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The Effect of Spousal Retirement On Health Outcomes

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Abstract
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By Yixuan Chen

Using data from the Health and Retirement Study (HRS), this article investigates the effect of spousal retirement on various health outcomes. It is found that retirement of spouses significantly improves respondents' physical health. In particular, it alleviates the respondents' difficulties with mobility and daily activities. Estimates also indicate spouses' retirement lead to a decrease in respondents' depressive symptom, though the effect is not statistically significant. Individuals tend to have a worse self-assessed health following their spouses' complete retirement, but the effect observed is most likely due to the confounding effect of their own retirement. In addition, evidence suggests income is not the major pathway through which spousal retirement influences their partner's health.

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I. INTRODUCTION

The relationship between retirement and health is the subject of a large and growing economic literature; however, this literature focuses almost exclusively on the effects of an individual's retirement on their own health. When spouses retire, the financial structure, time allocation, and the broader marital relationship between couples are influenced. Thus, an individual's health may be effected not only by their own retirement but also their spouses' retirement behavior. In this paper, we examine specifically the role of spousal retirement on individual health.

The effect of retirement on one's own health is theoretically ambiguous. There may be positive effects due to increased leisure time; however, retirement also reduces one's incentive to invest in health for purposes of human capital, generating a negative effect of retirement on health. Individual identities may also be attached to their careers, again yielding a negative effect of retirement on health. Indeed, retirement is ranked 10th on the list of life's 43 most stressful events (Holmes & Rahe, 1967).

While there is a broad literature analyzing the effect of retirement on the health of retirees (Mein et al., 2003; Ostberg & Samuelsson, 1994; Salokangas & Joukamaa, 1991; Szinovacz & Davey, 2004; Tuomi et al., 1991) literature examining the relationship between individual health and spouses' retirement is sparse. Importantly, retirement should not be viewed exclusively in relation to individual characteristics without considering the family-retirement linkage, and policies based solely on our understanding of an individual's retirement effect could be misinformed without considering the larger family structure. Whatever the direction and magnitude of the effect on health is, ignoring the interdependency of couples' retirement

decisions and health outcomes leads to potentially flawed retirement policy analysis and design, making the absence of a discussion of the effects on health notable.

Retirement means changes in the financial structure of the family. Although social security payments and pensions can help immensely as a regular money source, retirement, however, still means a huge reduction in income for many families. Therefore, both retirees and their spouses would have to make changes in their budget plans to adjust for the shifting from working to being retired.

Many marital changes also occur after retirement. For instance, many wives expect their husband to share the housework after their retirement (Brubaker and Hennon 1982). Planning and coordinating of spouses' time and leisure activities and decisions on whether to adapt to the plans and needs of spouses or not could also generate problems in marriage after retirement. Furthermore, Kulik and Bareli (1997) suggest that retirement can undermine husbands' power in marriages since men's power is believed to be grounded in their status as providers of resources. In these ways, retirement has a pervasive and powerful influence on marriage quality through the influence on psycho-social factors couples perceive.

As previous studies suggest, not only the retirement of the retirees themselves can lead to changes to their lives, their spouses' retirement could also result in such changes possibly through changes in family financial conditions and marital relations. Using the data from the Health and Retirement Study (HRS) the current study hence investigates whether such effects would cause changes in physical and mental health conditions. In other words, will the spouses' retirement influence their partners' health status?

In summary, the findings demonstrate that spousal retirement has a positive effect on their husband or wife's physical health. Specifically, it leads a decrease in difficulties with

mobility and daily activities even when the sample is stratified across individuals who had no major illness prior to their spouses' retirement and when work/retirement status of the respondents are controlled for. No statistically significant mental health effect of spouses' retirement is found. Despite the actual improvement in physical health outcome, the general self-accessed health condition is worsened after spouses are fully retired. However, the effect is not significant when retirement status of respondents is controlled, thus the major effect on worse perceived health outcomes after spouses' retirement is more likely to be confounded by the retirement status of respondents.

Using the data from the Health and Retirement Study (HRS), the current study investigates whether a spouses' retirement influences their partners' health status. After accounting for endogenous retirement due to one's health, we find that spousal retirement has a positive effect on their husband or wife's physical health, as measured by difficulties in mobility and daily activities. However, we find no statistically significant effect of spousal retirement on mental health.

