Familial Health Histories and their Relationship to Retirement Expectations and Retirement Wealth

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By virtually all accounts, significant portions of the American population are facing a retirement savings shortfall. A recent study forecasts that 44 percent of pre-retired households will observe a decline in income of 30 percent or more at retirement (Yuh 2011). This retirement shortfall has precipitated considerable research on factors that may be contributing to inadequate retirement planning. These studies have typically emphasized the role of financial literacy (Gross 2005, Agnew, Szykman et al. 2007, Lusardi and Mitchell 2007, Lusardi and Mitchell 2007a, Lusardi and Mitchell 2007b, Lusardi and Mitchell 2009, Lusardi and Mitchell 2009, Mayer, Zick et al. 2010), financial education (Lusardi 1999, Madrian and Shea 2001, Clark and D'Ambrosio 2002, Bernheim and Garrett 2003, Lusardi 2004, Jacobs-Lawson and Hershey 2005), and/or financial advice (Stawski, Hershey et al. 2007, Christian, René et al. 2008, Jansen, Fischer et al. 2008, Gerhardt and Hackethal 2009, Hackethal, Haliassos et al. 2010, Marsden, Zick et al. 2011). In this paper, we change the focus to explore how familial health histories may shape individuals' retirement expectations and savings behavior and thus contribute to retirement savings shortfalls.

The Literature

Given the importance of life expectancy in determining financial needs for retirement (see for example (2001, Otar 2007, Colvin 2008, White 2009)), one might expect a large amount of research on the role of familial health history in retirement planning. Instead, the focus of most scholarly research has centered on health factors as they relate to *retirement timing*. The majority of these studies have assessed the relationship between own health and retirement timing, with the authors typically concluding that health status and retirement timing are linked (see for example (McGarry 2004, Benitez-Silva and Dwyer 2005, Hagan, Jones et al. 2008, Bound, Stinebrickner et al. 2010, Gupta and Larsen 2010).

The few studies that have examined the relationship between familial health and retirement planning typically have limited their investigations to the role of health as measured by subjective longevity. Using data from the first HRS cohort, one such study finds that subjective longevity is not related to the likelihood of having a retirement shortfall (Mitchell, Moore et al. 2000). Another study that makes use of HRS data, reports that pre-retirees who think they will live to age 75 are more likely to attend a retirement planning seminar than are pre-retirees who do not think they will live to age 75 (Lusardi 2004). More recently, Salm (2010) finds support for the hypothesis that subjective life expectancy is related to consumption decisions but he does not explore the role that family health histories might play in this relationship.

Despite increasing awareness of the genetic determinants of health and longevity (Jorde, et al. 2008; Rowe, 1994), no study to date has assessed the relationship among broadly measured familial health histories and retirement planning activities. We begin to address this research gap with the current study where we examine if retirement expectations and retirement savings are linked to familial health. Our study will make three unique contributions to the literature. First, we make use of clinical health records to measure an individual's health and her/his knowledge of potential health trajectories gained from observing the health experiences of extended family members. Second, we link these clinical records to survey measures of retirement planning expectations and behaviors that in turn have the potential to shape the extent to which individuals face savings shortfalls when they retire. Finally, our multivariate analyses that investigate the relationship between familial health and retirement expectations will control for standard measures of financial knowledge, risk tolerance, present versus future orientation, and subjective longevity – all of which are characteristics that have been linked to retirement planning activities in past studies.

The Framework

The framework that will guide our exploratory investigation is drawn from the work of Rosen and Wu (2004). In this framework, the experience of poor health is hypothesized to lead individuals to lower

wealth accumulation through its effect on risk aversion, rate of time preference, income variability, and/or consumption choices (e.g., spending funds on health care rather than allocating them to retirement savings). We expand upon this framework in two ways. First, we allow for the possibility that the timing of health events within the life course may matter. For example, a parental diagnosis of disease or a parental death at an early age may have a larger impact on retirement expectations and behaviors than a parental disease diagnosis or death that occurs as part of the "normal course of events" in middle age. Second, we test to see if respondents who have familial health histories of early death or early-onset of chronic diseases may also accumulate less retirement wealth and/or have different expectations regarding income sources during retirement when compared to respondents who have no such family history.

