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Race, Anthropometrics, and Socioeconomics

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ABSTRACT

Black-White Marital Matching:
Race, Anthropometrics, and Socioeconomics[*]

We analyze the interaction of race with physical and socioeconomic characteristics in the U.S. marriage market, using the Panel Study of Income Dynamics from 1999 to 2009 for black, white, and inter-racial couples. We consider the anthropometric characteristics of both spouses, together with their wage and education, and estimate *who inter-racially marries whom* along these dimensions. Distinctive patterns arise by gender and race for inter-married individuals: the black women who inter-marry are the thinner and more educated in their group; instead, white women are the fatter and less educated; black or white men who inter-marry are poorer and thinner. While women in "mixed" couples find a spouse who is poorer but thinner than if they intra-married, black men match with a white woman who is more educated than if they intra-married, and a white man finds a thinner spouse in a black woman.

JEL Classification: D1, J1

Keywords: interracial couples, marriage market, BMI, wages, education

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1 Introduction

Social scientists have been inquiring about the determinants of black-white differences for decades, focusing on educational attainment, health status, labor market and family outcomes, among others.[1] One of these lines of research has explored the evolution of black-white marriages over time and its striking rarity, which persists in the 21st century, possibly providing policy recommendations on how to reduce the racial divide in the U.S. For one thing, black-white intermarriage rates are commonly viewed as an indicator of the health of race relations in a society.

Table 1 reports matching patterns between blacks and whites in the U.S. for recently married couples (4 years or less) aged 23–50, based on the most recent 1% Census sample (American Community Survey, ACS, 2009), in the top panel, and on the most recent waves of the Panel Study of Income Dynamics 1999–2009, in the bottom panel. Two stylized facts emerge from this table. First, in 2009 only 2.1% of couples are black-white, while if race were an irrelevant trait in marriage, this percentage would amount to about 18%. In addition, 78% of these inter-racial couples correspond to *white wife–black husband* ones, whereas, under random matching, the expected 18% would be almost evenly split.[2] Remarkably, although the PSID 1999–2009 has a much smaller sample size than the ACS 2009, its tabulation closely matches the Census one.[3]

[Insert Table 1 about here]

The marriage market literature has traditionally focused on socioeconomic indicators, such as education or wage (e.g., Qian, 1998). Recent studies have also highlighted the role of physical characteristics, such as body mass index, in understanding matching patterns (e.g.,

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[1]See for instance Barrow and Rouse (2005), Card and Krueger (1992, 1993), Card and Rothstein (2007), Deaton and Lubotsky (2003), Krueger, Rothstein and Turner (2006), Neal and Johnson (1996), Neal (2004) and Wilson (1987).

[2]These patterns have been present for decades in the U.S., as documented in Kalmijn (1993).

[3]Focusing on newly–wed couples (≤1 year), Table A1 in the appendix shows an identical matrix to that of panel A in Table 1.

Averett and Korenman, 1996; Chiappori, Oreffice, Quintana-Domeque, 2010; Oreffice and Quintana-Domeque, 2010).[4] However, no attempt has been developed to incorporate such dimensions in the analysis of interracial marriages. Given the well-known large disparities in black-white BMI distributions, in particular, for women (Johnston and Lee, 2011), physical characteristics are likely to be relevant in the formation of black-white couples.

The goal of this paper is to document *who inter-racially marries whom* along *physical* and *socioeconomic* attributes of blacks and whites in the U.S. In particular, using PSID data from 1999 to 2009, which contain not only socioeconomic characteristics but also *anthropometric* information for *both* spouses, we establish the following set of stylized facts. First, we uncover that, among black women, those who marry a white man are (on average) thinner and more educated. Conversely, white women who intermarry are (on average) fatter and less educated than those who intramarry. Second, among men, those who intermarry tend to be poorer and thinner. As to spousal characteristics in inter-marriages, we find that the black men who intermarry match with a wife who is more educated than the black wife that other similar black men marry, while for white men their black wife is thinner than the white wife the other white men match with. Those women who intermarry face thinner but poorer mates than the women who marry within their racial group. Finally, among black women, those who remain single are fatter and less educated. Instead single white women tend to be more educated than those who intermarry.

As illustrated in the seminal work by Becker (1991), race is definitely a relevant aspect in the marriage market. However, only few economic studies have been devoted to analyze inter-racial marriages. Wong (2003) considers *black husband–white wife* couples and their socioeconomic status, also using PSID data, for the waves 1968–1997. She estimates a structural model with search costs where an individual's quality in the marriage market depends on education and race, assuming away relevant observed differences in the distribution of

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[4]Body mass index is defined as the individual's body weight (in kilograms) divided by the square of his or her height (in meters).

characteristics by race and gender. Her explanation for the low prevalence of the intermarriages of black men and white women is whites' distaste to marry outside own race, rather than the racial income gap or lack of meeting opportunities. More recently, Fryer (2007) describes the increasing trends in interracial marriages over the 20th century using Census data, considering regional variation and socioeconomic determinants, suggesting that equilibrium sorting and higher socioeconomic characteristics can explain intermarriage in the presence of an "intermarriage cost".

Grossbard, Giménez and Molina (2010) link racial discrimination to household chores with U.S. time use data (ATUS), showing that in interracial couples the black spouse provides more hours of housework due to discrimination. In addition, there is a body of research focusing on the black marriage market linking unfavorable sex-ratio imbalances for black women to family, marital and labor market outcomes (e.g., Banks, 2011; Charles and Luoh, 2010; Neal, 2004; Seitz, 2009). Finally, in sociology, Kalmijn (1993) emphasizes that better economic conditions of black men are associated to a higher rate of interracial marriages, while Fu (2001) explicitly refers to a "racial status hierarchy" to explain the rare crossing of racial boundaries in marriages, showing how higher education of the minority spouse makes interracial marriages happen, through a "social status exchange" (Fu and Heaton, 2008; Merton, 1941; Qian and Lichter, 2007; Spanier and Glick, 1980).

Perhaps the studies most related to our work are those of Hitsch, Hortaçsu and Ariely (2010), and Fisman, Iyengar, Kamenica, and Somonson (2006, 2008). These authors consider several mate characteristics including race and non-socioeconomic attributes, the former also providing anthropometric information, and state that women exhibit strong same-race preferences in *dating*, and that this dating pattern cannot be explained by education or income differences. However, they work with online and speed dating, respectively, so that they lack the relevant information on the matches and families actually formed in the marriage market. Finally, Baccara et al. (2010) provide an innovative analysis of matching in the adoption

market documenting preferences against black children by prospective adoptive parents in the U.S.