This paper makes a contribution to the literature on health and retirement by recognizing the role of spouse in studying the health effect of retirement. The results inform researchers and policy makers to take the role of spousal context into account in analyzing costs and benefits of retirement. In the remainder of the paper, we review briefly the literature on retirement and health in Section 2, discuss the data and empirical methodology in Section 3, and present the results in Section 4. We conclude with a brief discussion in Section 5.

II. RELATED LITERATURE

A. Health and Retirement

Many studies have examined the impact of retirement on subsequent health of retirees (Mein et al., 2003; Ostberg & Samuelsson, 1994; Salokangas & Joukamaa, 1991; Szinovacz & Davey, 2004; Tuomi et al., 1991). According to the human capital model for the demand for health (Grossman, 1972), health can be viewed as a durable capital stock, and individuals demand health for its consumptive and investment aspects. Health capital increases utility and reduces work loss due to illness. Based on Grossman's theory, the motive to invest in health to raise productivity and earnings would disappear after retirement, and health is therefore expected to decline.

However, as Dave, Rashad, and Spasojevic (2008) pointed out, the effects of retirement depend not only on the the marginal benefits individuals gain from better health changes but also marginal cost of investing in health capital. Since retirement decreases the marginal value of time for retirees, their time cost for investigating in health care activities (for instance, going to a physician, cooking healthy meals, exercising etc.) post-retirement is also decreased. In this case, health is expected to increase after retirement. Therefore, theoretically the effect of retirement on health is ambiguous.

Since the question of whether or not retirement influences the subsequent health of retirees has important public policy implications as well as quality of life implications, empirical studies have provided evidence for the effect of retirement on health. Some early studies in the field suffer the problem of Behncke (2012) finds that retirement significantly increases the risk of being diagnosed with a chronic condition. Particularly, it raises the risk of developing severe cardiovascular disease and being diagnosed with cancer. Risk factors, such as BMI, cholesterol,

blood pressure etc., and problems in physical activities are found to be increased after retirement as well. In addition, the study illustrates that retirement worsens self-rated health outcomes and an underlying health stock. Using the data stem from English Longitudinal Study of Ageing (ELSA), she obtains information on the date of diagnosis and retirement. She observes whether individuals retire before or after a new diagnosis is made and eliminates those who retire right after a new diagnosis. In such a way, individuals retired because of health shocks are excluded from the sample, and the reverse causality, that people retire due to bad health, can be ruled out.

Similarly, Morris, Cook, and Shaper (1994) were able to control health at baseline and exclude those who retired due to illness. They find that men who retired had an 86 percent increase in mortality, when age, region, social class, health behavior is controlled. In particular, they found a significant increase in both cardiovascular and cancer mortality for male retirees in the UK.

While the majority of the literature suggests a negative effect of retirement on health, empirical studies have provided conflicting evidence as well. A study that compared pre- to post-retirement changes in physical health, measured with results of medical examinations, among participants from the Veterans Administration Normative Aging Study reaches the conclusion that the event of retirement does not influence the risk of health deterioration (Ekerdt, Baden, Bosse & Dibbs, 1983). However, the above study uses a cross-sectional comparison and ignores the heterogeneity between the retired group and working group.

Psychological health effect of retirement has been studied intensively as well. Nevertheless, evidence is mixed about how retirement might affect psychological well-being. The main reason for the disagreement among studies is that researchers are using different indicators for mental health outcomes and samples are from various regions.

Bosse et al. (1987) examine effect of retirement on mental health, as measured with psychological symptoms in a sample of 1,513 older men. Controlling for physical health status, analyses of variance indicate that retirees reported more psychological symptoms than workers.

Retirement behavior evidence from the longitudinal modelling study conducted by Westerlund and colleagues (2010) shows that retirement is associated with a substantial reduction in mental fatigue and depressive symptoms, particularly among people with chronic diseases. Salokangas and Joukamaa (1991) find mental health improvements in a cross-sectional study of Finnish individuals between the ages of 62 and 66 years. Drentea (2002) also reports cross-sectional differences between workers and retirees. She finds that retirees experienced less anxiety and distress due to greater autonomy and they tend to have higher positive affect.

Studies build on the theoretical framework as well as empirical evidences have investigated the possible mechanisms through which retirement affects health. Grundy et al. (1999) report that 27 percent of males and 31 percent of females do not get regular physical activity outside of work. Various studies have investigated the positive benefits of physical activity on health indicators and overall mortality (Franco et al., 2005; Lee & Skerrett, 2001). Thus the decline in intensity and frequency of physical activity when individuals shift from work to retire could be a reason that lead to their worse health outcomes.

