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Beyond Black and White: Color and Mortality in Post Reconstruction Era North Carolina

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Abstract

A growing empirical literature in economics and sociology documents the existence of differences in social and economic outcomes between mixed-race blacks and other blacks. However, few researchers have considered whether the advantages associated with mixed-race status may have also translated into differences in mortality outcomes between subgroups of blacks and how both groups compared to whites. We employ previously untapped 1880 North Carolina Mortality census records in conjunction with data from the 1880 North Carolina Population Census to examine whether mulatto, or mixed-race blacks may have experienced mortality advantages over to their colored, or non-mixed race counterparts. For men between the ages of 20-44, estimates demonstrate that all black males are more likely than whites to die. Although our results indicate that there are no statistically significant differences in mortality between mulatto and colored blacks, there are some indications that mulatto males may have enjoyed a slight mortality advantage compared to their colored counterparts. However, we find a substantial mortality advantage associated with mixed-race status among women. These findings indicate that mixed-race women, rather than men, may have accrued any mortality advantages associated with color and white ancestry.

Keywords

N00-Economic History; J1-Demographic Economics; J15-Economics of Minorities and Races

I. Introduction

A large literature in economics and public health documents marked disparities in health between non-Hispanic blacks and whites in the United States. Relative to whites, blacks in the United States are more likely to suffer from acute and chronic disease, self-report worse health, and experience greater risk of mortality from birth to adulthood [1-3]. These health

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disparities are not a new phenomenon [4]. Indeed, a robust literature in economic history points to the long-run health and human capital consequences of poor health among blacks born into slavery or just after Emancipation [5-8].

However, traditional measures of race that classify individuals as either black or white may obscure important within-group differences among blacks. A growing empirical literature in economics and sociology documents the salience of colorism among blacks, whereby lighter-skinned blacks experience social and economic advantages over their darker-skinned counterparts due to skin tone [9].

Evidence suggests that these differences have their origins in the past. Prior to the U.S. Civil War, mulatto blacks¹, many of whom were lighter skinned due to white ancestry, had higher rates of manumission among slaves [10], greater terminal adult heights [11], higher occupational statuses and greater wealth [12] compared to other blacks. After the Civil War, relative to non-mixed race blacks, mixed-race blacks had superior labor market outcomes and educational attainment [13]. More recent research also suggests the continued salience of skin tone for income, marital status and other life outcomes among blacks [14-16].

However, few studies, historical or contemporary, have considered the salience of skin tone or mixed-race status on mortality among blacks. Mortality, particularly among infants, children and working-age adults is an important marker of social inequality [17]. Many of the documented returns to skin tone, including greater human capital accumulation, earnings and overall socioeconomic standing are also associated with mortality [18, 19]. Moreover, understanding the historical origins of intra-racial differences in mortality can help to inform modern day research on the social and economic implications of skin tone differences [20, 21].

This paper extends the existing literature on colorism [11, 12, 22, 23] and race and mortality by examining whether the advantages associated with mixed-race status during the Post-Reconstruction period may have also included lower mortality. To accomplish this aim, we employ a unique dataset comprised of existing U.S. Census data sources that contain information on race, including mulatto status, allowing us to capture the associations between mixed-race status among blacks and compare blacks to whites. Using probit regressions, we estimate the associations between race and all-cause mortality among men and women. Our measure of mulatto status likely captures two factors: the impact of skin tone and the impact of structural advantages associated with white ancestry.

Our results demonstrate that both mulattoes and colored blacks were more likely than whites to die from any cause, but that mulatto males may have had a slight (but statistically insignificant) mortality advantage over colored males. However, among women, the probability of death is lower for mulatto blacks compared to colored women. Our work suggests that a mulatto advantage in mortality is largely confined to women, and that living environment is correlated with the risk of mortality.

¹We realize that the term mulatto may be potentially offensive to some readers, but in the interest of historical accuracy, we use this term for the remainder of this paper.

This paper will proceed as follows. Section 2 provides a background and a discussion. Section 3 describes the data and our estimation sample. Section 4 provides a review of our empirical strategy. Section 5 contains a discussion of our estimation results. Section 6 offers a discussion and conclusion.

II. Background

Historically, relative to their darker-skinned counterparts, lighter-skinned blacks were more likely to receive socioeconomic and political advantages. Evidence suggests that both the white and black communities extended these benefits. During the Antebellum period, lighter-skinned slaves were more likely to work as house slaves or in skilled occupations compared to darker-skinned enslaved blacks [24]. Slave owners were much more likely to free lighter-skinned slaves overall and at earlier ages. This may have been due to their white parentage or the fact that they were more likely to engage in skilled occupations that facilitated the ability to purchase their own freedom [25].

Among free blacks, mulatto blacks tended to be wealthier. Bodenhorn (2003) reports that in rural, agricultural communities of the Upper South, mulatto blacks were more likely to own their own farms or become farm tenants compared to other blacks [26]. Bodenhorn and Ruebeck (2007) report complementary findings in urban populations of the Upper South, where mulatto-headed households possessed about half of the wealth of whites, compared to the 20 percent reported by black heads of household. Thus, the disproportionate rates of intermarriage among mulattoes may have served as a mechanism for preserving the wealth advantages associated with skin tone or mixed-race status [21, 27].

