

Racial and ethnic infant mortality gaps and socioeconomic status

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The infant mortality rate, the number of deaths in the first year of life per 1,000 live births, is a widely used indicator of population health and well-being. In 2006, the overall infant mortality rate for the United States was 6.68, but infant mortality rates differed dramatically across racial and ethnic groups. Of every 1,000 live births, there were about five deaths among babies born to non-Hispanic white mothers and about 12 deaths among babies born to black mothers. The rate for babies born to Hispanic mothers was slightly lower than that for non-Hispanic white mothers. In this study, we use five years of micro-level data from 2000 through 2004 for non-Hispanic whites, blacks, Mexicans, Puerto Ricans, Asians, and Native Americans. We examine how infant mortality is associated with several background characteristics, including maternal marital status, education, and age. Using Census Bureau data on new mothers, we also look at the association between these characteristics and income and poverty. Our results provide new insights on the role of socioeconomic differences in infant mortality rates across racial and ethnic groups.

Previous research on infant mortality, race, and ethnicity

There are clear disparities in socioeconomic status between racial and ethnic groups, and accumulating evidence that health at birth is affected by many factors.¹ It is thus unsurprising that a lot of research has examined the extent to which infant mortality rate differences are related to socioeconomic status. Results to date suggest that the two may not be closely related. For example, previous studies have found that only about one-third of the black-white gap can be accounted for by the background characteristics commonly available on birth certificates, such as maternal age, education, and marital status. However, given that the set of characteristics available on birth certificates is limited, the inclusion of additional characteristics could account for more of the black-white gap. The relatively low infant mortality rate for Hispanics also fails to support a socioeconomic status explanation because, compared to whites, Hispanics and blacks appear similarly disadvantaged on many dimensions. However, the comparison of the Hispanic-white disparity to the black-white disparity is complicated by the “Hispanic paradox,” the finding that Hispanics tend to have better-than-expected health outcomes along many dimensions.²

New work on the role of socioeconomic status in infant mortality gaps

In the new work done with my colleagues Todd Elder and John Goddeeris described here, we have reconsidered the role of socioeconomic status in infant mortality rates across a variety of racial and ethnic groups.³ We study several groups simultaneously for three reasons. First, previous research has largely focused on the large and persistent black-white gap in the infant mortality rate, but has made relatively little progress understanding its sources; a systematic comparison to other racial and ethnic gaps could help shed light on this disparity. Second, these other racial and ethnic gaps are interesting in their own right, in part because of shifting demographics in the United States.⁴ Third, we wish to examine whether the relationships between socioeconomic status disparities and infant mortality rate gaps are similar across various between-group comparisons. We expand on our earlier work, which provided a common framework for examining how covariates predict between-group differences in infant mortality rates and other related outcomes.⁵ We also make use of census data on new mothers to examine the relationship between background characteristics and income and poverty.

Results

Actual and predicted infant mortality rate gaps are shown in Figure 1. The overall actual infant mortality rate of whites in our sample was 5.35 per 1,000 live births. Three groups had a substantially higher rate: blacks at 12.35, Native Americans at 8.31, and Puerto Ricans at 7.61. In contrast, two groups had a lower rate: Mexicans at 5.04, and Asians at 4.34. Predicted infant mortality rates are calculated by reweighting the population of white infants to create counterfactual populations that have the same distributions of observable characteristics as the other groups, while retaining the white correlations from characteristics to outcomes.⁶ The difference between white infant mortality rates and these counterfactual populations are the predicted gaps.

Smaller shares of the overall black and Puerto Rican gaps are predicted as compared to the overall Native American and Asian gaps. Also, the Hispanic paradox is evident for Mexicans, but not for Puerto Ricans. The predicted gap for Mexicans falls between those of Native Americans and Puerto Ricans, although Mexicans have much lower actual infant mortality rates than these groups. That is, blacks, Mexicans, Native Americans, and Puerto Ricans all have background characteristics that are associated with infant mortality among whites, but only blacks, Native Americans,

