Assortative Mating as a Source of Social Mobility? Considering Childbearing Trends by Racial and Ethnic Homogamy or Heterogamy of Unions in the U.S. 2000-2015

Margaret M. Weden,* Michael S. Rendall,** Joey Brown,** and Polina Zvavitch,**

Abstract (150/150 words):

Trends in assortative mating help illuminate changes in the malleability of social boundaries that can in turn fuel social mobility. Knowledge about assortative mating's role in social mobility, however, is seriously limited by an absence of evidence about the patterns of childbearing by couples whose union crosses social boundaries. We examine whether rates of childbearing differ, and have changed over time, by couples' racial/ethnic heterogamy using the American Community Survey (ACS), 2001-2016. In completed analyses combining the ACS and Survey of Income and Program Participation, we will also evaluate the role of educational attainment and labor market participation in explaining these differentials. Findings will help illuminate whether "status exchanges" across racial/ethnic and educational status hierarchies help to facilitate couple-based strategies for negotiating work-family constraints on childbearing. The study thus helps to provide a more complete understanding of the role of assortative mating in the reproduction of social status over generations.

*RAND Corporation, **University of Maryland, College Park

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Extended Abstract

Literature on assortative mating has with very few exceptions focused on what we would consider the first stage of 'mating', i.e., the likelihood of marriage and (recently) cohabitation occurs in which partners are unmatched, or heterogamous, on a key social characteristic (e.g., see Schwartz 2013). Little is known about whether heterogamous couples are more, or less likely than homogamous couples to actually have children. For example, only a few studies that contrast differentials in childbearing that occurs within unions by the various pairings of each partner's racial and ethnic origins (Fu 2008; Qian and Lichter 2018; Atkinson et al. 2001). About as many studies have explored a blunter assessment of childbearing that reflects assortative mating by contrasting the likelihood of interracial childbearing, regardless of the particular racial/ethnic pairing (Shen 2018, Gordon & Reber 2018, Parker & Madans 2002). Consequently, little is known, and little theory exists to guide hypotheses, about whether the type of heterogamous pairing by race and ethnicity is important for likelihood of childbearing.

Addressing the gaps in the literature on interracial and interethnic childbearing is important to understanding the growing racial and ethnic complexity of the U.S. population. First, to the extent that racial and ethnic origins correlate with positions within the social hierarchy, the likelihood of childbearing within heterogamous unions that cross these social cleavages provides additional evidence (beyond the evidence gleaned from patterns of interracial or interethnic marriage and cohabitation) for the relevance this social cleavage (Fu 2008). Secondly, to the extent that individuals improve the social position of their children by ensuring that the other parent has a race/ethnicity different from their own, the likelihood of childbearing within heterogamous unions determines the likelihood of social mobility.

This study examines the trends in childbearing of unions by the racial and ethnic composition of the male and female partners. In the preliminary analyses reported here, we explore the differences in childbearing between homogamous and heterogamous marital unions for the three largest racial and ethnic origin statuses in the U.S. (e.g., non-Hispanic White, NHW; non-Hispanic Black, NHB; and Hispanic) using data from the American Community Survey. We also evaluate whether the differentials in childbearing by the racial/ethnic origins of the male and female partners have changed over the first 15 years of the 21st century (2000-2015).

Data and Methods

In these preliminary analyses we use the American Community Survey (ACS), years 2001-2011 and 2013-2016 obtained from IPUMS (Ruggles et al 2015) to compare the likelihood of childbearing in the previous year within marital unions by the characteristics of both partners. The event of childbearing is identified using the question asked of all 15 to 50 year old women in the ACS household as to whether she gave birth in the last 12 months. In 2012, values of the variable for whether a woman gave birth in the last year are suppressed in the ACS public use version for some geographic areas, leading to our omitting this year to maintain national representativeness. Because we are interested in childbearing patterns from 2000 through the most recent available year of ACS data, we employ the data from the ACS for the years 2001 through 2016, or correspondingly birth years 2000 through 2015. Characteristics assessed for both the male and female partner in the union include age, race/ethnicity, and educational attainment. In the final model we will employ data from men and women in married and cohabiting unions, but for these preliminary results we present analyses of married unions. The ACS has very large sample sizes, allowing for assessment of our research questions.

