Marital Status and Older Women's Economic Well-being:

Income, Consumption, and Leisure before and after Retirement*

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Abstract: This paper examines how older women fare before and after retirement by their marital status. It demonstrates how different benchmarks on economic well-being can lead to different views on how older women fare, and that the findings in the aggregate mask more complex patterns across different marital status groups. The paper concludes that although income drops substantially at retirement, older women are able to smooth consumption. The decline in money expenditure can be explained by a standard model of household consumption augmented with Becker home production. The difference in the changes of consumption expenditure and time spent on housework between the married and unmarried older women at retirement further support the power of time/money expenditure substitution mechanism. Time use data further indicates that older women spend significantly more time on leisure activities at retirement. The evidence presented in this paper does not support the claim of a decline in economic well-being for older women after retirement.

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I. Introduction

This paper examines how older women fare before and after retirement by their marital status. The overall economic improvement the elderly experienced over the past half century has been substantial, but pockets of poverty for older women persist. In 2005, the official poverty rate for individuals 65 and over was at an all time low, at just 10.1 percent, and well below the overall rate of 12.6 percent. Yet a recent report by Social Security Administration reveals that the fraction of older women in poverty was 5 percentage points higher than that of men the same age.[1] Not only does economic well-being vary by gender, but the economic well-being of older women varies by marital status. The fraction of unmarried women aged 65 and older in poverty is about four times higher than the share of poor married women (17.4 percent and 4.4 percent, respectively). In addition, Current Population Survey data indicate that since 1990 there has been a considerable decline, by around five percent, of the fraction of women who enter old age married (Appendix Figure 1). Given the evidence of a substantial fall in marriage in the last several decades documented by a sizable volume of studies (Rosa 2003; Brien et al 2006; Stevenson and Wolfers 2007), the prevalence of the unmarried among older women will be higher for future cohorts. Also, redistribution from Social Security based on marital status has constantly been a repeat debate. Issues surrounding how to apportion benefits across families have ushered in a number of policy proposals for Social Security reform. Understanding the economic circumstances of older women of

[1] Social Security Administration, The income of the population ages 55 and older, 2004, Table 8.1. For more than a quarter century, the Office of Research, Evaluation, and Statistics of the Social Security Administration has regularly used Current Population Survey data to produce a detailed study of the income of the population ages 55 and older. The report provides a broad income picture of a cross section of the population aged 55 or older, with special emphasis on income of the population aged 65 or older.

different marital status is crucial to both researchers concerned with old age poverty and policy makers who evaluate a variety of Social Security reform proposals.

Despite the fact that the economic well-being of older women has been followed closely over the last couple of decades (Burkhauser and Holden 1982; Favreault and Sammartino 2002; Kijakazi 2001), much of the interest has focused on comparing income or poverty of the working and the retired population. However, the debate usually underlines that economic well-being should be analyzed in a broader context incorporating other sources of welfare such as consumption, household production, and leisure.

In this study, I view the economic situation of older women from many angles. First, I analyze a broad range of variables that capture the economic circumstances of older women: income, poverty rates, food consumption, housing consumption, household production, and leisure. Examining income allows exploration of the relative generosity of Social Security retirement benefits for older women. Yet consumption is a more direct and better measure of economic well-being. In addition, consumption is better measured than income for poor families and it is less vulnerable to under-reporting bias (Cutler and Katz 1991; Slesnick 1993; Meyer and Sullivan 2003). Allocation of time is important from both production side perspective and welfare analysis. Becker (1965) made an important contribution to consumption theory by underlining the role of time in consumption of goods and services. If we focus solely on money expenditures, the missing component-this role of time in consumption, is arguably even more substantial after retirement. Also, leisure is undoubtedly an input in an individual's utility function. Welfare calculations based solely on changing incomes or changing expenditures may be

incomplete. By incorporating a broader behavioral dimension in analysis, I obtain a comprehensive picture of the economic well-being of older women.

Second, the study goes beyond a uniform characterization of older women by dividing older women based on their marital status. Classifying older women by their marital status is crucial for following reasons. From income perspective, eligibility for and the amount of benefits received from Social Security retirement benefit is based on either contributions from earnings or marital status. Despite women's rising labor force participation, in 2005, 58.4 percent of women aged 62 and older made claims as spouses or widows. This makes marital status particularly important in shaping old age economic well-being of older women. In terms of consumption and time allocation analysis, if the change in consumption upon retirement comes through a simple time substitution mechanism, the married and unmarried should be analyzed separately since the married households have time input from both husband and wife.

Third, the study makes use of 35 years of Panel Study of Income Dynamics (PSID) data. Analyzing economic well-being from women's dimension is complex, because that the disproportionate vulnerability of women arises from the interaction of economic disadvantages in the labor market, in domestic circumstances, and in welfare systems. The life course perspective offers a superior starting point. Thus, longitudinal data is required. With the longitudinal structure of PSID data, I can examine changes in the variables of interest ten years prior to individuals experience retirement and the subsequent ten years. Making use of the latest panels of PSID data allows me to update several previous studies, taking into account more recent patterns in retirement.

There are several key findings in this paper. First, the fraction of unmarried among older women is high. Before retirement, 23 percent of older women were unmarried. Ten years after retirement, the share has risen to 50 percent. Second, income drops substantially and food consumption expenditure declines modestly for older women at retirement. Ten years after retirement, income falls 50 percent while food consumption expenditure falls 9 percent relative to more than ten years prior to retirement. However, the findings in the aggregate mask more complex patterns across different marital status groups. The third key finding suggests that changes in various outcomes differ sharply across marital status groups. By the tenth year after retirement, married older women households have experienced approximately 51 percent decline in total family income. The decline in total family income for the unmarried is slightly smaller. It falls over 36 percent for those widowed after retirement, 43 percent for those widowed before retirement, and around 50 percent for the divorced. The story on consumption side is more interesting. I find that food consumption expenditures falls four percent at retirement for the married older women but not for the unmarried[2]. However, the decline of food consumption expenditure for the married is accompanied by 39 percent increase in time spent on food production, and 33 percent increase in time spent on all shopping activities from the husband upon retirement. Yet no significant change in time spent on food preparation is diagnosed for the unmarried after versus before retirement. Moreover, by the tenth year after retirement, on average husband's time spent on housework in general has risen by over 32 percent. Furthermore, I find that housing consumption remains constant across retirement for both married and unmarried older

[2] In consumption analysis, the unmarried group includes those who were widowed before retirement, divorced before retirement, and single.

women. This piece of evidence further supports that appending the standard lifecycle model with a Becker (1965) model of home production would generate both falling expenditures and relatively constant actual consumption upon retirement for consumption categories that are amenable to home production. Fourth, I find a sizeable decline in both income and food consumption prior to retirement for the unmarried older women. A volume of literature reports that entering widowhood or a husband's departure imposes substantial adverse effects on women's economic well-being (Hurd and Wise 1989; Myers, Burkhauser and Holden 1987; Anzick and Weaver 2001; Haider et al. 2003). I also find that early widowhood is associated with sharp declines in both income and consumption. Income falls 12 percent and consumption drops 13 percent with widowhood status for those who were widowed before retirement. The steep decline in income and consumption before retirement for early widowed group indicates the incomplete role that individual savings, government transfers and private insurance play in reducing the consumption drop following an unanticipated adverse event. Fifth, evidence from time use surveys illustrates that after retirement, both married and unmarried older women allocate more time to leisure activities: both passive form like watching TV and sleeping, and active form such as social activities. I also find that the married and the widowed increase their time spent on vacation, an expensive form of leisure, at retirement. These findings together indicate that despite their income drops substantially at retirement, older women are able to smooth consumption. In addition, the leisure they enjoy rises significantly. The evidence presented in this paper does not support the claim of a fall in economic well-being for older women after retirement.

This paper proceeds as follows. In Section II, I describe the dataset and sample. In Section III, I present the empirical models to estimate. In Section IV, I examine the fall in income and the rise in poverty following retirement. Section V summarizes the change in consumption. This section also includes a series of robustness checks. Section VI presents trends in leisure for older women. Section VII concludes and discusses policy implications.

II. Data

A. Survey

For the primary analysis, I use the Panel Study of Income Dynamics (PSID). The PSID is a longitudinal dataset that has followed a sample of families, their offspring, and coresidents annually from 1968-1997, and biennially since 1997. The initial sample of the dataset consisted of about 4,800 U.S. households with 18,000 individuals. As of 2003, the PSID had collected information on 65,334 individuals.

One of the main advantages of the PSID is that it contains 35 years of data, making it possible to track long spells of transition. The survey also provides comprehensive data on family income and expenditures. The PSID income data are widely considered to be among the best available (Kim and Stafford 2000). A particularly attractive feature of the PSID is that it collects information on family food expenditures, an item not available in many other microeconomic surveys. In most years respondents report their spending for food at home and food away from home, as well as the dollar value of food stamps received. This variable has been used by many authors as a measure of the material well-being of individuals. The survey also includes approximately 30 questions about housing arrangements and housing costs that can be used to derive

information on total housing consumption. In addition, PSID collects information on time allocated to housework of household heads and spouses in most years.

B. Sample

The research uses the 1968-2003 waves of the PSID. My focus is on those women who are over the age of 65 during the survey year.

Specifying the date at which retirement occurs involves some measurement issues. The main retirement definition is based on a retrospective question asked of all household heads and spouses: "In what year did you retire?" This question is asked since 1978 and the respondent may change his or her answer from year to year.[3] I supplement alternative definitions of retirement based on reports of current work status of household heads and spouses[4] to cover the years before 1978. In this paper, I define a household to be retired if the head of household is retired.

I then split the sample by marital status. Since the research interest is the change in the outcome of interest during the ten years prior to retirement onset and the subsequent ten years, I divide my sample into five marital status group: married throughout the time interval of interest, widowed before retirement, widowed after retirement,[5] divorced,[6] and never-married. Those five categories are mutually exclusive and exhaustive. Given the definition of retirement I adopt in the study, older women in my sample are either female heads or the spouses of the household head. In order to have

[3] In the analysis of this paper, an individual's year of retirement is calculated as the latest reported year of retirement.

[4] The question on current work status of household heads and spouses is: "Are you working now, unemployed, retired, or what?" This question is asked of the household heads and spouses fairly consistently throughout the survey.

[5] The widowed before retirement group is defined as widowed at least two years before the retirement onset. The widowed after retirement is defined as entering widowhood any time in two years before to ten years after the retirement.

[6] I view the divorced as one group, instead of splitting based on the time of divorce, e.g. before vs. after the retirement due to the limited sample size.

sufficient information on the variables of interest, I select older women who are interviewed at least two times before retirement and two times after retirement. Lastly, I exclude individuals whose key demographic variables are missing. These restrictions result in a primary sample of 975 older women, and 28,131 observations.

Table 1 describes the sample studied. The married group consists of 490 individuals (50.25% of the total sample); the divorced group consists of 79 individuals (8.10% of the total sample); the single group consists of 32 individuals (3.28% of the total sample). There are 374 individuals (38.36%) who belong to the widowed group; among them, 171 individuals widowed before retirement (17.54%) and 203 widowed after retirement (20.82%). We can see that the propensity of becoming unmarried among older women is high. By the time of retirement, 22.46 percent of older women were unmarried, and by the tenth year after retirement, the share of the unmarried has risen to 49.74 percent. Members in the widowed group are the least educated, with an average of 10.59 years of schooling for those widowed before retirement and 10.22 years for those widowed after retirement. The married group and the single group are relatively more educated, with over 11 years of schooling. These two groups also consist of more white women (about 71% and 69% white, respectively); the divorced group consists of more minorities (43% white). Not surprisingly, the married on average has the biggest family size of about 2.5 persons at retirement; the family size of the widowed before retirement group is the smallest among the five groups, with only 1.61 persons. On average, 98% of women in the sample received Social Security Benefits. The corresponding percentages for married, widowed after retirement, widowed before retirement, divorced, and single groups are 99%, 100%, 99%, 94%, and 94%. Only a very small fraction (9%) of the

married group received Supplemental Security Income (SSI); in contrast, around 42% of the divorced group is receiving SSI. The married and the widowed after retirement groups hold more wealth[7] at retirement with highest total family assets and highest propensity of owning a house, relative to other three groups. In addition, the married are relatively healthier. We also see that the average age of older women when the household heads retired for married, widowed after retirement, widowed before retirement, divorced, and single groups is 61.01, 61.56, 63.45, 62.94, and 64.00 years old respectively. It is also encouraging to see that all five marital status groups have participated in a similar number of surveys, on average of 28 surveys. It allows this study to provide a complete life course picture and examine the dynamic nature of women's economic well-being, which is not presented elsewhere in existing literature.

III. Empirical Models

In order to measure the change in economic well-being of older women before and after retirement, I estimate two fixed effect specifications: 1) before and after retirement comparison specification, and 2) a period specific losses from retirement semi-parametric specification.

For before and after retirement comparison, I estimate:

$$\textbf{(1)}\quad y_{it} = \alpha_i + \gamma_t + X_{it}\beta + \sum_m \delta^m retire_{it}^m + \varepsilon_{it}$$

where y_{it} is the outcome of interest of person *i* in year t, such as total family income, food consumption, housing consumption, and time spent on housework. γ_t is a set of indicator variables for years 1968-2003. α_i measures the time-invariant, fixed differences between individuals. The control vector X_{it} includes a set of time varying

[7] The numbers of income and assets categories are equivalence scale adjusted.

explanatory variables such as age, age-squared, education, head and wife's health status; indicators of family size, number of children in the family, state of residence; interactions of marital status with education, family size, number of children, education, and health status. Retire_{it} equals one for all the years after the retirement of household head, and equals zero otherwise. The error term ε_{it} is assumed to be random with mean-zero. I focus on four marital status groups, indexed by *m*: Married, Widowed before retirement, Widowed after retirement, and Divorced.[8]

In period specific losses from retirement semi-parametric specification, I estimate

$$(2)\quad y_{it} = \alpha_i + \gamma_t + X_{it}\beta + \sum_m \sum_\tau \delta_\tau^m A_{\tau it}^m + \varepsilon_{it}$$

In this specification, τ equals to one to six that indexes the relative period before and after retirement. The coefficients δ_1^m and δ_2^m, are to estimate the changes in the outcomes of interest -10 to -6 years, and -5 to -2 years before the retirement for older women belong to marital status group *m*, respectively. The coefficient δ_3^m, is to estimate the changes in outcomes of interest in transition period: -1 year before retirement and the retirement onset. In same manner, the coefficients δ_4^m, is to estimate the short run effect (+1 to +3 years) of retirement, while the coefficient δ_5^m and δ_6^m, are to estimate the long run effect of retirement (+4 to +7 and +8 to +10 years after retirement) for older women of *m* group. Given the inclusion of individual fixed effects, δ_τ^m measures the change in the variables of interest τ period after (before) the date of retirement onset for those older women in

[8] In some specifications, due to the theoretical consideration and limited sample size, I combined widowed, divorced, and never married to represent unmarried older women. Thus m=2, indexes married and unmarried.

group *m* relative to the value of the dependent variable those older women would have received more than ten years prior to retirement.

