Period trends in U.S. marital health gaps, 1995-2010*

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Abstract:

Married adults have better health than the unmarried, but an important caveat to the view of marriage as "haven in a heartless world" is that the relationship between marriage and well-being may be changing. I use data from the 1995-2010 Behavioral Risk Factor Surveillance System (N = 4,096,943) to analyze period trends in health gaps across marital status. Assessing self-rated health, I confirm and extend prior findings of convergence between married and never married and health divergence between married and formerly married. I find comparable convergence and divergence, respectively, in five health risk factors. These trends in marital health gaps are attenuated after I adjust for the changing demographic characteristics of marital status groups. Recent married-never married convergence can be attributed to the two groups becoming demographically alike, while married-formerly married divergence appears to be a composite of rising selection into and rising adverse consequences of marital exit.

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Extended abstract

The health advantage of married over unmarried adults is widely cited by marriage promotion initiatives and the broader "marriage movement" that encourages people to get and stay married (Waite and Gallagher 2000; Nock 2005; Wilcox et al. 2005). Recent studies find that the health advantages of marriage have changed over the last several decades, such that marriage has become less advantageous relative to never marrying, but more advantageous relative to getting divorced or becoming widowed (Liu and Umberson 2008; Liu 2009; Roelfs et al. 2011). Marriage's economic, psychological and social contributions to health appear to be eroding, or at least becoming more uncertain (Liu 2009), while the stresses of divorce and widowhood continue to jeopardize health (Williams and Umberson 2004). Yet trends in marital health gaps may reflect not only evolving causal effects of marriage and marital exit, but also changes in the composition of each marital group.

Married adults' health advantage relative to never married and formerly married adults is attributed, in part, to the protective effects of marriage and the harmful effects of a marital exit (Hughes and Waite 2009). These health gaps are also partially due to selection on pre-existing health problems and health behaviors (Fu and Goldman 1996; Joung et al. 1998; Ask et al., 2012), as well as factors that increase the likelihood of both marrying and being in good health, such as educational attainment (Lillard and Panis 1996). Given the sharp decline in marriage rates (Qian 1998, Cherlin 2010), processes of selection into and out of marriage may be changing. Change in the demographic composition of marital status groups may account for health convergence between the married and never married, and health divergence between the married and formerly married (Mergenhagen, Lee and Gove 1985).

In this paper, I analyze trends in the prevalence of low self-rated health and several health risk factors among married, never married, and formerly married U.S. adults over the period 1995-2010. Behavioral risk factors link social and economic constraints to health outcomes (Himes 2011); thus, they mediate the relationship between marriage and good health, or divorce and bad health (Umberson 1992; Kiecolt-Glaser and Newton 2001). For example, after marriage, one spouse may pressure another to abandon unhealthy behaviors such as smoking (Duncan, Wilkerson and England, 2006). Analyzing risk factors in addition to health status paints a more complete picture of the changing link between marriage and health. I expect that, over successive periods, the prevalence of low self-rated health and various health risk factors should become more similar between the married and never married, but less similar between the married and formerly married. I hypothesize that these trends should be attenuated after adjusting for the changing demographic composition of each marital status group. In other words, I expect that changing selectivity of entry into and exit from marriage will account for some of the recent trends in marital health gaps.

Data and Method

I use data from the Behavioral Risk Factor Surveillance System (BRFSS). The BRFSS is a yearly cross-sectional telephone survey administered by each U.S. state and supervised by the Centers for Disease Control and Prevention (CDC, 1995-2010). The first surveys were fielded in the 1980s, but states' staggered entry into the BRFSS meant the survey did not gain a national

scope until the 1990s. To ensure comparability across survey years, I limit my analysis to 49 states (excluding Hawaii) tracked continuously from 1995 to 2010, yielding a pooled sample of 4,108,798 adult respondents. I restrict the sample to 4,096,943 adults whose marital status is known and who report data on at least one of the health outcomes I consider. The data are analyzed using survey weights to adjust for the BRFSS' stratified sampling design.