We estimate logistic regression models that predict the likelihood of a childbirth as a function of the sociodemographic characteristics of the female and male partners in the union, parity of the female

partner, and the year of the childbirth. Sociodemographic characteristics include racial/ethnic origins (non-Hispanic white, non-Hispanic black, and Hispanic), age, age squared, and educational attainment. We explore the improvement to the fit of the model of including interactions between indicators for the racial/ethnic origins of each partner, thereby capturing potential differences between homogamous and heterogamous unions by the specific racial/ethnic pairings. We also evaluate whether the associations with race/ethnicity of each partner and their interaction (which capture racial/ethnic pairings) change over time. Specifically, this entails 2-way interactions between birth year and male and female partner's race/ethnicity and 3-way interactions between each partner's race/ethnicity and the racial/ethnic pairing of the partner.

The ACS employs a complex sampling scheme (i.e., with strata and PSU) and sample weights which we address in our statistical anaylses using the 'svy' commands in Stata. In order to evaluate the improvement in model fit of incorporating additional parameters (e.g., interactions for racial/ethnic pairings and change in associations with these pairings over time), we employ adjusted Wald tests that are adjusted for the complex sampling scheme. In order to estimate the predicted probabilities of childbearing (and functions thereof such as differences and differences in differences) by couple characteristics and birth year, we employ the Stata 'margins' commands. The predicted probabilities and the functions of predicted probabilities are estimated for subpopulations (e.g., couples by the racial/ethnic pairing of the male and female partners) setting all characteristics to their mean. Standard errors and confidence intervals are estimated by the Delta Method.

FINDINGS

In Model 1, we fit a model with just the woman's characteristics and find that: childbearing is more likely among NHB women and, especially, Hispanic women than NHW women; childbearing is positively associated with women having both very low education (less than high school) and increasingly higher than high school attainment (e.g., some college, BA, greater than BA); childbearing is negatively associated with women's parity; and childbearing has an positive association with age that diminishes with increasing age. (See Model 1, Table 1)

[Table 1 ABOUT HERE]

In Model 2, we add the characteristics of the male partner and observe the significance of both partner's characteristics, and thereby assortative mating, for childbearing (See Model 2, Table 1). Inclusion of the male partner's characteristics significantly improves the model (See Model 2, Table 2). Controlling for male partner's race/ethnicity has dramatic consequences for associations of childbearing with women's race/ethnicity. In contrast with Model 1, we see that higher likelihood of childbearing among NHB and Hispanic women is no longer observed (NHB) or is substantially reduced (by a factor of 5 in the log-odds; Hispanic), holding partner's race/ethnicity constant. The strong positive associations of race/ethnicity with childbearing are now, however, observed for NHB and Hispanic men. In other words, associations of childbearing with race/ethnicity appear to be driven by men's racial/ethnic origins rather than women's. The strong associations in Model 1 with women's race/ethnicity appear to be explained by the fact that most of these women are married to men with the same racial/ethnic origins (i.e., there is assortative mating on race/ethnicity), and that childbearing is much higher among NHB and Hispanic men than NHW men. In Model 2, we also observe the importance of assortative mating on educational attainment for childbearing. We find that increases in the likelihood of childbearing for increments of education beyond high school are larger for men than women. For example, comparing Model 1 and Model 2, we observe that associations with women's education are about half as large for having a BA or greater than a BA relative to high school education. Finally, by considering both partner's age, we find that childbearing is more strongly influenced by women's than men's age.

