U.S. state variation in the marriage premium for infant health, 1990-2022

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Abstract

In the United States, infants born to married parents are born at higher weights than infants born to unmarried parents. Comparative work finds cross-country variation in the marriage premium for birth weight, suggesting that social context conditions the extent of infant health inequality across families. I add to this literature by using data on more than 100 million births to examine intra-U.S. heterogeneity in the married-unmarried birth weight gap. I find tremendous variation in birth weight inequality, both across states and over time. In 2022, gaps in birth weight between infants born to married and unmarried parents was greatest in Mississippi at 218g and smallest in Hawaii at 85g. Most states have seen their marital status birth weight gaps decline since 1990; New Jersey experienced the greatest decline in its gap, from nearly 250g in 1990 to under 100g in 2022. Differences in the composition of married and unmarried parents within states account for between 0-40% of gaps in birth weight between family types. Fixed effects models suggest that features of state context, such as the normativity of marital fertility and the degree of welfare generosity, may moderate the relationship between marital status and infant health. Findings provide new evidence on the scope of U.S. birth weight inequality.

Introduction

Birth weight predicts physical and socioeconomic wellbeing across the life course (Barker 2007; Braveman and Barclay 2009; Case et al. 2005). In the United States, infants born to married parents are typically born at higher weights than those born to unmarried parents. Studies typically point to differences in population composition and behaviors during pregnancy as forces driving these disparities (Buckles and Price 2013; Kane 2016; Song 2021). However, a growing body of work, much of it comparative, identifies policies, norms, and other aspects of social context as important determinants of health inequality across family structures (Panico et al. 2024; Smith-Greenaway and Clark 2017; Torche and Abufhele 2021). Much of this nascent literature compares family structure inequalities in infant health across countries. However, social context varies enormously within the U.S. Indeed, studies of adult health disparities within the U.S. have argued that the diversity in population characteristics and policy settings across U.S. states means that considering the U.S. as a single unit is ”increasingly untenable” (Montez et al. 2019, p. 623).

Building on this research, I use more than 30 years of U.S. birth records to examine intra-U.S. variation in birth weight gaps between infants born to married and unmarried parents. I first establish a series of descriptive facts that have, until now, been overlooked in the literature on the scope of spatial heterogeneity in birth weight inequalities across family structures. I then investigate the extent to which population composition produces differences across states in the degree of birth weight inequality between married and unmarried parents. The joint distributions of marital status and factors like age, parity, nativity, education, and race, as well as their associations with infant health, likely vary across states. For example, the extent of teen pregnancy reduction campaigns and the availability of high-quality healthcare to support births to older mothers may lead to state differences in the age distributions of married and unmarried parents, as well as the relationship between those distributions and infant health. These factors may also matter for change in birth weight inequalities within states over time, as selection into marriage by each variable has changed in the last thirty years—marriage has gotten less white and more educated, on average.[1]

Next, I explore the role of social context at the state level in shaping gaps in birth weight between infants born to married and unmarried parents. The first aspect of social context that I consider is the normative environment surrounding marriage and childbearing. In settings where marital fertility is common, unmarried expecting mothers may experience stronger negative social reactions to their perceived norm violations (Torche and Abufhele 2021). Scholars have found evidence that

[1]Census Table MS-1. Marital Status of the Population 15 Years Old and Over by Sex, Race, and Hispanic Origin, 1950 to the Present; Census Table AVG1. Average Number of People per Household, by Race and Hispanic Origin, Marital Status, Age, and Education of Householder: 2020

the population prevalence of family experiences, including marriage and divorce, condition the consequences of those experiences for children in Chile (Torche and Abufhele 2021), sub-Saharan Africa (Smith-Greenaway and Clark 2017), and Europe (Zeitlin et al. 2002). The second aspect of social context that I consider is the generosity of state welfare programs. Medicaid, cash disbursement, and food supplementation programs support better infant health and disproportionately serve unmarried parents (Fettling and Kearney 2025, Currie and Cole 1993, Currie and Gruber 1996, Miller and Wherry 2019). As such, their expansion (or retraction) may shrink or (grow) gaps in infant health across marital statuses.

Data and methods

Birth data from 1990-2022 come from the National Center for Health Statistics. These restricted-access records include information on birth weight, mother's marital status, and state of residence, as well as compositional factors like maternal age, parity, nativity status, race, and education. I bin education into college/no college groups because of changes in how the records report educational levels across years. I exclude twin births as they are systematically smaller than singleton births and restrict to cases with nonmissing data on all variables. I also remove all births to mothers residing in California because California did not report marital status on birth certificates after 2017. Last, I drop births to the youngest (<15 years) and oldest (>49 years) mothers. These exclusions result in an analytic sample of 106 million births, or 82% of all births in the U.S. over this period.[2]

Following Torche and Abufhele (2021), I measure the normativity of marriage as the proportion of births per state-year that occurred to unmarried mothers. Welfare program generosity indices come from Fox and colleagues (2020). These indices range from 0-100 and summarize information about benefit levels, requirements for eligibility, and administrative burdens involved in accessing benefits. Higher values indicate more generous programs. I use the indices for Medicaid, TANF, and SNAP generosity and average them to create an overall indicator of welfare program generosity for each state in each year where data is available (2000-2016). I standardize this variable for ease of interpretation.

Analyses include descriptive comparisons, Kitagawa-Oaxaca-Blinder decompositions, and fixed-effects regression models.

[2]The dropped California births account for 77% of the births not covered by this study.

Results

Figure 1 shows the national gap in birth weight between married and unmarried parents in each year from 1990-2022. The gap declined by about 50 grams over this period, with the entire decline concentrated in the 1990s and early 2000s. Since 2007, the married-unmarried birth weight gap has been largely stable at around 150g. As shown in Figure 2, declining average birth weight for infants born to married parents (rather than rising average birth weight for infants born to unmarried parents) has driven this decrease in inequality.