There are other channels through which retirement might affect health besides changing frequency of physical activity. As mentioned in the introduction section, retirement has always been viewed as a stressful event (Holmes & Rahe, 1967), and stress is believed to influence health by affecting healthy habits, such as drinking, smoking, eating, exercising, sleeping, etc. (Brannon & Feist, 2013). Furthermore, stress contributes to a variety of disease, including clinical depression, cardiovascular disease (CVD), human immunodeficiency virus (HIV)/AIDS,

and cancer (Cohen, Janicki-Deverts & Miller, 2007). In contrast, A Kaiser Permanente study with members of a health maintenance organization (ages 60 to 66) compared mental health and other health behaviors of those who retired with those who did not (Midanik et al., 1995). Controlling for age, gender, marital status, and education, the researchers find, however, that retired members were more likely to have lower stress levels.

Regardless of stress and physical activity, there is evidence suggesting that health behavior changes as individuals retire. For instance, retirees were found to be more likely to quit smoking (Lang, Rice, Wallace, Guralnik & Melzer, 2007); to have decreased social interaction (Sugisawa, Sugisawa, Nakatani & Shibata, 1997); to gain weight (Forman-Hoffman, Richardson, Yankey, Hillis, Wallace & Wolinsky, 2008); and to have increased problematic alcohol consumption (Perreira & Sloan, 2001). These changes can potentially harm or promote health as well.

B. Retirement and Spousal Relationship

A growing literature is recognizing that retirement decisions are made in the context of the family, and marital context plays an important role on retirement well-being (Szinovacz & Davey, 2004).

Rosenkoetter and Garris (1998) study psychosocial changes following retirement using a 72-item questionnaire. Factor analysis of their study demonstrates that spousal relationship is one of four particularly important areas in which new retirees tend to have difficulty adjusting.

Retirement has been found to have an effect on marital relationship as well. A study by Moen, Kim and Hofmeister (2001) examining couples' employment/retirement status and its effect on marital quality finds that being retired actually promotes marital quality. Kulik (2001)

studies the impact of men and women's retirement on marital relation by distributing a questionnaire to a sample composed of pre-retired and retired Isarelis. The findings from the study indicate that retired respondents of both genders report fewer complains than the pre-retired respondents, but at the same time retired couples also reported having less marital enjoyment.

The interdependent relationship between marital status and attitudes towards retirement has been assessed as well. Anson et al. (1989) examined 432 men and 373 women on the verge of retirement in their attitude towards retirement. Both men and women are found to perceive more gains in entering retirement and in leaving work if they are married compared with unmarried participants.

Retirement is a major transition in life. As discussed above, previous literature touches upon the causal effect of retirement on health outcomes, but the works have always been focused on the retiree himself. Few have studied the retirement effect on health in the context of spousal relationship.

Based on the health capital model (Grossman, 1972), retirement of spouses could change the marginal benefit from better health of the husbands or wives, depending on their own working/retirement status. At the same time, it also decreases costs of investigating in health capital at a family level. Thus on the theoretical level, retirement of spouses would have an effect on health outcomes of individuals, though the direction is ambiguous.

Retirement has been considered as a major milestone in marital life (Myers & Booth, 1996). It influences family income, which is an important determinant of good physical and mental health (Ettner, 1996). Also it brings changes to relationship between couples. The current

project, consequently, examines the effect of retirement of spouses on health outcomes of respondents.

III. DATA AND METHODS

A. Sample

The data for this study comes from the Health and Retirement Study (HRS), conducted by the Institute for Social Research at the University of Michigan. The HRS is an ongoing longitudinal study that surveys a representative sample of approximately 20,000 Americans over the age of 50, which began in 1992 and is repeated biennially. Its main goal is to provide panel data on experiences of older workers. The HRS is particularly well-suited for this study, because the survey includes detailed longitudinal information on demographic, labor supply and health status of the aged as well as this information from their spouses. The current study utilizes the RAND HRS Data File, which is a user-friendly file derived from all waves of the HRS.¹

Samples of respondents aging from 50 to 75 are used in the analysis. The sample is constructed using the 117,583 person-wave observations whose spouses have worked at least in one of the waves. To avoid confounding effects from spouses switching in and out of the labor market, subjects whose spouses have returned to work after reporting being fully-retired are excluded from the sample. The final sample size is 80,311 person-wave observations with the above exclusions.