[TABLE 2 ABOUT HERE]

In Model 3 and Model 4, we add interactions between the racial/ethnic origins of the female and male partners to evaluate potential differences between homogamous and heterogamous couples, with Model 4 also evaluating potential change over time. Because the associations between childbearing and all other covariates (i.e., age, parity, and educational attainment) and because coefficients for 3-way interactions are difficult to interpret, we do not present the coefficients for Model 4 in Table 1, but rather report the Wald Tests for improvement to the model from these interactions (Table 2) and report predicted probabilities and their differentials in the Figures that follow.

Considering Table 2, in the simplest assessment of racially heterogamous partnership in Model 3, we find that improvement in Model 2 that is achieved by including interactions between the partner's racial/ethnic origins does not reach statistical significance (Model 3, Table 4). That said, we see in Table 1 that interactions capturing the differences in the likelihood of childbearing for NHB women that depend on their partner's racial ethnic origins are each individually statistically significant (Table 1, row 19 and 20), and together their contribution to the model nearly reaches statistical significance (Table 1 row 25 or Table 2 row 2; p=0.055). In addition, when we include interactions (with year) to capture potential change in associations with each partner's race/ethnicity and their interaction (i.e., race/ethnicity of the female* year, race/ethnicity of the male * year, and interaction female and male race/ethnicity * year), this Model 4 is a significant improvement over both Model 3 (Table 2, row 3; p=0.000) and Model 2 (Table 2, row 7; p=0.011, Table 2).

In Table 3 and Figure 1, we display predicted probabilities of childbearing by male and female partner's race/ethnicity using the best fitting model. This final model, Model 4, estimates the likelihood of childbearing as a function of: the race/ethnicity, age, age-squared, educational attainment and parity of the female and male partners; the racial/ethnic pairing of the union; the year of the birth; and the potential changes over time in associations by racial/ethnic pairings.

[TABLE 3 ABOUT HERE]

First, beginning with homogamous marriages, we find that in 2000 Hispanic couples had the highest fertility, and there were no differences in childbearing between homogamous NHW couples and homogamous NHB couples. But by 2015, childbearing of homogamous NHB couples had increased to become statistically indistinguishable from homogamous Hispanic couples, and homogamous NHW couples alone had the lowest fertility. These trends are depicted in Figure 1.

[FIGURE 1 ABOUT HERE]

Secondly, we observe that the relevance of interracial and interethnic partnership versus homogamous partnership for childbearing depends on the race/ethnicity of the homogamous couple and the time period. In 2000, there are statistically significant differences in childbearing between heterogamous and homogamous couples, but this does not vary by race/ethnicity of the homogamous couple. For example, the marginal increase in the likelihood of childbearing for NHW women in an interracial (NHB husband and NHW wife) marriages versus same race marriages (NHW husband and wife) of 0.006 (95% Confidence Interval (CI): 0.000, 0.011) is nearly equal to the marginal increase in childbearing that NHB women experience if they marry a NHB man rather than NHW man (0.005; 95% CI: -0.001, 0.012). In fact, the relative difference is statistically indistinguishable (0.000; 95% CI: -0.009, 0.009). Similar findings are observed for interethnic versus same ethnicity childbearing for Hispanics and NH Whites. These findings highlight the importance of partnership with a minority (NHB or Hispanic) man for increasing the likelihood of childbearing, whether or not the union is heterogamous or homogamous.

By 2015, however, the patterns of changed. It remains the case that childbearing among interracial couples differ significantly than childbearing among same race couples. However, the relative increase in the likelihood of childbearing for NHB women in a homogamous union rather than a heterogamous union with a NHW man (0.012; 95% CI: 0.007, 0.018) is significantly larger than the increase in childbearing for a NHW woman in a heterogamous union with a NHB man compared with a NHW in a homogamous union (0.005; 95% C.I.: 0.000, 0.009). Specifically, the marginal difference in the probability of childbearing in heterogamous versus homogamous unions for NHB versus NHW women is 0.009 (95% CI: 0.001, 0.017). Underlying these trends is the finding that increases in childbearing over time were greater among racially homogamous NHW and NHB unions than heterogamous unions.