Figure 3 displays the married-unmarried birth weight gap in each state in 1990 and 2022. In 1990, the gap was largest in Michigan (278 grams) and smallest in Montana (79 grams). In 2022, the gap was largest in Mississippi (218 grams) and smallest in Hawaii (85 grams). To better show the geographic distribution of birth weight inequality and the position of each state in the birth weight gap distribution, Figure 4 maps the married-unmarried birth weight gap in 1990 and 2022 in terms of deciles. In both 1990 and 2022, Southern and Midwestern states make up most of the upper end of the birth weight gap distribution. Some states moved down in the distribution (e.g., their married-unmarried birth weight gap declined relative to other states). For example, in 1990 New York and Florida ranked in the 60th percentile of the birth weight gap. In 2022, they ranked in the 20th and 40th percentile, respectively. Other states moved up in the distribution, including Wisconsin, Louisiana, and Missouri, each of which moved from the 70th to the 90th percentile.

Figure 5 graphs the change in the married-unmarried birth weight gap in each state from 1990-2022. Nearly all saw their birth weight gap decline. New Jersey experienced the largest decline, from 247 grams in 1990 to 98 grams in 2022, a decline of 149 grams. Four states saw small increases in their married-unmarried birth weight gap, ranging from 3 grams in Wyoming to 41 grams in North Dakota.

Decomposition results

I decompose gaps in low birth weight, rather than in continuous birth weight, for computational efficiency. Figure 6 graphs the results of decompositions of the married-unmarried gap in low birth weight in each state in 1990-1995 and 2017-2022. The bars represent the percent of the gap attributable to group differences in compositional factors included in the model (age, parity, nativity status, education, and race). States are sorted by their 2017-2022 values. This figure shows dramatic variation in the contribution of these demographic factors to the married-unmarried low birth weight gap across states. Take the comparison between Mississippi and Michigan. Both states have relatively large gaps in the risk of low birth weight between married and unmarried parents (Mississippi's is the largest and Michigan's is the 6th largest). However, differences across married and unmarried parents in compositional factors account for more than twice the amount of the gap in Mississippi than in Michigan (37% vs. 17%).

It is also notable that in no state does the distribution of compositional factors explain more than half of the gap in low birth weight between infants born to married and unmarried parents. Further, the proportion explained by compositional factors declines in all but one state (New York) over time. Practically, this means that group differences in the distribution of age, parity, nativity status, education, and race became less important for explaining the gap in infant health between married and unmarried parents. The extent of change in the role of compositional factors varies across states, ranging from a decline of 25 percentage points in Idaho to an increase of a little over one percentage point in New York.

Figure 7 focuses on the more recent period. Each panel takes one of the five compositional factors and shows the proportion of the marital status gap in low birth weight that it explains. Panel A shows that the concentration of White parents among the married group makes a significant contribution to the marital status low birth weight gap in many states. For example, White parents in Louisiana are far more likely to be married, and this distributional difference contributes a third of the 5.3 percentage point gap in low birth weight between married and unmarried parents in that state. The proportion of the low birth weight gap attributable to differences in the distribution of race across groups ranges from -0.8% in Vermont to 36% in Mississippi. At the other extreme is maternal age (Panel B). In each state, differences in the distribution of maternal age across marital groups favor unmarried parents, making the gap in low birth weight smaller than it otherwise might be. Group differences in the maternal age distribution contribute from -0.05% of the gap in Vermont to -22% of the gap in Texas. This pattern reflects unmarried parents' younger average age—advanced maternal age (>35 years) is far more common among married parents and is strongly associated with low birth weight.

Group differences in the distributions of education, parity, and nativity fall somewhere between race and age in the weight of their contributions to the gap in low birth weight. Compared to differences in the distribution of race and age, these variables are relatively less important for explaining differences in low birth weight across marital statuses. Their contributions also vary less across states—standard deviations of the coefficients for these three variables are all around 0.02, compared to 0.04 for maternal age and 0.09 for race. The distributions of education, parity, and nativity all favor married mothers, who have higher education levels, are less likely to be having their first child, and are more likely to be immigrants.

Regression results

Table 1 reports regression results. Model 1 controls only for year, while Model 2 adds in the individual-level factors included in the decompositions. For both continuous birth weight (Panel A) and low birth weight (Panel B), sociodemographic factors account for 40-50% of the variation across married and unmarried parents. These results are in line with those from the decompositions. Models 3 and 4 in each panel report results from two-way fixed effects models. Net of unobserved time trends and time-invariant heterogeneity across states, I find that the marital status gap in birth weight increases as marital fertility becomes more common (Model 3) and decreases as welfare generosity increases (Model 4). Results for low birth weight show the same patterns but are insignificant at $p<0.05$. These results are in line with my expectations outlined above and with previous work (Currie and Gruber 1996; Smith-Greenaway and Clark 2017; Torche and Abufhele 2021; Zeitlin et al. 2002).

Discussion

This paper provides new evidence on the scope of infant health inequality between married and unmarried parents across the U.S. I show that the degree of inequality in birth weight between married and unmarried parents varies extensively across states and that population characteristics are responsible for far less than half of marital status gaps in infant health in most cases. Features of state context, such as the normativity of marital fertility and the degree of welfare state generosity, appear to moderate the relationship between marital status and infant health. These findings are in line with studies that show variation across states in other measures of health (Montez et al. 2020) and in inequality in health (Montez et al. 2019). Overall, results from this paper expand knowledge on the state of population health disparities in the U.S., add to the growing internatiol literature on marriage and infant health, and emphasize the importance of a contextual lens for understanding the implications of family structure for children's life chances.

In next steps, I will incorporate other measures of state context, including time-varying state-level controls to account for possible confounders. I will also conduct decompositions of changes in the married-unmarried birth weight gap over time within each state. Last, I will examine the role of medical intervention during birth. Increases in the incidence of induced labor and cesarean deliveries are at least partly responsible for the overall decline in U.S. birth weight since the 1990s (Tilstra and Masters 2020). If cesarean deliveries are correlated with demographic factors unevenly split across married versus unmarried groups, such procedures could contribute to changes in the birth weight gap. Future iterations of this paper will include delivery method in decompositions to examine its role in generating birth weight gaps across marital statuses.

