

In Sickness and In Health: An Examination of Relationship Status and Health using Data from the Canadian National Public Health Survey

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Abstract:

There is an extensive literature suggesting that marriage confers benefits to men and women in the form of improvements in mental and physical health and longevity. In this paper, we use longitudinal data from the Canadian National Public Health Survey to investigate the relationship between relationship status and several health related behaviors and outcomes. Our work improves on previous research in several ways. First, we consider both marriage and cohabitation. Second, the Canadian data are an improvement over U.S. data because the confounding of marriage and health insurance in Canada is not an issue. Third, we use twelve years of data and a rich array of health outcomes. Our results indicate that married people (and to a lesser extent those who cohabit) are generally healthier and tend to smoke and drink less but they are also heavier and more likely to be classified as overweight or obese.

Introduction

There is an extensive literature suggesting that marriage confers benefits to men and women in the form of increased earnings (recent empirical studies using U.S. data include Averett et al., 2006; Light, 2004; Stratton, 2002; Chun and Lee, 2001; Hersch and Stratton, 2000) and improvements in mental and physical health and longevity (Wilson and Oswald, 2005 and Wood et al, 2007 provide recent reviews of this “marriage health premium” literature). Recent empirical evidence suggests that the effect of marriage on longevity is greater even than the effect of income on longevity (Gardner and Oswald, 2002). Yet, most of this work has focused on one or two measures of health or on certain health behaviors such as smoking or alcohol use. In addition, much of this research has focused solely on marriage despite the fact that a growing number of adults are choosing to cohabit. Furthermore, much of the research in this area has been conducted using U.S. data. Given the effect of the U.S. tax code and health care system alter both the incentive to marry and the likelihood of obtaining health insurance (see Alm and Whittington, 1999 for a review of the marriage tax literature), estimates of the effect of marriage on health using U.S. data are likely to be confounded by these two institutions.

In this paper, we extend the research on the links between health and marriage in three important ways. First, we consider a wide array of health measures including self-reported health, diagnoses of chronic conditions, functional limitations and a measure of mental health.. Wood et al. (2007) note that little longitudinal evidence of the link between marriage and mental health exists in part because only one U.S. data set has the requisite information. Data from the Canadian National Public Health Survey (NPHS) allow us to explore this issue in a longitudinal research design context. We also consider health-related behaviors such as smoking and alcohol use that have been linked to poor health outcomes. And we examine weight for height measures of interest to health professionals and policy makers given rising rates of obesity and its link to poor health.¹ Thus one important advantage of our study is that we consider several different health outcomes and behaviors using a single data set.

Second, we extend the analysis to examine not just the effects of marriage compared to being unmarried, but the effects of relationship status more broadly defined including cohabitation and divorce. The consideration of cohabitation is particularly important because like marriage, cohabiting partners are co-resident but the extent to which partners are willing to invest in the health of each other may differ when a formal commitment is not involved.

Finally, we use the Canadian NPHS, a longitudinal data set from Canada with six cycles that span a period of twelve years. Institutional differences between Canada and the U.S. suggest that empirical studies of the association between marital status and health may yield different findings. First, Canadians experience a different pattern of relationships compared to Americans: most notably, a larger proportion of Canadians never marry. In addition, the Canadian health care system is not linked to employers and thus is not linked to marriage, eliminating the possible correlation between marriage and health through differential access to health care. In the U.S., 59.6 percent of American’s received their health insurance through employers (DeNavas-Walt et al., 2007) Also, the U.S. tax code provides

¹ Similar to trends in the U.S., the proportion of Canadian adults who are obese has grown from 5.6% in 1985 to 15.5% in 2005. In 2005, 33.4% of all Canadians were overweight (BMI of 25-29.9 according to the World Health Organization) and 15.5% were considered obese (BMI of 30.0 or higher)—in other words nearly half of the Canadian population is overweight (Statistics Canada, 2005).

marriage disincentives (such as the marriage tax) that are absent in the Canadian tax code (see Crossley and Jeon, 2007 for a discussion of marriage and taxation in Canada). And finally, Canadian welfare programs do not have demographic criteria that require recipients be unmarried to receive benefits.

The paper is organized as follows. We begin with an examination of the theoretical links between relationship status and health. We then summarize the previous empirical literature linking marriage and health, followed by descriptions of the data and our model. The paper concludes with a presentation of our results and a discussion of the implications of our findings.

The Theoretical Link between Marriage and Health

There are five competing, but not mutually exclusive explanations that have been offered to explain the well-documented positive correlation between marriage and various measures of health status and mortality. The marriage selection hypothesis purports that the healthy are selected into marriage because they make better marriage partners. According to this argument, an observed correlation between marital status and health is not causal—i.e. not a function of marriage *per se* but rather a function of the process by which marriage partners are selected; such a process favors the healthy. This observation is consistent with Becker's (1981) marriage model where comparative advantage is important if there are to be gains realized from marriage. This is also consistent with the positive assortative mating hypothesis where health status is a criterion—healthy people will marry other healthy people. It also suggests that healthier people may have an easier time finding a partner and maintaining a relationship (Lillard and Panis, 1996). Theory suggests a clear sign for the selection effect—those who are healthy are most likely to be selected into marriage.

A second explanation is that marriage confers health benefits by providing protection—this is referred to as the marriage protection hypothesis. Under this hypothesis, married people are healthier because they have a spouse who can monitor their health behaviors, who can care for them when they are ill, and who will likely discourage them from engaging in risky behaviors such as smoking. They also, by virtue of economies of scale and specialization in labor market and home production activities, have access to more material resources on a per capita basis than they would if they were single. Thus, marriage provides social support and financial resources that themselves promote health by providing care and access to better nutrition and health care and in turn married people are healthier precisely because they are married; i.e. being married is the cause of better health. Being married provides emotional support, lessens risk-taking behavior, stimulates a healthy life-style, provides additional economic resources, and provides a buffer for adverse life events. This link to emotional support makes it clear that marriage may also have mental health benefits, a link confirmed by the majority of studies of marriage and depression (see Wood et al, 2007 for a review of these studies). However, as Lillard and Panis (1996) note, the existence of the protective effect introduces the possibility of adverse selection: those in poor health have an incentive to marry. In other words, those who are most likely to benefit from marriage in terms of better health are most likely to marry and least likely to exit the marriage; i.e. they are most likely to “purchase” the marriage protective effect. However, there are also theories that emphasize that positive assortative mating will lead to better health because partners with similar traits share values and beliefs that may facilitate a supportive relationship (Stutzer and Frey, 2003).

In addition to the selection and protection hypothesis, which generally are assumed to hold for most measures of health, there is a third route through which the probability of being overweight or obese in

particular might be related to marital status. In American society (as in many other developed nations) obese persons are stigmatized (Sobal, 1999). Individuals who are not as socially desirable are less likely to have an opportunity to attract a potential mate (Jo, 2004). Carmalt et al. (2007), using BMI and other physical and behavioral covariates find that both heavier men and women are less likely to be matched with a physically attractive person, though an attractive personality and good grooming increases the likelihood of being matched with a physically attractive partner. This is especially true for women because physical attractiveness has traditionally played a more important role in attracting a mate. Because maintaining a low weight is costly, once a relationship has been established, vigilance in the monitoring of one's weight may relax. This 'marriage market hypothesis' suggests that married individuals, who are no longer concerned about attracting a mate may allow their BMI to rise. Similarly, individuals may lower their BMI in the event of a divorce. In fact, married individuals living in countries with high divorce rates have lower BMI's than married people living in societies with less of a divorce risk. This suggests that people are more likely to invest in their appearance when the potential of returning to the marriage market is high (Lundborg et al., 2006).

Theoretical models of marriage and divorce posit that individuals compare their utility in marriage to their utility in the single state (Becker, 1981). Utility in marriage is determined, in part, by the characteristics of one's spouse. Because the utility-maximizing conditions for entering marriage are the same as the conditions for remaining married, the validity of this marriage market hypothesis in explaining a link between marriage and BMI relies on the assumption that there are some transaction costs associated with exiting marriage (i.e. divorce costs are non-trivial). Under this scenario, partners will tolerate some amount of weight gain before they see their own benefits from the union fall enough to make divorce the preferred option.

An additional explanation for a positive correlation between marriage and health focuses on nutritional behavior. It has been suggested that married couples may face obligations that encourage them to eat—perhaps more than they would as single individuals because they may eat more regular meals as a married couple or eat out more and thus ingest more calories (Sobal, 2003; Jo, 2004). Recent evidence indicates that this may hold for social networks in general (Christakis and Fowler, 2007).