[TABLE 3 ABOUT HERE]

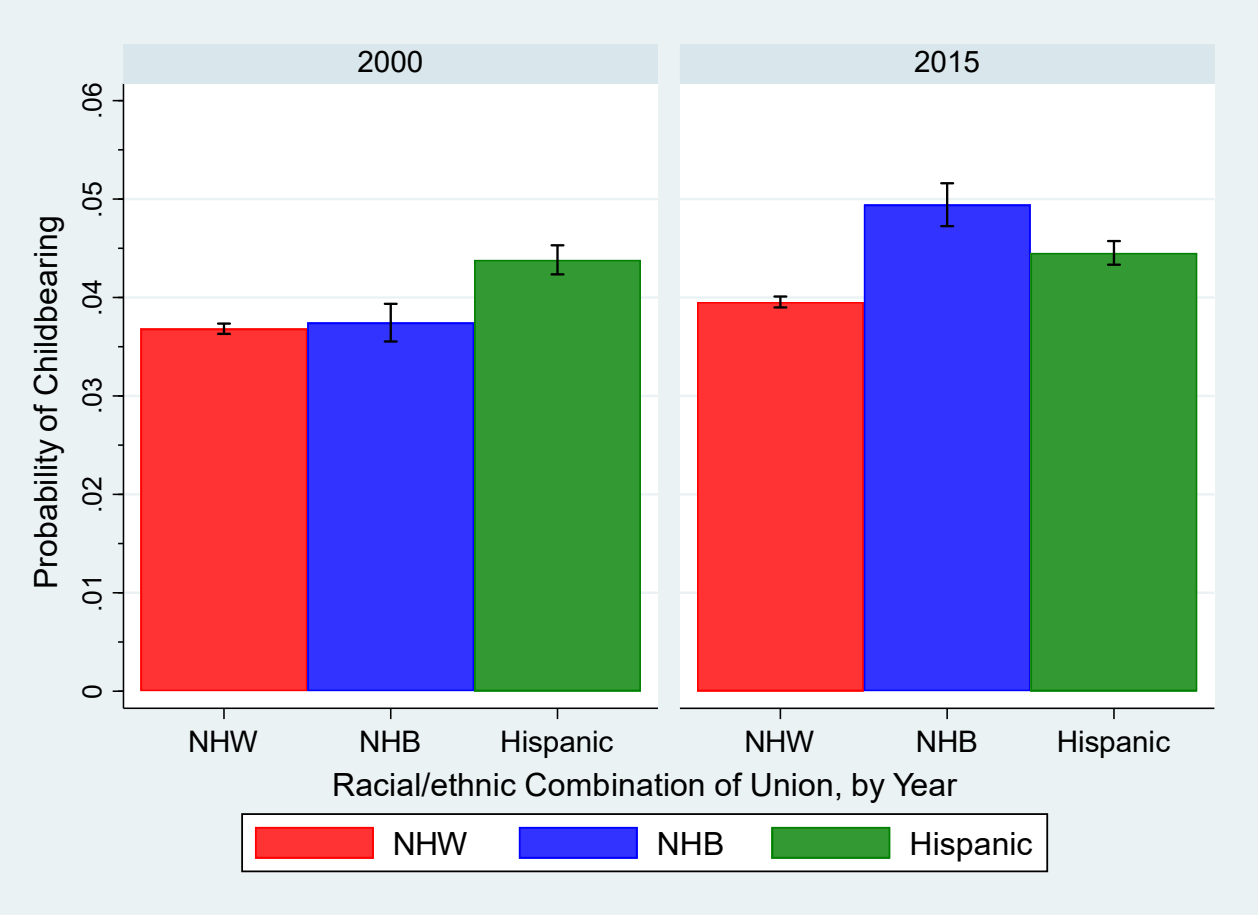
Next Steps

Already our preliminary analyses have made substantive contributions to the literature on childbearing. In addition to repeating the analyses for cohabiting couples and contrasting differences between married and cohabiting unions, the final paper will examine the role of each partner's educational attainment in explaining patterns of interracial and interethnic childbearing. In particular, we will evaluate the role of women's increasing educational gains over men, the racial/ethnic differences in these gains, and likelihood that assortative mating entails a "social exchange" of status positions by men and women (e.g., exchange of "higher" status on educational attainment for "lower" status on minority racial/ethnic origins, Kalmijn 2010; Torche and Rich 2017).