The main message of the present paper is that measurable differences in both socioeconomic and physical attractiveness across groups are important in explaining the observed matches. We believe that this represents a necessary step in building a comprehensive understanding of two still open questions: Why so *few* interracial marriages are observed? And, perhaps more importantly, why do we find an *asymmetry* in the prevalence of intermarriages depending on whether the husband or the wife is black?

The paper is organized as follows. Section 2 describes the data. Section 3 provides the main empirical results. Section 4 considers some extensions. Finally, Section 5 concludes.

2 Data description

The PSID is a longitudinal household survey collecting a wide range of individual and household demographic, income, and labor-market variables. In addition, in all the most recent waves since 1999 (1999, 2001, 2003, 2005, 2007, and 2009), the PSID provides the weights (in pounds) and heights (in feet and inches) of both household heads and wives, which we use to calculate the BMI of each spouse, defined as an individual's body weight (in kilograms) divided by the square of his or her height (in meters).[5]

In each of the survey years under consideration, the PSID comprises about 4,500 married households. We select households with a household head and a wife where both are actually present. In our sample years, all the married heads with spouse present are males, so we refer to each couple as husband and wife, respectively. We confine our study to those couples where both spouses are between 23 and 50 years old, i.e., prime-age couples. Our analysis

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[5]Weight and height are originally reported in pounds and inches in the PSID. The pounds/inches BMI formula is: Weight (in pounds) $\times$ 704.5 divided by Height (in inches) $\times$ Height (in inches). Oreffice and Quintana-Domeque (2010) have shown that non-response to body size questions appears to be very small in the PSID data.

incorporates spouses with working husbands, so that we include couples with both working and non-working wives. We focus on men and women whose BMI lies between 18.5 and 35, thus excluding underweight and severe and morbid obese (obese class II and III) individuals (WHO, http://apps.who.int/bmi/index.jsp?introPage=intro_3.html).[6]

Because the PSID main files do not contain any direct question concerning the duration of the marriages, we rely on the "Marital History File: 1985-2009" Supplement of the PSID to obtain the year of marriage and number of marriages, to account for the duration of the couples' current marriage. We merge this information to our main sample using the unique household and person identifiers provided by the PSID. We establish a threshold of less than or equal to four years of marriage, as a proxy for how recently a couple formed. This demographic group is particularly adequate for studying matching patterns, because the marriage market assessment of race and BMI should arise through sorting at the time of the match. Clearly, the price to pay is a serious reduction in the sample size.

In the PSID all the variables, including the information on the wife, are reported by the head of the household. Reed and Price (1998) found that family proxy-respondents tend to overestimate heights and underestimate weights of their family members, so that family proxy-respondent estimates follow the same patterns as self-reported estimates. The authors suggest that the best proxy-respondents are those who are in frequent contact with the target. Since we are considering married couples, the best proxy-respondents are likely to be the spouses.[7]

The other characteristics we use in our empirical analysis are age, log hourly wage, education, and race. Education is defined as the number of completed years of schooling and is top-coded at 17 for some completed graduate work. We consider only blacks and whites,

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[6]In the extensions section we add obese class II individuals ($35 \leq BMI < 40$) as a robustness check.

[7]Cawley (2004) used the National Health and Nutrition Examination Survey III (NHANES III) to estimate the relationship between measured height and weight and their self-reported counterparts. First, he estimated regressions of the corresponding measured variable to its self-reported counterpart by age and race. Then, assuming transportability, he used the NHANES III estimated coefficients to adjust the self-reported variables from the NLSY. The results for the effect of BMI on wages were very similar, whether corrected for measurement error or not. Recent papers confirm that the BMI adjustment makes no difference (Kelly et al., 2011).

where an individual's race is determined according to the PSID variable "race first mention". State dummy variables are included to capture constant differences in labor and marriage markets across geographical areas in the U.S., as well as geographical racial segregation (Cutler, Glaeaser, and Vigdor, 1999). Year fixed effects are also included.

The main characteristics of the four types of couples in our sample are described in Table 2. Among same-race couples, the mean age difference between spouses is about two years (Chiappori, Iyigun, and Weiss, 2009), although we note that white couples are younger. This reflects the fact that age at first marriage is higher for blacks than for whites (e.g., DaVanzo and Rahman, 1993). In "mixed" couples with a white woman the age gap is around 1.5, while in those with a black woman the gap falls to half a year.

Looking at education, white women in white couples have on average 14.5 years of education, while black women in black couples have one year less. Interestingly, these magnitudes and the corresponding gap are reversed when comparing black with white women in "mixed" couples. A quick inspection of wages reveals the well-known white-black wage gap (e.g., Western and Pettit, 2005). Within same-race couples, the average hourly wage of whites is 22% higher than that of blacks. However we do not find a wage gap between blacks and whites in "mixed" couples.

As to weight, male BMI is on average larger than female: white women are, on average, in the normal-weight range ($18.5 \leq BMI < 25$), around 24 if they are married to a white man, and overweight ($25 \leq BMI < 30$), around 26, otherwise. Black women are on average overweight, around 26, if married to a black man, and in the normal-weight range, around 23, when married to a white man. Men are overweight in all the four types of couples. A salient feature is that while on average a black man married to a white woman is poorer than his white counterpart, he is nevertheless thinner. Conversely, on average his white wife is fatter and less educated than the white woman who married a white man. Comparing black couples to *white husband-black wife* ones, one can see that on average the inter-married black women

are thinner and more educated that those who intra-marry, while their white husbands are thinner and poorer than the black ones.

[**Insert Table 2 about here**]

We also inquire about how the distributions of BMI, years of education (wages) of married men and women compare between blacks and whites. We first compute the raw correlation between education (log wage) and BMI, for both blacks and whites, by gender. The correlation is negative for women: -0.14 ($p-value < 0.01$) for both blacks and whites. Interestingly, the correlation is virtually zero for white men (0.03, $p-value = 0.20$), and positive for black men (0.10, $p-value < 0.05$). These estimates are in line with previous studies, confirming the existing heterogeneity in the BMI-SES relationship by gender and race (e.g., Houle, 2010).

[**Insert Figures 1–4 about here**]

Figure 1 plots the densities of the BMI distributions for black and white women: blacks have a right-shifted BMI distribution relative to whites (Houle, 2010), which is consistent with the findings in the literature that the distributions of BMI and waist-to-height ratio for black women lie to the right of those of white women, and that they exhibit more density at higher values (e.g., Johnston and Lee, 2011). Indeed, black women exhibit higher BMI than whites also after controlling for differences in socioeconomic attributes (e.g., Burke and Heiland, 2008). In Figure 2, we plot the BMI densities for black and white males: the distributions look more similar and symmetric around their respective means than those for females. In Figures 3 and 4, we explore the distributions of years of education and log(wage). White women are more likely than black women to have 16 or more years of education. Similarly, white men are (in general) more likely to earn higher (log)wages than black men.