Figure 1: Gap in birth weight between infants born to married and unmarried parents, all U.S. births, 1990-2022

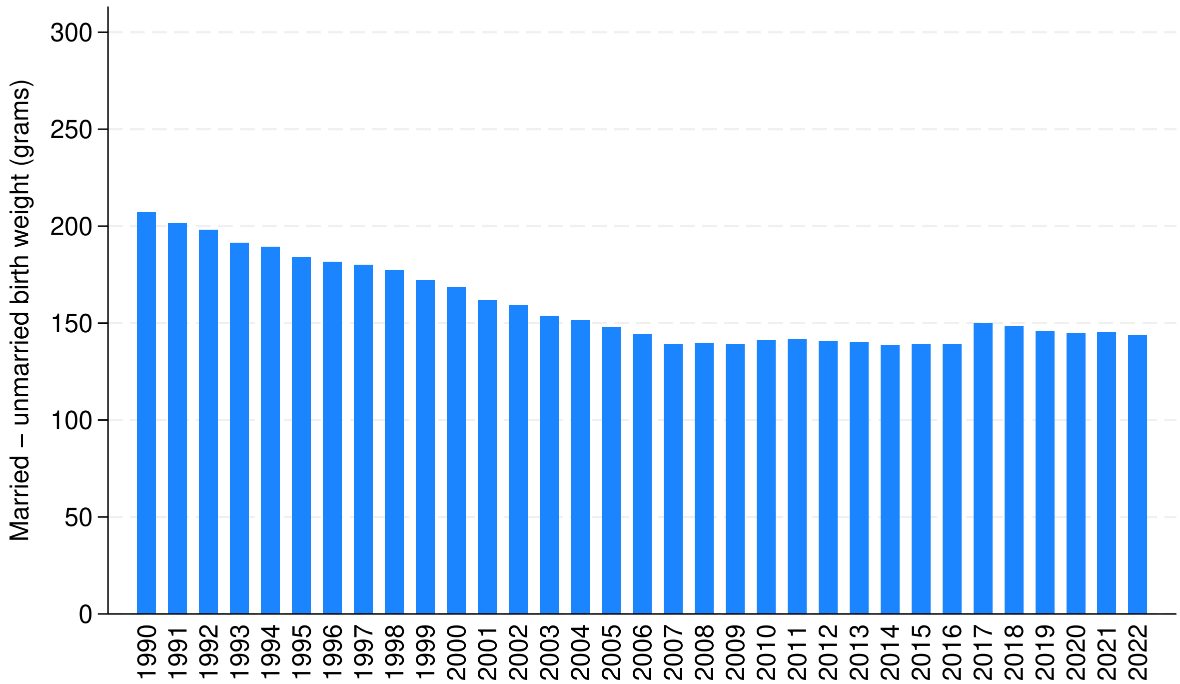


Figure 2: Average birth weight for infants born to married and unmarried parents, all U.S. births, 1990-2022

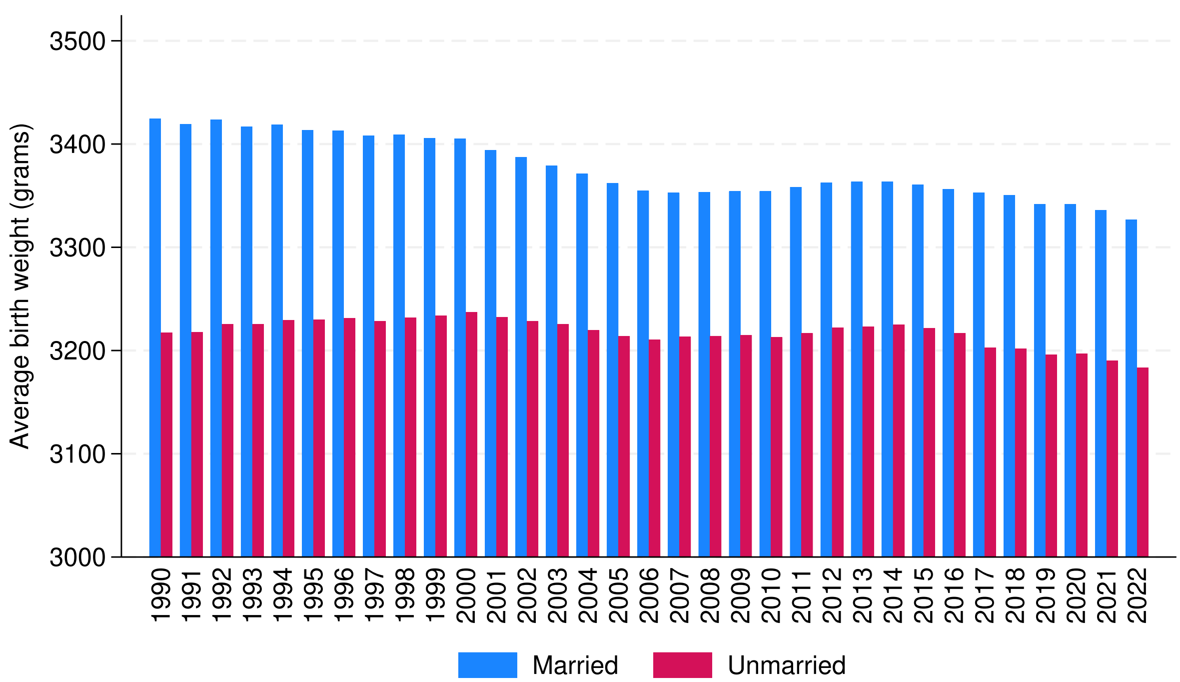
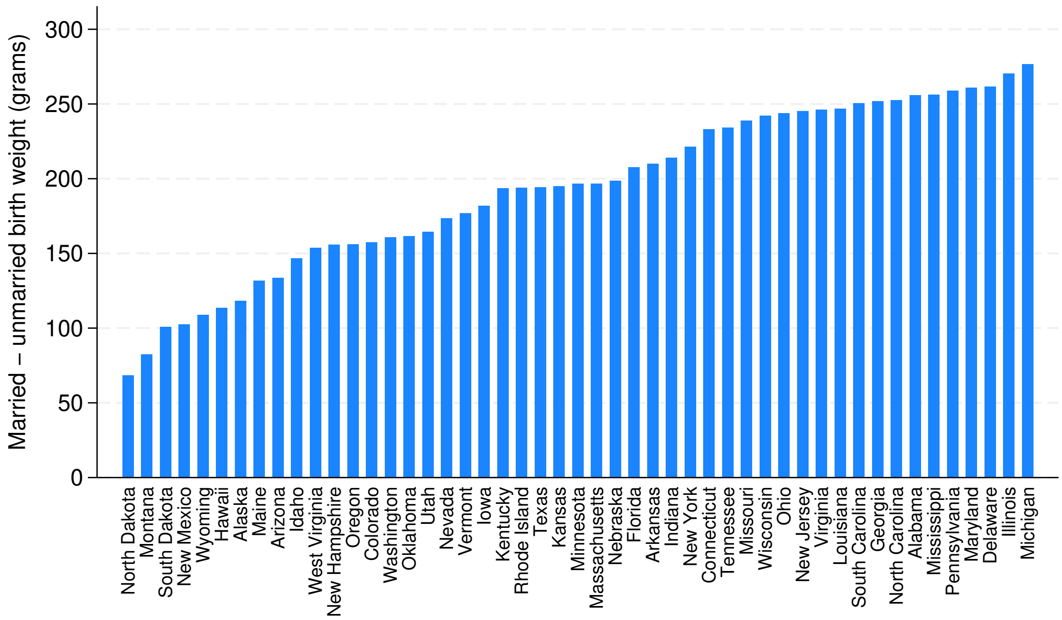