Finally, the link between body weight and marriage, and perhaps health and marriage in general, may be a consequence of the effect of marriage on physical activity. In two studies that examine the effects of transitions into and out of marriage on the level of physical activity among older adults, it was found that marriage is associated with lower levels of physical activity (Eng et al. 2005; Lee et al. 2005). A study by Nomaguchi and Bianchi (2004) showed that married men exercise about an hour and fifteen minutes less each week than unmarried men and that married women exercise about twenty minutes less each week than their unmarried counterparts. If married individuals are exercising less, they are burning fewer calories, which may explain a positive correlation between marriage and weight gain.

Naturally, these hypothesized explanations for the relationship between marriage and health are not mutually exclusive. One can easily imagine that while marriage *per se* might reduce risky behavior, selection would suggest that those who engage in risky behaviors might not be selected into marriage and that at least part of the observed relationship between marriage and risky behavior is due to selection. It is the job of empirical researchers to tease out the contribution of each explanation in order to provide policymakers the information needed to optimally design marriage-related policies.

In addition to marriage, cohabitation may impact partner's health, though perhaps to a lesser extent than among married partners. Cohabitators have some security in having a partner but also have a lower cost of exiting the union and therefore may feel that they are still in the "marriage market." Thus, cohabiting partners may feel greater pressure to maintain a lower BMI and better health. They also may be less likely to provide the protective effect if it is particularly time consuming and they feel lower levels of commitment. Divorced individuals may view themselves as back in the marriage market and thus we might expect them to lose weight.

We expect that the relationship between marital status and health may differ for men and women and we estimate our models separately for these two groups. Because physical attractiveness has been shown to be a more important factor for women in the marriage market than for men (Averett and Korenman, 1996; Conley and Glauber, 2005), and because there is some evidence that women are more likely to take care of men rather than vice versa (Goldman and Smith, 2002) we hypothesize that the protective effect of marriage may dominate for men, and the marriage market effect, especially in terms of BMI, may be strongest for women. In the next section we review the extant empirical literature on this topic followed by a discussion of our method and data.

Previous Empirical Research on the Link between Marriage and Health

There is an extensive literature that links marital status to health outcomes and longevity (Wilson and Oswald, 2005; Wood et al, 2007). In addition there is evidence that individuals (men in particular) reduce risky behaviors once they are married (Duncan et al, 2006). The evidence that cohabitation confers these same benefits is mixed and there are a number of studies that establish that the financial and health benefits of union status are somewhat unique to marriage (Waite and Gallagher, 2000). This may be because married individuals are more likely to invest in their relationship by specializing. It may also be the case that cohabitators are more likely to be risk-takers or have different attitudes towards relationships than those who marry (Wu and Hart, 2002). However, there are others whose research suggests that the type of union does not matter (Lillard and Panis, 1996).

Since our study looks at multiple health measures including weight for height measures, regular exercise, smoking and drinking, levels of depression, chronic conditions, and reported self-health we examined previous research that touched on each of these areas. Past studies have found that marriage does lead to modest weight gains for both men and women of less than five pounds (Sobal et al. 2003; Averett et al., 2008). Past studies provide conflicting results for the impact of marriage on smoking. For example, Duncan et al. (2006) find no evidence that entry into marriage reduces the likelihood of smoking. In fact, the study finds that women are more likely to smoke upon entry into marriage. However, in Thompson's (1994) study, which used data from the Canadian NPHS to look at the patterns of smoking intensity and changes in marital status, results indicate that transitions into marriage are associated with higher rates of smoking cessation (however, due to small sample sizes, this observation cannot be deemed statistically significant). Similarly, Lee et al. (2005) find that marriage is associated with a reduced likelihood of smoking among older female nurses. The limited and conflicting evidence on the effects of marriage on smoking makes it an important topic to examine further in our study.

Past studies that examine the effect of marriage on levels of depression have found that marriage is associated with reductions in depressive symptoms and that marital dissolution increases symptoms of

depression, particularly for women (Kim and McKenry, 2002). Furthermore, in a study conducted by McDonough, Walters, and Strohschein (2003) that uses data from the Canadian NPHS health survey, married women were found to be healthiest, while formerly married women fared the worst in terms of depression and long standing health conditions.

Finally, in another study using Canadian data, Wu and Hart (2002) found that after netting out selection, by estimating a difference model and controlling for protection effects by including measures of social networks and social contacts, staying married or cohabiting generally resulted in poorer physical and mental health compared to those who remained single. However, they did find that transition out of marriage reduces physical and mental health in men and increases depression among women. Similarly, Lorenz et al. (2006) found that divorced women reported significantly worse physical health than women who had remained married, where physical health is measured by number of specific illnesses (common colds, sore throats) and health conditions (asthma, diabetes).

Data and Economic Model

To examine the link between relationship status and health we use data from the Canadian National Population Health Survey, which is a longitudinal study focused on the health of the Canadian population. The survey was first fielded in 1994/1995 and it has been conducted biennially. After selecting households, limited health-related information was gathered on all household members. Then, one household member, greater than twelve years of age, was chosen at random to become the longitudinal panel respondent who would be surveyed every second year for up to twenty years. The initial response rate for cycle 1 was 83.6%, yielding a participant pool of 17,276 people. The response rate of cycle 1 participants gradually declined from 92.8% in cycle 2 to 77.4% in cycle 6 (in 2004/2005). There are 11,593 people who provided full responses in all 6 cycles. We use the longitudinal nature of the data to create a data set that includes individuals in each year in which they provided complete data. We limited our study to white participants ranging in age from 18-65 and in doing so our total sample consists of 11067 individuals who contributed 42690 person-years.²

We follow an empirical approach that is fairly standard in the literature on marriage and wages which aims to disentangle selection from other potential effects of marriage on earnings. Of course, our interest lies in ascertaining whether or not marriage confers protective effects after selection has been netted out. Yet, we are also interested in exploring the underlying reasons for some of these changes. We take advantage of the longitudinal nature of the data to estimate fixed-effects models. Our econometric model is as shown below

$$H_{it} = \alpha + \beta' M_{it} + \gamma' X_{it} + \delta_i + \varepsilon_{it}$$

where the dependent variable is a measure of the health of individual i at survey t . Health measures include a self-reported measure of general health, body mass index (BMI), indicators of chronic conditions, and health-related behaviors. See Table 1 for a complete description of the measurement of all dependent variables used in this analysis. The primary independent variables of interest are M_{it} , a vector of dichotomous variables indicating the individual's marital status at time t . Marital status variables are classified into one of five categories: 1) never married; 2) married; 3) divorced; 4) cohabiting; 5) widowed; or 6) separated. The omitted category in our analysis is *never married*. The

² Because of the effect of pregnancy on health outcomes for women, we excluded women from the study in the year of their pregnancy

vector X includes other important potentially important socio-demographic determinants of health such as age, gender, education, children, work, income, and province of residence. It is crucial to control for age in all of our models since, for all groups, chronic conditions and health problems become more common with age and marriage and divorce spells occur at older ages than when an individual is never married. Finally, our models include δ_i , a vector of individual-level fixed-effects. As explained above, the inclusion of these fixed-effects allows us to estimate β' parameters that are unbiased by any time invariant individual characteristics that might be correlated with marital status. Such models are standard in the marriage-wage premium literature and are increasingly being used to examine the health effects of marriage. In effect, this method measures the effect of *changes* in an individual's relationship status on *changes* in his health status. We are cognizant of the limitations of the fixed-effects models as summarized by Antonovics and Town (2004). However, given the difficulties in finding credible instrumental variables for union status and because we know that OLS models do not allow us to untangle selection from productivity; fixed-effects models are our preferred empirical method.

The NPHS is well-suited to our study since it includes measures of relationship status and health indicators at each interview in addition to a rich set of socio-demographic variables. The use of the NPHS for our study does have some drawbacks, however. In particular, though we know the current relationship status of the respondent at the time of each interview, the NPHS did not collect information on the timing of marital events between the two year survey periods. Thus, we do not know what marital events occur between survey periods. Within the space of two years, theoretically several marital transitions are possible—i.e. someone could cohabit, marry and divorce all during that time frame. A recent study by Statistics Canada notes that most Canadians marry only once, and less than one percent walk down the aisle more than twice. Since the survey years are only two years apart, the impact of unobserved transitions is likely to be small (NorthernLife.ca, 2007). In our analysis, we drop those who are under age 18 because they are not adults and union events are usually associated with adulthood. Second, the effects of aging on health become particularly pronounced at older ages so we limit our sample to those under the age of 65.

