list of selected variables constant while crossing as many as five others. This is conceptually identical to conducting a factorial analysis of covariance (ANCOVA) with the difference being that one must specify at exactly what level to hold each covariate constant.

Confounds

Any study of ethnic bias must address confounds. In these data, Black mothers were three times as likely as White mothers to give birth without having had prenatal care. This confound might suppress observed rates of cesarean sections among Black mothers because patients who cannot easily pay might be unlikely to receive expensive treatments. Black mothers were also twice as likely as White mothers to suffer from chronic hypertension. This confound works in the opposite direction and could falsely inflate the predicted findings. I initially addressed only a few confounds by focusing on adult (aged 20+) mothers of singletons who got early prenatal care and who had at least a high school education. Later, I account for additional confounds. To see if ethnic gaps in cesarean section rates were largest for mothers who were *least* likely to need

cesarean sections, I conducted preliminary analyses to identify the exact levels of several predictors that were associated with the lowest risk of cesarean section.

Older mothers were more likely than younger mothers to give birth by cesarean. Second, the gestational window for which cesarean section rates were lowest was 40 weeks (obstetric estimate). Cesarean rates were also lowest among babies of average birth weight (2500-3999 grams). Finally, mothers who smoked during their pregnancies, like those who suffered from diabetes, eclampsia, chronic hypertension, or pregnancy-associated hypertension were at increased risk for giving birth by cesarean. These findings set the stage for analyses that focused on (a) young mothers (20-29) who (b) gave birth at exactly 40 weeks gestation, (c) whose babies were of average weight, and (d-h) who did not suffer from *any* of the five empirically-validated maternal risk factors.

Initial Results

Results for typical mothers. I began with high-school-educated, adult mothers of singletons who began prenatal care in months 1-3. For these 15.6 million births, ethnic minority mothers were more likely to receive cesarean sections. As shown in Figure 1, White mothers were the least likely group to give birth by cesarean, and Black mothers were the most likely. Latinas and Native American Indians fell about halfway between Blacks and Whites. Cesarean rates for Asian-American mothers were only slightly higher than those for Whites. With room for argument regarding Native American Indians, these ethnic differences correspond very well to the social status of these five ethnic groups.

Use of ratio scores to express group differences. Because of enormous sample sizes, even the small differences between White and Asian mothers were highly significant ($p < .001$). Thus in lieu of traditional statistics, Figure 1 includes a ratio score (R_{AE}) for each ethnic group

that indicates how much more (or less) likely mothers were in each group to receive a cesarean section *relative to White mothers* (Simonsohn, 2011). Unlike traditional odds-ratios, this ratio statistic can be interpreted literally. A ratio score of 1.16 for Black mothers means that they are 16% more likely than White mothers to give birth by cesarean. We use this same ratio score in all follow-up analyses for very healthy mothers.

Moderation by Statistical Risk Factors

Did the ethnic gap in the likelihood of giving birth by cesarean grow larger when mothers were least likely to need a cesarean? I tested this hypothesis by identifying a group of very low-risk mothers. This meant repeating my initial population constraints while further specifying that mothers (a) had *none* of the five health risks that are a part of the CDC records, (b) were aged 20-29, (c) took their pregnancies to the empirically-ideal window of 40 weeks gestation, and (d) gave birth to babies weighing 2500-3499 grams.

As shown in Figure 2, the ethnic gap in rates of cesarean section was even larger than usual for these very low-risk mothers. Focusing on low-risk Black mothers, the 16% bias observed for the larger population increased to 45%. The bias for Latinas increased from 8% to 20%. For Asian mothers, the original, barely-perceptible bias of 2% increased to 27%. For Native American Indians, the increase was much smaller, from 6% to 8%. Ironically, the limited medical services available to many Native American Indians may sometimes protect them from medicalized births.