Post-Civil War, advantages associated with skin tone persisted in the form of preferential hiring practices, business ownership, homeownership, human capital attainment and political leadership [28-30]. There is evidence that the mulatto elite acted decisively to retain their higher social standing². For example, elite mixed-race blacks often formed educational, professional and social networks that often excluded their darker-skinned contemporaries [31]. Gullickson (2010) notes that mulatto elites were responsible for creating black preparatory schools after the Civil War. Many of the students at these schools were light-skinned and there were rumors of color-based admittance tests for some elite institutions [13]. The mulatto elite also formed other organizations, such as the Brown Fellowship Society, that provided members with the ability to borrow funds, receive benefits in the case of illness and even a form of life insurance [32].

The less favorable employment and earning conditions for black men shortly after the end of slavery, coupled with the disproportionate rates of in-group marriages among mulatto blacks, suggests that mixed race status may have conferred important advantages to mulatto women. That is, relative to their colored counterparts, mixed-race black women were likely to marry men with greater resources and prestige³ [21, 27]. Given the high concentration of

²It is important to note that the benefits of mulatto status may have been contingent upon the relative size of the black community. For example, using 1880 Census data, Gullickson (2009) suggests that the size of the black population is associated with an increase in colored/mulatto occupation differentiation. On the other hand, Bodenhorn and Ruebeck (2003) find that among antebellum free blacks, increased numbers of mulatto households were negatively associated with wealth (though often not statistically significant) but that living in a large black community had large negative impacts on wealth.

female deaths during this period resulting from the complications of childbirth coupled with poor sanitation [33, 34], to the degree in which marrying a man with greater resources improved living conditions, this may suggest that mixed-race black women possessed mortality profiles superior to those of their black, non-mixed counterparts.

Findings from Logan (2009) indicate substantial negative effects of poor health on the ability of blacks to amass human capital and to migrate during the post-Civil War era [5]. However, anthropomorphic evidence from the economic history literature suggests that failing to address skin tone differences may mask the existence of heterogeneous health outcomes among blacks. Most of this research on health and complexion focuses on the relationships between phenotype and height, an important measure of living conditions, including nutrition and the physical environment [11, 35].

Margo and Steckel (1982) find suggestive evidence that light-skinned enslaved free blacks were taller and heavier than dark-skinned blacks prior to the Civil War [36]. However, their results are of mixed statistical significance, potentially reflecting issues with small sample sizes. Bodenhorn (2002) documents the existence of a mulatto height advantage among free and enslaved blacks in the Upper South during the antebellum period. While both dark- and light-skinned children were about the same height, lighter-skinned adults were taller, likely reflecting differences in access to proper nutrition [11]. Carson (2009) and Carson (2008) confirm the existence of a mulatto height advantage in a large study of prisoners spanning the antebellum and postbellum periods [35, 37]. Carson (2009) suggests that lighter-pigmented blacks may have possessed a relative advantage in Vitamin D production (insolation) over their darker-skinned counterparts. However, even after accounting for insolation differences, mulatto blacks still demonstrated a height advantage. Finally, in recently published work using prison data, Carson (2011) confirms a mulatto height advantage among adult women [38].

Evidence of mortality differences between blacks and mulattoes is more limited compared to that for disparities in terminal height. Most antebellum evidence suggests that both slaves and free blacks had higher mortality rates compared to those of whites [6, 39-41], although few, if any studies have disaggregated mortality outcomes by mixed-race status. One key exception is Pritchett and Yun (2009), who show in a New Orleans sample of black slaves and (white) freemen that slaves had a substantially lower risk of death in the hospital than whites. These authors suggest that this result is the effect of selective hospital admissions, where slave owners only sent healthy slave with a high likelihood of survival to the hospital for treatment [42].

Two extant studies explore the role of skin tone or mixed-race status on mortality outcomes. The first, Lee (2009), uses the U.S. Colored Troops Sample, a random sample of black Union Army soldiers, to examine the role of socioeconomic differences in mortality rates in a sample of black Union troops during the Civil War. Results from the study demonstrate

³Hamilton et. al. (2009), using contemporary data, demonstrate that mixed-race black women are more likely to marry men with higher economic status. The authors demonstrate both theoretically and empirically that the shortage of marriageable black men in the marriage market creates an environment in which more desirable black men are able to attain higher status spouses. They also argue that this environment creates a premium on lighter skinned black women.

the salience of skin tone. Brown-skinned recruits were less likely to contract a disease than darker soldiers, a finding that helps to explain their lower mortality rates. Lighter-skinned blacks were both less likely to contract a disease and less likely to die, conditional upon contracting a disease.⁴ However, the results for light-skinned blacks are not statistically significant after the inclusion of personal characteristics in regression analyses. The author suggests that advantages associated with skin tone may have been attributable to better nutritional status prior to enlistment as well as healthier environments [43], an explanation that is also consistent with the results of previous studies on skin tone and height [11].