The most natural socioeconomic indicator is probably wage; not only does wage directly measure a person's ability to generate income from a given amount of input (labor supply), but it is also strongly correlated with other measures of socioeconomic attractiveness, such as

prestige or social status. However, it is only observed for people who actually work. This is a relatively minor issue for men, since their participation rate, at least in the age category 23–50, is close to one; but it may be a serious problem for women. One solution could be to estimate a potential wage for non-working women as in Wong (2003), the drawback of this strategy being to introduce an additional layer of measurement error. In practice, however, potential wages are predicted from a small number of variables: age, education, number of children and various interactions of these (plus typically time and geographical dummy variables). In addition, female education may also capture ability to produce quality household goods, which is likely to be valued by men. We use education as a proxy for female socioeconomic attractiveness, as for instance in Chiappori et al. (2010), who show that among white couples, men (women) prefer educated (rich) partners.

Regarding physical characteristics, there exists a considerable literature in which body mass index is widely used as a proxy for socially defined physical attractiveness (e.g., Gregory and Rhum, 2011). For instance, Rooth (2009) found that photos that were manipulated to make a person of normal weight appear to be obese caused a change in the viewer's perception, from attractive to unattractive. More recently, Mansour and McKinnish (2011) show that individuals rated as attractive have lower BMI on average than those not rated attractive. In their analysis of white couples, Chiappori et al. (2010) find that both men and women prefer thinner partners.[8] Therefore, we think of BMI as a measure of physical attractiveness. In principle, we would expect that an individual's socioeconomic attractiveness positively depends on her wage or education, regardless of her race. However, this may not be the case for physical attractiveness. In particular, experiences of beauty and aesthetic standards

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[8]Both body shape and body size are important determinants of physical attractiveness; in practice, BMI provides information on body size, while the waist-to-hip ratio (WHR) and the waist-to-chest ratio (WCR) provide information on body shape. The available empirical evidence, e.g., the literature review on body shape, body size and physical attractiveness by Swami (2008), seems to point to BMI being the dominant cue for female physical attractiveness, with WHR (the ratio of the width of the waist to the width of the hips) playing a more minor role. Regarding male physical attractiveness, WCR (waist-to-chest) plays a more important role than either the WHR or BMI, but it must be emphasized that BMI and WCR are strongly positively correlated. Not surprisingly, BMI is correlated with the male attractiveness rating by women, though this correlation is lower than the one with WCR.

may vary by gender and race (e.g., Wolf, 1992; Banks, 2000; Craig, 2006). We thus remain agnostic as whether blacks prefer a thinner or a fatter partner.

3   Estimating matching patterns across socioeconomic, physical, and racial dimensions

3.1   Who does intermarry?

Table 3 displays the estimates corresponding to simultaneous regressions of female BMI and education on a spousal race indicator (1 if white, 0 if black) controlling for own age, spousal "quality" (log wage and BMI), and state and year fixed effects, for black women, on the left, and white women, on the right.

[Insert Table 3 about here]

Among black women, those who marry black men are (on average) fatter and less educated than those who marry white men. Similarly, white women who marry black men are (on average) fatter and less educated than those who marry white men. The higher socioeconomic quality of the black woman in interracial marriages is consistent with the "status exchange" explanation given by sociologists (e.g., Fu, 2001; Qian and Lichter, 2007). The corresponding magnitudes are large, indicating differences of 2–3 BMI units, and 0.7–2 years of education between the inter- and the intra-married women.

[Insert Table 4 about here]

Table 4 contains the corresponding estimates of the simultaneous regressions of husbands' characteristics on their wives'. The panel on the left shows that, among black men, those who marry white wives are (on average) thinner and poorer. Hence, black men who inter-marry are (on average) of lower socioeconomic "quality" within their group, and they have a lower BMI.

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This is not consistent with the "status exchange" explanation given by sociologists (e.g., Fu, 2001; Qian and Lichter, 2007), unless the "exchange" happens in terms of lower body weight. When looking at white men, we find that those who marry white females are (on average) heavier and richer, if anything, albeit the results on BMI are not statistically significant on account of the very few white men marrying black women. Thus, white men who marry black women are (on average) of lower socioeconomic "quality" within their group. In the male population as well, these differences are large, corresponding to 1–1.5 units of BMI and 12–37% in wage.

The patterns documented in Tables 3 and 4 are visualized in Figure 5, which represents the observed matching of the four types of couples:

- Thinner and more educated white women are married to thinner and fatter white men.

- Fatter and less educated white women are married to thinner and poorer black men.

- Fatter and less educated black women are married to fatter and richer black men

- Thinner and more educated black women are married to thinner and poorer white men.

[Insert Figure 5 about here]

It appears that women in "mixed" couples are either at the "top" or the "bottom" of the distribution of both attributes at stake. Interracial matches may be rare simply because members of different races interact relatively infrequently as rates of interracial marriage capture both preferences and socio-geographic segregation. However, weak social interaction between blacks and whites would lead to the highest educated black women matching with the highest educated white men if, for example, they met in college, which is actually in contrast with our findings. On the other hand, these patterns are not obvious to rationalize in terms of racial prejudices against blacks, especially the fact that black men who intermarry are poorer than the ones who intra-marry, unless (low educated) white women have strong

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preferences for thinner individuals, and therefore match with these black men. We address now the second question on inter-racial marriages: *Whom do you intermarry?*

3.2 Comparing spouses' characteristics by race given individual "quality"

Suppose we have two women of the same race and with the same "qualities" (body mass index and education), one married to a black man and the other one to a white man. How do the characteristics of these men compare? We now address this question in Table 5 –for black women (panel on the left) and white women (panel on the right)– by running simultaneous regressions of husband's BMI and log wage on a husband's race indicator (1 if white, 0 if black), controlling for wife's qualities (body mass index and education), husband's age, year and state fixed effects.

[**Insert Table 5 about here**]

According to the estimates reported in Table 5, among those who marry *black* women, white men are (on average) poorer and thinner than black men (42% difference in wages and 2.3 BMI units). Moreover, among those who marry *white* women, black men are poorer and thinner than white men (32% and 0.8 BMI units), although the difference in BMI is not statistically significant. Black men may offset their empty wallet with lower body weight, suggesting that white wives will not see a possible white husband as "fully superior" to a black one.