Figure 3: Gap in birth weight between infants born to married and unmarried parents by state, 1990 and 2022

(a) 1990



(b) 2022

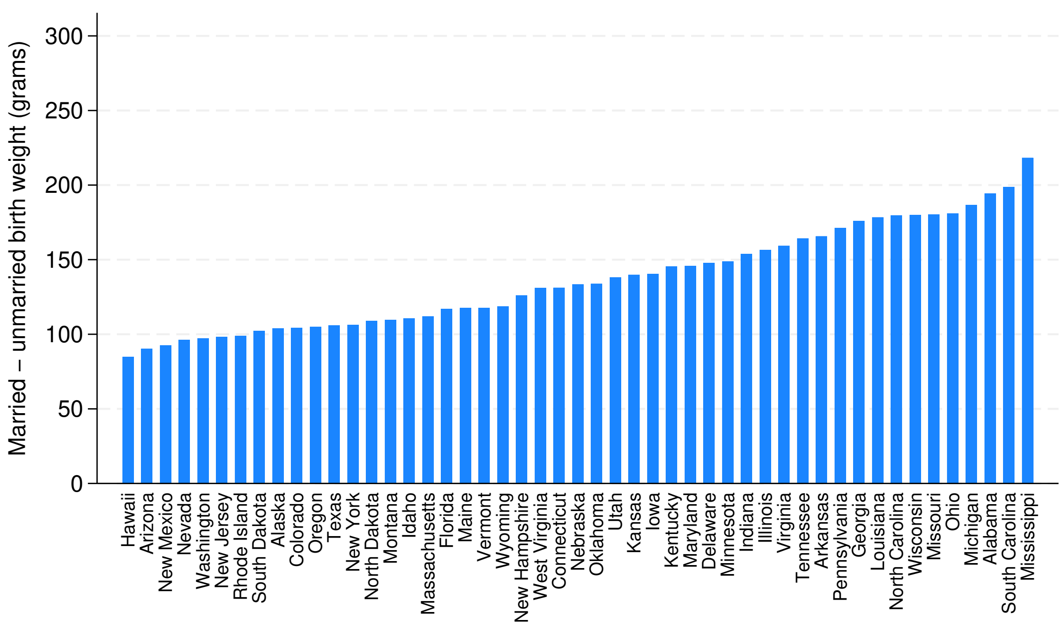
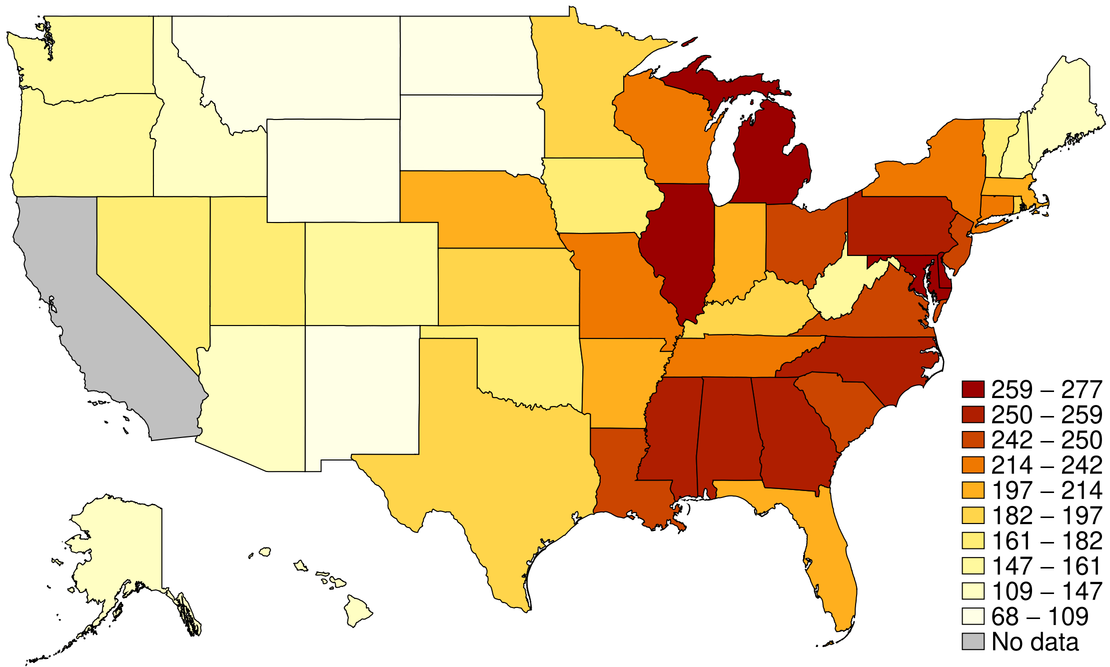