In a descriptive study of 13,000 black families in cities and rural communities using 1910 and 1920 census data, E. Franklin reports that, on average, children in mulatto black families had higher child survival rates. Frazier connects these child mortality differentials to the higher rates of literacy and homeownership in the many of the mulatto families in the study [44]. However, there is mixed evidence on the importance of literacy and homeownership as a determinant of child and adult mortality [45-47] .

There are other important limitations to both studies. Lee (2009) explores the determinants of wartime mortality in a non-civilian male population, making it challenging to draw more general conclusions about the associations between skin tone on mortality. Franklin (1933) does not empirically document the relationships between SES, skin tone and mortality. Moreover, both Lee (2009) and Franklin (1933) restrict their analyses to blacks, making it difficult to ascertain how both mulatto and colored blacks compared to whites.

In general, little of the literature in economics, sociology or public health considers the associations between skin tone and mortality. This work explicitly measures both between group differences between blacks and whites and within group skin tone differences between blacks. To our knowledge, this is the first paper to document these relationships in either a historical or modern context. Such differences have implications for understanding heterogeneity among blacks in the modern era.

III. Description of Data Sources and Estimation Sample

Our data is derived from two sources. The first source is the Integrated Public Use Microdata (IPUMS), housed at the Minnesota Population Center. While most IPUMS data is a random subsampling of census data, the entire 1880 Census is available in digital format. These data contain information on individual-, household- and geographic-level factors [48].

The second source of our data is the 1880 North Carolina Mortality Census Schedules. Enumerators conducted the Mortality Census nationwide from 1850-1900⁵, including the state of North Carolina [49]. While enumerated concurrently with the 1880 Federal Census, enumerators separately recorded the mortality census. Enumerators asked each respondent whether someone in the household had died during the twelve months preceding the census. Whenever possible, enumerators attempted to verify cause of death from the attending

⁴Costa and Kahn (2006) present suggestive evidence that black troops serving in the Union army may have viewed army companies with a greater proportion of light-skinned soldiers as more elite.

⁵The 1890 Federal Census and Mortality Schedules were destroyed in a warehouse fire and the 1900 Mortality Schedules were destroyed on the orders of Congress after statistics were compiled (see Thorndale, 1987).

physician listed on the mortality schedules (if any). Enumerators also solicited additional death records or registries from each physician residing in his enumeration district. While few, if any, complete mortality censuses are in digital form, Almas (2003) transcribed the entire North Carolina Mortality census into typewritten form from the original census records [50]. For the purposes of this study, we have transcribed these records into digital form.

Both data sources contain information on each respondent's name, age, race, gender, marital status, occupation and place of origin. We follow the conventions of the 1880 census in coding race: white, black and mulatto. It is important to note here that census enumerators were ultimately responsible for racial classification. While phenotypic characteristics were certainly key in classifying race (census enumerators had instructions to classify “quadroons, octoroons, and all persons having any perceptible trace of African blood” as a mulatto (p.20) [51]), we cannot be certain how much other unobservable factors, such as occupational or wealth, may have influenced enumerators' decisions about racial classification. Thus, mulatto and black may signify potential differences in the social hierarchy, rather than merely a measure of appearance [52]. We use occupational status as a marker of socioeconomic status and follow the coding conventions in the IPUMS to classify individual occupations into the following categories: professional, service, operative, farmer, laborer and unemployed. Finally, we exclude place of origin, as the vast majority of the individuals in the sample (more than 95 percent) were born in the state of North Carolina.

The 1880 North Carolina Mortality Census also contains information on the cause and place of death for each decedent. The causes of death in the mortality census are incredibly varied and given the state of medical diagnosis during this period, likely suffer from substantial measurement error. Due to these issues, we focus on all-cause mortality as an outcome.

For the purposes of this study, we exclude any individuals without valid information on gender ($n=21,938$), race⁶ ($n=127$) or marital status ($n=436$). Due to the fact that individuals may have been more likely to underreport deaths of the very young and the very old [53], we also restrict the sample to the population between the ages of 20 and 45 ($n=908,915$). Our final sample consists of 469,853 individuals from the population and mortality censuses.

Tables 1 and 2 displays descriptive statistics for the male and female populations, disaggregated by race. The overall death rate for both populations (not shown) is approximately 8 deaths per 1000, which is slightly lower than the average death rates for the entire U.S. Mortality Census (8.6 deaths per 1000) and roughly 38 percent lower than combined mortality rates for a select sample of states and major cities (11.2 deaths per thousand) [53]. While there is certainly some underenumeration of deaths in the Mortality Census, it is important to note that many of the selected cities were heavily urban and that rural areas tended to experience significantly lower mortality rates⁷.

⁶We also exclude Native Americans ('Indians not taxed'), as most appear in a separate population census.

⁷Haines (2001) finds using Death Registration Area estimates that the ratio of urban to rural deaths in 1890 was about 1.31.

The overall male death rate is 6.6 deaths per 1000, with the lowest death rate among white men (5.6 deaths per 1000). Colored black men have the second lowest death rate (8.5 deaths per 1000), closely followed by mulatto men (8.8 deaths per thousand). Thus, at first glance, descriptive statistics do not appear to suggest a mulatto mortality advantage among males.