Ruling Out a Specific Mechanism for These Effects

One potential mechanism behind these ethnic biases is scheduling (e.g., on a weekday, when risk of cesarean birth is highest). If doctors disproportionately schedule inductions or planned cesarean sections with Blacks and Latinas, for example, this could be a specific way in

which ethnic biases emerge. However, in these data ethnic minority mothers were *less* likely – not more likely – to give birth on weekdays. Further, the ethnic gap in rates of birth by cesarean section was slightly *stronger* for weekend births than for weekday births. This suggests that doctors probably are not *self-consciously* deciding to steer women of color toward artificial births.

Geographical Confounds

Are geographic confounds responsible for these findings? In a word, no. Although African American mothers are overrepresented in the South, where rates of cesarean section are high, the ethnic gap between Blacks and Whites was robust in all U.S. regions. This was the case even for extremely low-risk mothers. These results do not reflect geographic confounds.

Discussion

This report is the most comprehensive study ever conducted to address ethnic biases in the risk of giving birth by cesarean section. Even when focusing on mothers with ideal scores on 11 important birth-relevant indicators, this study identified more than a million non-Hispanic White mothers and more than 11,000 Native American Indian mothers. These sample sizes made it possible to test hypotheses that would be virtually impossible to test otherwise. The medical community must be willing to address the sensitive topic of ethnic biases as they apply to unnecessarily medicalized births.

Having said this, I must add that these data cannot identify the exact mechanisms through which biased birth outcomes occur. These CDC records do not include data, for example, on exactly how doctors spoke to White versus Latina mothers. Although I assume that unintended ethnic biases among health care providers played a role in these findings, it is possible that mothers themselves, and their loved ones, played a role, too. Medical decisions are usually a

two-way street. Consider recent increases in how many American women enjoy professional careers. In the wake of this cultural change, scheduling a birth to fit the constraints of a busy career probably sounds much more reasonable than it would have in the 1960s. In fact, these CDC data showed that the tendency to schedule births on weekdays was substantially higher for college-educated mothers than for mothers with very little education. Recognizing that mothers play a role in decisions about medicalized birth procedures is not meant to blame mothers but rather to acknowledge the complexity of birth decisions – and to draw attention to the many hurdles that must be cleared to change the status quo (Silver, Landon, Rouse, Leveno, Spong, Thom, Moawad, Caritis, Tully, & Ball, 2013).

One solution to the problem of overmedicalized births is to better educate both mothers-to-be and health care professionals about the risks that come with highly-medicalized birth practices – and the benefits of more natural approaches to childbirth. From giving women choices to the positions in which they labor to reducing the routine use of Pitocin and epidurals, there are some simple things health care providers can do to reduce rates of unnecessary cesarean sections (Patel, Peters, Murphy, et al., 2005). Any solution to the specific problem of the ethnic disparities uncovered here will require researchers and health care providers to acknowledge the reality of ethnic biases in unwarranted cesarean sections, and to look for ways to eliminate this ethnic gap. Wherever American birth practices go next, these results suggest that unnecessary cesarean sections are not only a matter of public health but also a matter of social justice.