Performing a similar exercise for women, Table 6 reveals that, among those who marry *black* men, white women are (on average) more educated (by half a year) than black women. In addition, among those who marry *white* men, black women are (on average) thinner by one unit of BMI than white women, although the estimated coefficient is not statistically significant at conventional levels.

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3.3   Never-married, intra-married or inter-married?

We now investigate whether there are differences by gender and race in terms of who remains single (defined as never married) rather than inter- or intra-marrying, and complement our analysis of *who* intermarries and how it is perceived in the population.[9] We are interested in estimating whether those who inter-marry rather than remaining single are distinctively more or less "physically different" and of higher or lower socioeconomic status, in an attempt to understand the average perception of inter-racial marriages, accounting for the fact that the outside option of remaining single is always available.

Table 7 presents the estimates from seemingly unrelated regressions of male BMI and log wage on individual age, state and year fixed effects, and two dummy variables for being inter- or intra-married, where the reference category is being never-married, for black men on the left and white men on the right. The estimated coefficients show that black men who remain single are 20% poorer than those who marry. Regarding physical characteristics, black men who inter-marry are thinner than those who intra-marry or remain single. The patterns for white men are different. White men who intra-marry tend to be richer, while those who inter-marry tend to be poorer. They tend to be overweight if intramarried, and thinner if intermarried.

Table 8 shows those women who remain single are fatter and less educated than any other married woman in the black population, whereas single white women are thinner and more educated than those who inter-marry. Interestingly, the significant patterns characterizing the sample of married women are reinforced in this context. Black women who inter-marry

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[9]We consider never-married household heads, as in the PSID no detailed information is collected on the adult individuals who are not heads or wives (neither anthropometrics nor wage data available).

are definitely those on the "bottom" and the "top" of their BMI and education distributions, respectively, exhibiting a difference of almost 2 years of schooling and 5 BMI units with respect to the never married women, who are confirmed to be those at the bottom of the distribution of black women, consistently with the unfavorable sex ratio they face.

[Insert Table 8 about here]

3.4   Discussion

The evidence presented above allows us to establish the following stylized facts. We uncover that, among black women, the thinner and the more educated are those who marry a white man. Conversely, the white women who intermarry are the fatter and the less educated in their racial group, whereas thinner and more educated white women are married to fatter and richer white men. The striking racial differences among women significantly hold in both the physical and the socioeconomic dimensions, and may indicate that black women need to provide top "qualities" to achieve an interracial marriage, or that this specific type of women value white husbands, while for white women an interracial marriage may be the least desirable outcome.

As to spousal characteristics in inter-marriages, we find that the black men who intermarry match with a wife who is more educated than the black wife married to other similar black men, while for white men their black wife is thinner than the white wife the other white men match with. Hence, men, and especially black men, may be more keen on inter-marriage than women, given the higher spousal quality they receive, and the importance of socioeconomic status.

In the female population, on average, the lower "quality" (fatter and less educated) women marry within race. For black males, those richer and fatter marry within the same race group, while those poorer but thinner intermarry. This may be compatible with black men having same race-preferences rather than preferring white partners, given that those who intermarry

are those of lower socioeconomic quality.

Given the unfavorable sex-ratio imbalance that black women face, one may expect to find more *white man–black woman* than *white woman-black man* marriages. In contrast, the observed differences in socioeconomic and physical characteristics may explain the higher prevalence of *white woman–black man* than *white man–black woman* marriages. There may be more fat and low educated white women than thin and educated black women, the former being more amenable to accept poorer black spouses than "top" quality black women. Black men in particular "benefit" from inter-marriage by matching with a more educated spouse, so that they may be willing to inter-marry more than white men, who do not "gain" in their wife's socioeconomic status. Finally, it is interesting to compare this evidence to the economic studies analyzing multiple attributes in mates, including race. Hitsch et al. (2010) and Fisman et al. (2008) emphasize that in speed dating women exhibit strong racial preferences. Our evidence from the marriage market does not reflect any in-group racial preferences, at least for black women, as those who inter-marry are high "quality" types. White women, instead, may reflect the preferences found in the speed dating experiment, although our results are not directly comparable as men and women behave differently when choosing sexual rather than life partners.

4   Extensions

4.1   Cohabitation rather than marriage

One may wonder whether the rare prevalence of *black woman-white man* couples is only found in marriages but not among cohabiting unions. Table A2 shows that this is not the case.[10] If anything, the prevalence of this type of couples is still below 1%, while the percentages

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[10]For cohabiting couples, the information on the duration of the relationship is not available, neither in the PSID nor in the Census data, although we may expect them to be recent unions. Moreover, a distinctive feature of the PSID survey structure is that cohabiting unions are recorded as such (providing the information on the second partner) only from the second year of cohabitation.

of the other inter-racial and black-black couples are higher among cohabitants than among married individuals. Black women are rarely matched to white men, no matter the type of relationship.

Results on the sorting patterns by BMI and socioeconomic status in cohabiting unions are reported in Tables A3 and A4. We find that the black women with a white partner are "still" higher educated and thinner, while the white women in interracial relationships are neither fatter nor less educated than the other white female cohabitants, as instead it was the case among married white women. On the other hand, black men with a white partner tend to be richer than the black men who live with a black woman. In the U.S. cohabitation is seen as a surrogate of marriage or as an initial step into it, so that these results may suggest that interracial unions are not frawned upon by white women, provided that those unions are not as binding as marriage. Instead, for black women, even cohabitation with a white man could be hard to achieve.

4.2   Controlling for observed heterogeneity

The following variables are considered to control for sources of observed heterogeneity: health status (1 if excellent, very good, or good; 0 if fair or poor); an individual dummy variable for being a smoker; number of children in the household under 18 years; recent pregnancy (previous 2 years); and height. Our results accounting for differences in these dimensions are very similar.

The exclusion of observations from the "immigrant sample" does not affect our results. This amounts to dropping 3.4% of observations in our married sample. Given the original purpose and set-up of the PSID survey, specific information on being hispanic was not collected until the 2005 wave, so that excluding the sample that the PSID had added to incorporate immigrants who entered the U.S. after 1968 is the only available way to include only non-hispanic blacks and whites in our analysis.

Finally, we have investigated whether including obese class II individuals ($35 \leq BMI < 40$) affects our findings, obtaining very similar results.

All these additional results are available upon request.

4.3 The relevance of physical characteristics

What is the relevance of physical characteristics in understanding matching patterns? To answer this question we re-estimate the regressions of Tables 3 and 4 without BMI information using ACS 2009, on the one hand, and PSID 1999–2009, on the other. Table A5 highlights that BMI is crucial to understand who inter-marries whom: While the patterns in this table are very similar between data sets, including underweight ($BMI < 18.5$) or extremely obese ($BMI \geq 40$) individuals contaminates the estimated socioeconomic patterns. These results confirm the need of richer data sources to observe the interracial matches not only through the socioeconomic but also the anthropometric lens.