Results

Our dependent variables are divided into two categories. The first group includes measures of depression, chronic conditions, reported self-health, and functional ability while the second group contains measures of weight and smoking and alcohol use. We refer to the first group as health outcomes and the second group as health behaviors. Even though measures of BMI and overweight/obesity could be considered outcomes, they are the results of specific behaviors related to diet and physical activity, and we report the results of these models with those for health behaviors. We have constructed each variable so that a higher value (or in the case of dichotomous indicators a one) implies a worse health outcome or an unhealthy behavior. Using this specification, a negative coefficient on marriage, for instance, means that married individuals are healthier.

Tables 2a and 2b present the means for our samples of men and women respectively. We divide our observations into subsamples based on their relationship status at the time of their interview. Table 2a, which lists the variables' means and standard deviations for Canadian men, shows that on average, married men have the highest BMI, measuring 27.19. This calculation is comparable to the BMI statistic of 27.16 for married men in the United States (Averett et al. 2008). In addition, both countries are similar in that after married males, divorced men have the highest BMIs on average, followed by

cohabitators. In addition, 71.7 percent of married men are overweight and 20 percent are obese-- the highest prevalence across all the relationship categories. Never married and separated men have the lowest prevalence of overweight. Divorced and widowed men report poorer health on the self-health index. The index of depression is highest for those who are separated or have never been married and lowest for married men. Widowed and divorced men are more likely to report having a chronic condition. Over fifty percent of widowed men report drinking often while never married men are the least likely to report that they drink two or three times per week. With respect to exercise, men in any relationship status reported being less active than did never married men.

Table 2b lists the variables' means and standard deviations for Canadian women. The BMI calculations for the different marital statuses are similar to those in the American study (Averett et al, 2008). In both countries divorced women have BMI's averaging approximately 26 and married women have BMI's of 25.43 in Canada and 25.99 in America. However, on average, cohabiting women in Canada have BMIs that are comparably lower than cohabiting women in American (24.05 compared to 26.0). Divorced and widowed women were the most likely to be obese—over 22 percent of widows are obese while rates of overweight are greatest among divorced and widowed women and lowest among those who cohabit, are separated or have never been married. Never married and widowed women are the most physically active. Divorced and widowed women report poorer health with the self-health index and are more likely to report a chronic condition while never married women report the highest levels of depression. Diabetes is most prevalent among divorced women and least likely among the never married. Because these are unadjusted means, we expect that widows might be more likely to have a chronic condition since they are, on, average older. Cohabiting women were the most likely to report being regular smokers while married women were the least likely. Never married women report the greatest number of drinks consumed per week.

Many of these patterns are consistent with age differences across these samples. To control for differences in observable characteristics across relationship status groups, we conduct multivariate analysis. Tables 3a and 3b present the OLS estimates of relationship status on health outcomes and behaviors for men. The estimates from OLS models capture any causal relationship between relationship status and health outcomes and behaviors, but also capture selection into relationship status. We compare these models to individual-level fixed effects models that purge the estimates of any bias caused by selection into various relationship states based on time invariant characteristics. We use a relatively parsimonious set of covariates which includes, age and its square and education (those with less than a high school education are the benchmark category). Though the coefficients are not reported here, these models include a set of dichotomous variables indicating the province of residence and year dummy variables.³ The effects of the sociodemographic controls are as we expect. Age exerts a non-linear effect with health problems rising at a diminishing rate with age. Furthermore, those with more education tend to be healthier across all dimensions of health outcomes and behaviors.

Turning to the effect of relationship status on health outcomes we begin with Table 3a. These estimates suggest that married and cohabiting men are significantly less likely to classify themselves as being in poor health or as depressed and are less likely to have functional limitations when compared to never-married men (our benchmark category). However, married men are more likely to have reported a

³ We estimate expanded models that add controls for income, whether or not the respondent worked last year and whether or not the respondent has children. Because these are arguably endogenous, we do not report these variables in our analysis. The coefficients on relationship status are largely unchanged by the inclusion of these regressors.

chronic condition. Divorced men are significantly more likely to report being depressed while separated men are more likely to have better self reported health. In Table 3b, we find that married Canadian men are estimated to have BMI's that are 0.85 greater than unmarried men and are significantly more likely to be overweight or obese. This coefficient is similar to estimates in the study of American men (Averett et al., 2008), which found that married men have BMI's that are 0.78 greater than never married men. The pattern is similar for cohabiting men only the coefficients are significantly smaller. With respect to smoking and alcohol use, married men are less likely to engage in these behaviors than their never-married counterparts but the same is not true for cohabiting men. Although cohabiting men report drinking fewer drinks per week than never married men, they are no less likely to smoke or drink frequently than their never married counterparts. Married men report exercising less frequently while cohabiting men report being less active. In Tables 3a and 3b, we also report the p-values testing the equality of the marriage and cohabitation coefficients. We find that these coefficients are significantly different for all of our dependent variables except having a chronic condition and being obese.

The Fixed Effects (FE) models, shown in Tables 4a and 4b for men, remove the marriage selection effect by controlling for unobservable heterogeneity that is time invariant. In these FE models, we include the age, education, year and province control variables, but we do not show them in the interest of parsimony. Comparing Tables 3a and 4a reveals that at least some of the positive effect of marriage on health is due to selection. For example, the sign on the self-reported index of poor health is now positive. This indicates that marriage may cause men to have a less favorable assessment of their own health. Interestingly, the index of depression is still negative signifying that marriage may have mental health benefits for men (this has been documented in the literature as well; see Wood et al., 2007 although Wu and Hart, 2002 report the opposite) although the magnitude and precision are lower than the OLS estimates. The results for cohabiting men are similar in pattern to those of married men. Cohabitation is no longer a significant determinant of self-reported health but it is still a significant predictor of depression. Specifically, men report a 4.5 percentage point lower incidence of depression when they are cohabiting than when they are unmarried and living alone. The magnitude of this effect is somewhat smaller than the OLS estimate suggesting men who cohabit are selected partly for their health.

Marriage also seems to confer a protective health effect through a reduction in tobacco and alcohol use (Table 4b). In keeping with findings by Duncan et al. (2006) we find that marriage, and to a lesser extent cohabitation, continue to exert a negative effect on the probability of drinking frequently. However unlike Duncan et al., we also find that smoking prevalence declines after marriage. The OLS model indicated that married men are 13.5 percentage points more likely to not smoke than unmarried men. The FE model shows that during their married years men are 5.5 percentage points less likely to smoke than when they were unmarried. Clearly, there is a protective effect of marriage on smoking and drinking after selection has been netted out.

Not all of the FE results suggest a health improvement for married and cohabiting men. Becoming married is, in fact, associated with a higher BMI. The BMI difference between married and never married however, has fallen from a 0.85 increase in the OLS model to a 0.47 increase in the FE model. Since the size of the effect has dropped by nearly half, this suggests that selection plays some role in the relationship between marriage and BMI, but marriage also potentially causes an increase in men's weight. These increases in BMI after marriage are substantial, and result in men being more likely to be overweight and obese (by more than 4 percentage points.) Cohabitation is also associated with increases

in BMI and the incidence of overweight and obesity. Both married and cohabiting men are significantly more likely to be inactive which may contribute to their increased BMI.

Finally, it is worth noting that the p-values on the tests of equality of the effects of marriage and cohabitation on the various outcomes display a different pattern than in the OLS results where they largely showed that the effects of marriage and cohabitation on health outcomes and behaviors were statistically different from each other. Now, they are only different for functional limitations, obesity, smoking and both measures of alcohol use.

Tables 5a and 5b present the OLS estimates of relationship status on our health measures for women. Focusing first on Table 5a, we see that married women are statistically significantly healthier across all of our outcomes. For most outcomes, the same is true for cohabiting women, but the effects are typically smaller and less precisely estimated. Divorced women are 1.3 percentage points more likely to report better self-health and less depression than never-married women. None of the coefficients are significant for separated women. Table 5b shows that married women are slightly more likely to be overweight (a different pattern than others have found using U.S. data, see Averett et al, 2008) but less likely to be obese. Married women are nearly 17 percentage points less likely to smoke than are never married women; they have fewer drinks per week and exercise more frequently than their never married counterparts. Cohabiting women drink more often and have more drinks when they drink than their never married counterparts. They also have lower BMIs and are less likely to be obese. The coefficients on marriage and cohabitation are, according to the p-values reported at the bottom of the tables, statistically different from each other for all outcomes except BMI, drinking often and both measures of physical activity.