Figure 4: Deciles of married-unmarried birth weight gap across states (grams)

(a) 1990



(b) 2022

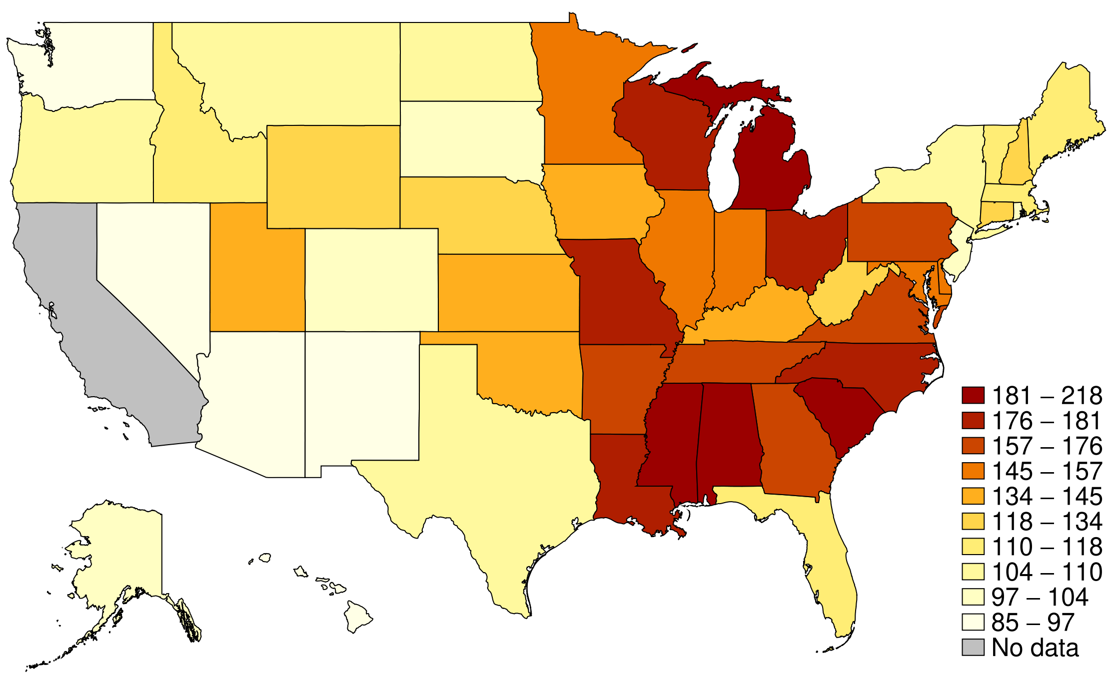


Figure 5: Change in birth weight gap between infants born to married and unmarried parents by state, 1990-2022

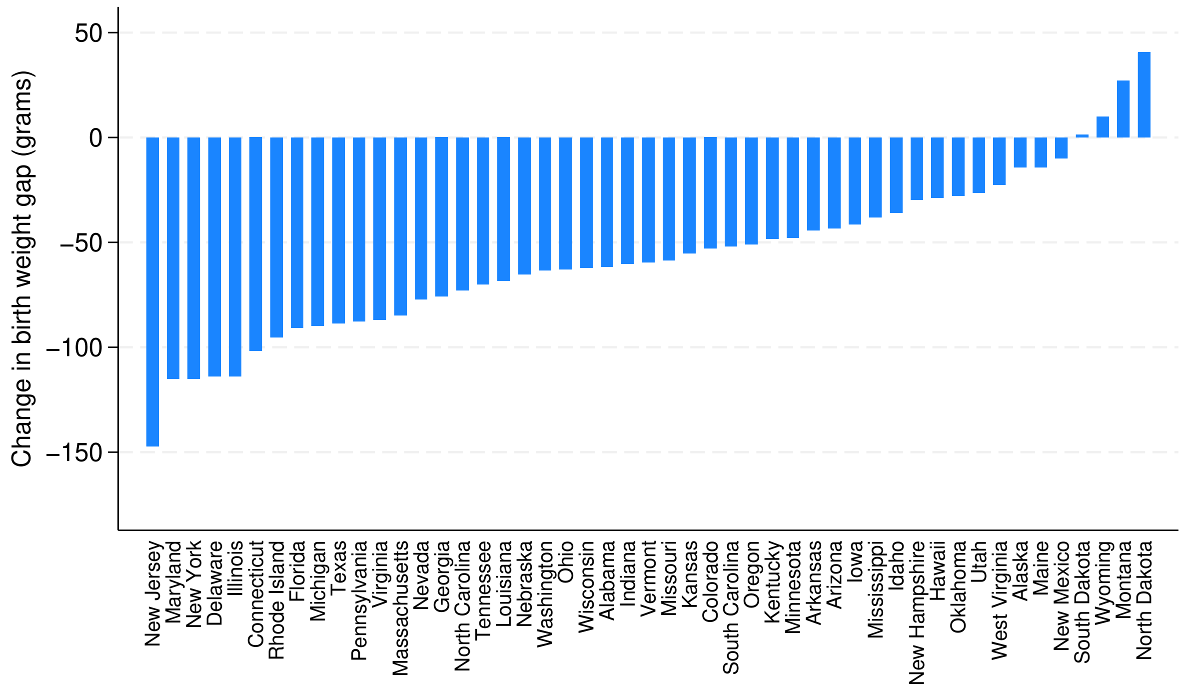


Figure 6: Proportion of gap in low birth weight risk due to compositional factors, 1990-1995 and 2017-2022