4.4 Additional physical characteristics

We run the same regressions as for BMI and socioeconomic status for height, as an additional anthropometric measure. This physical dimension may also be relevant in the marriage market (e.g., Oreffice and Quintana-Domeque, 2010). Interestingly, in the black population, those women who inter-marry are on average almost 3 inches taller than the other married to black men. As to black men those with a white wife tend to be 1.4 inches taller than those who marry within their race. Results available upon request.

5 Conclusions

We estimate *who inter-racially marries whom* along *physical* and *socioeconomic* characteristics of black and white men and women in the US, showing that both their body mass index and

their education(wage) matter in the formation of matches. Using PSID data from 1999–2009 and the Census ACS 2009 data, we establish several stylized facts on the characteristics of black and white men and women in these interracial unions, as compared to spouses in same-race marriages and to never-married individuals. We believe that this represents a necessary step in building a comprehensive understanding of two still open questions: Why so *few* interracial marriages are observed? And, perhaps more importantly, why do we find an *asymmetry* in the prevalence of intermarriages depending on whether the husband or the wife is black?

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TABLES

	White	Black	Total
Panel A. ACS 2009			
White	89.21	0.46	89.67
Black	1.63	8.70	10.33
Total	90.84	9.16	100
			N=35,263
Panel B. PSID 1999−2009			
White	88.90	0.30	89.20
Black	1.64	9.16	10.80
Total	90.54	9.46	100
			N=2,907

Notes: Recently married couples (≤ 4 years), both spouses aged 23−50. Sampling weights are used.

TABLE 2—DESCRIPTIVE STATISTICS BY TYPE OF COUPLE

	White man, White woman		Black man, White woman	
	Mean	Std. Dev.	Mean	Std. Dev
Wife's Age	30.23	6.09	31.35	5.99
Husband's Age	31.92	6.27	32.66	5.48
Wife's BMI	23.85	3.93	25.75	3.83
Husband's BMI	26.66	3.47	26.02	3.40
Wife's Education	14.47	2.08	13.72	2.49
Husband's Log Wage	2.99	0.64	2.72	0.49
Number of observations	1,493		48	

	Black man, Black woman		White man, Black woman	
	Mean	Std. Dev.	Mean	Std. Dev
Wife's Age	31.39	6.07	32.45	5.65
Husband's Age	33.32	6.79	32.96	4.36
Wife's BMI	25.99	4.08	23.06	3.87
Husband's BMI	26.93	3.35	25.41	2.00
Wife's Education	13.50	2.06	14.74	1.17
Husband's Log Wage	2.77	0.54	2.72	0.21
Number of observations	443		10	

Notes: Sampling weights are used.

TABLE 3—SIMULTANEOUS REGRESSIONS: WIFE'S CHARACTERISTICS ON HUSBAND'S CHARACTERISTICS

	Black women		White women	
	Wife's BMI	Wife's Education	Wife's BMI	Wife's Education
Wife's Age	0.035	−0.024	0.022	−0.025
	(0.029)	(0.014)*	(0.016)	(0.009)***
Husband's BMI	0.150	0.091	0.247	−0.001
	(0.054)***	(0.025)***	(0.028)***	(0.015)
Husband's Log Wage	−1.25	1.38	−0.751	0.705
	(0.353)***	(0.166)***	(0.166)***	(0.090)***
Husband is White	−3.41	1.92	−1.93	0.691
	(1.19)***	(0.558)***	(0.697)***	(0.378)*
	[1.61]**	[0.538]***	[0.854]**	[0.797]
State Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Number of observations ((couples))	453 ((320))		1,541 ((1,031))	

Notes: Standard errors in parentheses. Robust standard errors clustered at the couple level from individual regressions in brackets. Sampling weights are used. *** Significant at the 1 percent level. ** Significant at the 5 percent level. * Significant at the 10 percent level.

TABLE 4—SIMULTANEOUS REGRESSIONS: HUSBAND'S CHARACTERISTICS ON WIFE'S CHARACTERISTICS

	Black men		White men	
	Husband's BMI	Husband's Log Wage	Husband's BMI	Husband's Log Wage
Husband's Age	0.056	0.010	0.032	0.015
	(0.022)**	(0.003)***	(0.014)**	(0.002)***
Wife's BMI	0.103	−0.017	0.200	−0.013
	(0.039)***	(0.005)***	(0.023)***	(0.004)***
Wife's Education	0.116	0.065	0.063	0.054
	(0.067)*	(0.009)***	(0.043)	(0.007)***
Wife is White	−1.68	−0.119	1.07	0.374
	(0.413)***	(0.057)**	(2.10)	(0.353)
	[0.803]**	[0.089]	[0.706]	[0.155]**
State Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Number of observations ((couples))	491 ((351))		1,503 ((1,001))	

Notes: Standard errors in parentheses. Robust standard errors clustered at the couple level from individual regressions in brackets. Sampling weights are used. *** Significant at the 1 percent level. ** Significant at the 5 percent level. * Significant at the 10 percent level.

TABLE 5—SIMULTANEOUS REGRESSIONS: HUSBAND'S CHARACTERISTICS ON HIS RACE CONTROLLING FOR SPOUSAL QUALITY

	Black women		White women	
	Husband's BMI	Husband's Log Wage	Husband's BMI	Husband's Log Wage
Husband's Age	0.037	0.012	0.034	0.015
	(0.022)*	(0.003)***	(0.014)**	(0.002)***
Wife's BMI	0.122	−0.015	0.197	−0.012
	(0.039)***	(0.006)***	(0.022)***	(0.004)***
Wife's Education	0.309	0.091	0.049	0.051
	(0.078)***	(0.011)***	(0.042)	(0.007)***
Husband is White	−2.34	−0.416	0.816	0.315
	(1.01)**	(0.147)***	(0.624)	(0.104)***
	[0.831]***	[0.165]***	[0.762]***	[0.081]***
State Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Number of observations ((couples))	453 ((320))		1,541 ((1,031))	

Notes: Standard errors in parentheses. Robust standard errors clustered at the couple level from individual regressions in brackets. Sampling weights are used. *** Significant at the 1 percent level. ** Significant at the 5 percent level. * Significant at the 10 percent level.