Among women, the mortality rate is considerably higher (9.38 deaths per 1000), likely reflecting the high maternal mortality rates during this time period [54]. As with the male sample, white women have the lowest mortality rates (approximately 8.0 deaths per 1000). While mulatto and colored women have higher mortality rates, there is a gap between colored and mulatto women, with mortality rates of 12.2 and 10.5 deaths per thousand, respectively.

Employment characteristics also differ substantially across groups. Colored and mulatto blacks appear to have slightly lower unemployment rates compared to white men (6 percent vs. 4.5 percent). However, there appear to be potentially important differences in male employment rates both between blacks and whites and within blacks. For example, while white men report much higher rates of professional occupations compared to colored and mulatto men (8.7 percent), mulatto black men have rates of professional employment that are about 3 times as high as those of colored black men (3.1 vs. 1.2 percent). Similarly, while white males have the lowest rates of unskilled labor jobs (24.1 percent), colored males have the highest (nearly 60 percent), followed by mulatto males (approximately 48 percent). Interestingly, mulatto males report the highest rates of service and operative jobs in the male sample.

Unsurprisingly, women have much higher unemployment rates than men, reflecting the fact that most women listed an occupation of „housewife’. White women are the most likely to be unemployed (more than 90 percent), perhaps reflecting greater household socioeconomic standing where women did not have to take on paid labor. Colored women have the lowest unemployment rates (67 percent), followed by mulatto women (approximately 73 percent). While both colored and mulatto women report roughly equal rates of service occupations (12 percent compared to 3 percent among whites), there are differences in racial patterns among unskilled laborers. While only about 3 percent of white women report having an unskilled laborer job, about 18 percent of colored women and 11 percent of mulatto women report the same.

While both the population and mortality censuses contain rich information, both data sources are characterized by varying levels of population undercounts [55, 56] Reasons for underenumeration of deaths might include the length of time since the death in question or the dissolution of a household following the death of the head of household [56, 57]. While we recognize the importance of these issues, there are several reasons that previous researchers have used these data as a valuable resource on mortality trends during this time period [58-61]. First, while we are very interested in overall mortality patterns during this time period, our primary focus is on differences between and within racial groups. Given that blacks and other disadvantaged populations were perhaps more likely to be undercounted during the census period [56], the magnitude of our parameter estimates would be likely be understated, rather than overstated. Second, the Mortality Censuses are

the only source of national data on black mortality patterns prior to 1900. The U.S. government only implemented national vital statistics data collection systems, such as those from the National Death Registration Area (DRA) during the early part of the twentieth century. These early collection efforts only included a small number of northeastern states and the District of Columbia [57]. The heavily urban DRA, at least at its inception, was not particularly representative of the national black population [62]. For example, in 1900, while 90 percent of blacks in the DRA lived in urban areas, this was only true of 23 percent of the national black population [63]. Similarly, in 1880, only about 15 percent of the black population lived in urban areas. This number was even smaller in North Carolina, where just four percent of the black population lived in urban areas [48]. Given the well-documented differences in urban and rural mortality rates [41], a mortality census enumerated in a southern, rural state such as North Carolina, may provide a more typical picture of black mortality patterns during the Post-Reconstruction era. Lastly, as aforementioned, we restrict the sample to working age populations in order to minimize issues with underreporting of deaths by age.

IV. Empirical Approach

In order to estimate the relationships between race and mortality, we specify the following probit equation:

$$P(\text{dying}_{\text{all cause}}) = \Phi \left(X_i \delta + \beta_1 \text{Mulatto}_i + \beta_2 \text{Colored}_i + \sum_{j=1}^{J-1} \eta_j \text{Occupation}_j + \sum_{k=1}^{K-1} \theta_k \text{Township}_{ik} + \sum_{n=1}^{N-1} \text{County}_{in} \right)$$

where $\text{dying}_{\text{all cause}}$ represents death in the year prior to the census (June 1, 1879-May 31, 1880), X_i is a vector of standard demographic controls, including age and marital status. *Mulatto* and *Colored* indicate whether the individual was mulatto or colored black, respectively, with *White* as the reference category. *Occupation* is a vector of variables denoting employment status and type, including professional (reference category), service, operative, farmer, laborer and unemployed.

Following Bodenhorn (2003) and Gullickson (2010), we include the following variables in *Township*, the vector of township-level variables: the total number of mulatto residents, the total number of black (colored plus mulatto) residents⁸ and the overall percentage of blacks in the population. We include a measure of the total number of mulatto residents because the magnitude of the social and economic benefits associated with mulatto status may have been dependent upon the economies of scale generated from larger mulatto communities [64]. From the vantage point of whites, granting buffer class status to mulattoes may have been less costly (in terms of white privilege) with an increasingly large black population. However, conditional upon a fixed mulatto population, an increasingly large black (mulatto + colored) population may have blurred the distinctions between mulatto and colored blacks. Whites may have also seen proportionally large African-American populations as a threat—and may have also been hesitant to grant special privileges to mulattoes because of it [64].

⁸We take the logarithm of both of these variables.