IV. The Change in Income and Poverty at Retirement

I first investigate the change in income and poverty before and after retirement. Despite advance in the labor market, Social Security remains the leading source of income for old aged women (Glasse, Estes, and Smeeding 1999; Harrington Meyer 1990; Kijakazi 2001). In addition to benefits for retired and disabled workers, the current structure provides benefits for the nonworking spouses and survivors of those workers at no cost to the family in terms of either reduced worker benefits or additional contributions. Appendix Table 1 summarizes the Social Security retirement benefit eligibility and regulations. The importance of benefits based on marital status rather than employment status is clear in Appendix Table 2, which summarizes the percent of female Social Security recipients in each entitlement category from 1960 to 2000. Although Social Security disproportionately benefits women, countless studies examining the economic circumstance of older women conclude that because they live longer and have lower lifetime earnings, poverty in retirement remains a big issue for women for these very same reasons. The relationship between women and poverty is indeed very complex. Women's poverty is the outcome of an accumulation of deprivations within the three resource systems: the labor market, domestic circumstances and welfare systems. The dynamic characteristics of poverty must be understood in order to develop/implement public policies aimed at alleviating it. The analysis in this chapter is primarily descriptive in nature. Making use of PSID data, this paper is able to explore women's poverty from a life course perspective, to investigate the way in which personal responses are related to

previous circumstances, and to shed light on the different mechanisms behind women's poverty.

A. Income

In my analysis, total family income is defined as the sum of labor, asset, transfer incomes, food stamps and the rental equivalent of subsidized housing.[9] I estimate equations (1) and (2) above with total family income as the dependent variable. Table 2 shows the estimates of the effects of retirement on total family income of older women. Panel A presents the before-after comparison specification results; Panel B provides the estimation results from period specific losses from retirement semi-parametric specification. Following the same method adopt in Meyer and Mok (2007), I report the implied percentage changes; they are obtained by dividing the coefficient estimates by the average total family income of those older women of different marital status groups more than ten years prior to retirement.

In Panel A, the results for older women as a whole are reported in column (1). We see that older women experience a sharp decline in total family income at retirement, by about 23 percent (*p*-value=0.000), relative to the years before retirement. Columns (2)-(5) report the income changes for different marital status groups. There is no evidence suggesting that those widowed before retirement experience income drop at retirement (*p*-value=0.331). On the contrary, the married group is estimated to experience a largest decline in income, by about 27 percent (*p*-value=0.000), at retirement. The divorced and widowed after retirement groups are estimated to see a 17 percent (*p*-value=0.000) and an 11 percent (*p*-value=0.062) drop in income after retirement, respectively. One of the

[9] In this paper, all monetary variables are defined in 2003 dollars using the CPI-U.

interpretations for the income discontinuities at retirement across different marital status group is the progressivity of the basic benefit formula of Social Security system. As reported in Table 1, the total family incomes are much lower for those widowed and divorcees relative to the married. Lower income is associated with a higher replacement rate thus a smaller decline in income at retirement. Those differences suggest that there is a negative relationship between income replacement rate and income decline after retirement. Social Security spouse and survivor benefits also contribute to the differences.

The estimates for older women as a whole with period specific losses from retirement semi-parametric estimation are reported in column (1) of Panel B. We observe income has already declined even prior to retirement, by two percent (*p*-value=0.393), and by 12 percent (*p*-value=0.004) shortly prior to retirement. By the time of retirement onset, income drops 22 percent (*p*-value=0.000). A sharp drop follows this decline. Income is estimated to drop 43 percent (*p*-value=0.000) in subsequent three years after retirement. The income drop continues without a sign of recovery; by the tenth year after retirement, income has fallen by 50 percent (*p*-value=0.000) relative to the level of ten or more years prior to retirement. The most prominent observation in Panel B is that the changes in income differ sharply across marital status groups. The results for the married, which is depicted in column (2) reflect that their income drops slightly, by about one percent in the six to ten years prior to retirement; but is not statistically significant. The sizeable fall is observed right before retirement, by about ten percent (*p*-value=0.023). Right after retirement, a sharp drop of 43 percent (*p*-value=0.000) is estimated. The decline continues; by the tenth year after retirement, the fall is about 51 percent (*p*-value=0.000). The widowed after retirement group exhibits a similar pattern to the

married, but differs in magnitude. Right before retirement, income has already fallen 12 percent (p-value=0.035). The sharp drop is estimated to occur at retirement, by 22 percent (p-value=0.002), following by another 20 percent (p-value=0.000) drop in the short run. The change remains at around this level; by the tenth year after retirement, the fall is about 36 percent (p-value=0.003). An F-test with the null hypothesis that the short run effect of retirement on income equal to long run effect gives a p-value of 0.40. For the widowed before retirement group, the pattern is considerably different. The income drops noticeablely even well before retirement. In fact, income is estimated to fall by 12 percent (p-value=0.051) over six to ten years before retirement relative to more than 10 years prior to retirement, and by 19 percent (p-value=0.010) right before retirement. A sharp drop by about 35 percent (p-value=0.000) is estimated in subsequent three years after retirement. In the long run, the decline is about 43 percent (p-value=0.012). An F-test with the null hypothesis that the short run effect of retirement on income equal to long run effect fails to reject the null (p-value=0.280). For the divorced, income is estimated to drop massively well before retirement: it falls 19 percent (p-value=0.003) over six to ten years before retirement relative to more than ten years prior to retirement. The decline is to accelerate shortly before retirement where income is estimated to fall over 30 percent (p-value=0.002), and by 47 percent (p-value=0.000) in the short run after retirement. The long run decline in income is around 49 percent (p-value=0.003). The estimates of equation (2) reveal the important differences among the four groups. The sharp drop in income occurs right before retirement for the married and the widowed after retirement groups, whereas a substantial decline is evident even in six to ten years prior to retirement

for the widowed before retirement and the divorced groups. Those results are also displayed in Figure 1.

An important question here is why there is a drop in income even well prior to retirement for those widowed and divorced. A rich volume of literature follows closely the widowed/divorcees and reports that transition to widowhood or divorce usually associates with steep declines in income, high incidence of poverty, and serious health problems (Hurd and Wise 1989; Myers, Burkhauser and Holden 1987; Anzick and Weaver 2001). Appendix Table 3 shows that 52 percent of older women widowed before retirement experienced the death of the husband during the survey,[10] and among those who we observe the occurrence of death of the husband, about 57 percent were widowed ten more years prior to retirement. For older women in the divorced group, 68 percent experienced the departure of their husband ten years or more before retirement (among those who experience marriage dissolution during the survey). Thus, a plausible explanation could be that their income drop before retirement is a consequence of the adverse event they experienced in earlier life stage.

Both the amounts and the sources of income differ among the older women in different marital status groups. Personal savings, Social Security, and pensions are referred to as the "three-legged stool" of retirement income. While this term may be useful as a metaphor, for many older women, at least one of the legs of the stool is missing. Figure 2 illustrate the income composition of the older women over the first five years after retirement by marital status. It is clear that the widowed, both widowed before and after retirement, are highly reliant on income from Social Security. For example,

[10] The rest of the widowed before retirement group have already been widowed when they entered the survey.

about 57 percent of the income received by the widowed before retirement group comes from Social Security retirement benefit or SSI. For this group, less than 20 percent of their income comes from savings (about 6 percent) or pension (about 12 percent). The divorced has the least saving income, only counts for 3 percent of the total family income. The married has more diversified sources of income: around 41 percent of their income came from Social Security; over 30 percent is from pension and saving.

B. Poverty

I then explore the change in poverty of older women. Official poverty in the U.S. is determined by comparing pre-tax money income of the family to a predetermined poverty threshold. The percentage of a group with income below the poverty level is a standard indicator of its economic well-being. Figure 3a shows the percentage of older women living below the poverty line in the years before and after retirement by marital status. First, the unmarried are much more likely to live in poverty than the married, and among those unmarried, those who were widowed before retirement have the highest poverty rates. Second, for the unmarried group,[11] it is clear that poverty rises with advancing age and rises at retirement. In the fifth year prior to retirement, the poverty rate is roughly 24 percent for the widowed before retirement group, 7 percent for widowed after retirement group and 16 percent for the divorced. It rises to 33 percent, 19 percent, and 23 percent, respectively one year after retirement. In the long run, we observe, for the widowed before retirement group, the poverty rate remains at around this level even declines slightly at the tenth year after retirement. A modest increase is seen for the divorced group: ten years after retirement, the poverty rate has risen to over 30 percent

[11] Since there are huge fluctuations of single group due to the limited sample size, I didn't include single group in discussion.

for the divorced. In contrast, there is little change in the poverty rate for the married over time. In addition to examining poverty, it is also possible to examine persons who have an income that, while above the poverty threshold, still makes them quite poor by American standards. If "near" poverty is defined as an income of less than 150 percent of the poverty threshold, then the “near” poverty rate rises sharply after retirement for all groups. The patterns are depicted in Figure 3b. The increase in the “near” poverty rate at retirement is more dramatic for the widowed before retirement and the divorced group. In the long run, almost two-thirds of the widowed before retirement and the divorced are poor or near poor — more than three times the rate for the married.

Overall, this part of the paper illustrates the economic hardship of older women. The total family income declines, but the decline is more severe for the married. The different shape of income profile after retirement is partly due to Social Security’s progressive formula which favors lower income groups. Those unmarried older women have less diversified income sources after retirement and relatively more reliant on Social Security. Despite various public transfers they receive, over two-thirds of those widowed early and divorced older women are living in poverty in the tenth years after retirement. A typical concern with evaluating the changes in economic well-being is the power of the measure employed. There is substantial evidence that income is underreported (Meyer, Mok and Sullivan 2006). Moreover, Meyer and Sullivan (2007) points out that income of the aged does not accord well with what we hope to capture with a well-being measure. Income based measures do not capture the fact that the aged are more likely to have accumulated wealth that can be used to support general consumption; it neglects long-term insurance and the flow of resources from durables. Current consumption is a better

indicator of economic well-being than income for the elderly. As I discuss in the next section, consumption based measure reveals a different view on how older women fare.

V. Consumption Change at Retirement

A. Consumption vs. Expenditure

Background

I now turn to examining consumption change at retirement. According to the permanent income hypothesis (PIH), forward-looking agents will smooth their marginal utility of consumption across predictable income changes such as retirement. However, a large literature has emerged showing a "Retirement consumption puzzle"-a sharp decline in consumption as household transition into retirement. Besides work related expenses, the only category where consumption, on average, is consistently found to decline upon retirement is food. Using PSID data, Bernheim et al. (2001) find that total food expenditure declines 6-10 percent between the pre-and post- retirement periods for the typical household.[12] Haider and Stephens 2003 find a decline in food expenditure ranging from 10 to 15 percent using alternative data and empirical methodologies. Hurst (2003) finds a reduction in food expenditure of 11 percent for the median household. Banks et al. (1998) use the British Family Expenditure Survey to document that total expenditures decline sharply at the incidence of retirement. In summary, as Hurst (2007) concludes, "the fact that certain types of expenditures fall sharply as households enter into retirement is rather robust across data sets within the United States, across data sets from differing countries, and across differences in methodological approach". Given some of these findings, Bernheim et al. (2001) state: "Contrary to the central tenets of life-cycle theory,

[12] They find negligible declines for the wealthiest households, but discontinuities of more than 30 percent for households in the lowest wealth quartiles.

there is little evidence that households use savings to smooth effects on consumption of predictable income discontinuities [such as retirement]."

Aguiar and Hurst (2005) propose an explanation to "Retirement food consumption puzzle." They point out that standard tests of PIH using data on non-durables typically equate consumption with expenditure. As noted by Becker (1965), consumption is the output of "home production," which uses as inputs both market expenditures and time. When the relative price of time falls, individuals will substitute away from market expenditure to the extent possible. In this sense, Aguiar and Hurst conclude "an individual's opportunity cost of time has a direct bearing on the total costs of consumption, making market expenditures a poor proxy for actual consumption." They also refer to Stigler's (1961) model of search. In the presence of informational frictions, the same good may sell for different prices at a given point in time. By increasing shopping frequency, a household can lower the market price for a given basket of goods. Using Continuing Survey of Food Intakes by Individuals (CSFII) and National human Activity Pattern Survey (NHAPS), Aguiar and Hurst examine the distinction between consumption and expenditure and conclude that the decline in food expenditure is matched by an equally dramatic rise in time spent shopping for and preparing meals. In addition, neither the quality nor the quantity of food intake deteriorates with retirement status.

Changes in Total Food Consumption Expenditure

In this section, I explore the change of food consumption at retirement by marital status. If the change in consumption upon retirement comes through a simple time substitution mechanism, then the elasticity of substitution between time and expenditures

may be large for the married relative to the unmarried, since the married households have time input from both husband and wife. Particularly, we would expect the time input from husband is fairly large, given the fact that husbands shoulder of relatively less domestic work of the household before retirement, experiencing a marked decline in their opportunity cost of time allows them to allocate more time to shopping and household production. Even if housework is considered undesirable, a collective model of household behavior suggests that husband will increase time allocated to housework after retirement. Assuming that the husband's bargaining power depends upon his current income or employment status, the husband's retirement from a career job should cause deterioration in his relatively stronger bargaining position; therefore, he will perform more shore of the household responsibility. In addition, the theoretical framework of Becker (1981) on specialization on household production implies that complementarities in production among the partners imply that the total product of the married couple is larger than the sum of outputs of each produced separately. The story above generates a testable hypothesis: we should see consumption expenditure changes at retirement differ between the married and unmarried households.