We consider several measures of health in our analysis, including: (1) The mobility index; (2) the ADL index; (3) CES-D scale; and (4) self-assessed health. The mobility index ranges from zero to five and indicates difficulties in walking one block, walking several blocks,

¹ <http://hrsonline.isr.umich.edu/modules/meta/rand/index.html>

walking across a room, climbing one flight of stairs, and climbing several flights of stairs. The composite index measures difficulties associated with mobility. Another composite index is defined to measure difficulties associated with activities of daily living (ADL). The ADL difficulties index also ranges from zero to five (a larger composite index indicates more difficulties) and indicates difficulties in bathing, eating, getting dressed, getting in or out of bed, and using the toilet.

The HRS also contains a depression scale - the CES-D scale², which is a short self-reported measure designed to assess depressive symptomatology in the general population. It has been proven to be valid and reliable in measuring symptoms related to depression.

In one of the survey questions, the respondents are asked about their self-reported general health status, and the answers are coded from “1” for Excellent to “5” for Poor. Respondents’ answer to this survey question is used in this study as a measure of overall self-assessed health condition.

The HRS also contains rich information on other variables that may confound the relationship between spouses’ retirement and respondents’ health outcomes. Descriptions on these variables are provided in Table 1.

In the current study, these measures, which cover a broad range measurement of physical and mental health of the respondents, are chosen as primary dependent variables (cohabiting partners are treated as spouses for all variables in this dataset). Our main independent variable is spouses’ retirement status, and we included family income, marital status and age as additional controls.

² http://www.actonmedical.com/documents/cesd_long.pdf

Table 2 and Table 3 present the means of the full sample as well as samples stratified across retirement status of spouses. Table 3 indicates that 7.39 percent of observations are those whose spouses are fully retired, with an additional 6.59 percent of the observations with spouses partially retired. Those with full-retired spouses on average reported less difficulties with mobility and daily activities, have less depressive symptoms, and have better self-reported health condition. The significant difference in means indicate that those whose spouses are fully retired are in better health condition. The two groups also have significantly different means for other variables including gender, ethnicity, education level, age that might possibly confound the results and are controlled in further analysis.

B. Statistical Procedure

We estimate the effect of spousal retirement on individual health using a standard fixed effects regression, with $Y_{it} = \beta X_{it} + v_t + u_i + \varepsilon_{it}$, where Y_{it} is a dependent variable of interest, measured with Mobility index, ADL index, CESD score, and self-accessed health outcomes, representing the health condition of respondents in wave i at time t ; X_{it} represents the independent variables; v_t represents time fixed effects; u_i represents personal fixed effects and ε_{it} represents the residual.

The previous model estimates the association between spouses being fully retired and health outcomes of respondents. However, the association could be interpreted in the opposite direction of the intended topic of the current study – namely poor health conditions of the respondents might affect spouses' retirement decisions. Intuitively if the respondent is in poor health condition, his or her spouse may decide to work longer for the additional income or the spouse may choose to retire earlier to have more time to take care of the respondent. In fact,

several studies focusing on retirees' health conditions have found that poor health – both physical health problems and psychiatric disorders - motivates individuals to retire earlier (Dwyer & Mitchell, 1999; McGarry, 2014; Ettner et al. 1997). Moreover, Johnson and Favreault (2001), analyzing the patterns of joint labor supply behavior, found that both men and women were less likely to retire if their spouses appeared to have left the labor force because of health problems.

To address this reverse causality issue, we drop respondents who report being diagnosed with one of the following illnesses prior to their spouses' retirement: high blood pressure, diabetes, cancer, chronic lung disease, heart disease, stroke, arthritis, and psychiatric problems before their spouses retired are excluded from the sample. This reduces the sample to 67,741 person-wave observations after excluding these respondents. The means of both personal and panel variables in this subsample are presented in Table 4 and Table 5.

The change in the financial structure after retirement obviously would have different impact on families with different levels of income. Hence in the previous models, total household income is used as a control variable, which means that it is kept constant when analyzing the effect of spouses' retirement on respondents' health outcomes. Nevertheless, as mentioned in the introduction section above, changes in household income could be a major pathway through which retirement of spouses influences the respondent's health (Ettner, 1996). Thus, we considered additional specification that do not control for income.