Turning to the FE results for women shown in Tables 6a and 6b and comparing them to the OLS results for women discussed just above, we find that partnered women or women who have previously been married (but not those who are currently separated) are all significantly less likely to feel depressed than never married women, while the index of self-reported health exhibits no significant association with any of the relationship status variables in the fixed effects model. Divorced and widowed women are less likely to have chronic conditions and cohabiting women report having fewer functional limitations while separated women report more functional limitations.

In Table 6b the FE results for health behaviors reveal a large increase in the BMI of women when they are married compared to when they are unmarried. The FE results indicate that marriage increases one's BMI by 0.64, on average. Thus, after eliminating the effects of marriage selection, we see an increase in women's BMI in her married years compared to years in which she is single and not cohabiting, and that this weight gain results in increases in overweight and obesity. These results suggest a potentially causal relationship between marital status and weight gain. A similar relationship has been found for married women in the U.S. in Averett et al (2008) where FE results indicated that married women experience an increase in BMI of nearly 0.50), and an accompanying increase in the incidence of overweight and obesity among married women. The marriage market hypothesis can be used to explain this relationship by reasoning that married women, who are no longer concerned about attracting a mate, allow their BMI's to rise. Similarly, the positive relationship between marriage and weight gain can be explained by marital role obligations of eating out more frequently or by the findings that married individuals engage in lower levels of physical activity. While the Canadian NPHS data have no information on eating patterns, we see in Table 6b that married women are significantly more likely to

report being inactive and exercising infrequently. FE results also show that compared to never married years, separated women experience the only decrease in BMI, significant at a 1% level. This supports the marriage market hypothesis which suggests that women will lower their BMI upon return to the marriage market.

With respect to smoking, remembering that in the means depicted in Table 2b we saw that the greatest percent of non-smokers is found among married women, with 81.7% indicating that they do not smoke. The OLS results, which adjust for age and education, show that being married is associated with a 15.8 percentage point higher probability of being a non-smoker compared to being unmarried, while FE results show that women are nearly 5 percentage points more likely not to smoke when they are married than when they are single. Since the likelihood of being a nonsmoker is three times greater in the OLS model, this suggests that the selection hypothesis has an impact in that nonsmokers are more likely to be chosen for marriage. However, the marriage protection theory still has some effect, suggesting that spouses may monitor one another's behavior and discourage the unhealthy habit of smoking.

Similar to the pattern we observed for men, the effects of marriage and cohabitation on the health outcomes and behaviors are now sometimes statistically indistinguishable. The cases where these effects still differ include self-health, depression, BMI, overweight, obese and inactive.

Conclusions

Our research aims to discover the effect of relationship status on a variety of health outcomes and behaviors. Using data from the Canadian NPHS we examine the impact of formal relationships (marriage, separation, divorce, and widowhood) and informal relationships (cohabitation) on health between 1994 and 2004. The panel nature of the data allows us to examine the link between changes in marital status over time and changes in health outcomes and behaviors over time. This approach allows us to difference out individual time-invariant heterogeneity. Because of difficulties in identifying exogenous variation in marital status, researchers in this area have consistently identified longitudinal data as being important for a study of this nature.

The Canadian NPHS data provide the opportunity to examine a number of health outcomes and behaviors, but the evidence regarding the strength of the selection effect relative to the potentially causal effects of marriage and cohabitation is mixed. Married and cohabiting individuals, both male and female, were found to feel the lowest levels of depression and this result holds in the FE model specification. For men, the size of these effects was the same for the married and cohabiting individuals while for women, the effect was largest for married women. Our results indicate some evidence of the selection of the mentally healthy into marriage but also suggest that being in a relationship improves emotional well-being. This is particularly important as Wood et al. (2007) note that few U.S. longitudinal data sets with marriage and mental health information exist. Our finding with respect to marriage is consistent with others (Lamb et al., 2003) yet at odds with the only other study we know of which examines the link between mental health and cohabitation and also uses the NPHS (but only two waves) and finds that those who are married or who cohabit have poorer mental health than those who never marry (Wu and Hart, 2002).

Marriage and cohabitation for both men and women also appear to have protective effects with regard to the use of tobacco and alcohol. Past research found conflicting results for the impact of marriage on

smoking. Yet, our study showed that for both men and women, being married increases the likelihood of being a nonsmoker. This result holds in the FE specification model, though the effect is about one third the size of the OLS effect. This suggests that individuals who do not smoke are more likely to be chosen for marriage, yet the marriage protection theory still has some effect. Spouses may monitor one another's behavior and discourage the unhealthy habit of smoking.

We found similar results for alcohol use. The unadjusted means indicate that married men and women drink fewer drinks in a week in general and the OLS results bear this out. For men, the coefficient on the FE results is also negative but somewhat smaller in magnitude. Interesting, for drinking frequency, the OLS result is significant and less negative than the FE results for men. For women, we see a similar pattern with respect to the number of drinks but no effect of being married on how often women drink. This evidence is largely consistent with what Duncan et al. (2006) found for a sample of young Americans.

Interestingly, our FE models show no effect of marriage on the incidence of chronic conditions or self-reported health. Perhaps these are conditions that are more genetic or age oriented in nature (i.e. health outcomes that are largely beyond the control of the individual and for which even prevention could not entirely overcome).

Of interest is that our study identified some unhealthy aspects of partnership in that after marriage, both men and women see increases in their BMI that move them into unhealthy weight categories. For Canadian men, we consistently find, as others have for men in the U.S., that heavier men are selected into marriage. Our FE results suggest that marriage results in further increases in BMI for men, though the effect is about half the size of the OLS effect. The opposite effect was found for women, where after eliminating the effects of marriage selection, the FE model showed an even greater increase in married women's BMI. Furthermore, although some movement in BMI is not necessarily harmful, our FE results indicate that married individuals are more likely to be overweight or obese than are their never married counterparts. This suggests a causal relationship between marital status and weight gain, possibly related to changes in eating and exercise routines. Our FE models also suggest that married men and women are less active and married women exercise infrequently when compared to their non-married counterparts. The marriage market hypothesis can be used to explain this relationship by reasoning that married women, who are no longer concerned about attracting a mate, allow their BMI's to rise. We see no evidence of the protective effect of being in a relationship through healthier weight for women or for men.

Perhaps most important for policy makers are the consistent pattern of findings for obesity and overweight. These numbers are alarming given the links between obesity and a variety of medical problems including diabetes, hypertension, asthma, coronary heart disease, stroke, gallbladder disease, osteoarthritis, sleep apnea, and some types of cancer and poses costs on the health care system (and the tax-payers who support the system). The role for public policy follows from the externalities associated with obesity. As Paul Krugman (2005) succinctly describes it, "many of these costs fall on taxpayers and on the general insurance-buying public, rather than on the obese individuals themselves."

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Table 1. Health Measures

Poor Self-Health	Participants ranked their self-health on a scale from 0-4. Higher values indicate poorer self-reported health status.
Depression	An index of depression was created from a series of questions pertaining to how often participants felt sad, nervous, restless/fidgety, hopeless, worthless, and like everything was an effort during the past month. Higher values indicate greater levels of depression. In the NPHS, the index of depression we use was measured by the Composite International Diagnostic Interview—Short Form for Major Depression (CIDI-SFMD), derived from the full version of the CIDI and validated by Kessler et al.,(1998)
Chronic Conditions	A binary variable where 1 indicates that the participant reported having at least one chronic condition. In the NPHS, the list of chronic conditions includes: Allergies, Asthma, arthritis, back problems, sinusitis, diabetes, epilepsy, high blood pressure, chronic bronchitis or emphysema, migraines, heart disease, cancer, ulcers, effects of a stroke, urinary incontinence, acne requiring prescription medication, Alzheimer’s disease, cataracts, or glaucoma.
Functional Abilities	An index for functional limitations was calculated by taking into consideration whether participants have difficulty with activity due to vision, hearing, speech, mobility, dexterity, emotions, cognition, and/or pain. Higher values indicate more functional limitations.
BMI	BMI was calculated for respondents ages 18 and older, excluding pregnant women and anyone who was taller than 7 feet or smaller than 3 feet. Calculations were based on participant’s self-reported height and weight.
Overweight, Obese	Binary variables equal to 1 if the individual is overweight (BMI>25) or obese (BMI>30)
Smoking	A binary variable where 1 indicates that the participants smokes regularly (defined here as on a daily basis).
Drinking	A binary variable where 1 indicates that during the past twelve months, the participants drank as frequently as 2-3 times a week or more. Sum of number of drinks consumed, on all days, in the week prior to the interview.
Exercise	A binary variable where 1 indicates that the participant is categorized inactive according to a physical activity index. A binary variable where 1 indicates that the participant is categorized as infrequently participating in physical activity lasting >15 minutes.