This study mainly focuses on food consumption. Following Aguiar and Hurst, I disentangle consumption from expenditure. I use food consumption expenditure information from PSID. The total food consumption expenditure is defined as the sum of food consumed at home, food consumed outside the home and the face value of food stamps received. In this part of analysis, I compare the consumption response of married older women households to the retirement of the husband to the behavior of unmarried older women. I pooled single, widowed before retirement, divorced before retirement to

construct the unmarried sample. Widowed or divorced at retirement groups are excluded to avoid the potential confounding from marital status change at retirement. In regression analysis, 756 households are included of which 490 are married couples, and 266 are unmarried older women households.

To begin, I document the "retirement consumption puzzle". Column (1) of Table 3 shows the estimates of the effects of retirement on the log of total food consumption expenditure. Panel A presents the before-after comparison specification (Equation 1) results while Panel B provides the estimation results from the semi-parametric specification (Equation 2) by using period specific losses from retirement semi-parametric specification.

From Panel A, we see that the married reduce expenditure on food consumption after the husband's retirement by 4 percent (p-value=0.005) relative to the level they would spend before retirement. The unmarried, however, show no significant decline in food consumption expenditures. The null hypothesis that the post-retirement changes in consumption expenditure for married and unmarried are equal is narrowly rejected.

Panel B shows changes relative to those older women would have spent more than ten years prior to retirement. For the married, food consumption expenditure declines slightly right before retirement by 4 percent (p-value=0.079), but only significant at 10 percent confidence level. The sharp drop is estimated to occur at retirement, by 6 percent (p-value=0.057), and in three years after retirement, the married spend 11 percent less (p-value=0.003) per year than what they would have spent more than 10 years prior to retirement. The decline stabilizes through the next seven years. These numbers are comparable in magnitude to those reported by other researchers. For the unmarried, I find

that food consumption expenditure exhibits a declining trend well before retirement. Food consumption expenditure is estimated to fall by about 5 percent by six to ten years before retirement relative to more than ten years prior to retirement (*p*-value=0.061), and by 8 percent (*p*-value=0.042) right before retirement. At retirement onset, food consumption expenditure is estimated to drop by 10 percent (*p*-value=0.020). On the other hand, for the married, there is no significant change in food consumption expenditure after retirement, and it remains at around this level through the next ten years. An F-test with null hypothesis of equality between the married and the unmarried after the retirement is rejected (*p*-value=0.004). The results of estimating Equation (2) are also illustrated in Figures 4a.

In order to disentangle the effect of retirement from the effect of other events that occurs in the early/mid life stage, and to get a clear picture of the consumption change at retirement, I estimated a modified version of equation (2), where whole 10 to 1 year prior to retirement is used as the reference period. In the modified equation (2), τ equals to 1 to 4 which indexes the relative period at retirement. The coefficient δ_1^m estimates the changes in outcomes of interest in transition period: -1 year before retirement and the retirement onset. In same manner, the coefficients δ_2^m estimate the short run effect (+1 to +3 years) of retirement, while the coefficients δ_3^m and δ_4^m estimate the long run effect of retirement (+4 to +7 and +8 to +10 years after retirement) for older women of *m* group. Column (1) in Panel 3 of Table 3 summarizes the results. We see that for the married, there is a significant trend of decline, by 5-6 percent, in food consumption expenditure with the retirement status, whereas such change is absent for the unmarried. Equality between the married and the unmarried is rejected (*p*-value=0.023).

Food Eaten at Home and Outside Home

It is important to remember that food consumption expenditure in this paper is comprised of two components: (1) Food expenditure for food used at home (including food purchased with food stamps); (2) Food expenditure for food away from home (excluding the amount spend on meals at work or at school), and the latter tends to be more expensive in general. Substitution of restaurant meals for food produced at home is a plausible explanation to the decline of food consumption expenditure of the married. Column (2) and Column (3) of Table 3 report the results estimating separately for the two components of food consumption expenditure: food consumed at home and food away from home, and the results of estimating equation (2) are displayed in Figure 4b and 4c. The estimated decline in expenditure on food consumed at home is over 4 percent (*p*-value=0.005) for the married at retirement; while again, there is no significant decline in this category for the unmarried group. The null hypothesis that the post-retirement changes in expenditure on food eaten at home for married and unmarried are equal is rejected at the five percent level. The estimates from period specific losses from retirement semi-parametric specification are consistent with the patterns of total food consumption expenditure. It is evident that for the married, the expenditure on food eaten at home declines as they approach retirement, and a sharp drop of is estimated to occur at retirement, by 10 percent (*p*-value=0.002). Yet expenditure on food at home for the unmarried group does not change before and after retirement. Equality between the married and the unmarried after retirement is again rejected (*p*-value=0.023).

On the other hand, the results from estimating equation (1) show that there is no significant decline in expenditure of food eaten outside home at retirement for both

married and unmarried older women households. However, the estimates from equation (2) suggest a significant pre-retirement fall in this category for the unmarried, by about 28 percent (p-value=0.000) in six to ten years before retirement, and by 47 percent (p-value=0.001) in 5 to 2 years prior to retirement. The drop remains at around this level through the ten years after retirement. From estimating the modified equation (2), which uses ten years prior to retirement as the reference period, we see that the retirement itself has no effects on expenditures on food eaten outside home for both married and unmarried older women. The massive decline we observe actually is a consequence of other events occurred in the early or mid life stage of those unmarried older women. Given that for the married, there is no significant change of the expenditure on food eaten outside but expenditure on food consumed at home have fallen have retirement, it is apparent that the drop in food consumption expenditure is not simply due to a shift towards more meals eaten at home.

Time Spent on Home Production

While food consumption expenditure, in fact, the expenditure of food consumed at home declines with retirement status for the married, time spend on food preparation of husband dramatically increases with retirement status. To document time spent on food preparation, I use the American Time-Use Survey (ATUS), a large cross-sectional survey using a 24-hour recall of the previous day's activities to record time diary information. Pooled data from 2003, 2004, 2005, and 2006 survey years are used. I focus on the elderly who are 60 to 70 years of age. Particularly, I select married older men and both married and unmarried older women in this age bound. The sample includes 2,070 husbands with 46 percent of them classified as retired, and 3,049 older women with 50

percent are unmarried, and 51 percent claimed retirement. To look at the effect of retirement, I estimate

(3) $y = \beta_0 + \beta_1 retired + X\beta + u$, (for husbands)

(4) $y = \gamma_0 + \gamma_1 retired + \gamma_2 married + \gamma_3 married * retired + X\beta + \upsilon$, (for older women)

Where Y is time spend on food preparation per week, *retired* is an indicator variable that equals one if the individual is retired, and *married* is a marital status indicator that equals one if the individual is currently married with spouse present. X is a vector of demographic controls including age, age square, geographic region, family size, number of kids, and education.

Table 4a shows that retired husbands are estimated to spend 0.67 hours (*p*-value=0.004) more per week on food preparation. Relative to the mean of the non-retired husbands, this represents a 39 percent increase. The estimates for older women are reported in Tale 4b. On average, before retirement, the married older women spend 2 more hours per week on food preparation relative to the unmarried. However, there is no significant change in time spent on food preparation with retirement status for both married and unmarried older women. I also examine another important variable in food production-time spent on shopping and find that retired husbands spend 1.68 more hours (*p*-value=0.001) per week, about 33 percent more on all kinds shopping than their nonretired counterparts (Table 4a). Yet there is no significant change in time spent shopping for older women at retirement, regardless of marital status (Table 4b). These results suggest that husbands experience a large increase in food production time during retirement, although from a lower base. Women's time allocation to food production does not vary with retirement status. Given that women have already shouldered most of the

domestic work of the household before retirement, there is not too much room left for the pronounced change at retirement.

Taking advantage of the methodology used in Aguiar and Hurst, I translate the extra time husbands spend on food preparation at retirement into money value. I value husband's time during retirement at half of the sample's average pre-retirement wage of $15.5. The 0.67 hour per week would translate into an additional $540.44 per year. During retirement, for the married, total food expenditure, conditional on demographics, declines about $ 490.53 per year. Thus, the increase in time spent on food production for retired married households is roughly the same as their decline in food expenditure.

It is possible that husbands spend more time on food preparation at retirement simply because they shift the time they previously spend on other housework to food production. In addition, cross-sectional estimates only represent a snapshot in time, while PIH concerns a dynamic pattern of an individual over time. Fortunately, PSID tracks time spend on total housework. In PSID, a usable question about allocation of time to housework-"how much time do you spend on cooking, cleaning, and other work around the house in an average week" is asked each year at individual level till 1986 and household heads and spouses since 1986. I matched the married older women with their husbands. Table 5a and Table 5b report the estimates of the effects of retirement on the log of total time spent on housework per year for those husbands, and for older women respectively. From Table 5a, we see that time spent on housework from husband is estimated to increase substantially at retirement by 31 percent (p-value=0.000) based on estimating equation (1). In Table 5b, an 8 percent (p-value=0.002) and 10 percent (p-value=0.006) increase in time spent on housework with retirement status are reported for

married and unmarried older women respectively. An F test suggests that there is no significant difference between the changes for different marital status groups. The estimates from equation (2) confirm that of equation (1) and the results are displayed in Figure 5. Figure 6a plots the change of expenditure on food eaten at home and time spent on housework by husbands and wives before and after retirement estimated from equation (2). We find that the significant fall of food consumption expenditure is accompanied by a substantial increase in time spent on housework of husband. While food consumption expenditures fall by 10 percent in the short run after retirement relative to the level of 10 more years ago, husband's time spent on housework strikingly increases by 19 percent at retirement. Wife's time spent on housework also increases with retirement status, but far less dramatic comparing to that of her husband. Figure 6b depicts the trend of time spent on housework of the unmarried older women at retirement. While the expenditure of food declines well before retirement, there is no significant change in time spending on housework. Those results suggest that the fall in food consumed at home in those years for the unmarried is not substituted with more time spent in home production. Therefore, the fall in consumption represents the fall in actual material well-being. In addition, the dramatic decline in expenditure on food away from home for the unmarried group reported in Column (3), Panel (2) of Table 3 further supports the claim of a deterioration of the economic well-being for this particular group. There is no significant evidence that food consumption expenditure continuing drop at retirement, though we observe the unmarried older women increases their time for housework. The magnitude of the estimates of the unmarried is comparable to that of the

married older women, yet the lack of the input from husband side contributes to the different shape of food expenditure profiles at retirement.

Following Aguiar and Hurst, I supplement a question posed in the 1968 PSID on reducing food bill as a piece of corroborating evidence. Households were asked, "Are there any special ways you try to keep the food bill down?" if the respondents answer yes, the PSID asked them to list which methods were used. In the sample of 654 older women households aged 55-70, the married are more likely to than unmarried to answer yes to this question (62 percent and 56 percent, respectively). Conditioning on answering yes and with controls added for age, age-squared, family size, number of kids, education, and region of residence, married are 14 percentage points more likely to list shopping for bargains, making own meals, or growing own food as methods to reduce food costs (*p*-value=0.003).

So far, I have marshaled evidence that indicate older women do not suffer declines in consumption at retirement. The drop in food consumption expenditure for the married comes with the substantial increase in time spent in home production from the retired husband. However, it is still premature to conclude that there is no deterioration of economic well-being at retirement for older women. Since older households have substantial wealth locked in illiquid housing, it is possible that housing wealth is used to support general consumption in retirement in old age. Knowing whether the elderly perceive housing equity as a source of funds for general consumption as they age helps us to understand the adequacy of saving for retirement and provides an indirect check on the change of the elderly population's economic well-being.

Housing Consumption

In this paper, housing consumption is defined as the sum of owned housing service flow calculated as 6% of current housing value, rent payments, and the rental equivalent for those with free or subsidized housing. Table 6 reports the effect of retirement on housing consumption and Figure 7 depicts the pattern. Column (1) reports the estimates based on equation (1). The coefficients are not significantly different from zero for both the married and unmarried. These indicate that retirement has no effect on older women's housing consumption, regardless of the marital status. The column (2) of Table 6 presents the estimates based on equation (2), the dynamic analysis. Again, we observe the housing consumption for the unmarried drops severely well before retirement, by 11 percent (p-value=0.002) in 10 to 6 years before retirement; by 17 percent (p-value=0.001) in 5 to 2 years prior to the retirement onset, and by 21 percent (p-value=0.004) after the retirement. Yet there is no significant change for the marital group both before and after the retirement. The results from estimating the modified equation (2) are reported in column (3). These estimates illustrate that with the retirement status, housing consumption does not vary for both the married and the unmarried groups. These results are consistent with Venti and Wise (2004), who concludes that households are unlikely to discontinue home ownership as they age and home equity is not systematically converted to liquid assets to support general consumption.

The evidence I present in this section suggests that appending the standard lifecycle model with a Becker (1965) model of home production reconciles retirement consumption puzzle for consumption categories that are amenable to home production[13]. Changes in both durable and non-durable consumption at retirement illustrates that there

[13] It is consisted with the conclusion of Aguiar and Hurst (2005).

is no decline in the material well-being of older women surrounding retirement. However, there are two things to note with respect to the results of this section. First, the marriage economics literature (need to add reference) argues that marriage is a risk-reducing institution, as individual members insure each other against life's vagaries. Thus, precautionary saving may be higher for single households than married ones. Consequently, being ill-prepared for retirement may also be a plausible response to the decline in food consumption expenditure that accompanies retirement to the married older women households. Second, according to PIH, an abrupt change in the planning horizon will alter the household's consumption path. Yet the extent to which the individuals should substitute time for expenditure at exogenous shock is not well studied. The argument I made previously is meaningful only if the decline in consumption at exogenous shock represents the true fall in material well-being. In the next section, I investigate these concerns by looking at consumption responses to widowhood shock.