TABLE 6—SIMULTANEOUS REGRESSIONS: WIFE'S CHARACTERISTICS ON HER RACE CONTROLLING FOR SPOUSAL QUALITY

	Black men		White men	
	Wife's BMI	Wife's Education	Wife's BMI	Wife's Education
Wife's Age	0.039	−0.060	0.021	−0.021
	(0.027)	(0.015)***	(0.016)	(0.009)**
Husband's BMI	0.133	0.041	0.251	0.003
	(0.050)***	(0.028)	(0.028)***	(0.015)
Husband's Log Wage	−1.28	1.46	−0.753	0.704
	(0.347)***	(0.194)***	(0.167)***	(0.089)***
Wife is White	0.195	0.573	1.05	−0.180
	(0.476)	(0.266)**	(2.36)	(1.26)
	[0.834]	[0.725]	[2.00]	[0.476]
State Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Number of observations ((couples))	491 ((351))		1,503 ((1,001))	

Notes: Standard errors in parentheses. Robust standard errors clustered at the couple level from individual regressions in brackets. Sampling weights are used. *** Significant at the 1 percent level. ** Significant at the 5 percent level. * Significant at the 10 percent level.

TABLE 7—SIMULTANEOUS REGRESSIONS: MALE CHARACTERISTICS ON INTER-MARRIED AND INTRA-MARRIED INDICATORS

	Black men		White men	
	Male	Male	Male	Male
	Log Wage	BMI	Log Wage	BMI
Inter-married	0.204	−1.30	−0.092	−0.395
	(0.088)**	(0.451)***	(0.479)	(2.59)
	[0.136]	[0.719]*	[0.146]	[0.923]
Intra-married	0.230	0.096	0.195	0.902
	(0.045)***	(0.232)	(0.025)***	(0.133)***
	[0.073]***	[0.373]	[0.039]***	[0.208]***
State Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Number of observations ((household))	1,333 ((715))		2,867 ((1,473))	

Notes: Standard errors in parentheses. Robust standard errors clustered at the household level from individual regressions in brackets. Sampling weights are used. *** Significant at the 1 percent level. ** Significant at the 5 percent level. * Significant at the 10 percent level.

TABLE 8—SIMULTANEOUS REGRESSIONS: FEMALE CHARACTERISTICS ON INTER-MARRIED AND INTRA-MARRIED INDICATORS

	Black women		White women	
	Female	Female	Female	Female
	Education	BMI	Education	BMI
Inter-married	2.00	−4.96	−0.958	1.38
	(0.823)**	(1.71)***	(0.450)**	(0.837)*
	[0.373]***	[1.32]***	[0.814]	[0.835]*
Intra-married	0.739	−1.55	0.028	−0.410
	(0.128)***	(0.264)***	(0.085)	(0.159)***
	[0.211]***	[0.473]***	[0.136]	[0.241] *
State Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Number of observations ((household))	2,565 ((1,083))		2,604 ((1,519))	

Notes: Standard errors in parentheses. Robust standard errors clustered at the household level from individual regressions in brackets. Sampling weights are used. *** Significant at the 1 percent level. ** Significant at the 5 percent level. * Significant at the 10 percent level.

APPENDIX

TABLE A1—MATCHING PATTERNS BY RACE IN NEWLY-WED COUPLES (≤ 1 YEAR), ACS 2009

	White	Black	Total
White	88.46	0.56	89.02
Black	1.62	9.36	10.98
Total	90.08	9.92	100
			N=10,581

Notes: Both partners aged 23−50. Sampling weights are used.

TABLE A2—MATCHING PATTERNS BY RACE IN COHABITING UNIONS, ACS 2009

	White	Black	Total
White	82.45	0.67	83.12
Black	3.68	13.20	16.88
Total	86.13	13.87	100
			N=20,982

Notes: Both partners aged 23−50. Sampling weights are used.

	Black women		White women	
	Female BMI	Female Education	Female BMI	Female Education
Female Age	0.046	−0.002	0.091	−0.072
	(0.030)	(0.010)	(0.021)***	(0.012)***
Partner's BMI	0.051	0.040	0.103	−0.003
	(0.067)	(0.023)*	(0.044)**	(0.025)
Partner's Log Wage	−0.709	0.284	−0.856	1.13
	(0.318)**	(0.109)***	(0.279)***	(0.159)***
Partner is White	−3.02	2.34	−0.319	−0.280
	(1.60)*	(0.549)***	(0.778)	(0.444)
State Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Number of observations	331		526	

Notes: Standard errors in parentheses. Sampling weights are used. *** Significant at the 1 percent level. ** Significant at the 5 percent level. * Significant at the 10 percent level.

	Black men		White men	
	Male BMI	Male Log Wage	Male BMI	Male Log Wage
Male Age	0.006	0.022	0.038	0.021
	(0.026)	(0.005)***	(0.022)*	(0.003)***
Partner's BMI	0.017	−0.021	0.098	−0.016
	(0.046)	(0.009)**	(0.045)**	(0.007)**
Partner's Education	0.260	0.035	0.071	0.071
	(0.115)**	(0.022)	(0.074)	(0.011)***
Partner is White	0.979	0.186	−0.811	0.009
	(0.536)*	(0.102)*	(2.61)	(0.393)
State Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Number of observations	365		492	

Notes: Standard errors in parentheses. Sampling weights are used. *** Significant at the 1 percent level. ** Significant at the 5 percent level. * Significant at the 10 percent level.

	ACS 2009[a]			
	Black women Education	White women Education	Black men Log Earnings	White men Log Earnings
Husband's Log Earnings	0.486 (0.064)***	0.569 (0.019)***	--	--
Wife's Education	--	--	0.091 (0.010)***	0.090 (0.003)***
Spouse is White	0.254 (0.213)	0.593 (0.114)***	−0.043 (0.052)	0.158 (0.107)
State Fixed Effects	Yes	Yes	Yes	Yes
Number of observations	2,151	30,091	2,442	29,800

	PSID 1999−2009[b]			
	Black women Education	White women Education	Black men Log Wage	White men Log Wage
Husband's Log Wage	1.29 [0.174]***	0.750 [0.111]***	--	--
Wife's Education	--	--	0.076 [0.014]***	0.059 [0.009]***
Spouse is White	0.428 [0.764]	0.492 [0.742]	−0.087 [0.083]	0.046 [0.135]
State Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Number of observations (couples)	639 (421)	1,899 (1,207)	676 (452)	1,862 (1,177)

Notes: All regressions include individual age. Sampling weights are used. *** Significant at the 1 percent level. ** Significant at the 5 percent level. * Significant at the 10 percent level.

[a] Robust standard errors in parentheses. The variable "weeks worked" is available only in intervals since the 2008 wave. To avoid introducing error when predicting wages, we instead use earnings that are directly provided by the ACS.