Moreover, racial composition may, to some extent, proxy for the disease environment that individuals faced. During the late nineteenth century, infectious disease was one of the primary drivers of mortality, and African-Americans had much higher rates of infectious disease morbidity and mortality [53]. Deaton and Lubotsky (2003) also find in modern U.S. data that the racial composition of neighborhoods is correlated with mortality among both whites and blacks [65].

We also include a vector of county-level characteristics (*County*), including per-capita wealth and indicators for each of the 94 counties in the sample. We cluster standard errors by county, the highest level of aggregation in the data [66]. We report both probit coefficients and marginal effects from regressions. Additionally, we stratify models by gender, to account for gender-based mortality and occupational patterns [67, 68].

V. Empirical Results

In this section, we discuss the estimated relationships between race and all-cause mortality. We estimate separate probit equations for men and women. Tables 3 and 4 contain marginal effects from probit regressions for men and women, respectively. We compare results from basic specifications that only include race and age as covariates (Column 1) to fuller specifications that also include marital status and occupation (Columns 2 and 3). We then estimate models including township racial composition and (Column 4) and county-level fixed effects (Column 5). In order to ascertain whether there are statistically significant differences across subgroups of blacks, we perform a post-estimation chi-squared test on the equality of the *Mulatto* and *Colored* coefficients. Table 5 contains predicted mortality rates by profession and Table 6 contains the results of race-specific regressions for both men and women.

Men

We first report the empirical results for males in Table 3. Controlling for age only, we find that both colored and mulatto black males are both 0.3 percentage points more likely to die than white males (Column 1). We find similar results for race when we include an indicator of marital status (Column 2). Married males are also less likely to die than their unmarried counterparts. The inclusion of occupational status causes the association between race and mortality to increase to approximately 0.4 percentage points for both colored and mulatto blacks. The strongest correlations between occupation and mortality occur for men in the service industry, which has a 0.5 percentage point higher association with mortality (Column 3). In Column 4, we include indicators of the racial composition in each township, including the log of the mulatto and (overall) black populations and the percentage black population. However, there are no statistically significant associations with the racial composition of each township, nor with average wealth/per capita in each county. Finally, we include county-level fixed effects in Column 5. In each of the above specifications, chi-squared tests demonstrate that both colored and mulatto males are statistically equivalent with regard to mortality outcomes.

We also consider whether the returns to factors such as occupation, age and area-level characteristics differ by race. To explore this possibility, we re-estimate our final model

specification, stratifying our analyses by race. The results are located in Table 6.⁹ There are three results that appear to be most noteworthy. The first is that the association between unemployment and mortality is far greater for colored and mulatto males (4.2 and 6.4 percentage points, respectively) than white males (0.70 percentage points). Second, for white males, the overall black population appears to have a negative, but very small association with mortality. However, living in a township with a greater proportion of black residents is positively associated with mortality only among white males (1.1 percentage points). Finally, we find that among mulatto males, living in a township with a greater number of mulatto residents is negatively correlated with mortality (0.50 percentage points).

In order to place our results in context, in Table 5, we present predicted mortality rates by race and occupation at age 30¹⁰. Unsurprisingly, unemployed males have the highest mortality rates, with the lowest among white men (8.42 deaths per thousand), followed by mulatto and colored males (11.84 and 13.0 deaths per thousand respectively). We find that males that are operatives and laborers have the lowest mortality rates. Males who report being operatives have predicted mortality rates of approximately 1.96 deaths per thousand for white males, 2.92 deaths per thousand for mulatto males and 3.25 deaths per thousand for colored males. Similarly, predicted mortality for laborers is 1.88 deaths per thousand for white males, 2.80 deaths per thousand for mulatto males and 3.12 deaths per thousand for colored males. Mortality rates for farmers and those in service fall in between the death rates for the unemployed and operatives and laborers. Taken together, our models suggest that colored males had a 62 percent higher mortality rate compared to whites and that mulatto males had a 46 percent higher mortality rate compared to whites. While results from Table 5 indicate that the differences between mulatto and colored males fail to reach statistical significance, our predicted estimates suggest that mulatto males had a mortality advantage over their colored counterparts of approximately 10 percent.

Women

Table 4 reports the marginal effects from probit models on mortality among women between the ages of 20 and 44. Controlling for age, both colored and mulatto women have higher mortality rates compared to their white counterparts (Column 1). Marginal effects suggest that mulatto blacks are slightly less likely to die than colored blacks (0.3 vs. 0.4 percentage points). The inclusion of marital status (Column 3) fails to alter this result. However, the inclusion of occupational status (Column 3) decreases the association on mulatto status by more than a third (to 0.1 percentage points) and renders it statistically insignificant. Surprisingly, the association between marital status and mortality is positive (0.2 percentage points). On one hand, there were important economic and social benefits associated with marriage for women [69]. On the other hand, our sample covers prime childbearing years for women. Giving birth during this time period was a very deadly proposition, as reflected by the high maternal mortality rates at the turn of the twentieth century in the U.S. [54].

Women who were unemployed (generally housewives), operatives and in service had lower

⁹We view these results with caution both because of the considerably smaller sample sizes and that a fairly large number of individual observations are excluded from estimation due to the fact that they reside in counties that are perfectly correlated with our outcome of interest.