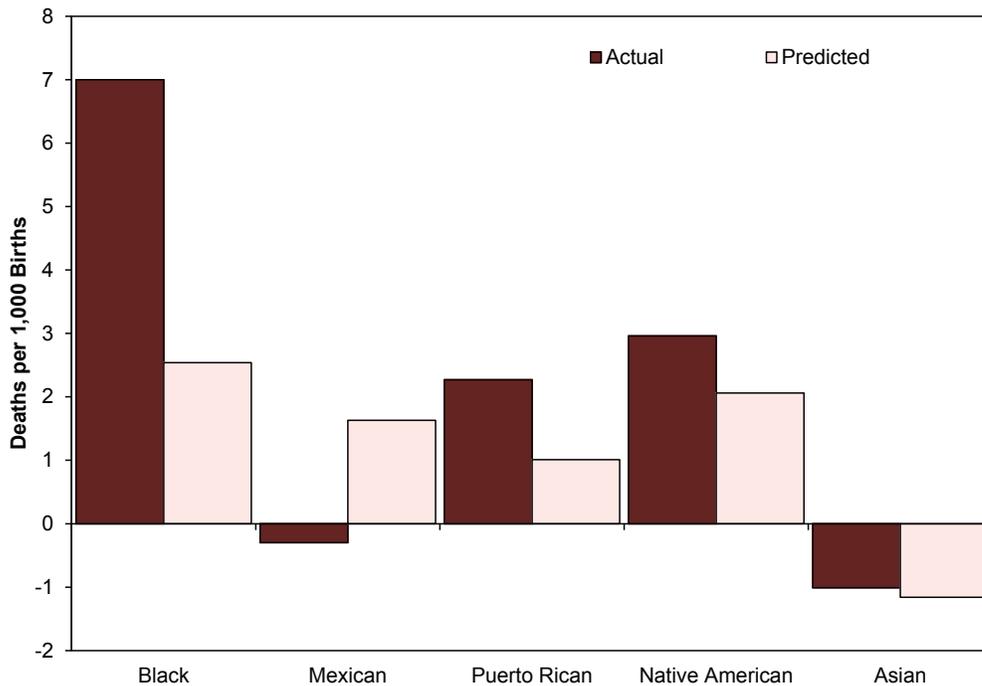


Figure 1. Actual and predicted gaps in the infant mortality rate between non-Hispanic whites and select racial and ethnic groups.

Note: The infant mortality rate for non-Hispanic whites was 5.35 deaths per 1,000 live births.

and Puerto Ricans actually have high infant mortality rates compared to those of other races and ethnicities. This prediction of a substantial positive gap when none exists represents the crux of the paradox.

The role of individual characteristics

Figure 2 shows the contribution of each background characteristic to the overall predicted gap in the infant mortality rate between whites and each other racial or ethnic group. For the four groups with relatively low socioeconomic status—blacks, Mexicans, Puerto Ricans, and Native Americans—three factors—maternal education, age, and marital status—are primarily responsible for the positive predicted gaps. If whites had the same distribution of these three characteristics as these other groups, their infant mortality rate would likely be substantially higher.⁷ For example, convergence in these three characteristics alone would reduce the infant mortality gap by nearly 2 deaths per 1,000 births for blacks, Puerto Ricans, and Native Americans.

How strongly are background characteristics related to socioeconomic status?

Our results indicate that the bulk of the predicted positive gap in the infant mortality rate between whites and some of our target racial and ethnic groups is attributable to three characteristics: maternal education, marital status, and age. To determine the extent to which these three variables are related to income differences, we use a census sample of new mothers. We used several different indicators of socioeconomic status, with similar results. Looking at household income, for example, we found that the three covariates that predict much of the gap in the infant mortality rate are asso-

ciated with large income differences. Married mothers have \$30,932 more household income than non-married mothers, and mothers with a college degree have \$63,737 more household income than mothers who have not completed high school. Large gaps remain even after adjusting for the other covariates: married mothers have \$11,937 more household income than non-married mothers, and mothers with a college degree have \$46,624 more household income than mothers who have not completed high school. Interestingly, age of the mother is also strongly related to income differences. Comparing the lowest income group to the highest income group using the adjusted results, mothers aged 35 and above have \$26,588 more income than mothers aged 20 to 24; the size of this income gap by age is even bigger than the income gap by marriage. These results suggest that all three of the main predictors of infant mortality are highly related to household income.

Census data also allow us to calculate unpredicted poverty gaps; that is, the poverty gaps remaining after subtracting out those explained by maternal education, age, and marital status. There appears to be a strong correlation between unpredicted deep poverty gaps and unpredicted infant mortality gaps, suggesting that even more of the infant mortality rate can be explained by poverty as a whole than is accounted for by the three currently available indicators of maternal education, age, and marital status.

Why is there a Hispanic paradox?

A striking result found above and in previous studies is the Hispanic paradox: the consistent finding that Hispanics do much better on health outcomes than would be predicted