Retirement behavior of couples tend to be highly correlated, and many studies have demonstrated the health effect of retirement on retirees themselves. Using data from the Retirement History Survey, Blau (1998) estimates that between 30 percent and 40 percent of couples exit the labor force within a year of each other. The sample he used was taken from

individuals born between 1906 and 1911. Hurd (1988) found that about one-quarter of couples retire within a year of each other, and between 6 and 9 percent choose to retire in the same month. Hurd's estimates were based on data from the New Beneficiary Survey (NBS), which surveyed persons born between 1910 and 1918. Later Favreault and Johnson (2002) estimated that between 22 and 40 percent of people retired within two years of each other using data on a sample of individuals born between 1931 and 1941 adopted from the HRS. Taken together, these studies indicate that retirement behavior between couples are highly correlated.

Therefore, in order to further investigate the effect of spousal retirement on health of respondents, we included specifications controlling for respondents' retirement status, and an interaction term *BothRetired*, which represents whether or not both of the couples are fully retired (1 for both retired, and 0 for all other conditions) to control for the confounding effect of the respondent's retirement status on their own health outcomes.

IV.RESULTS

Table 6 displays the results of the first set of models, which estimate the correlation between spouses' full retirement and respondents' health outcomes with the full sample. Estimates in the table indicates that spouses being fully retired is associated with a decrease in mobility difficulties, decrease in ADL difficulties, better self-reported health, and an increase in depressive symptoms. However, the associations are not statistically significant.

Table 7 displays the results of our FE regression after excluding individuals with reported health problems prior to their spouse's retirement. Results indicates that, among those who did not have major illness before their spouse retired, spouses' retirement improves respondents' physical health, measured with mobility index and ADL index. Specifically, spouses' complete

retirement decreases respondents' mobility difficulties by 0.226 unit. It also leads to a 0.107 decrease in respondents' difficulties associated with ADL. On a 0-5 scale, the estimated effects of 0.226 and 0.107 are also relatively large in magnitude. Respondents' depressive symptoms are shown to decrease after spouses' retirement, but the result is insignificant. An interesting result from Table 7 is that although both the respondents' physical and mental health is significantly improved, their self-rated health becomes worse after the retirement of their spouses.

One of the possible pathways through which retirement of spouses may influence the health of respondents is through changes in household income. Regression results of the models that excluded income variable do not show significant difference from the models that included income variables. The result indicates that the decline in income with the spouses' retirement is not the main reason for the changes in respondents' health.

Table 8 presents the results of the model that further control for the respondents' retirement status. Column 1 in Table 8 shows that full retirement of spouses decreases the respondents' difficulties with mobility, and the couples being both retired further benefits respondents' health with an additional 0.15 decrease in the respondents' mobility difficulties, while the respondents themselves retire completely increases their difficulty in mobility by 0.12. The influence on the respondents' difficulties with ADL is similar (column 2). Their spouses' retirement decreases the difficulties in daily activities significantly while their own complete retirement increases the difficulties. The couples being both retired is shown to be associated with a decrease in the difficulties with ADL, but the result is not significant. Controlling for respondents' employment status and the interaction term, spouses' full retirement is still not a significant predictor for the depressive symptoms of respondents while the respondents' own retirement seems to lead to a significant increase in depressive symptoms. Although

insignificant, respondents and spouses' joint retirement appears to further increase depressive symptoms in respondents and offsets the positive effects on mental health result from spouses' retirement.

Spouses' complete retirement is no longer a significant predictor of the respondents' self-reported health outcome. Results of further examination of the correlation between self-reported health and other objective measures of health (mobility index, ADL index, and CESD score) show that the results are highly correlated. There is no inconsistency between respondents' perceived health conditions and objective measures of their health. Thus the discrepancy observed in previous models is most likely to be caused by the confounding effect of respondents' retirement.

V. DISCUSSION

This paper aims to examine the influence of spouses' retirement on respondents' physical and mental health with the sample stem from the HRS. Retirement decisions are thought to influence the health outcomes of retirees, and previous studies have investigated the changes in spousal relationships pre- and post-retirement as well as the effect of individual retirement on one's health. However, this paper is the first to put the issue of health effect of retirement into the spousal context and therefore fill in the gap existed in the literature. Retirement marks the end of a period in life, and is a huge decision for most individuals, hence it is essential to address the consequences of this major transition. Many past literature suggests a negative health effect of retirement. However, such concerns ignore the role of spouses and could be misleading for policy makers.