¹⁰Predictions from model 4.

mortality rates compared to professional women. Chi-squared tests indicate that in Models 1-3, the differences between mulatto and colored black women are statistically insignificant at conventional levels.

However, upon inclusion of either area-level characteristics (Models 4), we find that the differences between colored and mulatto blacks become statistically significant. In our the model where we include county fixed effects (Model 5), the association between colored black status and mortality is approximately 0.2 percentage points while there is no statistically significant association between mulatto status and mortality. While few of the county-level characteristics are statistically significant, living in a county with higher numbers of mulatto blacks is associated with higher mortality (0.80 percentage points).

As with men, we consider whether the associations between mortality, marriage and occupational status differ by race in Table 6. Surprisingly, the association between marital status and mortality is positive and statistically significant only among white women. Similarly, the associations between mortality and occupational status are only statistically significant among white women. However, the racial composition of each township appears to have differential associations with mortality across racial groups. For colored women only, greater numbers of black residents in a township has a small negative association with mortality (-0.40 percentage points). However, for all women, a higher percentage of blacks residing within their township of residence is positively associated with mortality. The coefficient estimates are highest for mulatto women (2.6 percentage points) followed by colored women (1.5 percentage points) and white women (1.0 percentage point).

Turning to the estimates of predicted mortality at age 30 (Table 5) we find that the highest mortality rates are among women in the service industry. Of women with service-related jobs, whites had the lowest mortality rates (8.44 deaths per thousand), followed by mulatto women (5.47 deaths per thousand) and colored women (7.76 deaths per thousand). Predicted mortality for women in professional occupations is the next highest: 5.12 deaths per thousand for white women, 5.47 deaths per thousand for mulatto women and 7.76 deaths per thousand for colored women. The lowest mortality rates are among women in farming and operative jobs. Female farmers have predicted mortality rates of 2.77 and 2.98 deaths per thousand for white and mulatto women respectively and 4.32 deaths per thousand for colored women. For women in operative-related employment, predicted mortality for white and mulatto women is 2.41 and 2.59 deaths per thousand, respectively; the mortality rate for colored women is 3.77 deaths per thousand. Finally, predicted mortality for unemployed women (housewives) is 3.32 deaths per thousand for white women, 3.56 deaths per thousand for mulatto women and 5.14 deaths per thousand for colored women.

Our results suggest that among women, there is a penalty associated with colored status of more than 50 percent and that mulatto women have a substantial mortality advantage compared to their colored counterparts. Predictions from our models suggest that mulatto women were only about 7 percent more likely to die compared to white women but that these differences do not appear to be statistically significant.

VI. Discussion and Future Research

Using data from the 1880 North Carolina Mortality Census and the 1880 North Carolina Population Census, we find evidence of modest but significant differences in mortality between mulatto and colored blacks, but these differences appear to be largest among women. Analyses of males aged 20 to 44 demonstrate that although both subgroups of black males are more likely to die than whites in the same age category, mulatto males may have a slight mortality advantage (though statistically insignificant). Colored and mulatto males are approximately 46 to 62 percent more likely to die at age 30, respectively. These results are consistent with Sloan *et al.* (2010) who find that being a black male increased the probability of mortality by more than 50 percent from 1865 to 1914. [70].

In contrast, the results in our female-only models suggest a mulatto mortality advantage among women. On average, colored women have predicted mortality rates more than 50 percent higher than those of white women. However, differences in mortality between mulatto and white women are statistically insignificant and predicted mortality rates are nearly equivalent. These findings are consistent with contemporary literature that finds that the advantages of skin tone are much more salient for women than men [71].

One potential explanation for our findings is marriage selection. Although mulatto and colored women in the sample are equally likely to be married, our measure of marriage may obscure important differences in spousal quality. On the marriage market, having high status allows one to attract another high status partner, explaining in part why individuals are highly likely to engage in positive assortative mating [72-74]. Given the relative premium placed upon skin tone, mulatto women considering marriage would likely have had the ability to select a higher quality match from the pool of African-descent males.

Evidence from the economic history literature confirms that the mulatto elite during the mid-nineteenth century were disproportionately likely to intermarry in order to preserve the comparative advantages associated with skin tone—one of which included substantially greater wealth compared to that of colored blacks [27]. Mulatto male heads of household also had comparatively higher occupational prestige, were more likely to be literate and had higher average numbers of literate women compared to colored male heads of household [21]. Studies using data on contemporary populations also suggests that the spouses of mixed-race black women, particularly those who are older, are more likely to be employed and tend to rank higher on measures of occupational prestige than those of black women [15].

Taken together, our findings suggest that compared to colored women, mulatto women may have been able contract more advantageous marriages that provided social and economic resources that buffered against mortality [12]. However, the current study does not provide conclusive evidence for this assertion. Future work in this area should investigate this issue by matching decedents to their original reporting households in the census data. This would allow for explicit comparison of socioeconomic characteristics of the spouses of mulatto and colored women.