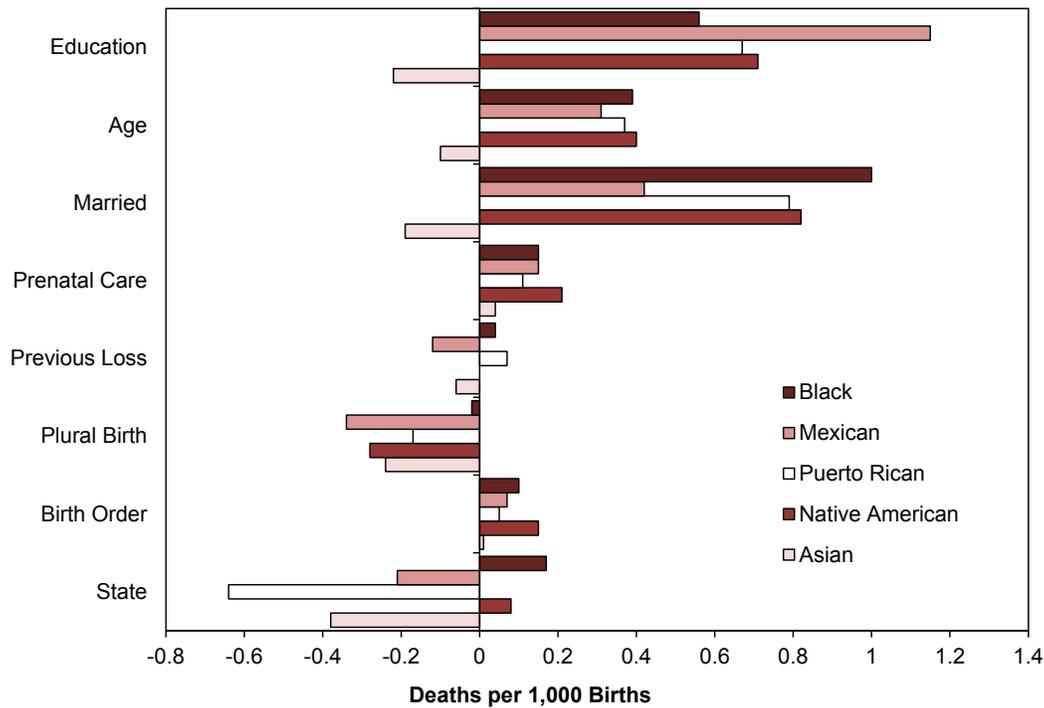


Figure 2. Predicted gaps in infant mortality rate by background characteristics and racial or ethnic group.

based on their observable characteristics. Consistent with previous studies, we found that the Hispanic paradox exists for Mexicans, but not for Puerto Ricans. There is an extensive literature showing that mothers who are foreign-born tend to have different outcomes; in particular, lower levels of infant mortality. As it turns out, once we account for the systematic relationship between being foreign-born and the infant mortality gap, the paradox largely disappears even for Mexicans: the predicted gap in the infant mortality rate is no longer substantially greater than the actual gap.

Conclusions

We found that the same three characteristics tended to predict much of the existing infant mortality gap between whites and select other racial and ethnic groups: maternal marital status, education, and age. We also showed that even the Hispanic paradox can be largely accounted for by a common finding across racial and ethnic groups: foreign-born citizens generally have lower infant mortality than do their domestic-born counterparts. Importantly, despite the fact that much of the infant mortality gaps are not predictable by background characteristics, we demonstrate that there appears to be a substantial role for socioeconomic status. Each of the three variables that predict much of the differences between groups—maternal marital status, education, and age—is strongly related to income and poverty. If whites had the distribution of these three characteristics found among the groups with the highest infant mortality rates, then the white infant mortality rate would increase by nearly 2 deaths per 1,000. This estimate represents a substantial fraction of the infant mortality rate for whites and the infant mortality

rate gap for blacks, Native Americans, and Puerto Ricans. An additional analysis that compared the unpredicted gaps in infant mortality to the unpredicted deep poverty gaps suggests that an even larger role for socioeconomic status might be uncovered if more comprehensive measures were available on birth certificates. ■

¹For a thorough review, see J. Currie, “Inequality at Birth: Some Causes and Consequences,” *American Economic Review* 101, No. 2 (2011): 1–22.

²L. Franzini, J. C. Ribble, and A. M. Keddie, “Understanding the Hispanic Paradox,” *Ethnic Disparities* 11, No. 3 (2001): 496–518.

³For a more detailed discussion of this work, see T. E. Elder, J. H. Goddeeris, and S. J. Haider, “Racial and Ethnic Infant Mortality Gaps and the Role of SES,” working paper, Michigan State University, July 2013, at https://www.msu.edu/~telder/SES_Current.pdf

⁴Between 1996 and 2006, the share of births to non-Hispanic whites and non-Hispanic blacks fell from 60.6 to 54.1 percent and from 14.9 to 14.5 percent, respectively. In contrast, the share of births to Hispanics grew from 18.0 to 24.4 percent, the share to American Indians / Alaska Natives grew from 1.0 to 1.1 percent, and the share to Asians grew from 4.3 to 5.7 percent. See J. A. Martin, B. E. Hamilton, P. D. Sutton, S. J. Ventura, F. Menacker, S. Kirmeyer, and T. J. Mathews, “Births: Final Data for 2006,” *National Vital Statistics Reports* 57, No. 7, Hyattsville, MD: National Center for Health Statistics, January 7, 2009.

⁵T. E. Elder, J. H. Goddeeris, and S. J. Haider, “A Deadly Disparity: A Unified Assessment of the Black-White Infant Mortality Gap,” *The B. E. Journal of Economic Analysis & Policy* 11, No. 1 (June 2011): 1–44.

⁶The observable characteristics are: education, age, marital status, prenatal care, previous infant death, gender, whether or not there was a plural birth, birth order, and state.

⁷Because Asians tend to have more favorable distributions of these three variables compared to whites (mothers are more likely to be married, be older, and have more education), the predicted effect is negative.