In addition, the final paper will consider the extent to which the patterns of interracial and interethnic childbearing – and any potential relationship to educational heterogamy– can be explained by the male and female partner's labor market participation. This last objective will be achieved using single and pooled survey analyses (e.g., see Rendall et al. 2013) with the ACS and the Survey of Income and Program Participation (SIPP).

In conclusion, we expect to draw upon hypotheses about the role of heterogamy in the union as both a source of potentially divergent childbearing desires and intentions as well as a determinant of the power dynamics within the union that influence whether these desires and intentions are fulfilled (Thompson 1997). Furthermore, we expect to consider the findings of the study in relationship to hypotheses about assortative mating providing a mechanism for not only advancing one's own social standing but the social standing of one's children. Assessment of childbearing is required to understand the later aspect of intergenerational social mobility, and to date, no known study has done so.

Figure 1. Adjusted Predicted Probability of Childbearing in Homogamous Married Unions, by Race/ethnicity and Year



Notes: Adjusted predicted probabilities are estimated from Model 4 setting all covariates to their mean. Model 4 estimates the likelihood of childbearing as a function of: the race/ethnicity, age, age-squared, educational attainment and parity of the female and male partners; the racial/ethnic pairing of the union; the year of the birth; and the potential changes over time in associations by racial/ethnic pairings. Data come from questions about childbirth in the previous year and sociodemographic characteristics of married men and women and their partners from the ACS, 2001-2015.

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Table 1. Log-odds of Birth in the Previous 12 Months For Married Couples by Female and Male Partner Characteristics, American Community Survey 2001-2016

		Models that add to Model 1:	
	Female Partner Characteristics (Model 1)	Male Partner Characteristics (Model 2)	Partner Race/ethnicity Interactions (Model 3)
Female Partner Characteristics			
Race/ethnicity (ref: NHW_Female)	.	.	.
NHB_Female	0.065***	-0.031	-0.140**
Hisp_Female	0.123***	0.028*	0.023
Education (ref: high school)			
<high school	0.221***	0.190***	0.189***
some college	0.033***	0.001	0.001
BA	0.216***	0.099***	0.099***
>BA	0.419***	0.242***	0.242***
Parity	-0.246***	-0.249***	-0.250***
Age	0.386***	0.346***	0.346***
Age*Age	-0.008***	-0.007***	-0.007***
Year	0.005***	0.005***	0.005***
Male Partner Characteristics			
Race/ethnicity (ref:NHW_Male)			
NHB_Male		0.143***	0.133***
Hisp_Male		0.124***	0.109***
Education (ref: high school)			
<high school		0.114***	0.113***
some college		0.050***	0.051***
BA		0.172***	0.172***
>BA		0.355***	0.355***
Age		0.048***	0.048***
Age*Age		-0.001***	-0.001***
Interactions of Female and Male Partner's Race/ethnicity			
NHB_Female*NHB_Male			0.123*
NHB_Female*Hisp_Male			0.193*
Hisp_Female*NHB_Male			-0.029
Hisp_Female*Hisp_Male			0.022
Constant	-6.007***	-6.162***	-6.162***
Total Observations	3,497,172	3,497,172	3,497,172
F-test's for contribution to model:			
All female*male race/ethnicity interactions			0.124
Subset of race/ethnicity interactions:			
NHB_Female*NHB_Male;			0.055+

Abreviations: NHW=Non-Hispanic White, NHB= Non-Hispanic Black, Hisp=Hispanic
Notes: Year centered at 2000. P-values: *** p<0.001, ** p<0.01, * p<0.05, + p<0.10