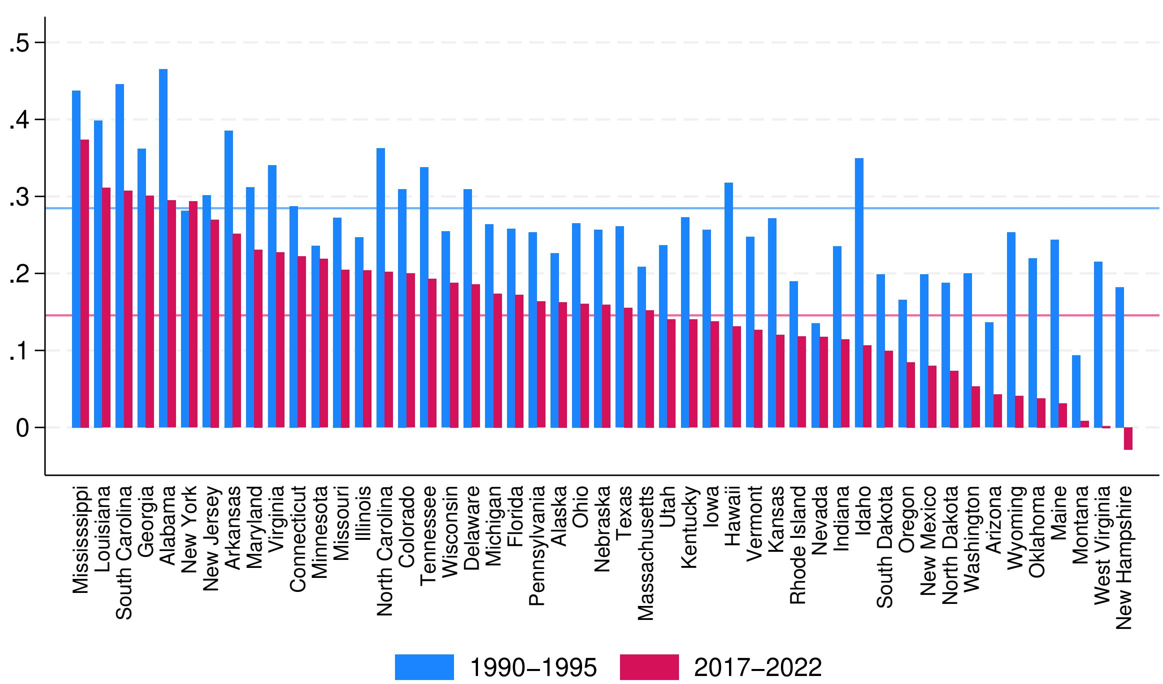
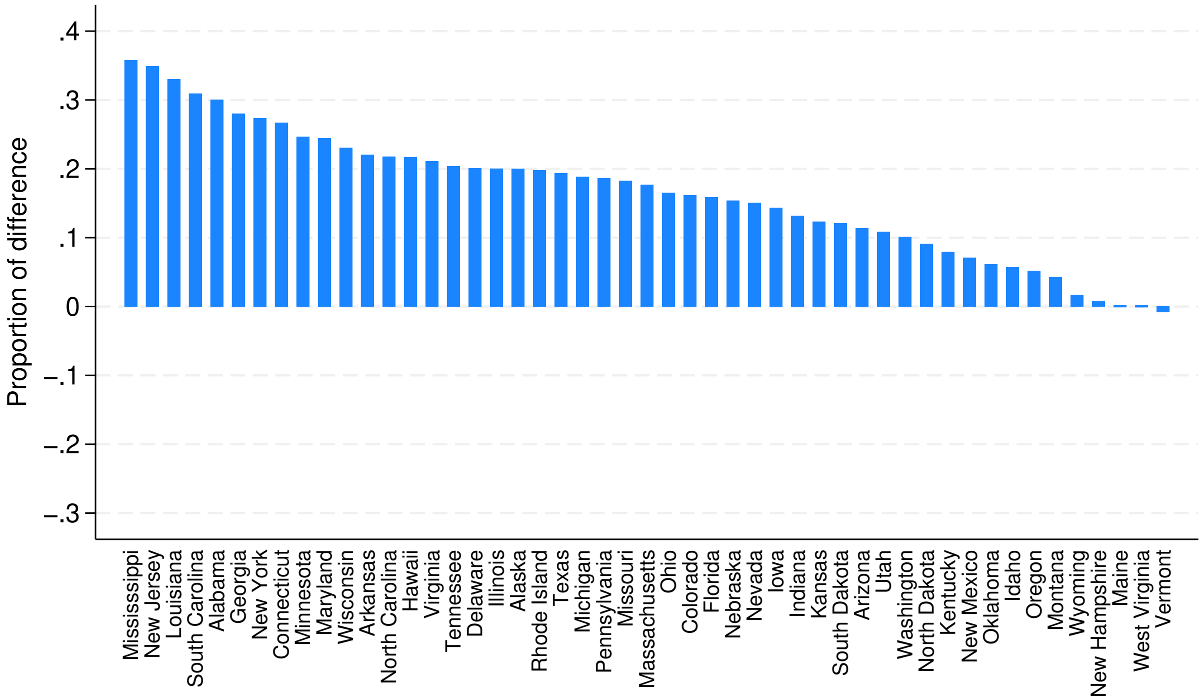
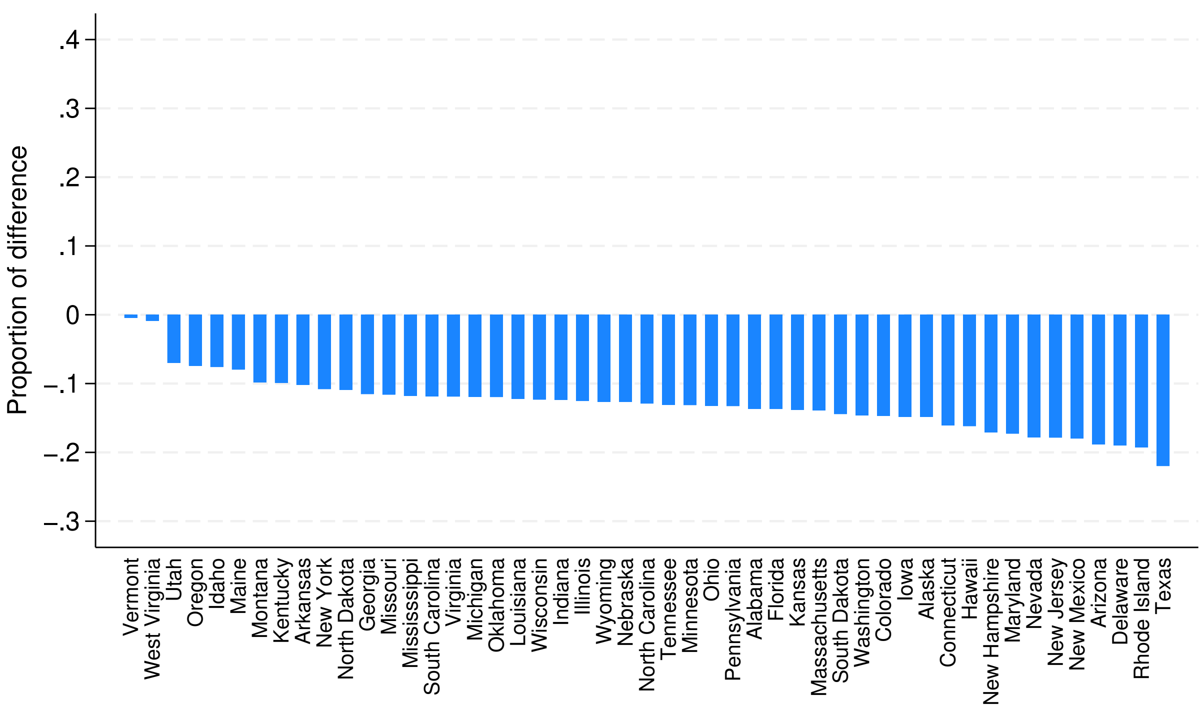