Consistent with the existing literature, we find that individuals retirement tends to decrease physical and mental; however, our results suggest that spouses' retirement may offset these negative changes. Specifically, spouses' complete retirement leads to statistically significant decrease in difficulties in mobility and daily activities even when their own retirement status is controlled. In addition, full retirement of spouses decreases the depressive symptoms in respondents, though the effect is not significant. Self-rated health is found to be worse after spouses' retirement, but the effect is most likely to be caused by the confounding of the respondents' own retirement.

One drawback of the sample due to the nature of the HRS is that the survey is conducted every two years, and although individuals with major illness before their spouses retired were removed from the sample, we were not able to control for health shocks that occurred between the last interview before spouses' retirement and time of spouses' retirement. These unobserved health shocks might drive spouses out of the labor market, and the positive effects of spouse's retirement found in this article might be underestimated.

This article joins together two branches of retirement literature. In one, health consequences of retirement are estimated on individuals, ignoring the effect on their spouses. In the other, effect of retirement on different aspects of spousal relationship is analyzed.

With the movement of baby boomers into retirement, health care costs for the aged in the US is rising, and it has led to funding problems for Social Security and Medicare. Concerns with fiscal stability has prompted many researchers to investigate the effect of retirement on subsequent health conditions. Findings from many of the studies suggest a negative health effect of retirement, both physically and psychologically. These findings along with increased life expectancy have encouraged many to promote policies that encourage aging workers to postpone

retirement. In fact, the retirement age for full social security eligibility was gradually raised to 67 for those born in 1960 or later, the Social Security Advisory Board has proposed to postpone the retirement age furthermore³. However, findings from this study demonstrate that such proposals are premature considering the health benefits generated through the retirement of one's spouse.

VI. CONCLUSION

In this paper, we examine the effect of spouses' retirement on different health outcomes. Data from all waves of the HRS allow us to control for potential confounders. Reverse causality is eliminated by excluding respondents with major illness prior to their spouses' complete retirement. We found that full retirement of spouses leads to a decrease in mobility and daily activities difficulties but also a worsened self-rated health. It also leads to an insignificant decrease in depressive symptoms. Additional checks demonstrate that income is not the major path for these influences.

As we further control the retirement status of respondents and the joint retirement behavior for spouses, the effect for spousal retirement on objective measures of physical and mental health remains the same. However, the effect on self-rated health is insignificant with the specification. This result implies that the previously observed decrease in self-rated health after spouses' retirement is most likely due to the confounding effect of respondents' own retirement status.

Although many studies have encouraged retiring at a later age, our results suggest that as policymakers consider reforms to retirement policy, it is important that they recognize the

³ <https://www.ssa.gov/retirementpolicy/projections/retirement-age.html>

interdependency of spouses' retirement decisions and health consequences and analyze the effect of such changes in the familial context.

The reason for the beneficial effect of spouses' retirement on physical health is interesting but beyond the scope of this article. Additional checks indicate that income is not a major channel through which health is affected by spouses' retirement. Other possible channels including changes of life styles after spouses retire and changes in marital satisfaction could be tested in future studies.

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Appendix

Table 1
Variable Description

Variable Name	Description
Female	Takes the value of 1 if the respondent is female and takes the value of 0 if the respondent is male.
Hispanic	Takes the value of 1 if the respondent is hispanic and takes the value of 0 otherwise.
White	Takes the value of 1 if the respondent is white and takes the value of 0 otherwise.
YearsEduc	Education level of respondent in years.
NativeUS	Takes the value of 1 if the respondent was born in the US and takes the value of 0 otherwise.
Age	Age of the respondent in years.
AgeSq	Square of age of the respondent in years.
TotalIncome	Total household income, in nominal dollars.
TotalIncomeSq	Square of the nature log of total household income, in nominal dollars.
FullRetiredS	Takes the value of 1 if the respondent's spouse reports being fully reitred and not working, and takes the value of 0 otherwise..
FullRetiredR	Takes the value of 1 if the respondent reports being fully reitred and not working, and takes the value of 0 otherwise..
BothRetired	Takes the value of 1 if both the respondent and the spouse report being fully reitred and not working, and takes the value of 0 otherwise.
Mobility	A score of 0 to 5 indicating difficulties with mobility. "0" means no difficulty, and "5" means difficulties in every area.
ADL	A score of 0 to 5 for difficulties with activities of daily living. "0" means no difficulty, and "5" means difficulties in every area.
SelfHlth	Self-reported general health status. Coded as 1 for "Excellent", 2 for "Very good", 3 for "Good", 4 for "Fair", and 5 for "Poor"
CESD	A score of 0 to 8 for depressive symptoms. The higher the score, the more negative feelings.