In our framework, the experiences of first degree relatives (i.e., parents and siblings) provide strong signals regarding one's longevity because they share 50% of the genes with an individual and because they share the same home environment for an extended period of time. Thus, the potential for inheriting specific genes for serious conditions such as cancer, heart disease, or Alzheimer's is high among first degree relatives (Jorde, et al., 2008). In addition, some environmental habits that affect longevity such as smoking (and/or exposure to passive smoke), exercise, and diet are likely formed during childhood. To the extent that both genes and environmental factors affect longevity, we hypothesize that an individual will take cues from his/her familial health histories that in turn alter her/his retirement expectations and savings behavior.

An individual shares fewer genes and typically fewer environmental factors with second-degree relatives (e.g., grandparents, aunts/uncles). Thus, while second-degree relatives' health experiences may also influence an individual, we hypothesize that the effect size, if present, will be smaller. In both cases, however, the prediction regarding the impact of familial predispositions is unambiguous as we hypothesize that a familial predisposition for disease and/or early death is hypothesized to reduce retirement wealth and alter expectations regarding retirement income sources.

The Data

Unique data from two sources are linked to test the hypotheses posed in the current study. Information on retirement planning expectations and behaviors comes from University of Utah Retirement Planning Survey (UURPS). The UURPS was designed to assess University of Utah employees' retirement planning knowledge, priorities, perceptions, and behaviors in the aftermath of the economic recession of 2008-09. All University of Utah benefits-eligible employees with valid email addresses (N=9,747) were invited to participate online in the UURPS during October 2009. Publicity efforts and participation incentives resulted in 3,000 people submitting completed surveys for an overall cooperation rate of 32.1%. Sixty-five percent of the 3,000 UURPS respondents are female and the median respondent age is 44 years. As a point of comparison, as of October 2009, 58% of all university employees were female and the median employee age was approximately 42. Thus, the survey respondents generally reflect the larger population of university benefits-eligible employees in terms of gender and age.

Detailed clinical data on familial health histories come from the Utah Population Database (UPDB). The UPDB is a shared resource located at the University of Utah. For 35 years, researchers have used this resource to identify and study health issues within a family context. The central component of UPDB is an extensive set of Utah family histories, in which family members are linked to demographic (i.e., birth, death, marriage, and divorce records) and medical information. Central to the current investigation, the UPDB includes state-wide medical information on cancer diagnoses, hospital inpatient discharges, and causes of death. Most families living in Utah are represented in the UPDB, and individuals in the same family pedigrees are linked to one another with their familial relationship identified.

Utah death certificates and the U.S. Social Security Death Index are linked to the UPDB and provide the needed information on age and cause of death for first and second-degree relatives of the UURPS respondents. In addition, diagnoses of specific health conditions for both living and deceased UURPS family members come from three UPDB sources: (1) the Utah Statewide Inpatient Hospital Discharge Data, (2) the Utah Cancer Registry, and (3) The University of Utah Health Sciences Center.

In accordance with the University's Institutional Review Board, consent for linkage was requested of the 2,795 respondents who provided contact information when completing the UURPS survey. Of those, 81 declined and of the 2,714 who agreed to be part of the study, 2,669 respondents linked to one or more data sources in the UPDB, for a linkage rate of 98.3%. Linkage of the UURPS survey data to UPDB records was done by the Pedigree and Population Resource (PPR) staff at the Huntsman Cancer Institute and a de-identified file was returned to the researchers for analysis. For the purposes of the current analyses, the sample is further restricted to those UURPS respondents who linked to both a biological mother and a biological father in UPDB. Thus, the final data set contained 1,119 respondents, 682 women and 337 men.

We recognize that analyses done with the UURPS-UPDB linked data may not be generalizable to the larger population of working individuals in the United States. Nevertheless, we believe they have the ability to provide exploratory insights and initial tests of our hypotheses that, if supported by the data, should be tested with other samples. Given that there is virtually no literature examining familial health histories and retirement planning, we view the empirical work done with these data to be an important first step.