Table 2a
Weighted means, males by marital status

Dependent Variables	All Men		Never Married		Married		Divorced		Cohabiting		Widowed		Separated	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Index of Poor Health	2.1933	0.9021	2.1481	0.8627	2.1956	0.8940	2.3233	0.9706	2.0622	0.8886	2.4275	0.9792	2.0031	0.8745
Index of Depression	1.4047	0.4977	1.5034	0.5359	1.3483	0.4356	1.4948	0.7076	1.4061	0.4951	1.4087	0.5085	1.5331	0.5250
Has a chronic condition	0.5382	0.4986	0.5064	0.5000	0.5925	0.4914	0.6091	0.4879	0.5150	0.4998	0.6989	0.4587	0.4442	0.4969
Has diabetes	0.0274	0.1632	0.0187	0.1355	0.0369	0.1886	0.0389	0.1933	0.0167	0.1282	0.0205	0.1416	0.0135	0.1152
Has heart disease	0.0285	0.1664	0.0099	0.0989	0.0421	0.2009	0.0128	0.1125	0.0144	0.1191	0.0180	0.1331	0.0059	0.0764
Index of functional Limitations	1.1866	0.2301	1.1672	0.2151	1.1889	0.2245	1.2462	0.2869	1.1645	0.2035	1.1964	0.2201	1.1653	0.2166
BMI	26.5477	4.1019	25.2255	4.2435	27.1981	4.0720	26.5802	4.0251	26.1975	3.7489	26.0896	3.9575	24.9277	3.8239
Overweight	0.6391	0.4803	0.4680	0.4990	0.7166	0.4506	0.6641	0.4723	0.6011	0.4897	0.5644	0.4958	0.4514	0.4976
Obese	0.1707	0.3763	0.1253	0.3311	0.2012	0.4009	0.1665	0.3725	0.1465	0.3536	0.1779	0.3824	0.0931	0.2905
Smoker	0.2947	0.4559	0.2973	0.4571	0.2281	0.4196	0.3602	0.4801	0.3392	0.4734	0.3260	0.4687	0.3208	0.4668
Drinks often	0.3675	0.4821	0.3432	0.4748	0.4086	0.4916	0.4277	0.4947	0.4179	0.4932	0.5125	0.4998	0.3508	0.4772
# drinks per week	5.9716	8.7417	7.1668	10.4871	5.2967	7.4011	7.6459	11.1731	6.6285	9.9024	7.3400	10.9071	6.8860	10.2757
Inactive	0.5119	0.4999	0.3882	0.4874	0.5257	0.4993	0.4314	0.4953	0.5572	0.4967	0.4308	0.4952	0.4692	0.4990
Exercises infrequently	0.1756	0.3805	0.1233	0.3288	0.1703	0.3759	0.1717	0.3771	0.1926	0.3944	0.1589	0.3656	0.1683	0.3741
Independent Variables														
Age (years)	39.9410	12.6599	29.3210	10.8146	45.2018	10.2598	47.7431	9.2793	38.0981	10.6729	48.3068	14.6817	29.0088	10.7123
High school graduate	0.1469	0.3540	0.1296	0.3359	0.1448	0.3519	0.1143	0.3181	0.1327	0.3393	0.1159	0.3201	0.1655	0.3717
Some trade school	0.2183	0.4131	0.2390	0.4264	0.2055	0.4041	0.2098	0.4072	0.2320	0.4221	0.1817	0.3856	0.2579	0.4375
Some University	0.0688	0.2532	0.1109	0.3140	0.0525	0.2231	0.0949	0.2930	0.0295	0.1693	0.0829	0.2758	0.1083	0.3108
Trade school graduate	0.2132	0.4096	0.2103	0.4075	0.2206	0.4147	0.2306	0.4212	0.2368	0.4251	0.1352	0.3420	0.1637	0.3700
University graduate	0.1271	0.3331	0.1231	0.3286	0.1523	0.3593	0.1275	0.3335	0.1555	0.3624	0.2148	0.4107	0.1128	0.3164
Post graduate education	0.0423	0.2014	0.0294	0.1690	0.0654	0.2473	0.0653	0.2471	0.0339	0.1810	0.0091	0.0949	0.0232	0.1504
Household income between 10to15K	0.0370	0.1888	0.0373	0.1895	0.0144	0.1192	0.0495	0.2168	0.0250	0.1562	0.0708	0.2565	0.0581	0.2340
Household income between 15to20K	0.0395	0.1948	0.0324	0.1770	0.0207	0.1425	0.0659	0.2481	0.0340	0.1813	0.0908	0.2873	0.0500	0.2180
Household income between 20to30K	0.0940	0.2919	0.0875	0.2825	0.0622	0.2414	0.1020	0.3027	0.0813	0.2733	0.1536	0.3606	0.1226	0.3280
Household income between 30to40K	0.1229	0.3283	0.0972	0.2962	0.0965	0.2953	0.0981	0.2974	0.1449	0.3520	0.1273	0.3333	0.1299	0.3361
Household income between 40to50K	0.1223	0.3277	0.0974	0.2965	0.1183	0.3230	0.1396	0.3466	0.1200	0.3250	0.1594	0.3661	0.1231	0.3285
Household income between 50to60K	0.1193	0.3242	0.0896	0.2855	0.1223	0.3276	0.1421	0.3492	0.1109	0.3140	0.0672	0.2504	0.1089	0.3115
Household income between 60to80K	0.1620	0.3685	0.1503	0.3573	0.2019	0.4014	0.1396	0.3466	0.1879	0.3906	0.1090	0.3117	0.1277	0.3338
Household income between 80-100K	0.1821	0.3860	0.1911	0.3931	0.2634	0.4405	0.1283	0.3344	0.1908	0.3929	0.1125	0.3160	0.1459	0.3530
New Foundland/Labrador	0.0601	0.2377	0.0171	0.1297	0.0216	0.1454	0.0179	0.1326	0.0143	0.1188	0.0087	0.0928	0.0202	0.1406
Prince Edward Island	0.0550	0.2279	0.0053	0.0726	0.0049	0.0696	0.0020	0.0449	0.0028	0.0526	0.0021	0.0454	0.0050	0.0708
Nova Scotia	0.0603	0.2381	0.0352	0.1843	0.0320	0.1761	0.0197	0.1390	0.0268	0.1616	0.0623	0.2416	0.0294	0.1690
New Brunswick	0.0593	0.2361	0.0230	0.1498	0.0265	0.1605	0.0171	0.1295	0.0232	0.1504	0.0153	0.1226	0.0242	0.1536
Quebec	0.1969	0.3976	0.2817	0.4498	0.2123	0.4090	0.2946	0.4559	0.5688	0.4952	0.3973	0.4893	0.2781	0.4480
Manitoba	0.0655	0.2475	0.0308	0.1726	0.0372	0.1891	0.0482	0.2141	0.0161	0.1260	0.0277	0.1640	0.0403	0.1967
Saskatchewan	0.0561	0.2301	0.0239	0.1529	0.0328	0.1781	0.0224	0.1479	0.0125	0.1111	0.0071	0.0841	0.0321	0.1762
Alberta	0.1023	0.3030	0.1059	0.3078	0.1060	0.3078	0.1006	0.3007	0.0609	0.2392	0.0752	0.2637	0.0954	0.2938
British Columbia	0.0954	0.2938	0.1055	0.3072	0.1260	0.3319	0.1430	0.3500	0.0668	0.2497	0.0952	0.2935	0.1000	0.3000
Worked in past year	0.8647	0.3421	0.8178	0.3860	0.8942	0.3076	0.8211	0.3833	0.9041	0.2945	0.6079	0.4882	0.8831	0.3213
Has Children	0.5787	0.4938	0.1444	0.3515	0.8406	0.3660	0.7439	0.4365	0.5721	0.4948	0.6099	0.4878	0.1144	0.3183
N	20480		2902		10670		514		2050		105		3606	