B. Robustness check, consumption change at widowhood shock

In this section, I analyze changes in consumption when older women are experiencing the death of the husband. In the same manner as I examine income change, I split the widowed into two groups: widowed before retirement and widowed after retirement, and exclude those who have already widowed when entering the PSID survey. Using the widowed group is important for two reasons. First, to extent the widow shock represents an unanticipated shock to lifetime resources, the PIH predict that consumption will change across widowhood status. Time allocated to home production at widowhood could go either direction. Declining in family financial resources may require widows to work more, accordingly, time spent on housework decreases. In contrast, the permanent

change in household composition-losing of husband, allows widows shift the time spent giving care or help to home production to reduce the price paid for a unit of consumption. Knowing whether the change in consumption surrounding widowhood represents a meaningful change in economic well-being offers a direct test of PIH. Second, those widowed after retirement have similar social economic status to the married. If the consumption drop for the married is due to insufficient saving rooted in marriage instead of time substitution mechanism then we should expect to observe the decline in consumption for those widowed after retirement as well. I estimate

$$\textbf{(5)} \quad y_{it} = \alpha_i + \gamma_t + X_{it}\beta + \sum_w \delta^w retire_{it}^w + \sum_w \lambda^w widow_{it}^w + \varepsilon_{it}$$

Where *w* indexes widowed before retirement and widowed after retirement; *retire* is an indicator variable that equals one if the individual is retired; w*idow* is an indicator variable that equals one if the individual is widowed. Other than these, equation (5) is essentially the same as that of equation (1).

The results of estimating equation (5) are reported in Table 7. I find that entering widowhood is associated with a sharp decline in consumption, in particular, for the widowed before retirement group. Total food consumption expenditures fall by 13 percent (*p*-value=0.007) for those who were widowed before retirement with the widowhood status, with food at home falling by 12 percent (*p*-value=0.018), and food away from home falling by 16 percentage (*p*-value=0.284). In contrast, there is no significant change in food consumption expenditures for the widowed after retirement group with widowhood status. Moreover, food consumption expenditures remain relatively constant with retirement status for the widowed before retirement group, whereas it declines significantly with retirement status for those who widowed after

retirement. For the widowed after retirement group, total food consumption expenditures fall by 8 percent (p-value=0.001) in retirement, with food at home falling by 8 percent (p-value=0.003), and food away from home falling by 3 percentage (p-value=0.669).

A natural question to ask is whether the widowed substitutes time for money expenditures at shocks. While expenditure declines with the widowhood shock, time spent on housework drops dramatically as well for those widowed before retirement. This group spends, on average, 13 percent (p-value=0.024) less than they would have spend before entering widowhood in housework. Consistent with what I reported in previous section, time spent on total housework increases with retirement status by 16 percent (p-value=0.007) for the widowed before retirement group; controversially, the time spent on total housework does not change for the widowed after retirement group (p-value=0.239) who experiences a consumption drop at retirement.

So far, these results indicate that those who are widowed before retirement experience a true decline in economic well-being. The dramatic decline in money expenditure is not explained by a substitution from the other input of consumption: time spent on home production. The finding on the inability of early widows to sustain the level of consumption is consistent the literature on the economic well-being of those who were widowed in early/mid life stage.

Puzzle remains for those widowed after retirement group. While the consumption expenditure drops at retirement, the time older women spent on housework declines as well. To finish this section, I examine the changes in husband's time spent on housework of those widowed after retirement using matched husband/wife data, and find that upon retirement, husband's time spent on housework also falls by 12 percent (p-value=0.03).

Therefore, a substitution mechanism could not explain the food consumption drop with retirement status of those widowed after retirement. Does this indicate there is a real retirement consumption puzzle for this group? One important strand of "retirement consumption" literature examines the role of unanticipated retirement in explaining the drop of consumption and reports that households who experienced real consumption declines upon retirement often experienced involuntary retirement. Moreover, these involuntary retirements are often due to a health shock (Haider and Stephens 2007; Smith 2006; Hurd and Rohwedder 2003). In my sample of those widowed after retirement, 64 percent of them lost their husband within 5 years from husband's retirement. In addition, over 60 percent of the heads (normally defined as husband) of those households reports poor health condition upon retirement. I conjecture that the drop in food consumption expenditure for those widowed after retirement is due to the fact that households retired involuntarily because of health shock rather than planned. The future study is to examine this question in details.

The change in consumption at widowhood shock or health shock provides an interesting counterpoint to the notable absence of such decline during retirement. These results highlight how different anticipated and unanticipated shocks affect consumption smoothing.

VI. Leisure at retirement

The discussion so far all point to the conclusion that income decreases and poverty rate rises with retirement status. However, older women are able to smooth consumption across retirement by substitute money expenditure with increasing home production. Yet it is still premature to draw the conclusion on whether and how older

women's economic well-being changes with retirement status. The extra time which is made available upon retirement also increases the number of hours for leisure. Undoubtedly, leisure is an important input to individual's utility function. Welfare calculations based solely on changing incomes or changing consumption is incomplete. In this section, I look at the difference in pattern of leisure at retirement for older women by marital status.

I again make use of ATUS. I define two measures of leisure. The narrow measure, Leisure 1, is defined as the sum of all time spent on "entertainment/social activities/relaxing" and "active recreation." It includes activities that are pursued solely for direct enjoyment such as socializing and communicating, pet care, social events (for example, parties), relaxing, television watching, radio listening, playing games, computer use for leisure, hobbies, reading and writing for personal interest, sports and recreation, traveling for leisure and telephone use and mailing. A broader measure, Leisure 2, includes activities that provide direct utility but may also be viewed as intermediate inputs. It includes activities in Leisure measure 1 as well as time spent sleeping, eating, and personal care. The definitions of these leisure measures are essentially the same as those of Aguiar and Hurst (2007).

Table 8 reports the average time spent on various activities by marital status and the results of estimating equation (6)

$$y = \gamma_0 + \gamma_1 widowed + \gamma_2 divorced + \gamma_3 retired + \gamma_4 retired * widowed + \gamma_5 retired * divorced + X\beta + u$$

with time spent on each category as the dependent variable. Omitted category in this specification is the married group. I find that before retirement, the married older woman enjoys less leisure than the widowed and divorced. On average, a married older woman

spends 40 hours per week on leisure activities that have a direct impact on personal enjoyment, which is about 5 hours per week (p-value=0.006) less than those widowed, and 4 hour (p-value=0.018) less than those divorced. The differences are mainly due to the time spent watching TV and social activities. The widowed on average spend 3 more hours (p-value=0.024) watching TV, and about 4 more hours (p-value=0.025) on social activities than the married. The comparable numbers for the divorced are 5 hours (p-value=0.000), and 3 hours (p-value=0.031) respectively. The married also enjoys less time on broadly measured leisure; the married spend on average 115 hours per week, while the widowed spend 4.5 (p-value=0.032) more hours and the divorced spends 2.6 (p-value=0.149) more hours per week. Point estimates also indicate that the married spend significantly more time eating.

Retirement is estimated to accompany with a substantial increase in leisure for all marital status groups. In terms of narrow leisure measure, at post-retirement the married enjoy 10.43 (p-value=0.000) hours more leisure than their non-retired counterparts. The increase is over 26 percent. A majority of this extra leisure time is spent on social activities- 8 more hours (p-value=0.000) per week, which is about 25 percent increase relative to that of prior to retirement, with an additional 5 hour (p-value=0.000) spent watching TV. The widowed and the divorced are also estimated to experience a substantial increase in leisure, measuring narrowly at retirement. There are no statistically significant difference between the married and the widowed, however, the divorced enjoys nearly 6 more hours (p-value=0.027) in leisure relative to the married and the widowed with retirement status. This 6 hours increase is virtually all due to the more

time spent on social activities– at retirement the divorced spend 5.65 (p-value=0.018) hours per week more in social activities than the married and the widowed.

Measuring leisure broadly, the married and the widowed enjoy another over 12 (p-value=0.000) hours per week more of leisure to their non-retired counterparts. The divorced is estimated to experience a larger increase, but the point estimate is not statistically significant. We observe at retirement, older women spend more sleeping; the increase is about 2 hours (p-value=0.005).

In addition, I examine the change of time spent on vacation, a more expensive form of leisure. I consider only those trips that are for vacation and visiting friends and families. The results indicate that at retirement, the duration of the trip is estimated to increase by 1.36 day (p-value=0.001) per month for the married and widowed, which is almost twice the time spent by those older women prior to retirement, but drop by almost the same magnitude, 1.22 days (p-value=0.003) per month for the divorced.

Summarizing the findings, I see that retirement is associated with a pronounced increase in leisure time for older women. The rise in leisure is not restricted to those passive and inexpensive forms of leisure, such as sleeping and watching TV. Older women also dramatically increase their time spent on those active and expensive form of leisure, like engaging in social activities and vacations. The findings in this section suggest that broadening our concept of economic well-being to include the value of leisure, there is no evidence showing older women's economic well-being deteriorates at retirement.

VII. Discussion and Conclusion

The size of the population 65 years and older will increase dramatically in the coming decades, far faster than the rest of the U.S. population. A significant characteristic of the older population is it being predominantly women: according to a U.S Census 2005 report, among people ages 65 and older, there were 73.7 men for every 100 women in 2004. Understanding the economic circumstances of these older women is important for both economists and policymakers. This paper studies the changes in the economic well-being of older women with retirement status. It demonstrates how different benchmarks on economic well-being can lead to different views on how older women fare, and that the changes in various outcomes differ sharply across different marital status groups. Income based measures show that with retirement status, total family income drops substantially, and more severely for the married; the poverty rate rises with advancing age and rises at retirement, particularly for early widows and divorcees. However, the patterns obtained with current consumption as a measure are different from those evident in income based measures. Older women are able to sustain their level of consumption at retirement. The decline in money expenditure documented by a vast literature can be explained by a standard model of household consumption augmented with Becker home production. The differences in the changes of consumption expenditure and time spent on housework of the married and unmarried older women at retirement further support the power of the time /money expenditure substitution mechanism. Moreover, time use data indicate that older women spend significantly more time on leisure activities at retirement. Thus, broadening our concept of economic well-being to include first the value of household production and secondly the value of leisure

brings into question the suggestion by many scholars that economic well-being deteriorates with retirement status for older women.

While a number of policy proposals on reforming Social Security focus on increasing Social Security survivor benefits and/or decreasing spouse benefits, as well as raising the divorced spouse benefits, the findings in this paper point to a different direction. A relatively smaller decline in income and smoothing of the consumption upon retirement for the unmarried group suggests the effectiveness of the redistribution from Social Security in helping this special group. However, the paper reports that early widowhood is associated with a true decline in economic well-being. Both income and consumption measures point to the conclusion that early widows experience a sharp reduction in their living standard. Couples could insure against severe reductions in income of widows by purchasing more life insurance. These findings show that many couples are significantly or severely underinsured against the untimely death of their spouse. It raises the question of the roles of the government transfer and private insurance in reducing the consumption drop following an unanticipated adverse event, and suggests there is potentially be room for an improved insurance market. Future study could examine these questions in detail and find out the specific policy directions.

One concern of the study is that while the evidence presented in this paper does not support the claim of a decline in economic well-being with retirement status for older women, it does not rule out that some older women households are ill-prepared to sustain consumption during retirement. Bernheim et al. (2001) reports that households in the bottom quartile of the pre-retirement wealth distribution experience declines in food expenditures that are nearly three times as large as the median households. Scholz (2004)

also concludes that 15.6 percent of the HRS sample has deficits in saving to maintain living standards in retirement. Future work, however, needs to be spent learning more about heterogeneity among older women, and identify those older women households who maybe ill-prepared to maintain their consumption levels after retirement.

Although this study points out the importance of housework and leisure in welfare analysis, to fully measure the welfare effect of these activities, we have to measure the value of time spent in household production and leisure. Studying the appropriate methods for assessing the value of housework and leisure would be a fruitful area for future research.

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Table 1. Sample Mean and Standard Deviations, By Marital Status

	All	Married	Widowed after Retirement	Widowed before Retirement	Divorced	Single
	Mean	Mean	Mean	Mean	Mean	Mean
Total Years in the Survey	28.85	29.88	27.79	27.96	28.04	26.66
	(5.63)	(4.88)	(6.58)	(5.68)	(5.65)	(6.70)
Age When the Head of Household Retired	61.81	61.01	61.56	63.45	62.94	64.00
	(3.76)	(3.54)	(4.04)	(3.69)	(3.13)	(2.77)
Age at the Last Interview	76.32	75.91	77.17	77.37	73.94	77.34
	(6.83)	(6.84)	(6.28)	(7.56)	(5.74)	(6.64)
Fraction of Female Who Ever Receives SSI	0.20	0.09	0.23	0.36	0.42	0.38
	(0.40)	(0.29)	(0.42)	(0.48)	(0.50)	(0.49)
Fraction of Female Who Ever Receives Social Security	0.98	0.99	1.00	0.99	0.94	0.94
	(0.13)	(0.12)	(0.07)	(0.08)	(0.25)	(0.25)
White	0.66	0.71	0.67	0.67	0.43	0.69
	(0.48)	(0.45)	(0.47)	(0.47)	(0.50)	(0.47)
Highest Level of Education	10.89	11.23	10.22	10.59	10.67	11.94
	(3.16)	(2.98)	(3.47)	(3.16)	(2.92)	(3.40)
Number of Own Kids at Retirement	0.18	0.17	0.15	0.24	0.23	0.19
	(0.67)	(0.64)	(0.54)	(0.89)	(0.67)	(0.65)
Family Size at Retirement	2.20	2.52	2.21	1.61	1.65	1.61
	(1.22)	(1.11)	(0.99)	(1.34)	(1.40)	(1.12)
Total Family Assets* at Retirement (Mean)	65101.28	78893.85	89867.01	20563.31	21773.54	27390.93
	(156256.94)	(160764.79)	(213264.91)	(89314.19)	(51715.50)	(40268.40)
Total Family Assets at Retirement (Median)	9196.65	19411.22	8476.43	1325.26	3228.25	2024.01
Total Family Income**at Retirement	29859.76	35742.12	27558.15	21132.32	20471.30	30055.94
	(28528.46)	(32029.11)	(29761.79)	(17177.59)	(14589.24)	(22836.28)
Total Family Social Security Income at Retirement	3497.78	3021.30	4191.55	4321.07	3039.74	2951.23
	(3922.01)	(3810.37)	(4151.03)	(3869.12)	(3712.67)	(3683.63)
Total Family Pension Income at Retirement	3936.50	5336.80	2721.90	2051.27	2038.29	2287.34
	(8701.44)	(10694.46)	(5594.20)	(5176.33)	(4518.17)	(4779.52)
Total Family Savings Income*** at Retirement	4303.41	5559.32	5659.62	1573.89	408.35	514.22
	(13011.89)	(14171.45)	(17207.86)	(5353.32)	(4242.82)	(811.69)
Fraction of Female Reported Own a House at Retirement	0.78	0.89	0.82	0.59	0.51	0.62
	(0.41)	(0.31)	(0.38)	(0.49)	(0.50)	(0.49)
Fraction of Female Reported Disability before Retirement	0.25	0.19	0.21	0.36	0.42	0.25
	(0.43)	(0.39)	(0.41)	(0.48)	(0.50)	(0.44)
Fraction of Female Reported Disability after Retirement	0.84	0.79	0.87	0.89	0.94	0.88
	(0.37)	(0.41)	(0.34)	(0.32)	(0.25)	(0.34)
Fraction of Female Reported Chronic Disability ****	0.70	0.63	0.75	0.81	0.73	0.63
after Retirement	(0.46)	(0.48)	(0.43)	(0.39)	(0.44)	(0.49)
Number of Individuals	975	490	203	171	79	32

