Men, Marriage, and Health: Using Longitudinal Data to Examine Selection Bias

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EXTENDED ABSTRACT

Abstract

The literature has established that married men have better health than men who never marry, divorce or who are widowed. However, the causal pathway between health and marriage has not been established empirically. This paper uses a sample of 3391 men living in the United Kingdom to examine the question, "are healthy men both more likely to marry and more likely to be healthy later in life?" I hypothesize that healthier men are selected into marriage and that marriage is not significantly associated with self-rated general health over time. Fixed and random effects models are estimated to examine the data longitudinally. The fixed effects model shows that marriage is not associated with general health over time, suggesting that healthier men are selected into marriage. The random effects model shows an association of marriage with general health over time (p<.01). However, this is most likely due to the omitted variable bias suggests that marriage is not associated with general health over time, which may be indicative of selection effects.

Introduction

The central question guiding this analysis is: are healthy men both more likely to marry and more likely to be healthy later in life? I hypothesize that healthier men are selected into marriage and that marriage is not significantly associated with health when repeated measures are taken over time. This will be tested by comparing a random effects model which estimates both between person and within person variation over time to a fixed effects model which estimates only the within person variation over time. If the fixed effects model shows no association between marriage and health, but the random effects model does show a significant association I will know that the positive association between marriage and health found in previous studies is due to some personal characteristic of healthy men for which regular OLS models are unable to control. Due to the differences in both the health benefits of marriage (Choi & Marks 2011, Grundy et al 2010, Staehelin et al 2012) and the potentially different selection process for men and women (Cheung 1998), this study examines selection into marriage by health solely for men.

Current Study

The assumptions present in the current literature regarding the relationship between marriage and self-rated health are graphically displayed in Figure 1. The figure shows the population of men beginning their search for mates with health that is not significantly different. After marriage the health of men who marry decreases at a slower rate relative to those who never marry. Divorced and widowed men are not graphically represented, but they would 'fray' off of the end of the married line and decrease in health due to losing the 'marriage' treatment. Figure 2 represents the alternative hypothesis.

Data

This study uses the National Childhood Longitudinal Survey, also known as the British Birth Cohort Study 1958. It is a longitudinal data set that stems from the Perinatal Mortality Survey; a study created from a sample of children born in England, Scotland and Wales in one week in 1958 (Power & Elliot 2006). The first wave was collected when the children were infants and is considered wave 0. There are eight subsequent waves of data when the respondents are 7, 11, 16, 23, 33, 41, 46 and 50 (Power & Elliot 2006). This study will begin using the data at wave four when the respondents are 23, because that is the wave the first asks questions regarding general health.

This study is addressing issues of selection; therefore several purposeful sample restrictions were made. First, only males were retained in this study which shrinks the original sample from 14,815 to 6,267. Second, any respondent who did not have at least two waves of data was dropped (N=5,448). Next, respondents who did not have at least two measures of the dependent variable were dropped (N=5,424). Finally, because the study is interested in the effect of marriage on health it is essential to have a measure of health before marriage. Therefore, only men who are unmarried at wave 4 (age 23) are retained, which bring the number of respondents to 3,391. The final number of observations used in long format is 3,391 respondents times 5 waves or 16,955.

Measures

The dependent variable in this study is a measure of general self-rated health captured at all 5 waves. It is measured on a scale of 1-4 with one reflecting poor health and 4 reflecting excellent health. The independent measure will be marital status. This will be a simple dichotomous measure of marital status at each wave (1=yes). People who never marry, divorce and are widowed will be coded as 0. Previous literature has identified differences in the health of men who divorce and are widowed versus men who never marry (Robards et al 2012, Dupre & Meadows 2007, Grundy & Tomassini 2010). However, this study is interested only in the transition into marriage and possible transition out at subsequent waves and how this may affect health. Because all transitions out of marriage re associated with a decrease in health relative to continuous marriage a simple dichotomous measure will pick up these differences relative to the married at each wave.

The controls for this model will be age, current job, smoking and alcohol. Due to the nature of the sample, all respondents are the same age at every wave. This means that age also serves as a control for each wave. Current Job is coded as a dichotomous variable. Professional/managerial occupations are coded as 1 and all other occupations are coded as 0. Professional/managerial occupations are associated with both higher earnings and higher prestige which have both been shown to be beneficial to health (Haas et al 2011). At each wave respondents are asked about their drinking and smoking behaviors. If the respondent smokes says that he is a 'current smoker then he receives a 1 for that wave and if he does not then he receives a 0. If the respondent drinks alcohol daily then he receives a 1 for alcohol for that wave and 0 if drinks alcohol less than daily.