Table 2
Means of individual variables for respondents

VARIABLES	Means		
	All n=17,819	Full-Retired Spouses n=1,869	Other n=15,950
Female	0.582*** (0.493)	0.513 (0.500)	0.59 (0.492)
Hispanic	0.116*** (0.320)	0.0487 (0.215)	0.124 (0.33)
White	0.702*** (0.458)	0.898 (0.302)	0.679 (0.467)
YearsEduc	12.40** (3.282)	12.54 (2.973)	12.38 (3.316)
NativeUS	0.871*** (0.335)	0.926 (0.262)	0.865 (0.342)

Standard deviations in parentheses

*** p<0.01, ** p<0.05, * p<0.1; denote significant differences between respondents with full-retrieved spouses and those who without

Table 3
Means of panel variables for respondents

VARIABLES	Means		
	All n=80,311	Full-Retired Spouses n=14,544	Other n=65,767
FullRetiredR	0.265*** (0.441)	0.385 (0.487)	0.238 (0.426)
PartRetiredR	0.107** (0.309)	0.112 (0.315)	0.106 (0.308)
FullRetiredS	0.0739 (0.262)	0.408 (0.491)	0 -
PartRetiredS	0.0659*** (0.248)	0.112 (0.315)	0.0558 (0.23)
Married	0.541*** (0.498)	0.949 (0.221)	0.451 (0.498)
TotalIncome	65,208 (253,083)	67,559 (73,963)	64,688 (277,497)
Age	61.66*** (6.948)	64.03 (6.703)	61.14 (6.892)
BothRetired	0.0468 (0.211)	0.258 (0.438)	0 -
SelfHealth	2.775*** (1.152)	2.542 (1.062)	2.827 (1.165)
MobilityIndex	0.940*** (1.401)	0.758 (1.213)	0.979 (1.435)
ADL	0.264*** (0.811)	0.157 (0.611)	0.287 (0.846)
CESD	1.537*** (2.051)	0.990 (1.602)	1.653 (2.116)

Standard deviations in parentheses

*** p<0.01, ** p<0.05, * p<0.1; denote significant differences between respondents with full-retired spouses and those who without

Table 4
Means of individual variables for respondents

VARIABLES	Means		
	All n=16,200	Full-Retired Spouses n=250	Other n=15,950
Female	0.590 (0.492)	0.564 (0.497)	0.59 (0.492)
Hispanic	0.122*** (0.328)	0.0280 (0.165)	0.124 (0.33)
White	0.683*** (0.466)	0.936 (0.245)	0.679 (0.467)
YearsEduc	12.39** (3.309)	12.91 (2.767)	12.38 (3.316)
NativeUS	0.866* (0.341)	0.904 (0.295)	0.865 (0.342)

Standard deviations in parentheses

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$; denote significant differences between respondents with full-retired spouses and those who without

Table 5
Means of panel variables for respondents

VARIABLES	Means		
	All n=67,741	Full-Retired Spouses n=1,974	Other n=65,767
FullRetiredR	0.241*** (0.428)	0.344 (0.475)	0.238 (0.426)
PartRetiredR	0.106* (0.308)	0.119 (0.324)	0.106 (0.308)
FullRetiredS	0.0152 (0.122)	0.520 (0.500)	0
PartRetiredS	0.0566*** (0.231)	0.0821 (0.275)	0.0558 (0.23)
Married	0.466*** (0.499)	0.950 (0.218)	0.451 (0.498)
TotalIncome	64,958 (273,815)	73,954 (85,292)	64,688 (277,497)
Age	61.21*** 6.904	63.66 (6.845)	61.14 (6.892)
BothRetired	0.00828 (0.0906)	0.284 (0.451)	0
SelfHealth	2.800*** (1.168)	1.917 (0.895)	2.827 (1.165)
MobilityIndex	0.959*** (1.424)	0.285 (0.701)	0.979 (1.435)
ADL	0.280*** (0.837)	0.0381 (0.314)	0.287 (0.846)
CESD	1.620*** (2.102)	0.486 (1.051)	1.653 (2.116)

Standard deviations in parentheses

*** p<0.01, ** p<0.05, * p<0.1; denote significant differences between respondents with full-retired spouses and those who without

Table 6
Fixed effects estimates of association between spouses' retirement and health outcomes of respondents with full sample