Table 2. F-test Statistics For Model Comparisons

Description of Model Fit Assessment	Coefficients Assessed using F-test Statistics	F-test	DF	P-value
Model 3 versus Model 2	(Race/ethnicity Female)*(Race/ethnicity Male): NHB_Female*NHB_Male; NHB_Female*Hisp_Male; Hisp_Female*NHB_Male; Hisp_Female*Hisp_Male	1.808	4	0.124
Model 3: Racial/ethnic pairings for NHB females	NHB_Female*NHB_Male; NHB_Female*Hisp_Male	2.896	2	0.055
Model 4 versus Model 3	(Race/ethnicity Female)*(Year); (Race/ethnicity of Male)*(Year); (Race/ethnicty of Female)*(Race/ethnicity	5.393	8	0.000
Model 4: Change over time in partner's race/ethnicity		2.756	4	0.026
Model 4: Change over time in racial/ethnic pairings		1.538	4	0.188
Model 4: Change over time in racial/ethnic pairings, Hispanic females		2.270	2	0.103
Model 4 versus Model 1		2.481	8	0.011

Table 3. Adjusted Predicted Probability of Childbearing among Married Couples by Race/ethnicity of Male and Female Partners, by Year

	Female Partner's Race/ethnicity				
	NHW	NHB	Hispanic	(NHB-NHW)	(Hispanic - NHW)
Male Partner's Race/ethnicity					
2000					
NHW	0.037	0.031	0.038		
	(0.036, 0.037)	(0.024, 0.038)	(0.035, 0.04)		
NHB	0.043	0.037	0.048		
	(0.037, 0.048)	(0.036, 0.039)	(0.036, 0.061)		
Hispanic	0.045	0.039	0.044		
	(0.042, 0.048)	(0.026, 0.052)	(0.042, 0.045)		
(NHB - NHW)	0.006	0.005	0.013	0.000	0.005
	(0, 0.011)	(-0.001, 0.012)	(-0.002, 0.028)	(-0.009, 0.009)	(-0.015, 0.015)
	0.038	0.097	0.101	0.922	0.971
(Hispanic - NHW)	0.008	0.006	0.007	0.000	-0.002
	(0.005, 0.01)	(-0.006, 0.019)	(0.004, 0.011)	(-0.015, 0.015)	(-0.006, 0.002)
	0.000	0.311	0.000	0.971	0.422
2015					
NHW	0.040	0.035	0.040		
	(0.039, 0.04)	(0.029, 0.041)	(0.038, 0.042)		
NHB	0.044	0.049	0.039		
	(0.04, 0.049)	(0.047, 0.052)	(0.032, 0.045)		
Hispanic	0.040	0.051	0.045		
	(0.038, 0.042)	(0.038, 0.063)	(0.043, 0.046)		
(NHB - NHW)	0.005	0.012	-0.002	0.009	-0.006
	(0, 0.009)	(0.007, 0.018)	(-0.011, 0.006)	(0.001, 0.017)	(-0.015, 0.002)
	0.046	0.000	0.626	0.020	0.132
(Hispanic - NHW)	0.001	0.013	0.005	0.015	0.004
	(-0.002, 0.003)	(0.001, 0.025)	(0.002, 0.008)	(0.001, 0.029)	(0, 0.007)
	0.619	0.028	0.001	0.037	0.027

Notes: Parentheses contain 95% confidence intervals. Adjusted predicted probabilities are estimated from Model 4 setting all covariates to their mean. Model 4 estimates the likelihood of childbearing as a function of: the race/ethnicity, age, age-squared, educational attainment and parity of the female and male partners; the racial/ethnic pairing of the union; the year of the birth; and the potential changes over time in associations by racial/ethnic pairings. Data come from questions about childbirth in the previous year and sociodemographic characteristics of married men and women and their partners from the ACS, 2001-2015.