* Total Family Assets is defined as the sum of current net assets of car, bonds, business or farm, stocks, and mutual fund

**Total Family Income is defined as the sum of labor, asset, transfer incomes, food stamps and the rental equivalent of subsidized

***Total Family Saving Income is defined as the sum of the income from dividends, interests, trust funds, and royalties

**** Chronic Disability after Retirement is defined as reporting three or more times disability after -10 from retirement

Standard deviations are in parentheses

Table 2. Fixed Effects Estimates of the Change in Total Family Income, Before and After Retirement, By Marital Status

	Column (1)			Column (2)			Column (3)			Column (4)			Column (5)		
	All			Married			Widowed after Retirement			Widowed before Retirement			Divorced		
Panel A: Before-after Comparison Estimation a															
			Implied % change			Implied % change			Implied % change			Implied % change			Implied % change
Retirement	-13870.08		-22.67%	-20269.10		-26.94%	-10230.16		-16.79%	-1853.25		-5.14%	-3744.20		-10.61%
	(1437.37)	***		(1773.31)	***		(2395.46)	***		(1918.76)			(2023.02)	*	
Panel B: Period Specific Losses from Retirement Semi-Parametric Estimation b															
Before Retirement Year -10 to -6	-1670.25		-2.60%	-638.18		-0.84%	-836.14		-1.31%	-5144.48		-11.56%	-7620.17		-18.50%
	(1954.38)			(2565.36)			(3320.31)			(2636.60)	*		(2549.83)	***	
Before Retirement Year -5 to -2	-7928.49		-12.36%	-7254.10		-9.55%	-7770.35		-12.18%	-8638.17		-19.41%	-12447.79		-30.21%
	(2771.75)	***		(3192.47)	**		(3683.55)	**		(3331.75)	***		(3572.26)	***	
Retirement Onset Year -1 to 0	-13947.79		-21.74%	-14533.85		-19.14%	-13962.69		-21.88%	-9565.78		-21.50%	-14223.93		-34.52%
	(3624.10)	***		(4134.36)	***		(4537.15)	***		(4149.95)	**		(4542.35)	***	
Post Retirement Year +1 to +3	-27676.86		-43.15%	-32769.13		-43.15%	-25156.39		-39.42%	-16007.15		-35.97%	-19391.47		-47.07%
	(4487.20)	***		(4993.56)	***		(4972.73)	***		(5002.34)	***		(5148.03)	***	
Post Retirement Year +4 to +7	-30099.46		-46.92%	-35972.82		-47.37%	-23061.30		-36.13%	-17716.76		-39.81%	-22688.23		-55.07%
	(5244.25)	***		(5179.76)	***		(6626.57)	***		(6148.43)	***		(6205.78)	***	
Post Retirement Year +8 to +10	-32264.39		-50.30%	-38407.71		-50.58%	-22897.79		-35.88%	-19199.98		-43.15%	-20597.44		-49.99%
	(6334.40)	***		(6349.13)	***		(7687.54)	***		(7601.28)	**		(7490.59)	***	
Observations	19349														
Households	943														

Controls include age, age-squared, education, head and wife's health status, indicators of household size, number of children, state of residence, and year, and interactions of marital status with education, family size, number of children, and health status.

Standard Errors clustered by household, are in parentheses.

* Significant at 10%; ** Significant at 5%;*** Significant at 1%.

a. All years before retirement as the reference period

b. More than 10 years prior to retirement as reference period

Table 3. Fixed Effects Estimates of the Changes in the Food Consumption for Married and Unmarried Older Women

	Column (1)		Column (2)		Column (3)	
	Log of Total Food Consumption Expenditure		Log of Expenditure on Food Eaten at Home		Log of Expenditure on Food Eaten outside Home	
	Married	Unmarried	Married	Unmarried	Married	Unmarried
Panel A: Before-after Comparison Estimation (Equation 1)						
Retirement	-0.043	-0.018	-0.044	0.013	0.028	-0.080
	(0.015) **	(0.024)	(0.015) ***	(0.024)	(0.039)	(0.065)
P-value (Married =Unmarried)	0.097		0.032		0.253	
Base line	All years before retirement as the reference period					
Observations	15515		15515		11394	
Households	756		756		729	
Panel B: Period Specific Losses from Retirement Semi-Parametric Estimation (Equation 2)						
Before Retirement Year -10 to -6	-0.020	-0.055	-0.019	-0.035	0.000	-0.285
	(0.016)	(0.030) *	(0.016)	(0.031)	(0.046)	(0.096) ***
Before Retirement Year -5 to -2	-0.043	-0.076	-0.041	-0.031	-0.030	-0.465
	(0.024) *	(0.038) **	(0.025)	(0.039)	(0.069)	(0.114) ***
Retirement Onset Year -1 to 0	-0.059	-0.098	-0.055	-0.036	-0.042	-0.306
	(0.031) *	(0.044) **	(0.033) *	(0.046)	(0.088)	(0.118) ***
Post Retirement Year +1 to +3	-0.109	-0.102	-0.095	-0.030	-0.057	-0.470
	(0.036) ***	(0.050) **	(0.038) ***	(0.052)	(0.103)	(0.141) ***
Post Retirement Year +4 to +7	-0.116	-0.097	-0.099	-0.011	-0.064	-0.493
	(0.045) **	(0.057) *	(0.049) **	(0.061)	(0.130)	(0.168) ***
Post Retirement Year +8 to +10	-0.092	-0.101	-0.074	-0.030	-0.005	-0.447
	(0.055) *	(0.069) *	(0.060)	(0.074)	(0.159)	(0.206) **
P-value (Before Retirement: Married=Unmarried)	0.215		0.491		0.024	
P-value (After Retirement: Married =Unmarried)	0.004		0.023		0.094	
Base line	More than 10 years prior to retirement as reference period					
Observations	15515		15515		11394	
Households	756		756		729	
Panel C: Modified Period Specific Losses from Retirement Semi-Parametric Estimation (Modified Equation 2)						
Retirement Onset Year -1 to 0	-0.011	-0.026	-0.017	-0.008	0.020	-0.042
	(0.015)	(0.024)	(0.016)	(0.025)	(0.040)	(0.071)
Post Retirement Year +1 to +3	-0.058	-0.027	-0.060	-0.004	0.014	-0.076
	(0.019) ***	(0.028)	(0.019) ***	(0.029)	(0.053)	(0.084)
Post Retirement Year +4 to +7	-0.064	-0.019	-0.070	0.016	0.034	-0.150
	(0.026) **	(0.036)	(0.027) ***	(0.036)	(0.072)	(0.110)
Post Retirement Year +8 to +10	-0.043	-0.057	-0.056	-0.017	0.050	-0.098
	(0.036)	(0.046)	(0.038)	(0.048)	(0.101)	(0.149)
P-value (After Retirement: Married =Unmarried)	0.023		0.030		0.833	
Base line	10 years prior to retirement as reference period					
Observations	11450		11450		8525	
Households	756		756		720	

Controls include age, age-square, education, head and wife's health status, indicators of household size, number of children, state of residence, and year, and interactions of marital status with education, family size, number of children, and health status.

Standard Errors clustered by household, are in parentheses.

* Significant at 10%; ** Significant at 5%;*** Significant at 1%.

Table 4a. Husband's Time Spent on Food Preparation and All Shopping Activities (in Hours per Week)

	Sample Mean		Coefficient	
	Nonretired Husband	Retired Husband	Retirement indicator	
Food Preparation	1.74	2.26	0.67	
	(3.81)	(4.44)	*** (0.23)	***
All Shopping	5.03	6.23	1.68	
	(9.28)	(10.27)	(0.53)	***
N	1128	942	2070	

Controls include age, age-square, education, indicators of household size, number of children, and region of residence.

Standard Errors clustered by family ID, are in parentheses.

* Significant at 10%; ** Significant at 5%;*** Significant at 1%.

Table 4b. Older Women's Time Spent on Food Preparation and All Shopping Activities (in Hours per Week)

	Sample Mean				Coefficient				
	Nonretired Married Older Women	Nonretired Unmarried Older Women	Retired Married Older Women	Retired Unmarried Older Women	Marital status indicator		Retirement indicator		Married * Retired
Food Preparation	7.01	4.89	8.27	5.59	2.00		0.49		0.85
	(8.21)	(7.01)	(9.17)	(7.55)	(0.41)	***	(0.41)		(0.60)
All Shopping	7.27	6.28	7.11	6.89	0.67		0.94		0.29
	(11.59)	(10.41)	(10.79)	(6.89)	(0.54)		(0.55)	*	(0.78)
N	819	1091	1141	898	3949		3949		3949

Controls include age, age-square, education, indicators of household size, number of children, and region of residence.

Standard Errors clustered by family ID, are in parentheses.

* Significant at 10%; ** Significant at 5%;*** Significant at 1%.

Table 5 a. Fixed Effects Estimates of the Change in the Log of Husband's Total Time Spend in Housework for Married Older Women

	Column (1)	Column (2)	Column (3)
	Before-after Comparison Estimation (Equation 1)	Period Specific Losses from Retirement Semi-Parametric Estimation (1) (Equation 2)	Period Specific Losses from Retirement Semi-Parametric Estimation (2) (Modified Equation 2)
Retirement	0.314 ***		
	(0.05)		
Before Retirement Year -10 to -6		-0.042	
		(0.06)	
Before Retirement Year -5 to -2		-0.133	
		(0.08)	
Retirement Onset Year -1 to 0		0.052	0.215
		(0.10)	(0.06) ***
Post Retirement Year +1 to +3		0.188	0.378
		(0.12) **	(0.07) ***
Post Retirement Year +4 to +7		0.139	0.382
		(0.14) **	(0.10) ***
Post Retirement Year +8 to +10		0.07	0.324
		(0.17)	(0.13) ***
Baseline Group	All years before retirement as the reference period	More than 10 years prior to the retirement as the reference period	10 years prior to the retirement as the reference period
Observations	6685	6685	5459
Households	467	467	466

Controls include age, age-square, education, head and wife's health status, indicators of household size, number of children, state of residence, and year.

Standard Errors clustered by household, are in parentheses.

* Significant at 10%; ** Significant at 5%;*** Significant at 1%.

Table 5 b. Fixed Effects Estimates of the Change in the Log of Total Time Spend on Housework for Married and Unmarried Older Women

	Column (1)				Column (2)				Column (3)			
	Before-after Comparison Estimation (Equation 1)				Period Specific Losses from Retirement Semi-Parametric Estimation (1) (Equation 2)				Period Specific Losses from Retirement Semi-Parametric Estimation (2) (Modified Equation 2)			
	Married		Unmarried		Married		Unmarried		Married		Unmarried	
Retirement	0.077		0.097									
	(0.02)	***	(0.03)	***								
Before Retirement Year -10 to -6					0.076		-0.061					
					(0.03)	**	(0.05)					
Before Retirement Year -5 to -2					0.131		0.004					
					(0.05)	***	(0.06)					
Retirement Onset Year -1 to 0					0.234		0.072		0.070		0.035	
					(0.06)	***	(0.08)		(0.02)	***	(0.04)	
Post Retirement Year +1 to +3					0.222		0.185		0.041		0.122	
					(0.07)	***	(0.08)	**	(0.03)		(0.05)	***
Post Retirement Year +4 to +7					0.285		0.147		0.114		0.070	
					(0.08)	***	(0.10)		(0.04)	***	(0.05)	
Post Retirement Year +8 to +10					0.263		0.118		0.066		0.024	
					(0.10)	***	(0.12)		(0.06)		(0.07)	
P-value (Married =Unmarried)	0.606											
P-value (Before Retirement: Married=Unmarried)					0.175							
P-value (After Retirement: Married =Unmarried)					0.000				0.000			
Baseline Group	All years before retirement as the reference period				More than 10 years prior to the retirement as the reference period				10 years prior to the retirement as the reference period			
Observations	15608				15608				11662			
Households	756				756				756			

Controls include age, age-square, education, head and wife's health status, indicators of household size, number of children, state of residence, and year, and interactions of marital status with education, family size, number of children, and health status.

Standard Errors clustered by household, are in parentheses.

* Significant at 10%; ** Significant at 5%;*** Significant at 1%.