Table 2b
Weighted means, females by marital status

Dependent Variables	All Women		Never Married		Married		Divorced		Cohabiting		Widowed		Separated	
	Mean	Std.Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Index of Poor Health	2.1887	0.9002	2.2273	0.8652	2.1182	0.8755	2.3858	0.9665	2.1733	0.8763	2.3590	0.8763	2.1394	0.8654
Index of Depression	1.5124	0.5647	1.6531	0.6284	1.4355	0.4938	1.5377	0.6525	1.5954	0.5801	1.5887	0.6145	1.6864	0.6281
Has a chronic condition	0.6522	0.4763	0.6153	0.4865	0.6514	0.4765	0.7781	0.4155	0.6296	0.4829	0.7666	0.4230	0.5649	0.4958
Has diabetes	0.0186	0.1351	0.0116	0.1071	0.0182	0.1338	0.0390	0.1936	0.0137	0.1164	0.0298	0.1699	0.0060	0.0773
Has heart disease	0.0178	0.1323	0.0088	0.0931	0.0181	0.1335	0.0413	0.1991	0.0062	0.0783	0.0381	0.1913	0.0105	0.1017
Index of functional Limitations	1.2121	0.2440	1.1953	0.2618	1.2017	0.2262	1.2897	0.2935	1.1810	0.2140	1.2684	0.2400	1.2007	0.2391
BMI	25.1847	5.1330	24.0634	5.0908	25.4334	4.9646	26.1191	5.3215	24.0587	4.7786	25.9265	5.4304	23.4614	4.5024
Overweight	0.4297	0.4950	0.3058	0.4608	0.4554	0.4980	0.5175	0.4997	0.3130	0.4637	0.5368	0.4986	0.2721	0.4451
Obese	0.1538	0.3608	0.1229	0.3283	0.1546	0.3616	0.1974	0.3980	0.1005	0.3006	0.2223	0.4158	0.0947	0.2927
Smoker	0.2612	0.4393	0.2850	0.4514	0.1829	0.3866	0.3551	0.4785	0.3659	0.4817	0.2823	0.4501	0.3285	0.4697
Drinks often	0.1731	0.3783	0.1708	0.3764	0.2119	0.4086	0.2075	0.4055	0.1960	0.3969	0.2092	0.4068	0.1672	0.3731
# drinks per week	2.4325	4.2497	3.1302	5.3615	2.2974	3.7703	2.5552	4.1773	2.6160	4.0170	1.9359	3.3404	2.8848	5.2657
Inactive	0.5311	0.4990	0.4859	0.4998	0.5487	0.4976	0.5327	0.4989	0.5482	0.4977	0.4774	0.4995	0.5055	0.5000
Exercises infrequently	0.1512	0.3582	0.1362	0.3430	0.1556	0.3625	0.1846	0.3880	0.1463	0.3534	0.1299	0.3362	0.1496	0.3567
Independent Variables														
Age (years)	40.0226	12.5570	29.1701	10.7705	44.3203	10.5786	49.7346	10.0243	34.5443	9.9892	50.1832	13.0754	29.4582	11.4284
High school graduate	0.1528	0.3598	0.1137	0.3174	0.1836	0.3872	0.1404	0.3474	0.1666	0.3727	0.1473	0.3544	0.1484	0.3555
Some trade school	0.2229	0.4162	0.2324	0.4223	0.2184	0.4132	0.2830	0.4505	0.2422	0.4284	0.2330	0.4227	0.2486	0.4322
Some University	0.0750	0.2633	0.1436	0.3506	0.0412	0.1988	0.0524	0.2229	0.0465	0.2106	0.0290	0.1677	0.1441	0.3512
Trade school graduate	0.2176	0.4126	0.2034	0.4025	0.2133	0.4097	0.2415	0.4280	0.2283	0.4197	0.1913	0.3933	0.1829	0.3866
University graduate	0.1548	0.3617	0.1862	0.3893	0.1658	0.3719	0.1093	0.3121	0.1586	0.3653	0.0770	0.2665	0.1375	0.3444
Post graduate education	0.0328	0.1782	0.0265	0.1605	0.0355	0.1851	0.0189	0.1362	0.0229	0.1497	0.0395	0.1949	0.0279	0.1646
Household income between 10to15K	0.0549	0.2278	0.0722	0.2588	0.0139	0.1171	0.0950	0.2932	0.0233	0.1509	0.1289	0.3351	0.0823	0.2749
Household income between 15to20K	0.0522	0.2225	0.0638	0.2443	0.0227	0.1489	0.0988	0.2983	0.0361	0.1864	0.1121	0.3155	0.0629	0.2427
Household income between 20to30K	0.1092	0.3119	0.0949	0.2931	0.0669	0.2498	0.1641	0.3704	0.0887	0.2843	0.1818	0.3857	0.1217	0.3269
Household income between 30to40K	0.1306	0.3369	0.1156	0.3197	0.1035	0.3046	0.1495	0.3565	0.1449	0.3520	0.0924	0.2896	0.1274	0.3334
Household income between 40to50K	0.1206	0.3256	0.1054	0.3071	0.1217	0.3269	0.1050	0.3065	0.1654	0.3716	0.1063	0.3082	0.1238	0.3294
Household income between 50to60K	0.1108	0.3139	0.0886	0.2841	0.1368	0.3436	0.0948	0.2930	0.1207	0.3258	0.0803	0.2717	0.0951	0.2934
Household income between 60to80K	0.1465	0.3536	0.1288	0.3350	0.1985	0.3989	0.1023	0.3031	0.1679	0.3738	0.1034	0.3044	0.1159	0.3201
Household income between 80-100K	0.1529	0.3599	0.1335	0.3401	0.2418	0.4282	0.0666	0.2493	0.1590	0.3656	0.0930	0.2904	0.1081	0.3105
New Foundland/Labrador	0.0579	0.2335	0.0196	0.1385	0.0208	0.1427	0.0175	0.1313	0.0154	0.1233	0.0163	0.1266	0.0194	0.1379
Prince Edward Island	0.0563	0.2305	0.0052	0.0716	0.0050	0.0702	0.0046	0.0680	0.0034	0.0585	0.0065	0.0802	0.0059	0.0763
Nova Scotia	0.0625	0.2421	0.0354	0.1848	0.0352	0.1842	0.0415	0.1994	0.0167	0.1280	0.0166	0.1277	0.0334	0.1797
New Brunswick	0.0665	0.2492	0.0289	0.1675	0.0262	0.1598	0.0137	0.1163	0.0323	0.1768	0.0352	0.1843	0.0267	0.1613
Quebec	0.1889	0.3915	0.2725	0.4452	0.2186	0.4133	0.2499	0.4329	0.5223	0.4995	0.2902	0.4538	0.2754	0.4467
Manitoba	0.0647	0.2459	0.0313	0.1742	0.0420	0.2005	0.0309	0.1732	0.0244	0.1543	0.0391	0.1938	0.0302	0.1711
Saskatchewan	0.0615	0.2403	0.0329	0.1785	0.0382	0.1917	0.0228	0.1493	0.0199	0.1396	0.0312	0.1739	0.0299	0.1702
Alberta	0.1025	0.3033	0.1162	0.3205	0.1007	0.3009	0.0913	0.2880	0.0677	0.2512	0.0751	0.2635	0.1098	0.3126
British Columbia	0.0962	0.2948	0.1004	0.3005	0.1265	0.3324	0.1628	0.3692	0.0791	0.2698	0.1209	0.3261	0.1171	0.3215
Worked in past year	0.7639	0.4247	0.7767	0.4165	0.7381	0.4397	0.7201	0.4489	0.8154	0.3880	0.5989	0.4901	0.8559	0.3512
Has Children	0.6649	0.4720	0.2421	0.4283	0.8526	0.3545	0.8691	0.3373	0.5734	0.4946	0.7866	0.4097	0.2242	0.4171
N	22210		2865		11271		1316		2026		316		3288	

Table 3a
OLS, Men, Health Outcomes

	Index of Poor Health	Index of Depression	Has a chronic condition	Index of Functional Limitations
Married	-0.1070 (0.0187)***	-0.1413 (0.0104)***	0.0293 (0.0104)***	-0.0472 (0.0048)***
Divorced	0.0305 (0.0422)	0.0466 (0.0233)**	-0.0132 (0.0235)	0.0147 (0.0107)
Cohabiting	-0.0634 (0.0249)**	-0.1125 (0.0138)***	0.0304 (0.0139)**	-0.0249 (0.0063)***
Widowed	0.0865 (0.0870)	-0.0490 (0.0481)	0.0818 (0.0485)*	-0.0474 (0.0221)**
Separated	-0.0545 (0.0225)**	-0.0228 (0.0125)*	-0.0088 (0.0125)	-0.0097 (0.0057)*
Age	0.0088 (0.0034)***	0.0010 (0.0019)	-0.0067 (0.0019)***	-0.0017 (0.0009)**
Age squared	0.0000 (0.0000)	-0.0001 (0.0000)***	0.0002 (0.0000)***	0.0001 (0.0000)***
HS graduate	-0.2188 (0.0217)***	-0.0672 (0.0120)***	-0.0041 (0.0121)	-0.0268 (0.0055)***
Some Trade School	-0.1645 (0.0197)***	-0.0142 (0.0109)	0.0319 (0.0110)***	-0.0106 (0.0050)**
Some University	-0.2513 (0.0278)***	-0.0320 (0.0154)**	-0.0048 (0.0155)	-0.0393 (0.0071)***
Grad of Trade School	-0.2087 (0.0199)***	-0.0383 (0.0110)***	0.0170 (0.0111)	-0.0203 (0.0051)***
University Graduate	-0.4262 (0.0227)***	-0.0587 (0.0126)***	-0.0063 (0.0127)	-0.0631 (0.0058)***
Postgraduate Education	-0.5391 (0.0334)***	-0.0360 (0.0184)*	0.0298 (0.0186)	-0.0440 (0.0085)***
N	20480	20480	20480	20480
R squared	0.06	0.06	0.05	0.07
p-value: marr=cohab	0.05	0.02	0.93	0.00

Standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Table 3b
OLS, Men, Health Behaviors

	BMI	Overweight	Obese	Smokes Regularly	Drinks often	# drinks per week	Inactive	Exercises infrequently
Married	0.8510 (0.0843)***	0.1174 (0.0099)***	0.0467 (0.0079)***	-0.1354 (0.0094)***	-0.0502 (0.0101)***	-2.1210 (0.1857)***	0.0071 (0.0105)	-0.0305 (0.0080)***
Divorced	0.0328 (0.1899)	0.0309 (0.0222)	-0.0117 (0.0179)	0.0320 (0.0211)	-0.0340 (0.0227)	-0.0606 (0.4184)	-0.0379 (0.0236)	-0.0150 (0.0180)
Cohabiting	0.5975 (0.1123)***	0.0667 (0.0131)***	0.0369 (0.0106)***	-0.0115 (0.0125)	-0.0090 (0.0134)	-0.5633 (0.2475)**	0.0564 (0.0140)***	0.0017 (0.0107)
Widowed	0.4419 (0.3918)	0.0385 (0.0459)	0.0546 (0.0369)	0.0457 (0.0435)	0.0055 (0.0469)	-0.1911 (0.8632)	0.0645 (0.0487)	0.0188 (0.0372)
Separated	0.2610 (0.1014)**	0.0125 (0.0119)	0.0293 (0.0095)***	-0.0227 (0.0113)**	0.0105 (0.0121)	-0.2832 (0.2234)	0.0222 (0.0126)*	0.0102 (0.0096)
Age	0.2873 (0.0152)***	0.0325 (0.0018)***	0.0106 (0.0014)***	0.0222 (0.0017)***	0.0138 (0.0018)***	-0.0116 (0.0335)	0.0236 (0.0019)***	0.0126 (0.0014)***
Age squared	-0.0029 (0.0002)***	-0.0003 (0.0000)***	-0.0001 (0.0000)***	-0.0003 (0.0000)***	-0.0001 (0.0000)***	0.0002 (0.0004)	-0.0002 (0.0000)***	-0.0001 (0.0000)***
HS graduate	-0.0755 (0.0976)	0.0022 (0.0114)	-0.0193 (0.0092)**	-0.1124 (0.0108)***	0.0648 (0.0117)***	0.5930 (0.2151)***	-0.0722 (0.0121)***	-0.0900 (0.0093)***
Some Trade School	-0.1516 (0.0886)*	-0.0043 (0.0104)	-0.0333 (0.0083)***	-0.1169 (0.0098)***	0.0610 (0.0106)***	0.2769 (0.1951)	-0.0524 (0.0110)***	-0.0715 (0.0084)***
Some University	-0.3417 (0.1252)***	-0.0339 (0.0147)**	-0.0469 (0.0118)***	-0.2294 (0.0139)***	0.0781 (0.0150)***	-0.2711 (0.2758)	-0.1206 (0.0156)***	-0.1195 (0.0119)***
Grad of Trade School	-0.1647 (0.0897)*	-0.0109 (0.0105)	-0.0377 (0.0085)***	-0.1509 (0.0100)***	0.0917 (0.0107)***	0.3006 (0.1978)	-0.0748 (0.0112)***	-0.0855 (0.0085)***
University Graduate	-0.5495 (0.1024)***	-0.0361 (0.0120)***	-0.0661 (0.0096)***	-0.2982 (0.0114)***	0.1123 (0.0123)***	-0.2833 (0.2256)	-0.1680 (0.0127)***	-0.1536 (0.0097)***
Postgraduate Education	-1.2331 (0.1502)***	-0.1136 (0.0176)***	-0.1219 (0.0141)***	-0.3326 (0.0167)***	0.1416 (0.0180)***	-0.7636 (0.3309)**	-0.1961 (0.0187)***	-0.1762 (0.0143)***
N	20480	20480	20480	20480	20480	20480	20480	20480
R squared	0.08	0.08	0.03	0.08	0.05	0.02	0.04	0.04
p-value: marr=cohab	0.01	0.00	0.29	0.00	0.00	0.00	0.00	0.00

Standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Table 4a
Fixed Effects, Men, Health Outcomes

	Index of Poor Health	Index of Depression	Has a chronic condition	Index of Functional Limitations
Married	0.0555 (0.0280)**	-0.0688 (0.0159)***	-0.0006 (0.0157)	-0.0102 (0.0069)
Divorced	0.0742 (0.0413)*	-0.0339 (0.0235)	-0.0108 (0.0232)	0.0015 (0.0102)
Cohabiting	0.0116 (0.0290)	-0.0682 (0.0165)***	-0.0016 (0.0163)	0.0049 (0.0072)
Widowed	-0.0196 (0.0890)	-0.0886 (0.0507)*	0.0022 (0.0501)	-0.0305 (0.0220)
Separated	0.0032 (0.0232)	-0.0094 (0.0132)	-0.0138 (0.0131)	-0.0001 (0.0057)
N	20480	20480	20480	20480
R squared	0.03	0.03	0.03	0.02
p-value: marr=cohab	0.15	0.97	0.95	0.05

Standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

All models include controls for age, education, province of residence and year

Table 4b
Fixed Effects, Men, Health Behaviors

	BMI	Overweight	Obese	Smokes Regularly	Drinks often	# drinks per week	Inactive	Exercises infrequently
Married	0.4720 (0.0678)***	0.0472 (0.0117)***	0.0404 (0.0095)***	-0.0554 (0.0101)***	-0.0614 (0.0152)***	-1.6725 (0.2755)***	0.0438 (0.0176)**	-0.0083 (0.0140)
Divorced	0.0295 (0.0998)	0.0244 (0.0173)	-0.0118 (0.0141)	-0.0474 (0.0149)***	-0.0818 (0.0223)***	-0.4743 (0.4060)	-0.0339 (0.0259)	0.0005 (0.0206)
Cohabiting	0.3506 (0.0702)***	0.0436 (0.0121)***	0.0185 (0.0099)*	-0.0023 (0.0105)	-0.0237 (0.0157)	-0.9772 (0.2855)***	0.0694 (0.0182)***	-0.0041 (0.0145)
Widowed	0.3956 (0.2155)*	0.0472 (0.0373)	0.0787 (0.0304)***	-0.1093 (0.0322)***	-0.0243 (0.0482)	-0.7931 (0.8761)	0.0097 (0.0559)	-0.0237 (0.0444)
Separated	-0.0377 (0.0562)	-0.0072 (0.0097)	0.0011 (0.0079)	-0.0212 (0.0084)**	0.0212 (0.0126)*	0.2104 (0.2286)	0.0095 (0.0146)	0.0016 (0.0116)
N	20480	20480	20480	20480	20480	20480	20480	20480
R squared	0.14	0.05	0.04	0.02	0.01	0.01	0.01	0.01
p-value: marr=cohab	0.10	0.78	0.04	0.00	0.02	0.02	0.18	0.78

Standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

All models include controls for age, education, province of residence and year

Table 5a
OLS, Women, Health Behaviors

	Index of Poor Health	Index of Depression	Has a chronic condition	Index of Functional Limitations
Married	-0.2329 (0.0170)***	-0.1925 (0.0106)***	-0.0339 (0.0091)***	-0.0633 (0.0046)***
Divorced	-0.0622 (0.0289)**	-0.0600 (0.0181)***	0.0134 (0.0155)	0.0063 (0.0078)
Cohabiting	-0.1046 (0.0242)***	-0.1042 (0.0151)***	0.0023 (0.0129)	-0.0338 (0.0065)***
Widowed	-0.1631 (0.0518)***	-0.0569 (0.0324)*	-0.0240 (0.0277)	-0.0243 (0.0140)*
Separated	-0.0112 (0.0216)	-0.0022 (0.0135)	-0.0133 (0.0115)	-0.0001 (0.0058)
Age	0.0005 (0.0032)	0.0032 (0.0020)	-0.0033 (0.0017)*	0.0041 (0.0009)***
Age squared	0.0001 (0.0000)***	-0.0001 (0.0000)***	0.0001 (0.0000)***	-0.0000 (0.0000)
HS graduate	-0.2391 (0.0219)***	-0.0772 (0.0137)***	-0.0197 (0.0117)*	-0.0537 (0.0059)***
Some Trade School	-0.2445 (0.0203)***	-0.0876 (0.0127)***	0.0405 (0.0108)***	-0.0417 (0.0055)***
Some University	-0.4364 (0.0272)***	-0.1436 (0.0170)***	-0.0293 (0.0145)**	-0.0787 (0.0074)***
Grad of Trade School	-0.3390 (0.0205)***	-0.1212 (0.0128)***	0.0087 (0.0109)	-0.0615 (0.0055)***
University Graduate	-0.5075 (0.0221)***	-0.1586 (0.0138)***	-0.0087 (0.0118)	-0.0843 (0.0060)***
Postgraduate Education	-0.5867 (0.0363)***	-0.1887 (0.0227)***	0.0480 (0.0194)**	-0.1094 (0.0098)***
N	22210	22210	22210	22210
R squared	0.06	0.07	0.04	0.07
p-value: marr=cohab	0.00	0.00	0.00	0.00

Standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Table 5b
OLS, Women, Health Behaviors

	BMI	Overweight	Obese	Smokes Regularly	Drinks often	# drinks per week	Inactive	Exercises infrequently
Married	-0.1415 (0.0969)	0.0188 (0.0093)**	-0.0275 (0.0070)***	-0.1706 (0.0081)***	-0.0004 (0.0072)	-0.5508 (0.0822)***	-0.0139 (0.0096)	-0.0326 (0.0069)***
Divorced	-0.0497 (0.1647)	0.0178 (0.0159)	-0.0013 (0.0118)	0.0201 (0.0138)	-0.0378 (0.0122)***	-0.5134 (0.1398)***	-0.0028 (0.0163)	0.0208 (0.0117)*
Cohabiting	-0.3414 (0.1376)**	-0.0095 (0.0133)	-0.0414 (0.0099)***	0.0193 (0.0115)*	-0.0006 (0.0102)	-0.3227 (0.1167)***	-0.0014 (0.0136)	-0.0180 (0.0098)*
Widowed	-0.4223 (0.2946)	-0.0203 (0.0284)	0.0066 (0.0212)	-0.0349 (0.0247)	-0.0584 (0.0218)***	-1.0358 (0.2500)***	-0.0426 (0.0291)	-0.0337 (0.0210)
Separated	0.0466 (0.1228)	0.0224 (0.0118)*	0.0058 (0.0088)	-0.0303 (0.0103)***	0.0235 (0.0091)***	0.1502 (0.1042)	-0.0127 (0.0121)	-0.0195 (0.0087)**
Age	0.2208 (0.0183)***	0.0133 (0.0018)***	0.0116 (0.0013)***	0.0189 (0.0015)***	0.0054 (0.0014)***	-0.0439 (0.0155)***	0.0120 (0.0018)***	0.0046 (0.0013)***
Age squared	-0.0017 (0.0002)***	-0.0001 (0.0000)***	-0.0001 (0.0000)***	-0.0003 (0.0000)***	-0.0000 (0.0000)	0.0005 (0.0002)***	-0.0001 (0.0000)***	-0.0000 (0.0000)***
HS graduate	-0.3839 (0.1244)***	-0.0440 (0.0120)***	-0.0266 (0.0089)***	-0.1020 (0.0104)***	0.0439 (0.0092)***	0.1610 (0.1055)	-0.0479 (0.0123)***	-0.0434 (0.0089)***
Some Trade School	-0.2839 (0.1153)**	-0.0457 (0.0111)***	-0.0204 (0.0083)**	-0.1266 (0.0097)***	0.0331 (0.0085)***	0.0937 (0.0979)	-0.0273 (0.0114)**	-0.0486 (0.0082)***
Some University	-0.9712 (0.1549)***	-0.1011 (0.0149)***	-0.0661 (0.0111)***	-0.2821 (0.0130)***	0.0932 (0.0115)***	0.4892 (0.1315)***	-0.1232 (0.0153)***	-0.0855 (0.0110)***
Grad of Trade School	-0.5018 (0.1167)***	-0.0545 (0.0113)***	-0.0332 (0.0084)***	-0.1833 (0.0098)***	0.0529 (0.0086)***	0.2216 (0.0990)**	-0.0626 (0.0115)***	-0.0744 (0.0083)***
University Graduate	-0.9045 (0.1257)***	-0.1089 (0.0121)***	-0.0501 (0.0090)***	-0.3266 (0.0105)***	0.1358 (0.0093)***	0.5845 (0.1067)***	-0.1341 (0.0124)***	-0.1189 (0.0089)***
Postgraduate Education	-1.7932 (0.2067)***	-0.1693 (0.0199)***	-0.0929 (0.0148)***	-0.3594 (0.0173)***	0.2078 (0.0153)***	0.6260 (0.1754)***	-0.1436 (0.0204)***	-0.1166 (0.0147)***
N	22210	22210	22210	22210	22210	22210	22210	22210
R squared	0.07	0.07	0.02	0.10	0.06	0.02	0.03	0.03
p-value: marr=cohab	0.11	0.02	0.12	0.00	0.99	0.03	0.31	0.10

Standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Table 6a
Fixed Effects, Women, Health Outcomes

	Index of Poor Health	Index of Depression	Has a chronic condition	Index of Functional Limitations
Married	-0.0227 (0.0249)	-0.1153 (0.0163)***	-0.0065 (0.0134)	-0.0083 (0.0065)
Divorced	0.0137 (0.0288)	-0.0473 (0.0188)**	-0.0359 (0.0155)**	0.0061 (0.0075)
Cohabiting	0.0239 (0.0269)	-0.0795 (0.0176)***	0.0070 (0.0145)	-0.0129 (0.0070)*
Widowed	-0.0810 (0.0524)	-0.0992 (0.0343)***	-0.0491 (0.0283)*	-0.0029 (0.0137)
Separated	-0.0077 (0.0211)	0.0097 (0.0138)	-0.0125 (0.0114)	0.0192 (0.0055)***
N	22210	22210	22210	22210
R squared	0.02	0.03	0.04	0.02
p-value: marr=cohab	0.10	0.05	0.38	0.53

Standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

All models include controls for age, education, province of residence and year

Table 6b
Fixed Effects, Women, Health Behaviors

	BMI	Overweight	Obese	Smokes Regularly	Drinks often	# drinks per week	Inactive	Exercises infrequently
Married	0.6430 (0.0756)***	0.0692 (0.0105)***	0.0280 (0.0080)***	-0.0471 (0.0087)***	-0.0062 (0.0111)	-0.4342 (0.1272)***	0.0353 (0.0162)**	0.0202 (0.0121)*
Divorced	0.0828 (0.0876)	0.0155 (0.0122)	0.0125 (0.0093)	-0.0101 (0.0101)	-0.0048 (0.0128)	-0.1587 (0.1473)	-0.0030 (0.0187)	0.0180 (0.0140)
Cohabiting	0.2024 (0.0817)**	0.0221 (0.0114)*	-0.0056 (0.0087)	-0.0330 (0.0094)***	-0.0171 (0.0120)	-0.5933 (0.1374)***	-0.0018 (0.0175)	0.0165 (0.0131)
Widowed	0.0574 (0.1594)	-0.0008 (0.0222)	0.0099 (0.0169)	-0.0251 (0.0184)	0.0068 (0.0233)	-0.1044 (0.2680)	-0.0395 (0.0341)	-0.0103 (0.0255)
Separated	-0.1527 (0.0640)**	0.0115 (0.0089)	-0.0108 (0.0068)	-0.0162 (0.0074)**	0.0214 (0.0094)**	-0.0804 (0.1077)	-0.0263 (0.0137)*	-0.0229 (0.0103)**
N	22210	22210	22210	22210	22210	22210	22210	22210
R squared	0.11	0.05	0.02	0.03	0.02	0.00	0.01	0.01
p-value: marr=cohab	0.00	0.00	0.00	0.15	0.39	0.27	0.04	0.79

Standard errors in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

All models include controls for age, education, province of residence and year