This work has several important limitations. First, the complete version of the IPUMS census does not contain any measures of human capital, such as literacy. In that racial classification can influence health and mortality through the acquisition of human, any mulatto advantage may be operating through an educational mechanism. Second, occupation is potentially endogenous and may reflect premarket factors that are also correlated with race. Another important issue is that we do not have detailed information on skin tone, which would have allowed us to capture the associations between phenotype, mixed-race status and mortality in a more precise manner. Also, mortality experiences during a single year may not allow us to generalize to other years during this time period. Finally, the standard limitations of using cross-sectional data also apply here.

However, this work provides historical evidence that intragroup differences among blacks may have extended to differences in mortality. Pursuing this line of research will allow us to gain a better understanding of the mechanisms through which mixed-race status may have informed mortality and other life outcomes during the post-Reconstruction era and beyond.

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Research Highlights

- We use data from the 1880 North Carolina Mortality Census to explore inter- and intra- racial mortality differences.
- Our analyses demonstrate that net of a variety of controls black males have greater probability of dying in 1880 than whites.
- We confirm that mulatto (mixed race) women have more favorable mortality profiles than colored (non-mixed race) women, and that mortality differences between white and mulatto women are statistically insignificant.

Table 1

Summary Statistics for Men in North Carolina by Race, 1880 Mortality and Population Censuses

	White	Colored	Mulatto
Mortality (Proportion)	0.006	0.009	0.009
Age	29.572	29.543	29.388
Married (Proportion)	0.6452	0.6721	0.6631
Professional (Proportion)	0.0867	0.0117	0.0311
Service (Proportion)	0.0075	0.0252	0.0406
Operative (Proportion)	0.0831	0.0756	0.1256
Farmer (Proportion)	0.5211	0.2526	0.2791
Laborer (Proportion)	0.2418	0.5899	0.4791
Unemployed (Proportion)	0.0597	0.0450	0.0446
Log Mulatto Pop., Township	3.7466	4.5444	5.3729
Log Colored Pop., Township	5.9616	6.9867	7.0593
Percent All Blacks, Township	0.3210	0.4999	0.5027
County Wealth	107.4117	117.8474	115.7328
N	140249	67287	10808

Table 2

Summary Statistics for Women in North Carolina by Race, 1880 Mortality and Population Censuses

	White	Colored	Mulatto
Mortality (Proportion)	0.008	0.012	0.011
Age	30.447	29.802	29.559
Married (Proportion)	0.642	0.697	0.707
Professional (Proportion)	0.008	0.002	0.006
Service (Proportion)	0.028	0.124	0.129
Operative (Proportion)	0.016	0.005	0.015
Farmer (Proportion)	0.008	0.007	0.007
Laborer (Proportion)	0.033	0.189	0.117
Unemployed (Proportion)	0.906	0.673	0.726
Log Mulatto Pop., Township	3.725	4.579	5.387
Log Colored Pop., Township	5.930	7.011	7.056
Percent All Blacks, Township	0.314	0.503	0.501
County Wealth	107.403	117.236	115.473
N	160671	77152	13686

Table 3
Marginal Effects from Probit Regression Models of Race on Mortality among Men from North Carolina in 1880

Variables	(1)	(2)	(3)	(4)	(5)
Age	0.0001 (0.0000) ***	0.0002 (0.0000) ***	0.0002 (0.0000) ***	0.0002 (0.0000) ***	0.0002 (0.0000) ***
Colored	0.0030 (0.0008) ***	0.0031 (0.0008) ***	0.0036 (0.0009) ***	0.0028 (0.0009) ***	0.0029 (0.0009) ***
Mulatto	0.0032 (0.0012) ***	0.0033 (0.0012) ***	0.0037 (0.0013) ***	0.0026 (0.0010) ***	0.0025 (0.0009) ***
Married		-0.0045 (0.0006) ***	-0.0031 (0.0006) ***	-0.0030 (0.0005) ***	-0.0029 (0.0005) ***
<i>Occupation (Reference: Professional)</i>					
Service			0.0049 (0.0023) **	0.0050 (0.0024) **	0.0048 (0.0023) **
Operative			-0.0020 (0.0011) *	-0.0016 (0.0010)	-0.0016 (0.0010)
Farmer			-0.0001 (0.0010)	0.0001 (0.0010)	0.0003 (0.0010)
Laborer			-0.0019 (0.0010) *	-0.0014 (0.0010)	-0.0013 (0.0010)
Unemployed			0.0168 (0.0047) ***	0.0175 (0.0045) ***	0.0179 (0.0043) ***
Proportion Mulatto				0.0003 (0.0003)	0.0003 (0.0003)
Proportion Colored				-0.0006 (0.0005)	-0.0005 (0.0006)
Total Proportion Black				0.0052 (0.0040)	0.0069 (0.0054)
County Wealth				0.0000 (0.0000) *	0.0000 (0.0000) *
County Controls					Yes
<i>Hypothesis tests</i>					
χ^2	0.04	0.03	0.04	0.02	0.09
Intra-racial Differences (p-value)	0.84	0.87	0.97	0.88	0.77
N	218344	218344	218344	218344	218344

Source: These data are taken from the 1880 Census of Population and the 1880 Mortality Census for the state of North Carolina. The sample excludes individuals younger than 20.