Table 6. Fixed Effects Estimates of the Change in the Log of Total Housing Consumption for Married and Unmarried Older Women

	Column (1)		Column (2)			Column (3)	
	Before-after Comparison Estimation (Equation 1)		Period Specific Losses from Retirement Semi-Parametric Estimation (1) (Equation 2)			Period Specific Losses from Retirement Semi-Parametric Estimation (2) (Modified Equation 2)	
	Married	Unmarried	Married	Unmarried		Married	Unmarried
Retirement	-0.021	-0.058					
	(0.02)	(0.04)					
Before Retirement Year -10 to -6			0.006	-0.113			
			(0.03)	(0.04)	***		
Before Retirement Year -5 to -2			0.004	-0.170			
			(0.04)	(0.05)	***		
Retirement Onset Year -1 to 0			-0.020	-0.187		-0.006	-0.033
			(0.05)	(0.06)	***	(0.02)	(0.03)
Post Retirement Year +1 to +3			-0.025	-0.211		-0.020	-0.053
			(0.06)	(0.07)	***	(0.03)	(0.04)
Post Retirement Year +4 to +7			-0.060	-0.180		-0.032	-0.046
			(0.07)	(0.08)	**	(0.04)	(0.05)
Post Retirement Year +8 to +10			-0.033	-0.163		-0.023	-0.041
			(0.09)	(0.10)		(0.05)	(0.07)
P-value (Married =Unmarried)	0.301						
P-value (Before Retirement: Married=Unmarried)			0.038				
P-value (After Retirement: Married =Unmarried)			0.124			0.927	
Baseline Group	All years before retirement as the reference period		More than 10 years prior to the retirement as the reference period			10 years prior to the retirement as the reference period	
Observations	16431		16431			11947	
Households	756		756			756	

Controls include age, age-square, education, head and wife's health status, indicators of household size, number of children, state of residence, and year, and interactions of marital status with education, family size, number of children, and health status.

Standard Errors clustered by household, are in parentheses.

* Significant at 10%; ** Significant at 5%;*** Significant at 1%.

Table 7. Fixed Effects Estimates of the Changes in Food Consumption Expenditure and Time Spend on Housework for Widowed Older Women

	Log of Total Food Consumption Expenditure		Log of Expenditure on Food Eaten at Home		Log of Expenditure on Food Eaten outside Home		Log of Time Spent on Housework	
	Widowed before Retirement	Widowed after Retirement	Widowed before Retirement	Widowed after Retirement	Widowed before Retirement	Widowed after Retirement	Widowed before Retirement	Widowed after Retirement
Retirement	-0.003	-0.082	0.023	-0.079	-0.062	-0.034	0.158	0.052
	0.042	0.025 ***	0.043	0.027 ***	0.106	0.079	0.058 **	0.044
Widowhood	-0.126	0.023	-0.120	0.007	-0.159	0.015	-0.128	-0.069
	0.047 ***	0.032	0.050 **	0.034	0.148	0.088	0.057 **	0.052
P-value: Retirement shock (widowed before retirement = widowed after retirement)	0.079		0.027		0.805		0.092	
P-value: Widow shock (widowed before retirement = widowed after retirement)	0.003		0.017		0.265		0.417	
Base line	All years before retirement as the reference period							
Observations	5639		5639		3710		5667	
Households	288		288		280		288	

Controls include age, age-square, education, head and wife's health status, indicators of household size, number of children, state of residence, and year

Standard Errors clustered by household, are in parentheses.

* Significant at 10%; ** Significant at 5%;*** Significant at 1%.

Table 8. Regression of Changes in Leisure by Marital Status (Hours per Week)

	Sample Mean	Coefficient								
	Nonretired Married Older Women	Widowed Indicator		Divorced Indicator		Retirement Indicator		Widowed * Retired	Divorced * Retired	
Leisure (Narrow)	39.68	4.85		4.00		10.43		1.87	5.84	
	(23.81)	(1.76)	***	(1.69)	**	(1.28)	***	(2.35)	(2.64)	**
Watching TV	15.87	3.02		4.92		5.37		1.07	-0.53	
	(17.96)	(1.34)	**	(1.29)	***	(1.01)	***	(1.90)	(2.02)	
Socializing	33.26	3.71		3.35		8.39		2.43	5.65	
	(22.01)	(1.66)	**	(1.55)	**	(1.18)	***	(2.25)	(2.38)	**
Relaxing	2.72	0.00		-1.03		-0.01		-0.13	0.94	
	(7.94)	(0.82)		(0.46)	**	(0.44)		(1.08)	(0.72)	
Games and Computer	1.84	0.29		-0.30		0.54		-0.15	1.51	
	(6.35)	(0.44)		(0.36)		(0.36)		(0.69)	(0.73)	**
Leisure (Broad)	114.97	4.48		2.64		12.59		0.15	3.90	
	(26.27)	(2.09)	**	(1.83)		(1.38)	***	(2.55)	(2.59)	
Sleeping	59.15	0.80		0.81		1.88		-1.06	-1.52	
	(12.91)	(0.94)		(1.24)		(0.67)	***	(1.25)	(1.65)	
Eating	10.07	-1.25		-2.01		0.59		-0.14	-0.10	
	(7.68)	(0.46)	***	(0.44)	***	(0.38)		(0.63)	(0.67)	
Person Care	6.07	0.08		-0.16		-0.30		-0.52	-0.33	
	(5.06)	(0.33)		(0.30)		(0.27)		(0.45)	(0.44)	
Vacation	1.45	0.51		-0.25		1.36		-0.57	-1.22	
(days per month)	(3.74)	(0.61)		(0.37)		(0.41)	***	(0.86)	(0.56)	**
N	819	3714								

Controls include age, age-square, education, indicators of household size, number of children, and region of residence.

Standard Errors clustered by family ID, are in parentheses.

* Significant at 10%; ** Significant at 5%;*** Significant at 1%.

Figure 1. Change of Total Family Income before and after Retirement, by Marital Status

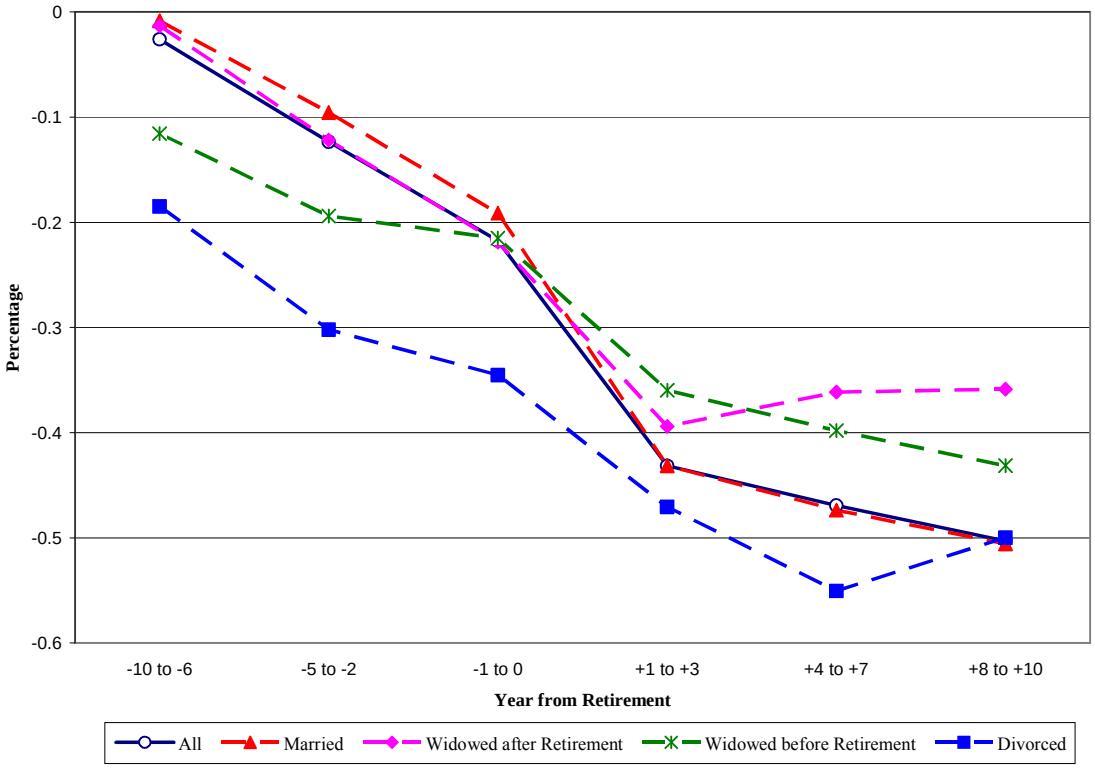


Figure 2. Composition of Total Family Income after Retirement, By Marital Status

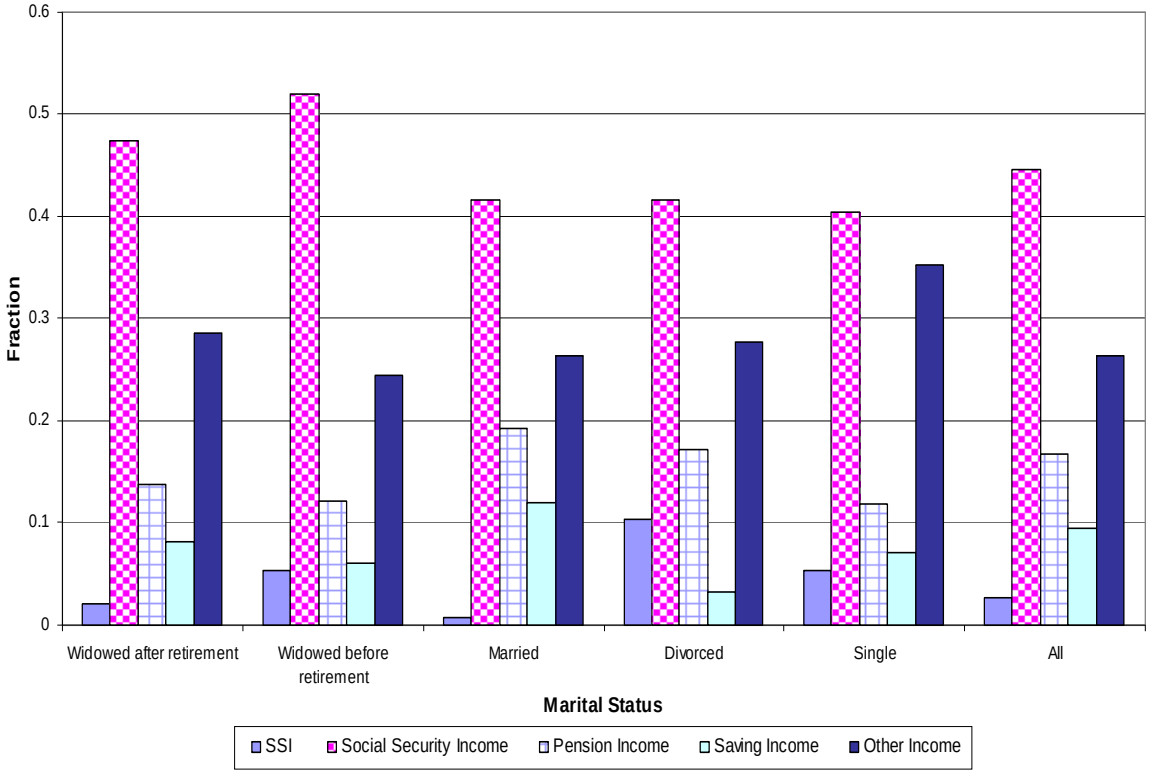


Figure 3a. Fraction of Families with Total Family Income below the Poverty Threshold, By Marital Status

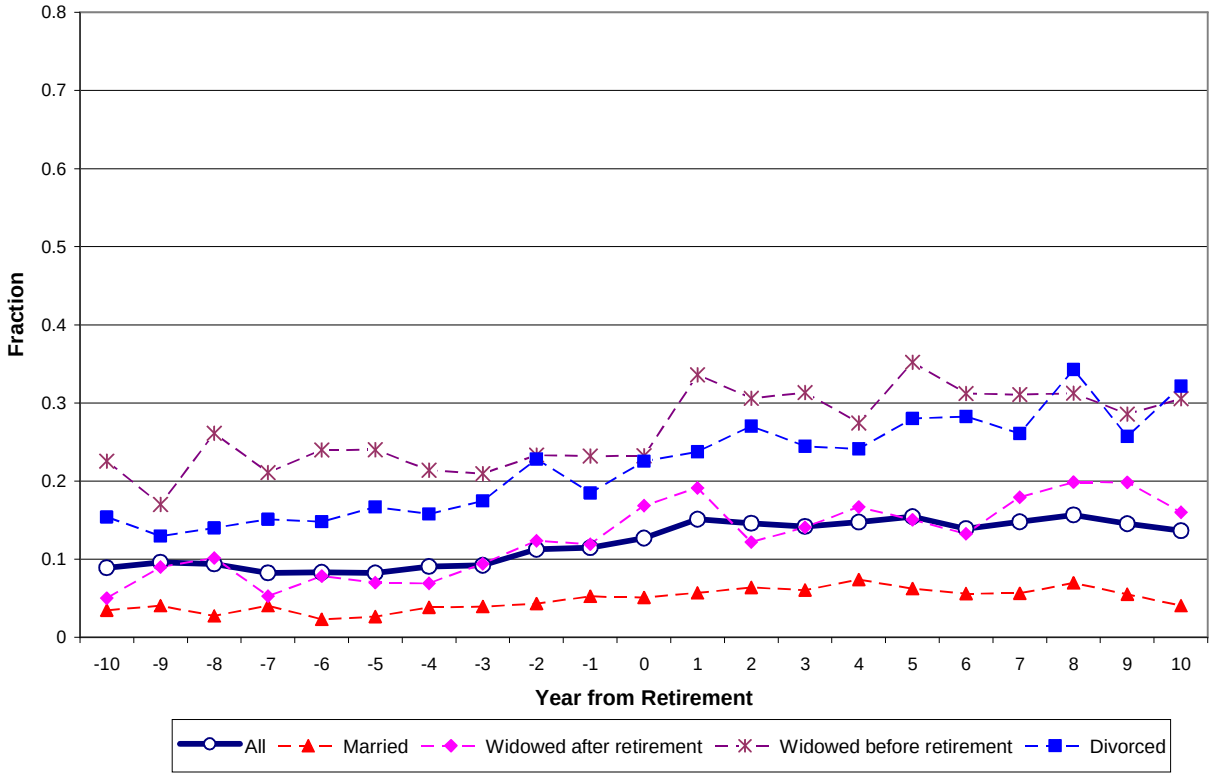


Figure 3b. Fraction of Families with Total Family Income below 150% of Poverty Threshold, by Marital Status