In constructing measures of the respondent's health and their familial health histories, we limit our measures to the six leading causes of deaths in the United States (National Center for Health Statistics 2010) that are also thought to have a genetic and/or an environmental component. These are ischemic heart disease, cerebrovascular disease, cancer, chronic obstructive pulmonary disease (COPD), diabetes, and cerebral degenerations. These diagnoses are obtained from the ICD9 and ICD10 codes available in the UPDB. Diagnoses and death record information is limited to those events reported through September 2009, the month before the UURPS survey was administered.

Given that very little research has examined the possible linkages between familial health histories and retirement planning expectations, we anticipate undertaking a series of exploratory analyses where we vary the measurement of familial health. Some models will look at the percentage of first and second degree relatives who have been diagnosed or died from specific diseases. Other models will assess the

relationship between familial longevity, measured by a modified version of familial excess longevity (Kerber, et al., 2001, Smith et al., 2009).

For the purposes of this extended abstract, we present preliminary results for models that estimate how the timing of a parent's death affects the respondent's retirement expectations and savings behaviors. More specifically, we assess how own health, as measured by the respondent's number of chronic disease diagnoses, and the timing of parental death links to (1) expectations regarding major sources of income during retirement, (2) expectations regarding retirement timing, and (3) total retirement savings as of 2009.

Preliminary Results

The preliminary empirical work is restricted to the 517 UURPS respondents who (1) linked to both parents in UPDB, and (2) were age 40 or older at the time of the UURPS survey. Table 1 presents descriptive information about the sample. The typical respondent is female, 52 years of age, married, with two children, a bachelors' degree, and an annual household income of almost $77,000/year. The majority of respondents are present- rather than future-oriented. They take average financial risks, and rate themselves as having a good understanding of personal finance. Turning to the measures of parental death, we see that 7% of these respondents had at least one parent die before age 20. Another 28% lost one or more parents between the ages of 20 and 39. By far the largest group is the 46% of respondents who lost one or more parents after age 39.

Two-thirds of the respondents expect that their employer-administered retirement savings plan will be a major source of income during retirement. Slightly less than one-third expect that their employer-administered supplemental retirement savings plan will be a major source of income during retirement and roughly the same percentage of respondents answered affirmatively when asked about Social Security. Only 11 percent report that they expect their home equity to be a major income source. For the last two income sources, we classified individuals as answering "yes" if they said the source would be either a major *or* minor source. In the case of working for pay, 60 percent of respondents said

they expected it to be a major or minor source of income during retirement while only 21 percent expected inheritance to be a major or minor income source. Finally, the typical respondent has slightly more than $250,000 in retirement savings.

Table 2 presents the logistic regression results for the various retirement expectations. Interestingly, while the respondent's disease diagnoses have virtually link to expectations regarding retirement income sources, the timing of parental death relative to the respondent's life course matters for several outcomes. Specifically, respondents who had one or more parents die after the respondent was age 40 or older are significantly more likely than otherwise similar respondents whose parents were alive, to report that they expect the employer-administered retirement plan to be a major of income after retirement but they are significantly less likely to view that their employer-administered supplemental retirement plan will be a major source of retirement income. Conversely, respondents who lost one or more parents before age 20 are significantly less likely than otherwise similar respondents whose parents were alive, to anticipate that paid employment will be a source of income after retirement and they are significantly more likely to forecast that they will retire early. This provides suggestive evidence that the timing of parental loss has an impact on retirement expectations.

Finally, in Table 3, we present the OLS parameter estimates of factors linked to total retirement wealth. Holding other factors constant, both own health and the timing of parental death have statistically significant effects. As hypothesized, each serious, chronic disease diagnosis for the respondent is associated with a $69,100 decline in total retirement savings. If a parental death occurred prior to the respondent reaching age 20, the respondent has $160,390 more in retirement wealth compared to an otherwise similar respondent who has both parents living. Those respondents who lost one or more parents between the ages of 20 and 39 have $83,870 more in retirement wealth compared to individuals who have both parents living. Finally, there is no significant difference in wealth holdings for those who experienced a parental death after age 39 and those whose parents are still living. Given that the OLS regression controls for health status, subjective longevity, risk aversion, and time preferences, the parental death effects are not reflecting these considerations. Rather, they likely reflect (a) differences in

consumption patterns, and/or (b) inheritances that have allowed the individual to re-direct resources to retirement savings.