VARIABLES	Mobility	ADL	SelfHlth	CESD
FullRetiredS	-0.0328 (0.0246)	-0.00180 (0.0155)	-0.0124 (0.0178)	0.0320 (0.0327)
TotalIncome	-0.0182 (0.0378)	-0.000107 (0.0276)	-0.0300 (0.0231)	-0.0204 (0.0581)
TotalIncomeSq	-0.000899 (0.00189)	-0.000549 (0.00134)	-0.000441 (0.00119)	-0.00171 (0.00292)
Age	-0.0698*** (0.0224)	-0.0446*** (0.0146)	0.0219 (0.0164)	0.00707 (0.0363)
AgeSq	0.000823*** (0.000123)	0.000548*** (7.92e-05)	8.41e-05 (8.79e-05)	0.000434** (0.000172)
Constant	2.210** (0.992)	1.013 (0.665)	1.427** (0.720)	0.686 (1.684)
Observations	65,969	72,901	79,017	69,857
R-squared	0.072	0.022	0.057	0.007
Number of hhidpn	17,046	18,368	18,884	17,890
personal FE	YES	YES	YES	YES
time FE	YES	YES	YES	YES
regional FE	YES	YES	YES	YES

Standard errors in parentheses are robust and clustered at individual level

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 7
Fixed effects estimates of effect of spouses' retirement on respondents' health outcomes with stratified sample⁴

VARIABLES	Mobility	ADL	SelfHlth	CESD
FullRetiredS	-0.226*** (0.0407)	-0.107*** (0.0197)	0.0716* (0.0425)	-0.0571 (0.0579)
TotalIncome	-0.0215 (0.0396)	0.00219 (0.0288)	-0.0228 (0.0240)	-0.0204 (0.0602)
TotalIncomeSq	-0.000704 (0.00200)	-0.000758 (0.00141)	-0.000885 (0.00126)	-0.00167 (0.00306)
Age	-0.0566** (0.0239)	-0.0446*** (0.0160)	0.0312* (0.0178)	0.0319 (0.0396)
AgeSq	0.000777*** (0.000137)	0.000534*** (9.05e-05)	9.21e-06 (9.92e-05)	0.000225 (0.000196)
Constant	1.590 (1.026)	1.040 (0.706)	1.160 (0.761)	0.122 (1.794)
Observations	55,828	61,554	66,485	59,136
R-squared	0.067	0.021	0.054	0.007
Number of hhidpn	15,401	16,583	17,093	16,153
personal FE	YES	YES	YES	YES
time FE	YES	YES	YES	YES
regional FE	YES	YES	YES	YES

Standard errors in parentheses are robust and clustered at individual level

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

⁴ There is no statistically significant difference in the results with the models included and excluded income variables.

Table 8
Fixed effects estimates of effect of spouses' retirement on respondents' health outcomes with stratified sample and control for respondents' retirement

VARIABLES	Mobility	ADL	SelfHlth	CESD
FullRetiredS	-0.157*** (0.0464)	-0.0956*** (0.0221)	0.0522 (0.0479)	-0.0699 (0.0720)
FullRetiredR	0.120*** (0.0163)	0.0379*** (0.0115)	0.0705*** (0.0110)	0.0636*** (0.0235)
BothRetired	-0.150*** (0.0538)	-0.0305 (0.0308)	0.0167 (0.0509)	0.00610 (0.0826)
TotalIncome	-0.0289 (0.0397)	-0.000169 (0.0287)	-0.0279 (0.0239)	-0.0248 (0.0602)
TotalIncomeSq	-4.49e-05 (0.00200)	-0.000547 (0.00141)	-0.000438 (0.00125)	-0.00129 (0.00306)
Age	-0.0468* (0.0239)	-0.0403** (0.0161)	0.0390** (0.0179)	0.0393 (0.0397)
AgeSq	0.000712*** (0.000137)	0.000505*** (9.20e-05)	-4.64e-05 (9.98e-05)	0.000173 (0.000197)
Constant	1.271 (1.026)	0.898 (0.710)	0.916 (0.762)	-0.109 (1.795)
Observations	55,828	61,554	66,485	59,136
R-squared	0.069	0.021	0.056	0.007
Number of hhidpn	15,401	16,583	17,093	16,153
personal FE	YES	YES	YES	YES
time FE	YES	YES	YES	YES
regional FE	YES	YES	YES	YES

Standard errors in parentheses are robust and clustered at individual level

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