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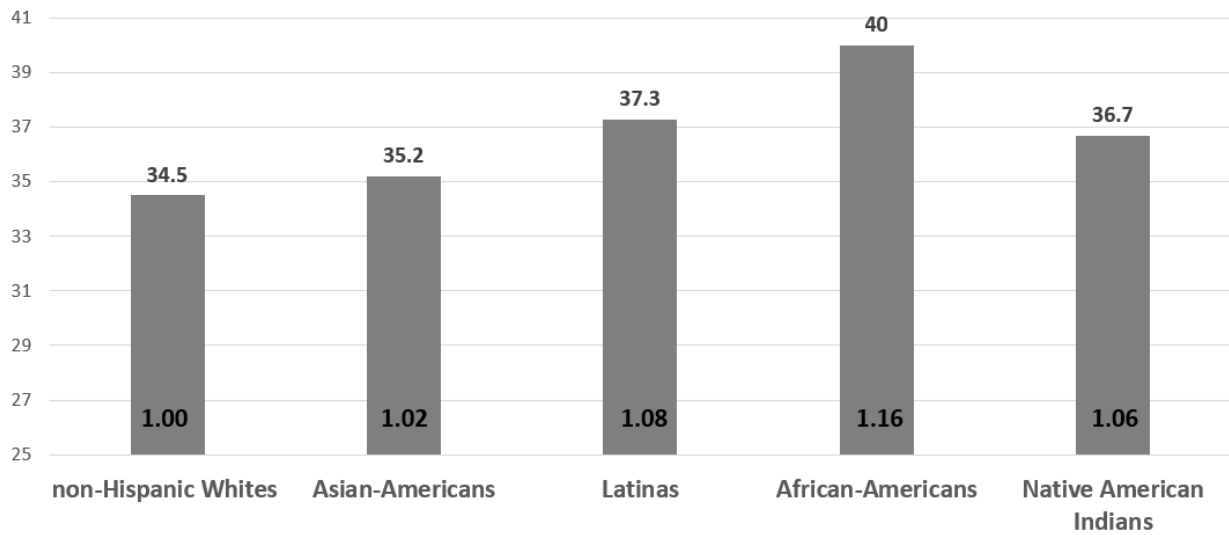


Figure 1. Ethnic gap in cesarean birth to singletons: Adult mothers with at least a high school education who began prenatal care in months 1-3 (2007-2014). Note. Because of extremely large sample sizes, all ethnic minority groups differ significantly from the 34.5% value for non-Hispanic Whites (all $ps < .001$).

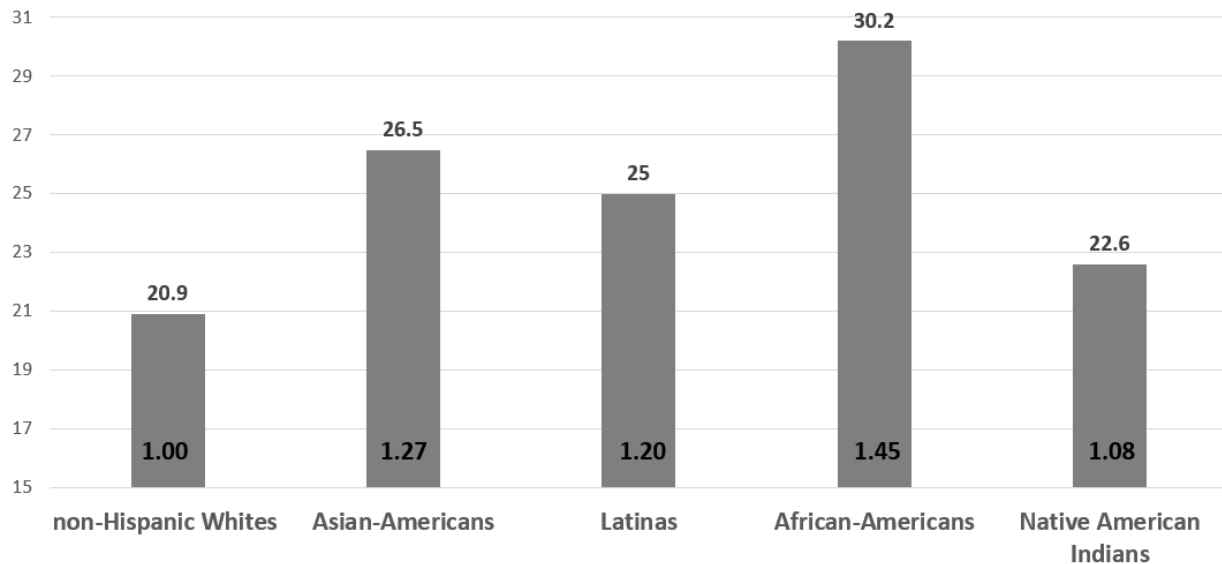


Figure 2. Ethnic gap in cesarean birth to singletons for extremely healthy, low-risk adult mothers (2007-2014). Note. All ethnic minority groups differ significantly from the 20.9% value for non-Hispanic Whites (all $ps < .001$).

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