Figure 7: Proportion of gap in low birth weight risk due to individual compositional factors, 2017–2022 period

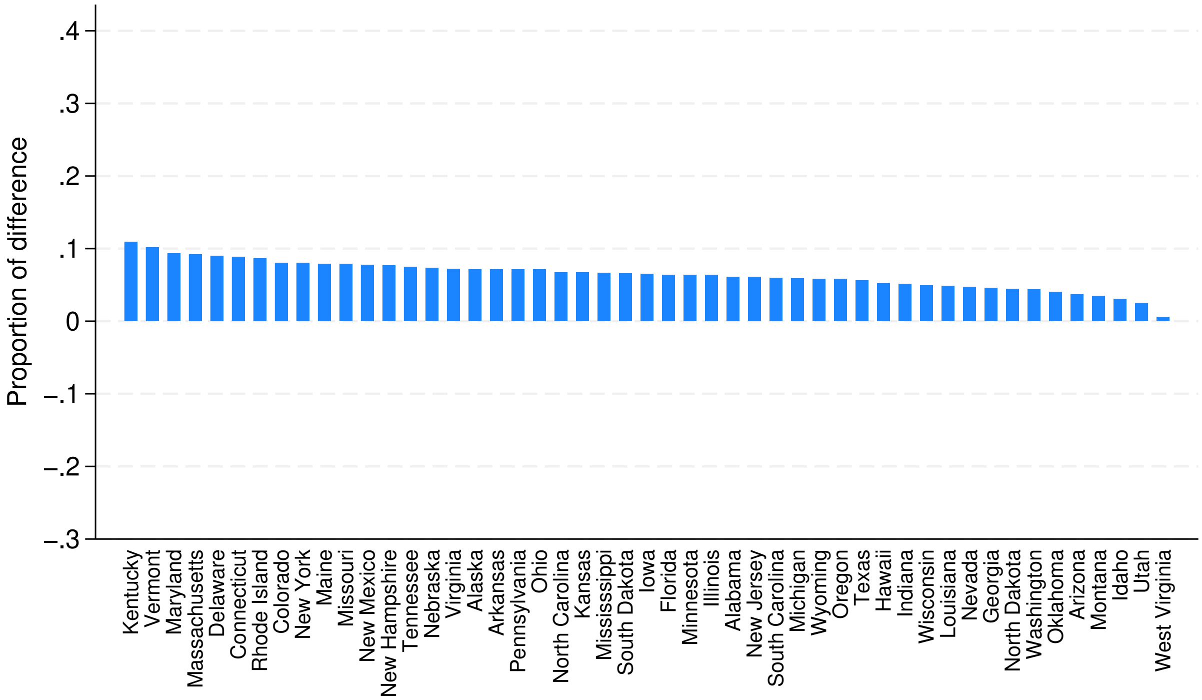
(a) White



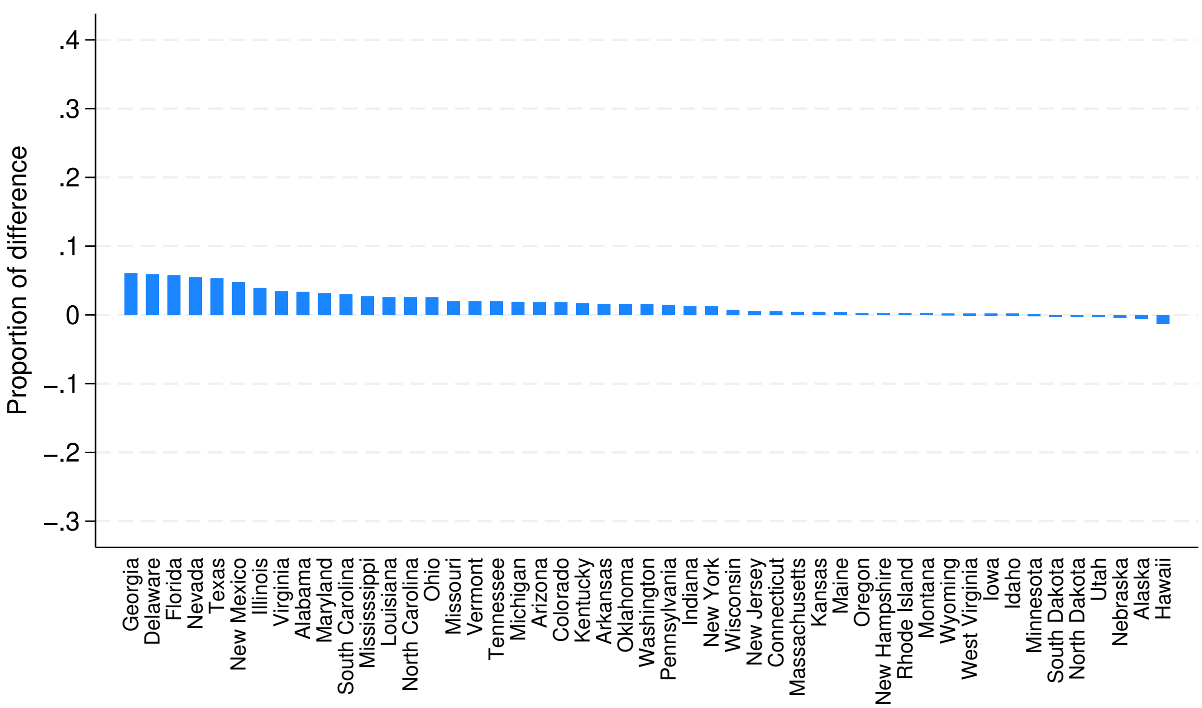
(b) Age



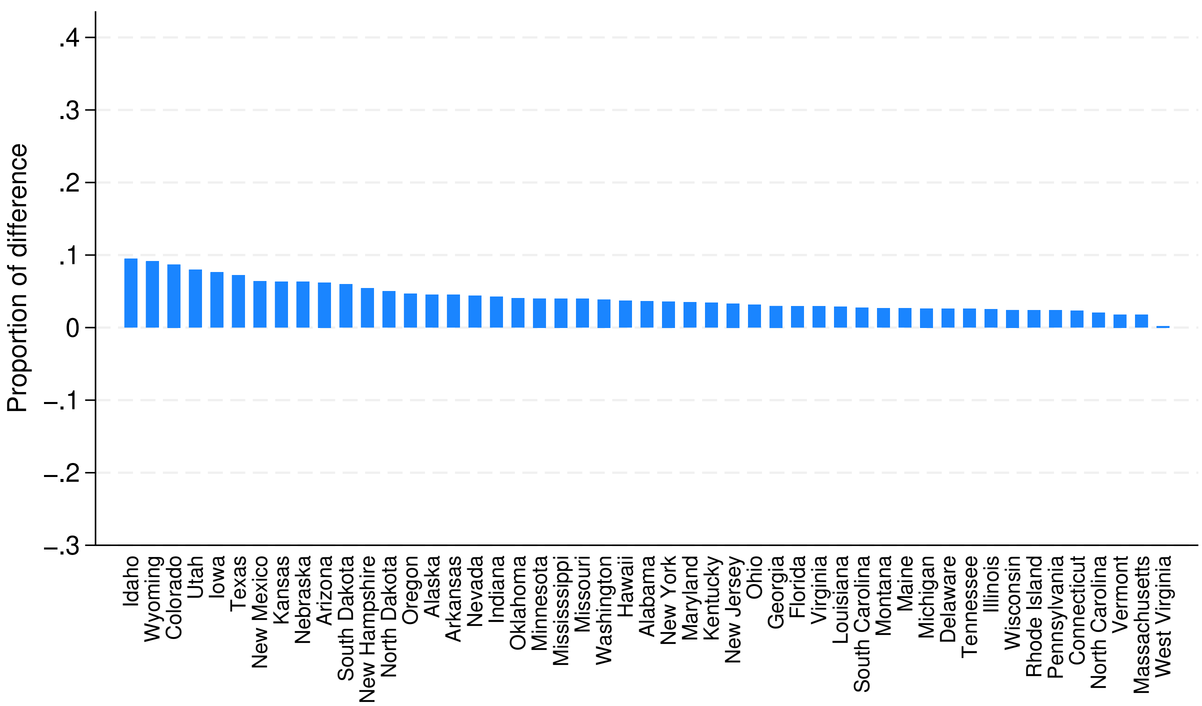
(c) Education



(d) Nativity



(e) Parity



Proportion of difference
.4
.3
.2
.1
0
–.1
–.2
–.3
Idaho
Wyoming
Colorado
Utah
Iowa
Texas
New Mexico
Kansas
Nebraska
Arizona
South Dakota
New Hampshire
North Dakota
Oregon
Alaska
Arkansas
Nevada
Indiana
Oklahoma
Minnesota
Mississsippi
Missouri
Washington
Hawaii
Alabama
New York
Maryland
Kentucky
New Jersey
Ohio
Georgia
Florida
Virginia
Louisiana
South Carolina
Montana
Maine
Michigan
Delaware
Tennessee
Illinois
Wisconsin
Rhode Island
Pennsylvania
Connecticut
North Carolina
Vermont
Massachusetts
West Virginia

Table 1: Regression models of continuous birth weight and low birth weight on marital status, 1990-2022

	Model 1	Model 2	Model 3	Model 4
Panel A: Birth weight				
Married	161.0***	78.3***		
	(10.6)	(5.5)		
Proportion married			-12.2	
			(34.0)	
Married X Prop. married			80.3**	
			(27.6)	
Welfare generosity				2.20
				(2.0)
Married X Welfare generosity				-6.94*
				(3.5)
Individual controls		X	X	X
Panel B: Low birth weight				
Married	-0.037***	-0.022***		
	(0.003)	(0.001)		
Proportion married			-0.006	
			(0.009)	
Married X Prop. married			-0.007	
			(0.007)	
Welfare generosity				-0.001
				(0.001)
Married X Welfare generosity				0.001
				(0.001)
Individual controls		X	X	X

Note: All models control for year. Models 2-4 control for maternal age, parity, nativity status, education, and race. Models are weighted by the number of births to each state-year-age-parity-education-race group. Model 4 restricted to 2000-2016.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

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