The outcomes are self-reported measures of health status and health risk factors. The BRFSS measures self-rated health on a five-point scale ranging from poor to excellent; I recode this to a binary measure of fair or poor health, following prior work on the changing marital gaps in self-rated health (Liu and Umberson 2008). I also use binary measures of five health factors assessed in the BRFSS. These are: currently smoking; overweight, defined as having a body mass index (BMI) of 25 kg/m^2 or higher, computed from self-reported height and weight (Yun et al. 2006); falling below the recommended fruit and vegetable intake, 5 servings per day (Kim and Holowaty 2003); reporting no moderate or vigorous physical activity in a usual week (Macera et al. 2005); and meeting the criteria for binge drinking—reporting five or more drinks on one occasion (Naimi et al. 2003).

I compare health outcomes across four marital status categories: never married, currently married, cohabiting, and formerly married (separated, divorced or widowed). As the BRFSS does not collect marital history data, I cannot tell which cohabiters have never married and which are formerly married, so I treat them as a separate group. I consider changes in the composition of each marital status group on demographic variables, including sex; age and its square; race/ethnicity, coded as non-Hispanic White, non-Hispanic Black, Hispanic, Asian or Pacific Islander, Native American, or other (including multiracial); and educational attainment (less than high school, high school or equivalent, some college or a technical degree, and a four-year college degree).

I proceed by charting the prevalence of each outcome across marital status over the period 1995-2010, concentrating on the changing gaps between married and never married and between married and formerly married[1]. I model trends in marital health gaps in each outcome (Y) by fitting logistic regression models to the pooled sample:

$$\text{Logit}(Y) = \beta_0 + \beta_y * \text{YEAR} + \beta_m * \text{MARSTAT} + \beta_i * \text{YEARxMAR} + \varepsilon$$

where YEAR is a vector of powers of survey year (year, year squared), MARSTAT is a vector of marital status dummies (with married the omitted category), and YEARxMAR is a vector of interactions between each power of survey year and each marital status. I define the best-fitting polynomial function of survey year as having a nonzero power *k* such that polynomials of $k + 1$ or $k + 2$ degree do not have significantly better model fit. From this model, I recover a series of year-specific unadjusted predicted differences across marital status, using the intercept β_0 and the coefficient vectors β_m and β_i,

I produce a comparable series of predicted differences adjusted for demographic characteristics by fitting the following model:

$$\text{Logit}(Y) = \beta_0 + \beta_y * \text{YEAR} + \beta_m * \text{MARSTAT} + \beta_i * \text{YEARxMAR} + \beta_d * \text{DEMOG} + \varepsilon$$

[1] The cohabiting category is included in the regression models, but not otherwise featured in the present analysis.

where DEMOG is a vector of demographic measures: age, age squared, gender, race/ethnicity, and educational attainment. This model nets out some health differences across marital status that are solely due to differences in the demographic make-up of each marital status group. Then, year-specific adjusted predicted differences among marital status groups can be obtained from the β_0, β_m and β_i, just as with the unadjusted model above.

Results

Table 1 summarizes trends in the prevalence of the six health outcomes in each marital status group. At baseline, there are clear health gaps on every outcome by marital status, but in conflicting directions. Compared to the married, the never married have better self-rated health, are more likely to engage in physical activity, and are less likely to be overweight; but are more likely to smoke, binge drink, and fall short of the recommended fruit and vegetable intake. The formerly married have worse self-rated health than the married, are more likely to be inactive, and are more likely to smoke; but less likely to be overweight or to binge drink. Over time, the observed differences between married and never married diminish, except in the case of smoking. Differences between formerly married and married increase over time, except in the case of overweight, where there is a slight convergence; and in the case of low fruit/vegetable intake, where the difference hovers around zero for all years.

[Table 1 about here]

Figure 1 charts the changing health differences between currently married and never married adults. For each health outcome, I plot the observed difference; the unadjusted predicted difference, obtained from a logistic regression on the best-fitting polynomial of survey year, marital status, and their interaction; and the adjusted predicted difference, obtained from models that also control for the demographic variables discussed above. Comparing adjusted predicted differences to the unadjusted predicted series, I find that health gaps between married and never married are smaller at baseline and their convergence over time is attenuated, except in the case of binge drinking. For several outcomes, there is a profound floor effect—the adjusted difference is close to zero at the 1995 baseline, so further convergence is impossible.