Table 4

Marginal Effects from Probit Regression Models of Race on Mortality among Women from North Carolina in 1880

Variables	(1)	(2)	(3)	(4)	(5)
Mortality					
Age	0.0001 (0.00002)	***	0.0001 (0.00002)	***	0.0001 (0.0000)
Colored	0.00432 (0.0009)	***	0.00282 (0.0009)	***	0.0019 (0.0008)
Mulatto	0.00273 −(0.0012)	***	0.00141 −(0.0011)	0.0004 (0.0009)	0.0000 (0.0009)
Married		0.00048 (0.0004)	0.00202 (0.0006)	***	0.0021 (0.0006)
Occupation (Reference: Professional)					
Service			0.00353 (0.0043)	0.0042 (0.0042)	0.0046 (0.0042)
Operative			−0.01151 (0.0044)	**	−0.0112 (0.0044)
Farmer			−0.01222 (0.00424)	***	−0.0119 (0.0041)
Laborer			−0.00724 (0.00447)		−0.0070 (0.0042)
Unemployed			−0.00919 (0.00438)	**	−0.0088 (0.0043)
Proportion Mulatto				0.0003 (0.0004)	−0.0002 (0.0003)
Proportion Colored				−0.0007 (0.0006)	−0.0006 (0.0006)
Total Proportion Black				0.0079 (0.0038)	**
County Wealth				0.0000 (0.0000)	***
County Controls					
Hypothesis tests					
χ²	2.32	2.34	2.12	2.89	4.54
Intra-racial Differences (p-value)	0.1279	0.1261	0.1457	0.089	0.0032
N	251509	251509	251509	251509	251509

Standard errors in parentheses

p<0.01**
p<0.05*
p<0.1

Table 5

Predicted Probability of Death by Race and Profession in North Carolina, 1880 Mortality and Population Censuses

	Men			Women		
	White	Colored	Mulatto	White	Colored	Mulatto
Professional	2.74	4.49	4.04	5.12	7.76	5.47
Service	4.31	6.89	6.23	8.44	12.49	8.98
Operative	1.96	3.25	2.92	2.41	3.77	2.59
Farmer	2.65	4.34	3.90	2.77	4.32	2.98
Laborer	1.88	3.12	2.80	4.15	6.36	4.45
Unemployed	8.42	13.00	11.84	3.32	5.14	3.56
N	218344	218344	218344	251509	251509	251509

Table 6

Marginal Effects from Probit Regression Models of Mortality By Race from Men and Women, North Carolina in 1880

	(1)	(2)	(3)	(4)	(5)	(6)
	Men			Women		
	White	Colored	Mulatto	White	Colored	Mulatto
Variables						
Age	0.00018 (0.00003) ***	0.00017 (0.00005) ***	0.00035 (0.00018) **	0.00018 (0.00003) ***	0.00008 (0.00005)	-0.00012 (0.00018)
Married	-0.00305 (0.00055) ***	-0.00281 (0.00086) ***	-0.00907 (0.00519) *	0.00236 (0.00069) ***	0.00124 (0.00116)	-0.00045 (0.00326)
<i>Occupational Categories (Reference: Professional)</i>						
Service	0.01653 (0.00478) ***	-0.00332 (0.00411)	0.00722 (0.00734)	0.02511 (0.00547) ***	-0.01010 (0.01978)	-0.01094 (0.01913)
Operative	0.00052 (0.00121)	-0.00791 (0.00346) **	0.00170 (0.00459)	-0.00958 (0.00392) **	-0.01593 (0.02215)	-0.02063 (0.01986)
Farmer	0.00063 (0.00087)	-0.00419 (0.00369)	0.00995 (0.00491) **	-0.01154 (0.00367) ***	-0.01842 (0.02033)	-0.00799 (0.02578)
Laborer	-0.00215 (0.00086) **	-0.00273 (0.00352)	0.00629 (0.00421)	-0.00807 (0.00429) *	-0.01445 (0.01998)	-0.01530 (0.01888)
Unemployed	0.00717 (0.00170) ***	0.04274 (0.01318) ***	0.06357 (0.01759) ***	-0.00746 (0.00388) *	-0.01651 (0.02006)	-0.01344 (0.02006)
Proportion Mulatto	0.00007 (0.00031)	0.00069 (0.00060)	-0.00540 (0.00237) **	-0.00039 (0.00028)	0.00092 (0.00076)	0.00158 (0.00301)
Proportion Colored	-0.00099 (0.00046) **	0.00027 (0.00169)	0.00440 (0.00369)	0.00018 (0.00057)	-0.00445 (0.00170) ***	-0.00491 (0.00325)
Total Proportion Black	0.01098 (0.00482) **	0.00311 (0.00787)	-0.01236 (0.01726)	0.00696 (0.00401)	0.01500 (0.00837) *	0.02589 (0.01412) *
Country Wealth	0.00000 (0.00001)	-0.00017 (0.00002) ***	-0.00035 (0.00006) ***	0.00004 (0.00001) ***	-0.00015 (0.00003) ***	0.00058 (0.00010) ***
N	140249	66618	7454	160671	76289	11303

Note: The sample sizes listed here differ from those in other tables. Some individuals are excluded from estimation because of the fact that they reside in counties that are perfectly correlated with our outcome of interest.