Analyses in Progress

We are in the process of extending these preliminary analyses to include alternative familial health measures. These models will examine the relationship between the percentage of first and second degree relatives who have been diagnosed or died from specific diseases and retirement planning using the full sample of linked respondents (N=1,119). Other models will use summary measures of familial excess longevity. We will also explore the impact of early-onset of chornic diseases within a family. Finally, we will examine how the age at which a respondent receives a disease diagnosis affects his/her retirement expectations and savings.

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Table 1. Descriptive Statistics for UURPS Respondents Age 40+ Who Linked to Biological Parents in UPDB (N=517)

Variable	Definition	Mean/ Proportion	Standard Deviation
emp_ret_source	Expect employer-administered retirement savings plan to be a major source of income in retirement (1=yes, 0=no)	0.67	
emp_sup_source	Expect employer-administered supplemental retirement savings plan to be a major or minor source of income in retirement (1=yes, 0=no)	0.28	
ss_source	Expect Social Security to be a major or minor source of income in retirement (1=yes, 0=no)	0.29	
home_source	Expect equity in home to be a major source of income in retirement (1=yes, 0=no)	0.11	
work_source	Expect working for pay to be a major **or** minor source of income in retirement (1=yes, 0=no)	0.60	
inh_source	Expect inheritance to be a major **or** minor source of income in retirement (1=yes, 0=no)	0.21	
early_ret	Age at which the respondent expects to retire completely (1=$\leq$ 65, 0=otherwise)	0.36	
late_ret	Age at which the respondent expects to retire completely (1=$\geq$70, 0=otherwise)	0.24	
rsavings	The total amount of money the respondent has currently in all accounts dedicated to retirement ($1,000)	252.97	422.95
gender	Respondent's gender (1=female, 0=male)	0.67	
age	Age measured in years	52.07	7.10
educ	Education measured in years	15.70	2.15
married	Marital status (1=married, 0=otherwise)	0.68	
kids	Number of children ever born	2.39	2.02
income	Annual household income ($10,000)	7.69	4.22
risk_scf	Survey of Consumer Finance risk tolerance question: Which of the following statements comes closet to describing the amount of financial risk that you are willing to take when you save or make investments? 1=not willing to take any financial risks, 2=take average financial risks expecting to earn average returns, 3=take above average financial risks expecting to earn above average returns, 4=take substantial financial risks expecting to earn substantial returns.	2.18	0.69
future_oriented	1=would claim $1100 prize 1 year from today rather than $1000 prize today, 0=otherwise	0.38	
pf_grade	On a scale of 1-5, the respondent's self-assessed knowledge of personal finance where	3.37	0.97

	1=poor, 5=excellent		
chance_85	Respondent's estimate of the chances s/he will live to age 85 (range 0-100)	63.29	29.75
db_plan	1=respondent is enrolled in the defined benefit plan, 0=respondent is enrolled in the defined contribution plan	0.19	
Grand_total	Number of chronic disease diagnoses the respondent has had in the past 13 years	0.16	0.75
parentdie_b4_20[a]	One or more of the respondent's parents died before the respondent was age 20 (1=yes, 0=no)	0.07	
parentdie_20_39 [a]	One or more of the respondent's parents died when the respondent was between the ages of 20-39, inclusive (1=yes, 0=no)	0.28	
parentdie_after_39 [a]	One or more of the respondent's parents died after the respondent was age 40+ (1=yes, 0=no)	0.46	

[a] The omitted group in this series of dummy variables are respondents where both parents are still living.