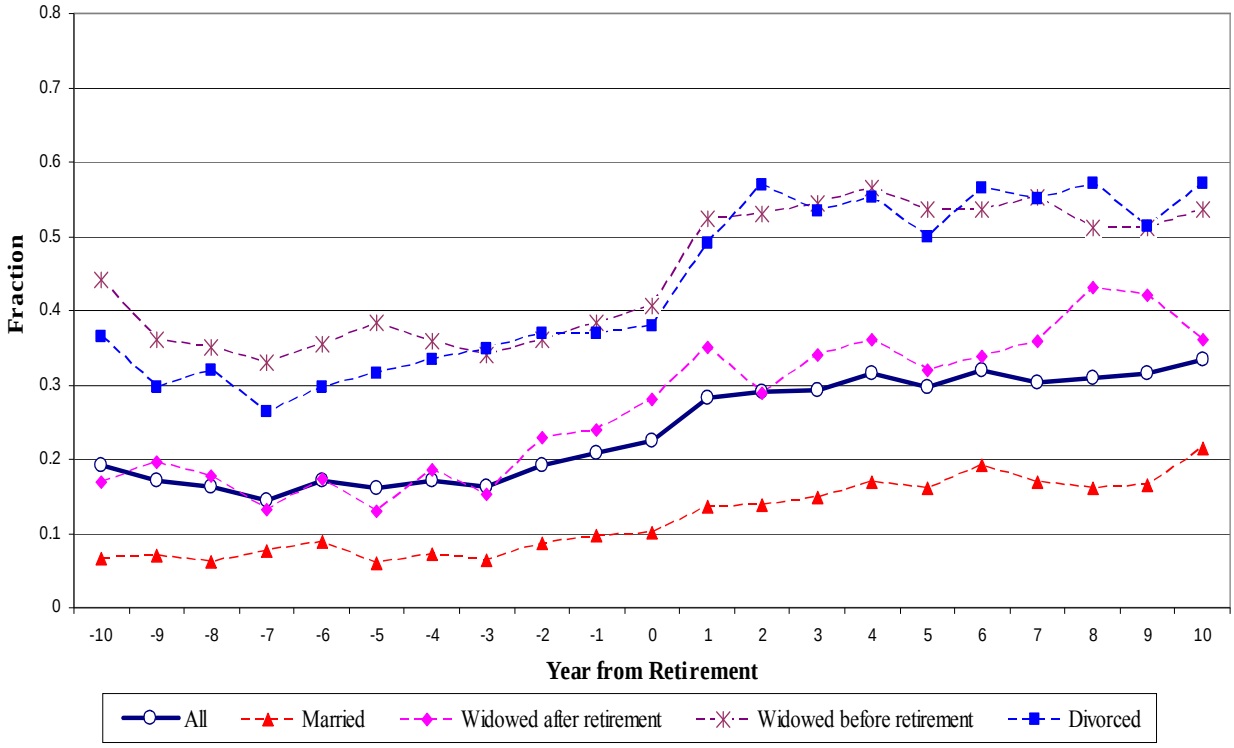


Figure 4 a. Change of Total Food Consumption Expenditures before and after Retirement, By Marital Status

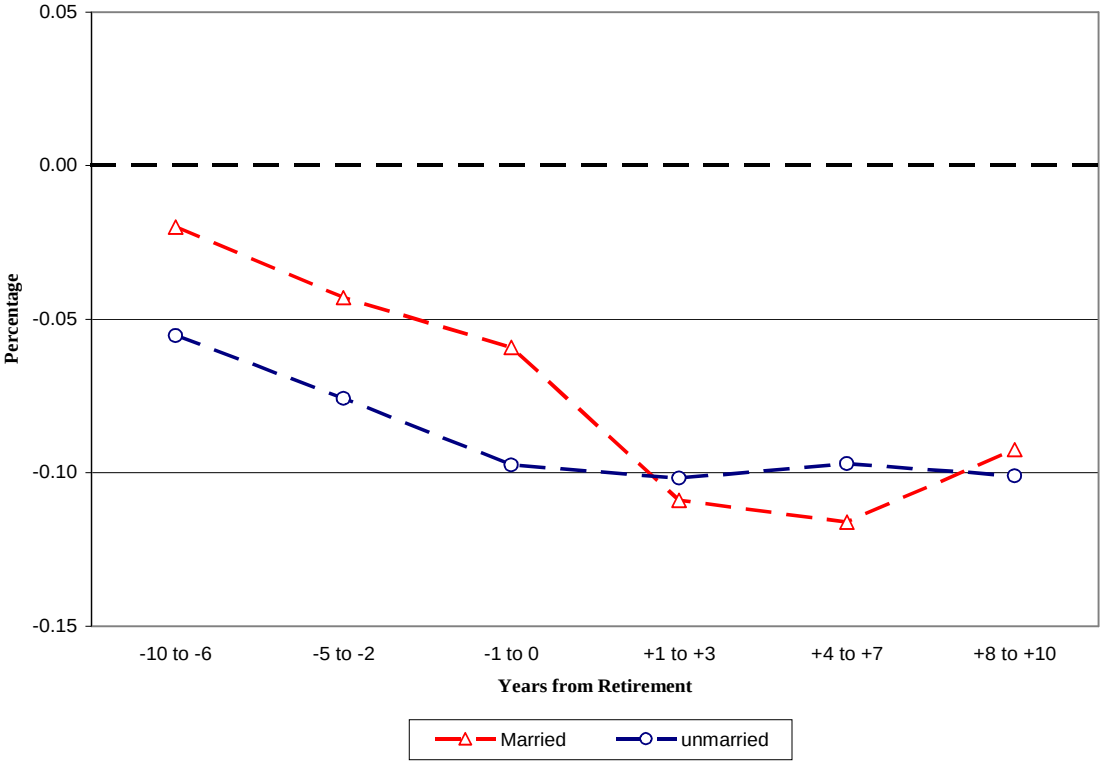


Figure 4 b. Change of Expenditures On Food Eaten at Home before and after Retirement, By Marital Status

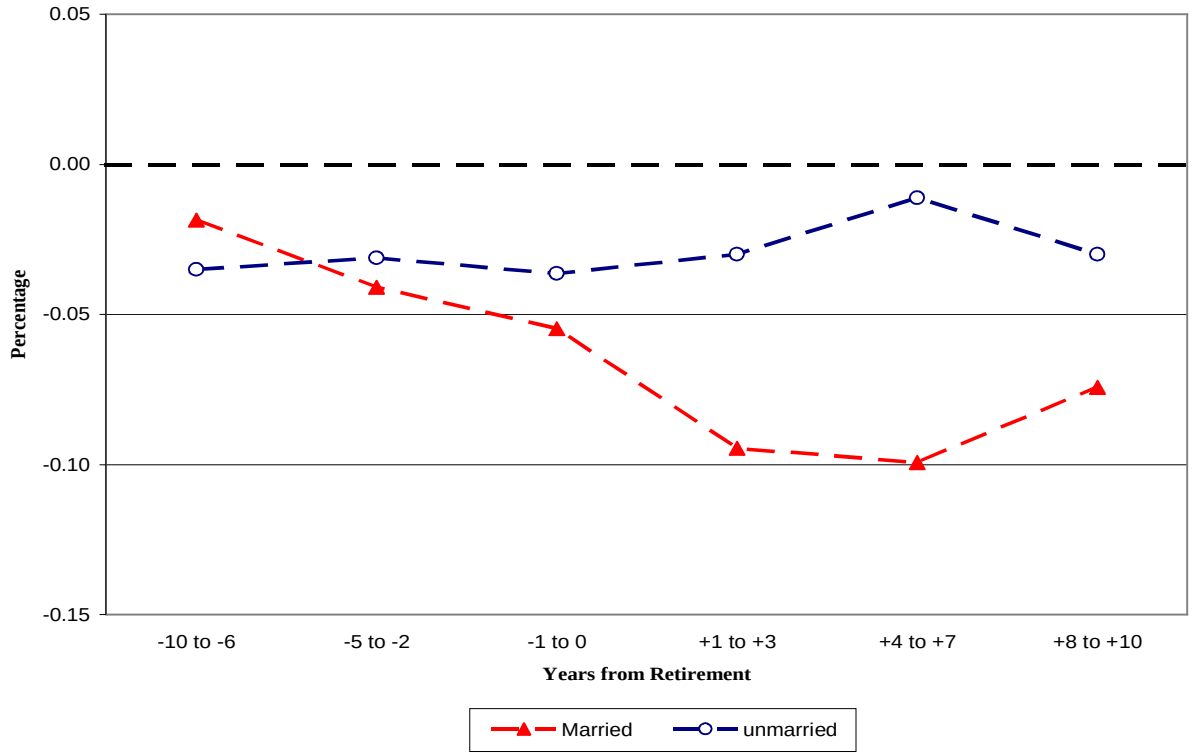


Figure 4 c. Change of Expenditures On Food Eaten outside Home before and after Retirement, By Marital Status

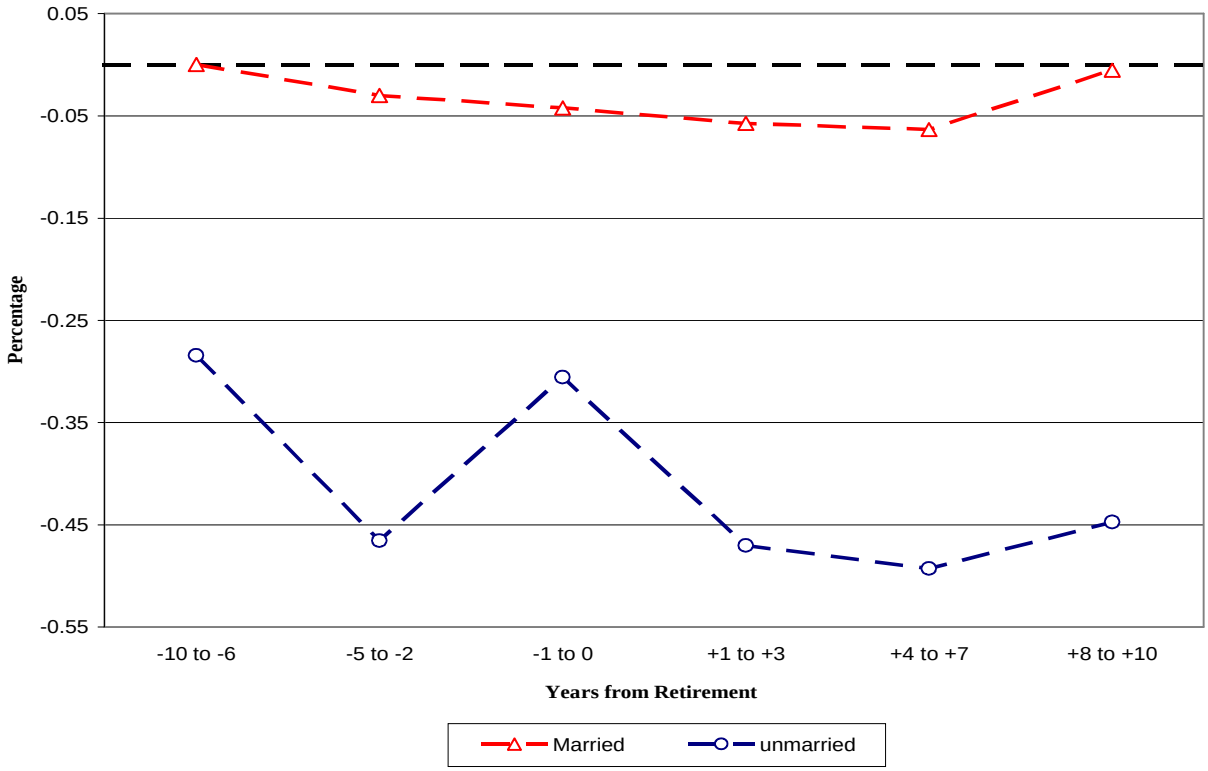


Figure 5. Change of Total Time Spent on Housework before and after Retirement, By Marital Status

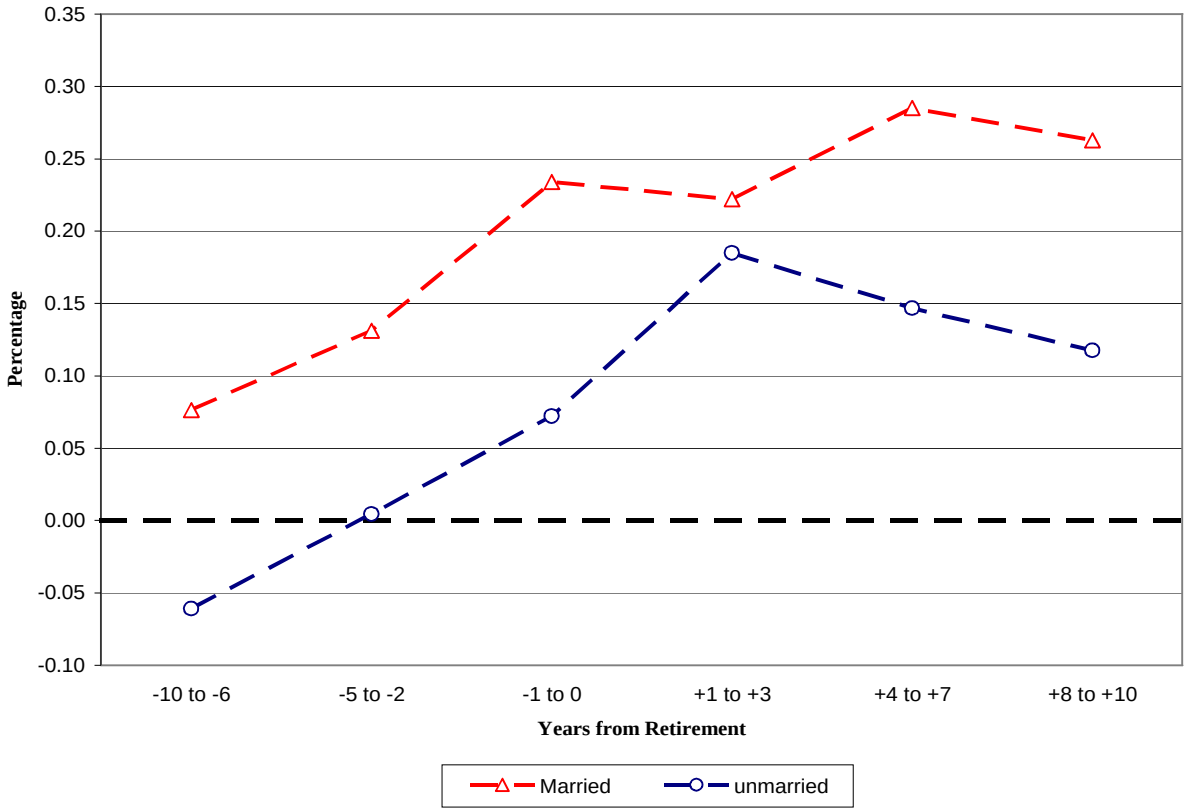


Figure 6a. Change of Expenditure on Food Eaten at Home and Time Spend in Housework for the Married, before and after Retirement

