



# The effects of prospective mate quality on investments in healthy body weight among single women<sup>☆</sup>



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## ABSTRACT

This paper examines how a single female's investment in healthy body weight is affected by the quality of single males in her marriage market. A principle concern in estimation is the presence of market-level unobserved heterogeneity that may be correlated with changes in single male quality, measured as earning potential. To address this concern, we employ a differencing strategy that normalizes the exercise behaviors of single women to those of their married counterparts. Our main results suggest that when potential mate quality in a marriage market decreases, single black women invest less in healthy body weight. For example, we find that a 10 percentage point increase in the proportion of low quality single black males leads to a 5–10% decrease in vigorous exercise taken by single black females. Results for single white women are qualitatively similar, but not consistent across specifications. These results highlight the relationship between male and female human capital acquisition that is driven by participation in the marriage market. Our results suggest that programs designed to improve the economic prospects of single males may yield positive externalities in the form of improved health behaviors, such as more exercise, particularly for single black females.

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## 1. Introduction

The obesity rate in the United States grew from 15% in 1980 to 34% in 2008. In addition to the obvious health implications, this growth generated significant economic costs (Flegal et al., 2010). Reuters estimates that obesity contributed \$190 billion to annual health care costs in the United States in 2012, a figure that exceeds the costs attributable to smoking (Begley, 2012). Obesity is linked to

increased hypertension, heart disease, stroke, disability, diabetes, and non-health factors such as decreased productivity in the workplace and stunted human capital formation. The Brookings Institution estimates the aggregate economic costs of obesity to be \$215 billion per year, or 1.4% of GDP (Hammond and Levine, 2010).

While the incidence of obesity among all demographic groups in the United States has risen considerably since the 1980s, some groups have been disproportionately affected (see Fig. 1). The CDC reports that 58.5% of black women over the age of 20 are obese, compared to a population average of 33.9% (Flegal et al., 2010).<sup>1</sup> The demographic discrepancy in severe (grade 2) obesity is even larger. Black

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<sup>1</sup> Obesity is generally defined using the body mass index (BMI), which is calculated as  $BMI = [\text{weight (lb)}/\text{height (in)}^2] * 703$ . The Centers for Disease Control define obesity as a BMI greater than or equal to 30. Severe (grade 2) obesity is defined as a BMI greater than or equal to 35.

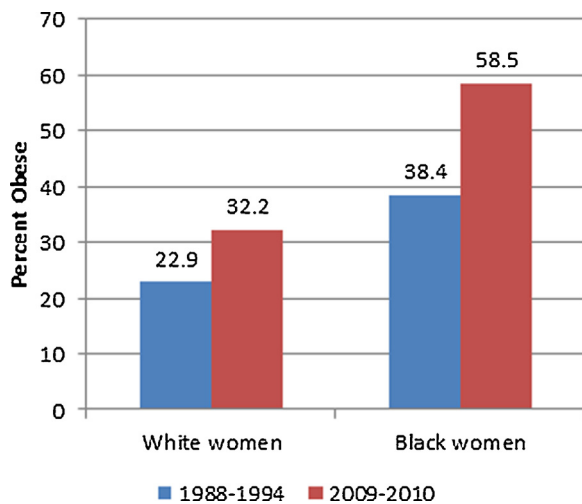


Fig. 1. Obesity rates among women by race; 1998–1994 and 2009–2010.

women have a severe obesity rate of 27.9% compared to a rate of 14.3% for the total population. While the obesity rate (particularly severe obesity) is highest among black women, the obesity rate among single white women has exhibited the largest growth rate (45% from 1999 to 2011) of any demographic group in recent years. According to the Behavioral Risk Factor Surveillance System, the obesity rate for single black women under age 45 increased by 27% over the same period.

Biologically, body weight is a function of calories ingested and expended. Economically, the individual's decision to consume net calories is a function of her incentives to invest in healthy eating and exercise. Philipson (2001) posits that an unfavorable marriage market for women may reduce the marginal benefit of premarital investment in fitness and therefore contribute to the high rate of obesity. Black women have exhibited greater obesity rates and faced less favorable marriage prospects than white women since the 1970s (Wilson and Neckerman, 1986). The U.S. Bureau of Justice Statistics (BJS) reports that black males are incarcerated at nearly seven times the rate of white males. Estimates place the proportion of black males with a felony conviction as high as one-third. Black men exhibit 100% greater high school dropout rates and 40% lower college completion rates than white men.<sup>2</sup> The unemployment rate among black men has been approximately twice that of white men since the 1960s and black men are also 45% more likely than white men to not participate in the labor force.<sup>3</sup> Conditional on being employed, median wages are 27% lower for black men than white men.<sup>4</sup> These observed disparities in human capital, employment, wages, and incarceration rates are clearly not independent. For example, Western (2002) finds that incarceration decreases earnings by

between 10% and 30%, increases search costs when seeking employment, and limits the set of attainable occupations.

In this paper, we study the effect of single male quality on a single female's investment in healthy body weight.<sup>5</sup> Our analysis is empirical. Using panel data from the Behavioral Risk Factor Surveillance System – Selected Metropolitan/Micropolitan Area Risk Trends (BRFSS-SMART) we measure premarital investment in healthy body weight by minutes of moderate and vigorous exercise per week. As suggested by Becker (1974), we measure a male's quality by his earning potential.<sup>6</sup> Thus, defining marriage markets by MSA, race, and age group, we measure single male quality within a given marriage market using education, employment, income, and arrests rates.<sup>7</sup> Ideally, we would observe the entire distribution of male quality, which would allow us to analyze the behavioral responses of single females to shifts in the entire male quality distribution. However, the data allow us to measure only the proportion of low quality single males within a marriage market (i.e. we observe high school graduation rates, the unemployment rate, percent with low income, and arrest rate). We assume that this measure of the proportion of low quality males reflects a shortage of quality mates (for women) in the marriage market.

We estimate the effect of the proportion of low quality males on the body weight investment decisions of the average single female in a marriage market. Our regressions include year and marriage-market fixed effects, which control for unobservables that vary by time period (e.g. nationwide economic conditions) and marriage market (e.g. persistent economic, cultural, and geographic factors) that may be correlated with the characteristics of single males. However, there are additional unobservables that vary by both time period and marriage market (e.g. chemical dependency rates, poverty rates, local economic shocks) that may be correlated with single male quality. Ignored, this correlation between male quality and unobservables would bias our results. We address the potential omitted variable bias by differencing the average health investments of married women from single women in the same marriage market. We also include differenced control variables and market-level fixed effects in these regressions to account for time-variant observable and time-invariant unobservable compositional differences

<sup>5</sup> Throughout this paper we will reference the “quality” of males and females participating in the marriage market. In all instances, an individual's quality refers to their value to potential mates. (Burdett and Coles (2001) use the term “pizazz” to describe a similar value.) In theory, single females receive greater utility from matching to a high quality male than a low quality male and vice versa.

<sup>6</sup> In a similar vein, Wilson and Neckerman (1986) proxies for quality, which he refers to as the “marriageability”, of black men using employment. Wood (1995) measures marriageability using full-time or military employment and various own-income thresholds. Brien (1997) adds student status and education to Wood's measures.

<sup>7</sup> The Pew Research Center reports that black-white interracial marriage rates are less than 5% of all black and white marriages. As such, throughout our analysis we treat marriage markets separately for each race.

<sup>2</sup> Source: National Center for Education Statistics.

<sup>3</sup> Source: Bureau of Labor Statistics, Current Population Survey.

<sup>4</sup> Source: American Community Survey.

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