[Figure 1 about here]

In Figure 2, I illustrate results for the health differences between currently married and formerly married adults. Comparing the adjusted predicted differences to the unadjusted, I find baseline gaps between formerly married and currently married are reduced—for self-rated health, physical inactivity and overweight, they are practically zero. Divergence between formerly married and currently married is attenuated for smoking and inactivity, erased in the case of self-rated health, and reversed in the case of binge drinking. For overweight and low fruit/vegetable intake, there is no clear trend in the health gap after adjusting for composition. As in the case of convergence between married and never married, crude trends in health divergence between married and formerly married are substantially explained by adjusting for demographic characteristics of the married and formerly married groups.

[Figure 2 about here]

Discussion

Married adults, have, on average, better health than the unmarried, but an important caveat to the view of marriage as a "haven in a heartless world" (Lasch, 1977) is that the relationship between marriage and well-being may be changing (Glenn and Weaver 1988). Analyzing self-rated

health, I confirm and extend prior findings of health convergence between married and never married and health divergence between married and formerly married (Liu and Umberson 2008; Liu 2009). I also analyze marital gaps in five health risk factors, most of which exhibit comparable convergence and divergence, respectively. This is anticipated by theories of marriage and health that consider behavioral risk factors to mediate marital effects on health (Umberson 1992). Yet, in a few cases, marital gaps in risk factors and self-rated health move in opposite directions. This highlights a need for better understanding which health behaviors mediate the effects of marital status, and in which contexts.

I highlight descriptive comparisons of health by marital status because such comparisons are practically universal in expositions of the health advantages of marriage (Waite and Gallagher 2000; Wilcox et al. 2005). Even on these terms, leaving aside the task of isolating causal effects of marriage (Musick and Bumpass 2012), the health of the married has become more similar to the health of the never married, and on some measures the two groups are now identical. This convergence can be substantially attributed to the married and never married groups becoming demographically alike. The health advantages of the married are receding as singlehood becomes more common and less selective. Meanwhile, the married and formerly married are drifting apart, with the health disadvantages of the formerly married singled out as a cause for concern (Williams and Umberson, 2004; Liu 2009). My results suggest this trend, too, is a mixture of changing causal effects and changing demographics of the formerly married group. Polarization among the married may be at work: for a select group of people marriage is beneficial and long-lasting, but for the less fortunate, marriage is only a trying, fleeting stage before separation, divorce or widowhood (Huston and Melz 2004).

The limitations of this study suggest promising directions for future research. First, health consequences of marital transitions are stratified by gender, race/ethnicity, and marital quality among other factors (Williams, Sassler and Nicholson 2008; Koball et al. 2010). The present analysis does not identify which subgroups have experienced the greatest change in marital health gaps. Second, the present method does not assess if the causal effects of marriage and marital exit are actually declining and increasing, respectively. Adverse selection into marriage could be concealing the positive effects of marriage (Lillard and Panis 1996; Cheung 1998; Murray 2000). Panel data from multiple cohorts would allow formally testing if later cohorts have experienced different marital effects on health. Third, trends in selection into marriage should be examined more closely. Is marriage becoming less selective on health status, or only on its demographic predictors? What is the trend in assortative mating on health? Recent evidence on spousal health concordance suggests spouses' health converges as their marriage goes on (Meyler, Stimpson and Peek 2007)—is the advantage of marriage diminishing because unhealthy people are increasingly marrying "up" and dragging down the health of their spouses?

America's retreat from marriage has been accompanied by changes in the health advantages of the married. Demographic changes augur health convergence between married and never married and health divergence between the married and formerly married. Selection into and out of marriage is sometimes a distraction from causal estimation of marital effects, but both causal and selection processes affect the salience of marital status to health stratification in society. Vanishing health differences between never-married and married adults threaten the rationale for further marriage promotion initiatives. It remains to be seen if the rising health gap between married and formerly married reflects the rising adverse effects of marital exit or increasing polarization between married couples who stay together and those who do not.