Method

First, a set of descriptives for all waves will be shown. Next a cross-sectional bivariate regression of self-rated health on marriage will be run at each wave to re-create the results from previous studies. Finally, the effect of marriage on health over time will be examined using fixed and random effects models. The fixed effects are advantageous because it examines a person's variation from his personal mean over time. This means that fixed effects will allow us to assess within person variation without the necessity of controlling for all possible confounders such as genetics and attractiveness. The random effects models are similar to fixed effects models but allow for between person variation as well as within person variation. However, unless necessary controls are entered into a random effects model then it is mis-specified and the results are biased. Using both methods will shed light both on selection effects and the nature of selection effects.

Results

Table 1 shows the descriptive statistics for the pooled data. The average health rating across the waves is 3.14 out 5, which reflects an average health rating that is 'good.' 14% of respondents in the sample have a job that is professional or managerial in nature, while 31% are current smokers and 28% drink alcohol daily across waves. The mean percent married across all waves is 48%, but the percent of respondents who were married at least once from the ages of 23 to 50 is 71%.

Table 2 shows the cross-sectional, bivariate relationship between marital status and general health at each wave. This replicates the positive association between marriage and health that has been shown in numerous studies (Robards et al 2012, Dupre & Meadows 2007, Grundy & Tomassini 2010).). This association also gained strength as the men aged and a larger proportion of men entered the "married" pool. Additional cross-sectional models (not shown) included controls for having a professional/managerial job, drinking alcohol and smoking. In these models the association between marriage and health remained significant at a minimum of a $p<.05$ level, except for wave 5, where the significance was $p<.10$ with controls.

Table 3 shows a comparison between fixed effects and random effects models. Model 1 examines the bivariate relationship between marriage and general health over time. In both the random and fixed effects models this relationship is negative and significant. The negative direction of this coefficient is due to the exclusion of a control for age. Model 2 introduces a variable for age and age squared, because health does not decline linearly over time. Marriage becomes positive in both the fixed and random effects models. However, marriage is no longer significant in the fixed effects model while marriage is still significant at the $p<.01$ level in the random effects model.

A control for having a professional/managerial job is entered in model 3. This has no effect in the fixed effects model. It also does not mediate the association between marriage and general health in the random effects model. The negative direction of having a professional/managerial job in the random effects model is due to the fact that the majority of respondents obtain these jobs later in life. Age modifies having a professional/managerial job such that it becomes positive in random effects models. However, this interaction is not included in the final model because this relationship did not significantly alter the association between marriage and general health or improve model fit.