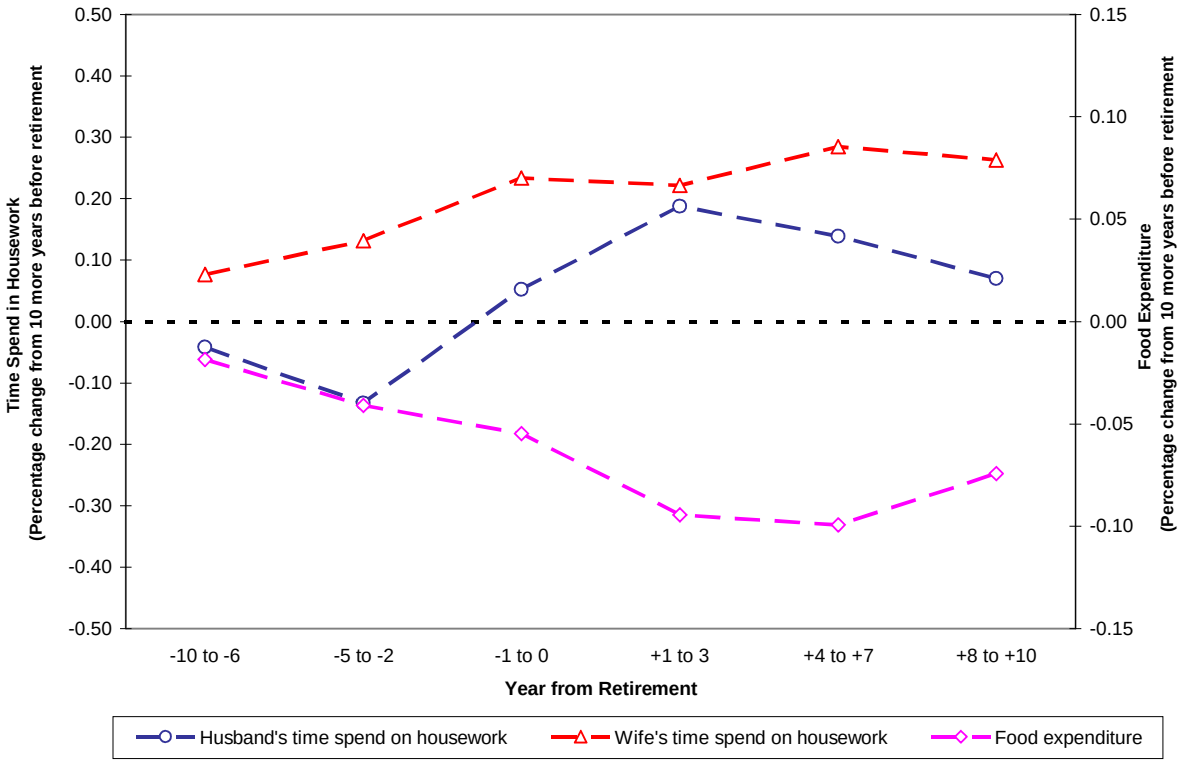


Figure 6b. Change of Expenditure on Food Eaten at Home and Time Spend in Housework for the Unmarried, before and after Retirement

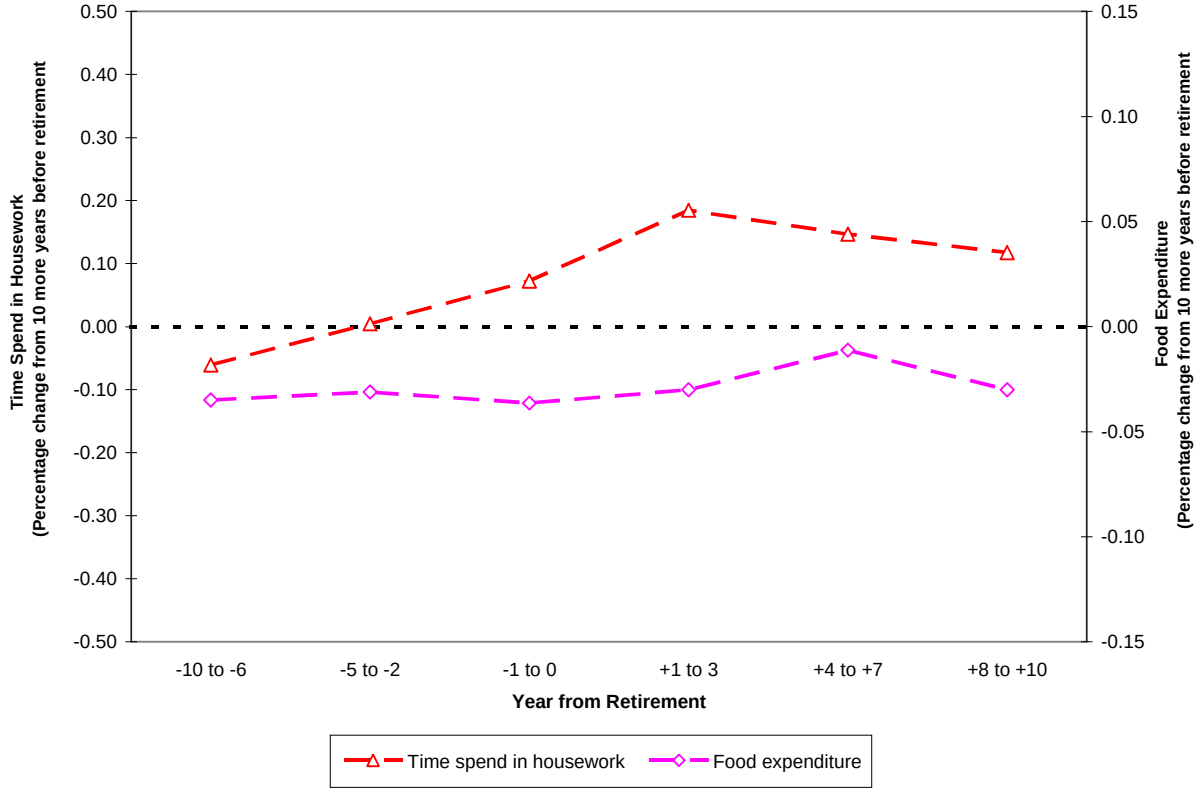
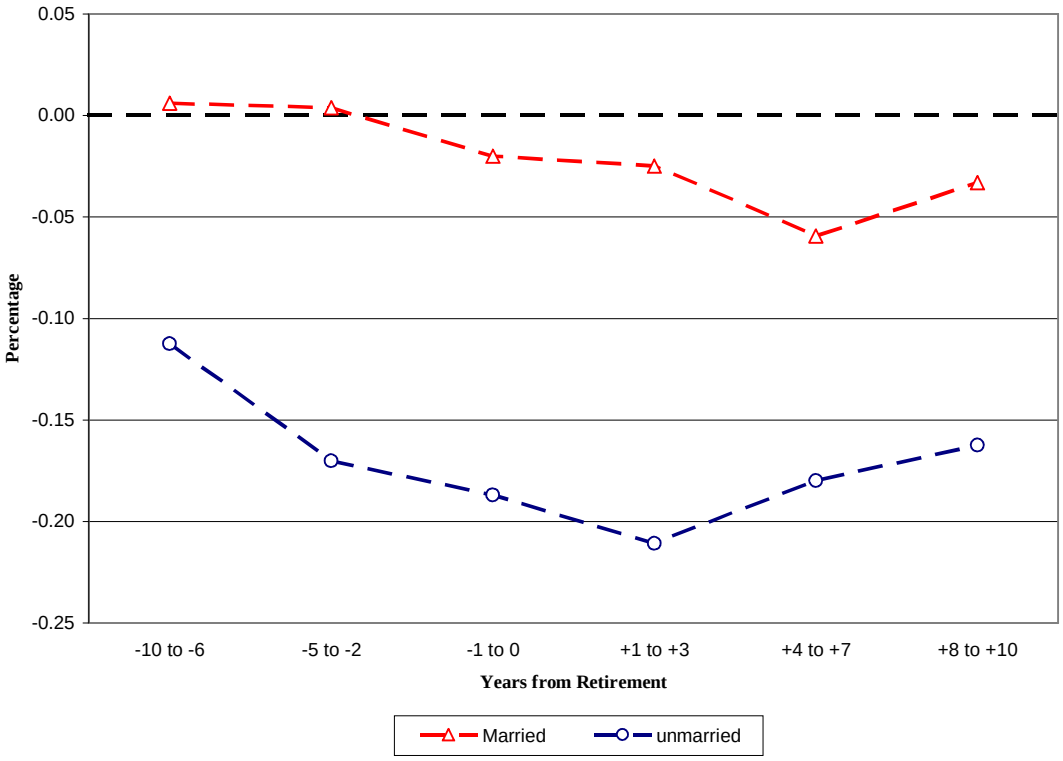


Figure 7. Change of Total Housing Consumption before and after Retirement, By Marital Status



Appendix Table 1. Social Security Eligibility and Benefits Regulations

Status	Eligibility	Benefits	Age requirement	Dual Eligibility	Auxiliary Eligibility
Retired Worker	10 years (40 Quarters of contribution. May be discontinuous.	Based on earnings from 35 highest years , indexed and averaged	Full benefits will be received at age 65 if born before 1940. (The age to receive full benefits is gradually increasing to age 67 worker born in 1940 or later.) Reduced benefits can be received as early as age 62.		
Spouse	Married at least one year	Equal to 50 percent of covered worker's benefit	Full benefits will be received at age 65 if born before 1940. (The age to receive full benefits is gradually increasing to age 67 for spouse born in 1940 or later.) Reduced spouse benefits can be received as early as age 62.	Eligible for retired worker send spouse benefits. Receives the (larger) spouse benefits	Not eligible for retired worker benefits. Only receives spouse benefits
Non-Widow/Widower	Married to covered worker	Equal to 100 percent of covered worker's benefit i	Full benefits will be received at age 65 if born before 1940. (The age to receive full benefits is gradually increasing to age 67 for widows and widowers born in 1940 or later.) Reduced widow or widower benefits can be received as early as age 60.	Eligible for retired worker and widow benefits. Receives the (larger) widow benefits	Not eligible for retired worker benefits. Only receives widow benefits
Divorced	10 years of marriage to covered worker	Equal to 50 percent of covered worker's benefit if ex-spouse alive. Equal to 100 percent of covered worker's benefit if ex-spouse died.	Full benefits will be received at age 65 if born before 1940. (The age to receive full benefits is gradually increasing to age 67 if born in 1940 or later.) Reduced spouse benefits can be received as early as age 60.	Eligible for retired worker and widow benefits. Receives the (larger) spouse/widow benefits	Not eligible for retired worker benefits. Only receives spouse/widow benefits

Appendix Table 2. Percentage Distribution of Female Social Security Beneficiaries Age 62 and Older by Entitlement Status, 1960-2000

	1960	1965	1970	1975	1980	1985	1990	1995	2000
Worker Beneficiaries	38.7	40.6	42.1	42.3	41	38.5	36.9	39.5	40.2
Spouse Beneficiaries	35.2	30.2	25.8	24	23.8	25.1	25.7	22.2	23.4
Dual Entitlement	2.4	3.1	3.4	4.4	6.2	8.7	10.4	9.1	11.6
Auxiliary Entitlement	32.8	27.1	22.4	19.6	17.6	16.4	15.3	13.1	11.8
Widow Beneficiaries	25.5	28.8	31.8	33.5	35	36.4	37.3	38.2	36.3
Dual Entitlement	2.1	3.6	5	7.4	9.6	11.5	13	14.4	15.1
Auxiliary Entitlement	23.4	25.2	26.8	26.1	25.4	24.9	24.3	23.8	21.2
Total Percent *	99.4	99.6	99.7	99.8	99.9	99.9	99.9	99.9	99.9

Source: Social Security Administration

* may not add to 100 percent due to rounding error

Appendix Table 3: Change of Marital Status

Panel A: Change of Marital Status of the Widowed before Retirement Group			
	Widowed when entering the survey	Experience a widowhood shock during the survey	Total
	83	88	171
	48.5%	51.5%	
Widowed 2-5 years before the retirement		6	
Widowed 5-10 years before the retirement		32	
Widowed more years before the retirement		50	
Panel B: Change of Marital Status of the Divorced Group			
	Divorced when entering the survey	Experience a departure of husband during the survey	Total
	25	54	79
	31.6%	68.4%	
Divorced -2 to +10 years at the retirement		16	
Divorced 2-5 years before the retirement		2	
Divorced 5-10 years before the retirement		4	
Divorced more years before the retirement		32	
Panel C: Change of Marital Status of the Widowed after Retirement Group			
	Widowed when entering the survey	Experience a widowhood shock during the survey	Total
	0	203	203
Widowed -2-0 years at the retirement		50	
Widowed 1 to 5 years after the retirement		78	
Widowed 6 to 10 years after the retirement		75	

Appendix Figure 1: Fraction of Women At Age 55 Who Are Currently Married