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Table 1. Prevalence of health outcomes among U.S. adults across marital status groups, 1995-2010 BRFSS[1]

	Fair or poor self-rated health			Current smoker			Overweight			
Year	Married	Never married	Formerly married	Married	Never married	Formerly married	Married	Never married	Formerly married	N
1995	0.12	0.09	0.24	0.19	0.25	0.28	0.54	0.40	0.51	111,082
1996	0.13	0.09	0.23	0.20	0.27	0.29	0.55	0.40	0.52	118,204
1997	0.13	0.09	0.24	0.20	0.27	0.29	0.56	0.40	0.53	128,686
1998	0.13	0.10	0.24	0.19	0.28	0.28	0.57	0.43	0.55	142,468
1999	0.13	0.10	0.24	0.19	0.28	0.28	0.59	0.44	0.57	152,397
2000	0.14	0.11	0.24	0.18	0.28	0.27	0.60	0.46	0.57	171,004
2001	0.14	0.11	0.25	0.19	0.29	0.28	0.62	0.46	0.59	196,174
2002	0.14	0.11	0.26	0.18	0.28	0.29	0.62	0.46	0.59	229,986
2003	0.14	0.11	0.27	0.18	0.28	0.27	0.62	0.47	0.60	248,721
2004	0.14	0.12	0.27	0.16	0.27	0.26	0.63	0.49	0.61	291,286
2005	0.14	0.12	0.28	0.16	0.27	0.26	0.64	0.50	0.61	336,240
2006	0.14	0.12	0.28	0.15	0.25	0.26	0.64	0.49	0.62	332,990
2007	0.14	0.13	0.28	0.15	0.25	0.26	0.65	0.53	0.63	408,524
2008	0.14	0.13	0.28	0.14	0.24	0.24	0.65	0.53	0.63	391,388
2009	0.13	0.13	0.28	0.14	0.24	0.24	0.66	0.53	0.64	409,058
2010	0.14	0.13	0.28	0.13	0.22	0.24	0.66	0.54	0.64	428,735
	<5 servings of fruit/vegetables			Physically inactive			Binge drinker			
1995	0.75	0.78	0.78	0.28	0.21	0.35				111,082
1996	0.75	0.80	0.75	0.29	0.23	0.37				118,204
1997	0.76	0.80	0.76	0.33	0.28	0.43				128,686
1998	0.75	0.79	0.75	0.28	0.22	0.37				142,468
1999	0.74	0.81	0.74	0.28	0.22	0.39				152,397
2000	0.75	0.78	0.75	0.27	0.21	0.35		n/a		171,004
2001	0.73	0.79	0.73	0.25	0.22	0.34	0.11	0.29	0.11	196,174
2002	0.75	0.79	0.75	0.24	0.21	0.33	0.12	0.28	0.12	229,986
2003	0.76	0.79	0.75	0.23	0.20	0.33	0.12	0.28	0.12	248,721
2004		n/a		0.22	0.21	0.32	0.12	0.26	0.11	291,286
2005	0.75	0.78	0.75	0.23	0.22	0.35	0.12	0.24	0.10	336,240
2006		n/a		0.22	0.20	0.34	0.13	0.24	0.11	332,990
2007	0.75	0.76	0.76	0.22	0.22	0.34	0.13	0.25	0.12	408,524
2008	n/a	n/a	n/a	0.23	0.23	0.35	0.13	0.23	0.11	391,388
2009	0.76	0.78	0.76	0.22	0.23	0.34	0.13	0.23	0.10	409,058
2010		n/a		0.22	0.22	0.34	0.13	0.22	0.11	428,735

[1] Survey weights applied. Prevalence expressed as proportion of each group. Prevalence among cohabiters not shown.
n/a - not available; some outcomes were not measured in every wave of the survey.