Table 2. Logistic Regressions for Retirement Income Sources and Early Retirement

	emp_ret_source			emp_sup_source			ss_source			home_source			work_source			inh_source			early_ret		
Independent Variables	Odds Ratio	95% CI		Odds Ratio	95% CI		Odds Ratio	95% CI		Odds Ratio	95% CI		Odds Ratio	95% CI		Odds Ratio	95% CI		Odds Ratio	95% CI	
gender	3.93	1.68	9.17	1.48	0.91	2.40	0.84	0.50	1.41	0.80	0.50	1.27	1.00	0.65	1.55	1.36	0.83	2.23	0.81	0.52	1.28
age	0.99	0.94	1.04	1.00	0.96	1.03	1.14	1.10	1.19	1.02	0.99	1.06	0.99	0.96	1.02	1.00	0.96	1.03	0.98	0.95	1.01
educ	0.97	0.82	1.14	1.04	0.93	1.17	0.99	0.88	1.11	1.05	0.94	1.16	1.04	0.94	1.15	1.13	1.01	1.27	0.89	0.80	0.99
married	1.15	0.56	2.36	1.28	0.77	2.12	0.62	0.37	1.04	0.89	0.56	1.42	0.63	0.40	1.00	1.90	1.12	3.22	1.50	0.92	2.43
kids	0.96	0.82	1.12	1.00	0.90	1.11	1.01	0.90	1.12	1.00	0.91	1.11	0.99	0.90	1.09	1.00	0.89	1.11	1.00	0.91	1.10
income	1.04	0.97	1.12	1.03	0.98	1.08	0.92	0.87	0.99	1.06	1.00	1.12	0.99	0.95	1.04	0.98	0.93	1.03	1.08	1.03	1.14
risk_scf	1.05	0.67	1.64	1.26	0.93	1.72	1.02	0.74	1.41	1.12	0.84	1.51	0.93	0.71	1.23	1.05	0.77	1.44	0.81	0.60	1.09
future_oriented	0.94	0.51	1.74	0.70	0.46	1.08	1.24	0.79	1.96	0.73	0.48	1.09	0.89	0.61	1.31	1.02	0.66	1.55	0.63	0.42	0.95
pf_grade	1.26	0.92	1.74	1.29	1.03	1.61	0.92	0.73	1.17	1.20	0.97	1.47	0.93	0.76	1.13	1.27	1.01	1.60	1.37	1.10	1.69
chance_85	1.00	0.99	1.01	1.00	0.99	1.01	1.00	0.99	1.00	1.00	0.99	1.01	1.00	1.00	1.01	1.01	1.00	1.01	1.00	0.99	1.01
db_plan	0.99	0.52	1.87	1.26	0.80	1.98	1.31	0.82	2.09	1.08	0.71	1.64	0.80	0.53	1.20	1.01	0.63	1.62	1.10	0.71	1.69
grand_total	0.91	0.60	1.40	0.92	0.66	1.28	0.88	0.65	1.19	1.27	0.85	1.89	1.02	0.80	1.30	0.92	0.65	1.29	0.82	0.58	1.15
parentdie_b4_20	0.70	0.20	2.45	0.93	0.42	2.06	0.58	0.23	1.47	1.04	0.47	2.30	0.49	0.24	0.99	0.56	0.22	1.43	2.97	1.38	6.35
parentdie_20_39	1.26	0.67	2.36	1.10	0.70	1.72	1.24	0.78	1.98	1.00	0.65	1.54	0.84	0.56	1.27	0.71	0.44	1.14	1.32	0.86	2.03

parentdie_after_39	2.10	1.05	4.18	0.61	0.38	0.97	1.00	0.62	1.63	0.62	0.39	0.97	1.09	0.71	1.67	0.92	0.57	1.48	1.22	0.78	1.90
Pseudo-R^2	.04			.05			.17			.05			.04			.06			.08		

Table 3. OLS Regression Estimates of Total Retirement Wealth (rsavings)

Variable	Parameter Estimate	Standard Error	t Value
Intercept	-688.47	170.08	-4.05**
gender	-151.13	39.85	-3.79**
age_centered[a]	18.49	7.36	2.51**
age_centered_sq[a]	-0.15	0.32	-0.48
educ	26.94	9.39	2.87**
married	-59.78	41.74	-1.43
kids	11.18	8.82	1.27
income	25.16	4.35	5.79**
risk_scf	-4.99	25.43	-0.20
future_oriented	96.45	35.65	2.71**
pf_grade	40.35	19.31	2.09**
chance_85	0.71	0.62	1.14
dbplan	-63.47	39.95	-1.59
grand_total	-69.53	30.33	-2.29**
parentdie_b4_20[a]	160.39	67.10	2.39**
parentdie_20_39 [a]	83.87	38.18	2.20**
parentdie_after_39 [a]	7.57	40.29	0.19

F= 15.83, R^2=.36, ** p<.05

[a] Age has been centered at the mean to adjust for the collinearity between age and age-squared.