[b] Robust standard errors clustered at the couple level in brackets.
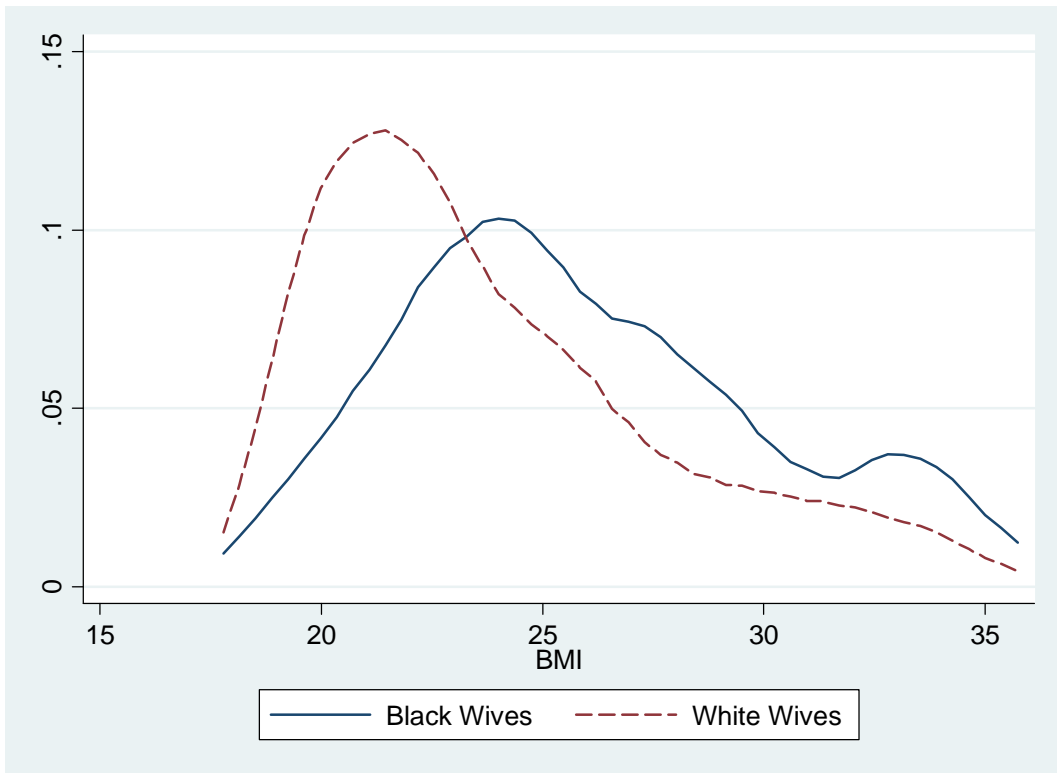
FIGURES