Figure 1. Differences in self-rated health and risk factors between never married and currently married adults.

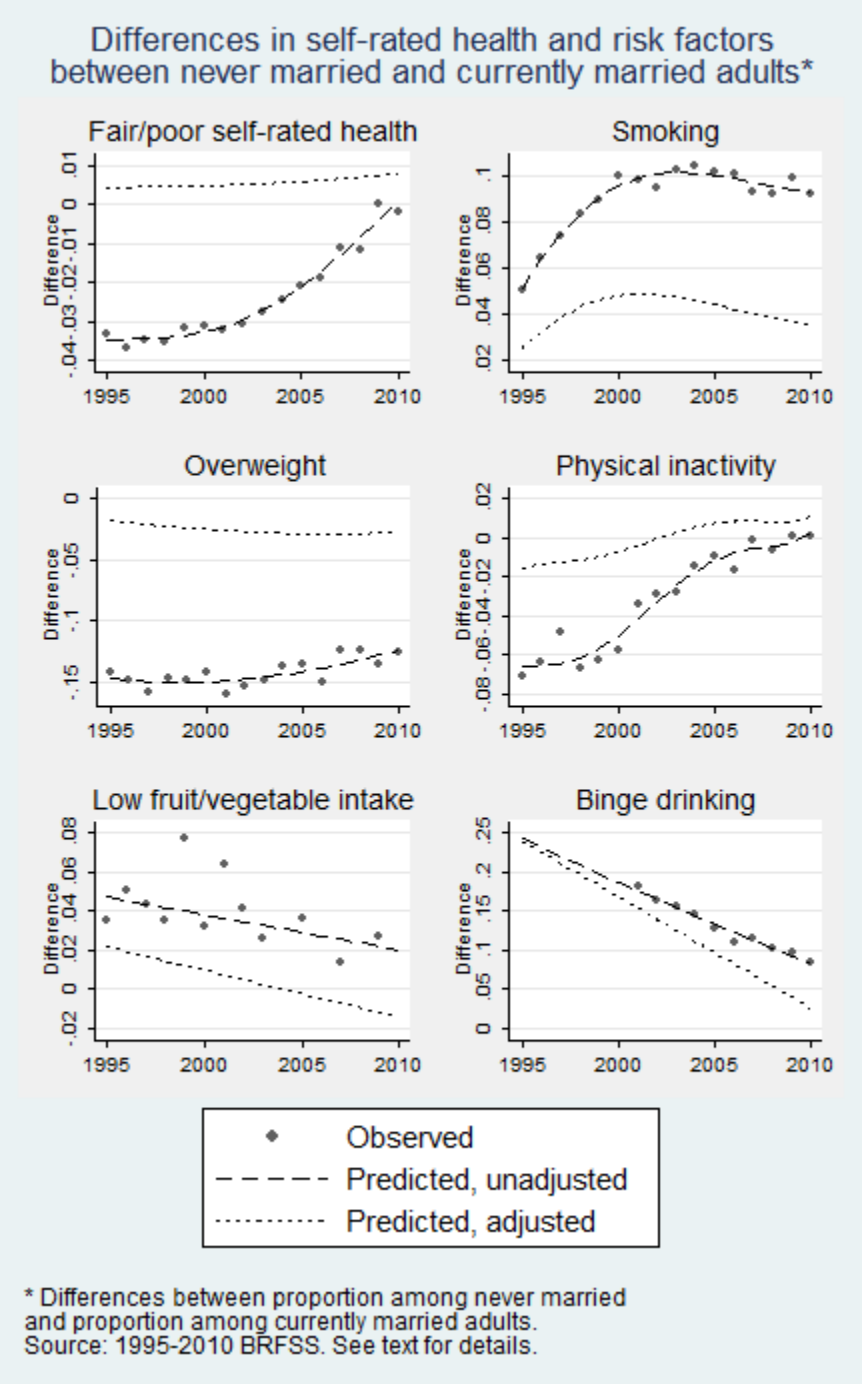

Figure 2. Differences in self-rated health and risk factors between formerly married and currently married adults.