Finally, Model 4 adds controls for smoking and alcohol use. Alcohol is not significantly associated with health in either model, but smoking is significantly negatively associated with general health in the random effects model ($p<.001$). The addition of these controls for health behaviors slightly mediate the coefficient for marriage in the random effects model, providing further support that there is unobserved heterogeneity in the random effects model that can be controlled for. However, they do not change the relationship between marriage and general health at all in the fixed effects model.
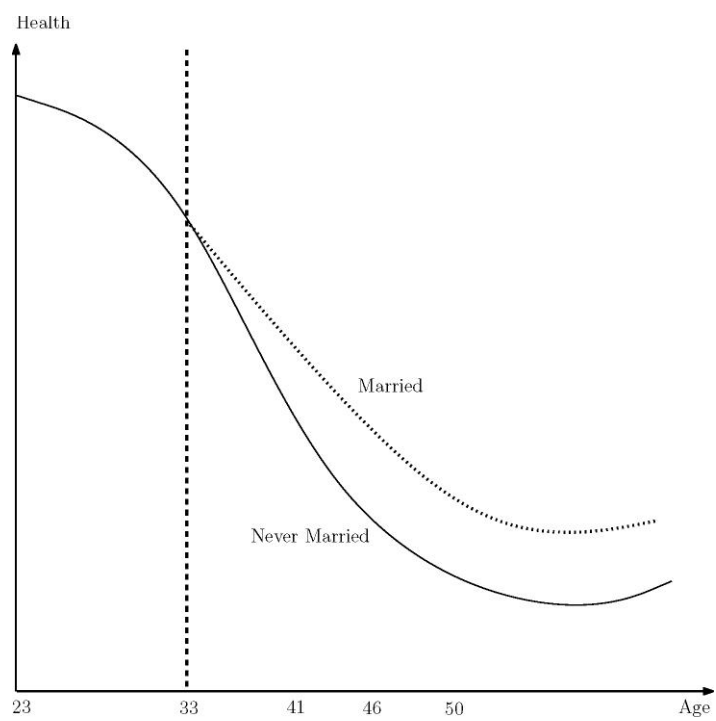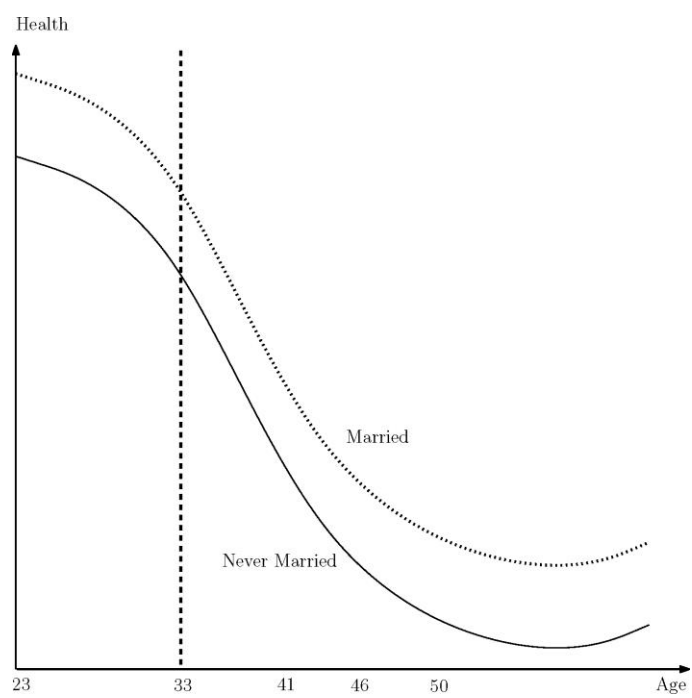
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Figure 1.

Figure 2.

Table 1. Descriptive Statistics for Variables in The Pooled Dataset

	Mean or Percentage	Std. Err.	[95% Conf.	Interval]
Self Rated Health (1=Poor; 4=Excellent)	3.142	0.006	3.129	3.154
Married (1=Yes)	48%	0.004	0.471	0.487
Age	40.2	0.091	40.022	40.378
Professional/Managerial Occupation (1=yes)	14%	0.003	0.133	0.146
Current Smoker (1=yes)	31%	0.004	0.298	0.313
Drinks Alcohol Daily (1=yes)	28%	0.004	0.270	0.286

Note: Number of Records= 16955; Number of Individuals = 3391

Data: National Childhood Longitudinal Study

Table 2. Bivariate Relationship Between Marriage and Self-Rated Health Treating Each Wave
as a Cross-Sectional Sample

Married at Wave 4 - age 23 (1=yes)	N/A
Married at Wave 5 - age 33 (1=yes)	.093** (.027)
Married at Wave 6 - age 41 (1=yes)	.126*** (.030)
Married at Wave 7 - age 46 (1=yes)	.177*** (.036)
Married at Wave 8 - age 50 (1=yes)	.183*** (.030)

Note: Number of Individuals= 3391

Data: National Childhood Longitudinal Study

Table 3. General Health Among Men in the United Kingdom

	Model 1	Model 2	Model 3	Model 4
Panel 1: Fixed Effects				
Married (1=Yes)	-.207***	0.009	0.008	0.006
Age		-.029***	-.029***	-.029***
Age^2		0.000***	0.000***	0.000***
Unskilled Laborer			0.033	0.033
smoke				-.0247
alcohol				-.005
Constant	3.241***	3.941***	3.927***	3.949***
Panel 2: Random Effects				
	Model 1	Model 2	Model 3	Model 4
Married (1=Yes)	-.136***	0.062**	0.062**	0.051**
Age		-.034***	-0.035***	-.037****
Age^2		0.000***	0.000***	0.000***
Unskilled Laborer			-0.071**	-.064**
smoke				-.130***
alcohol				0.007
Constant	3.207***	4.028***	4.057***	4.145***

Note: Number of Records= 16955; Number of Individuals = 3391

Data: National Childhood Longitudinal Study

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