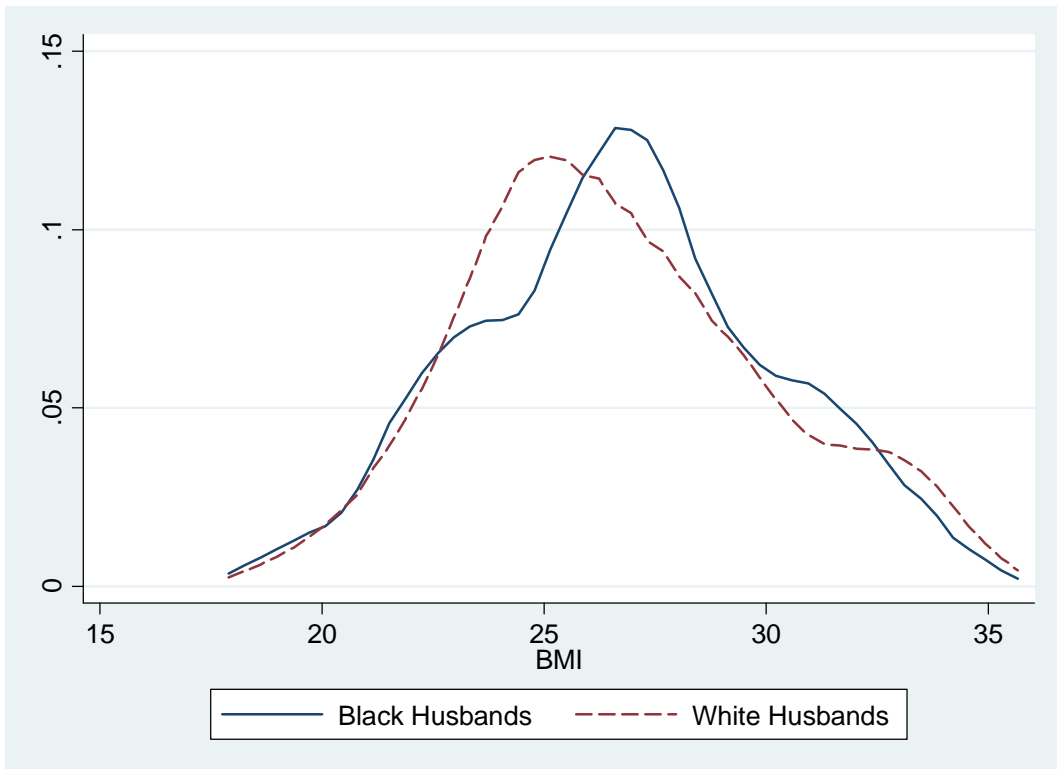FIGURE 1. BMI DISTRIBUTIONS OF MARRIED WOMEN: BLACK AND WHITE

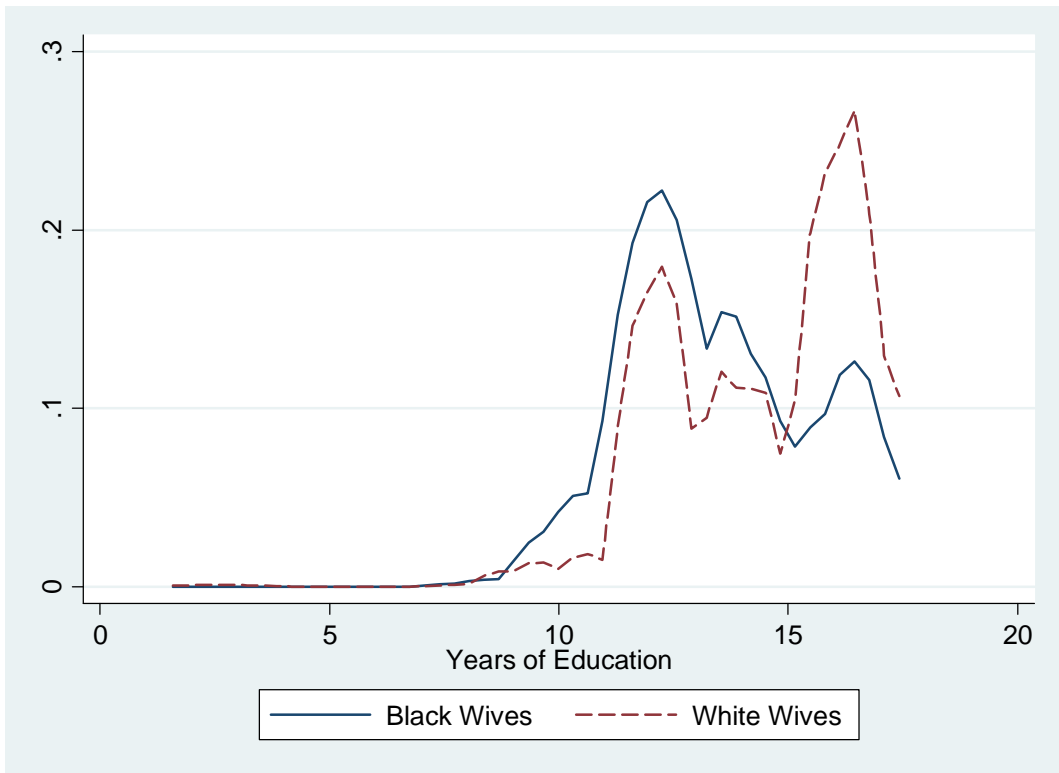FIGURE 2. BMI DISTRIBUTIONS OF MARRIED MEN: BLACK AND WHITE

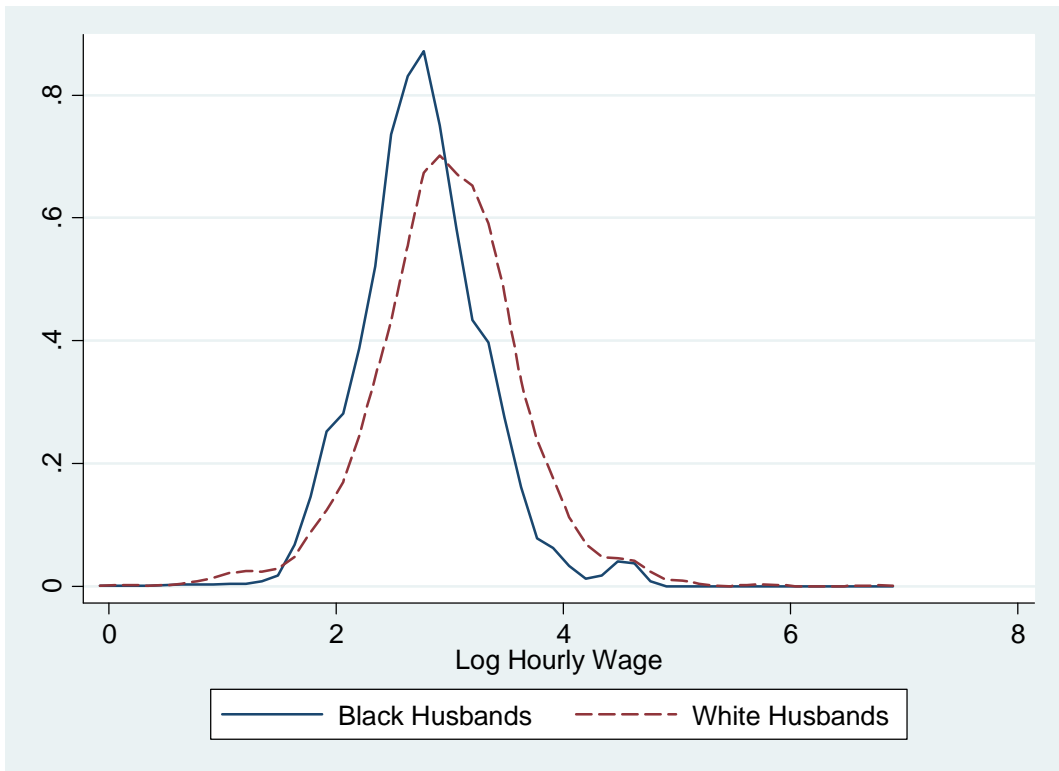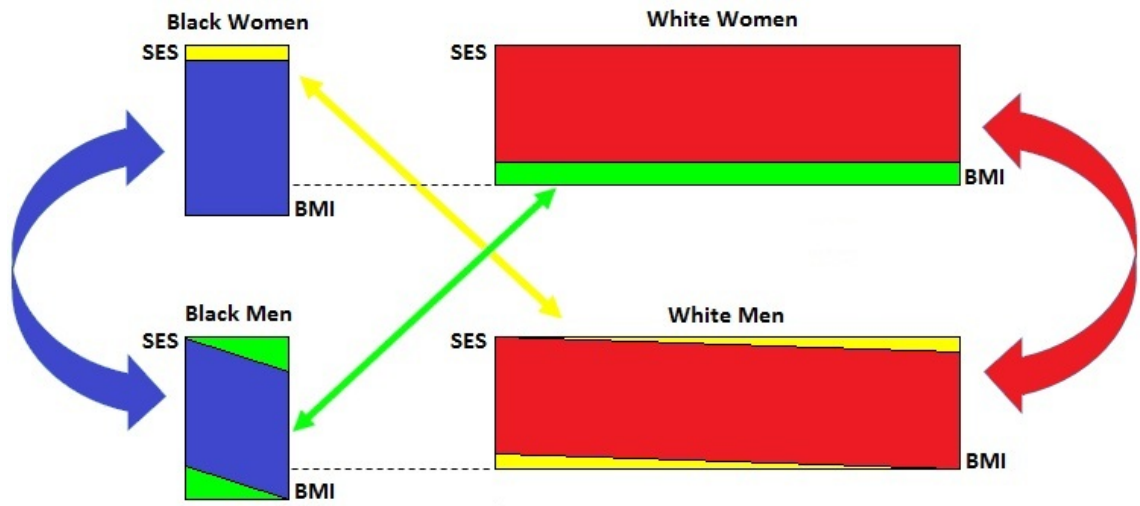FIGURE 3. EDUCATION DISTRIBUTIONS OF MARRIED WOMEN: BLACK AND WHITE

FIGURE 4. LOG WAGE DISTRIBUTIONS OF MARRIED MEN: BLACK AND WHITE

FIGURE 5. OBSERVED MATCHES