Out-of-Pocket Medical Expenses and Retirement Security

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I. Introduction

With spending projected to increase from 4 percent of GDP to 12 percent in 2050 (CBO, 2007), Medicare and Medicaid are increasingly posing a threat to the fiscal solvency of the U.S. federal government. Less well understood is the implication of these trends for out-of-pocket costs faced by the current elderly and future baby boomer retirees. Since 1980, the real growth in per capita out-of-pocket expenditures (including insurance premiums) has been 4 percent annually, roughly equivalent to the growth in aggregate medical expenditures (Catlin, et. al., 2007). In past years, consumers could absorb 4 percent growth rates; the dollar amounts were small, and so 4 percent of a small "base" did not put too much pressure on the retiree's pocketbook. However, as average expenditures have grown, these same growth rates exert an ever larger *dollar* impact on household finances.

We know remarkably little about the impact of out-of-pocket expenditures on retirement security. Judging from the popular press, out-of-pocket expenditures are a growing and serious problem with American families. Himmelstein et. al. (2005) suggested that catastrophic health costs or injuries contributed to *half* of all personal bankruptcies, while Fronstin (2006) estimates that a 55-year-old couple retiring in 2016 will require accumulations of more than $400,000 over the next decade to pay just for Medigap insurance, leaving the couple still exposed to nursing home expenditure risk.

By contrast, existing studies of out-of-pocket expenditures ((McGarry and Schoeni, 2005; Goldman and Zissimopoulos, 2003, French and Jones, 2004, Hubbard, Skinner, Zeldes, 1995; Hurd and Smith, 1999), find that, on average, out-of-pocket expenditures are relatively modest, albeit with some large effects among specific socio-demographic groups, or among those near death.

There are several reasons why published estimates of out-of-pocket expenditures appear to be largely unimportant. First, many of the studies use data from past decades – some as old as 1977 –when out-of-pocket expenditures were considerably less. For example, a 4 percent real growth in out-of-pocket expenditures would imply that by 2007, out-of-pocket expenditures would be 54 percent higher in real terms than what would be measured in a 1996 survey. We therefore consider more recent data from the Health and Retirement (HRS) study through 2006.

Second, previous studies may have not uncovered all expenses associated with illness, particularly those associated with "non-medical" expenses such as additional domestic help, and for expenses near the end of life where it may be difficult to discern from proxy respondents how much money was actually spent. Since there is so much (insured) health care spending in the last year of life, we might also expect high levels of out-of-pocket expenditures as well. Thus we focus on out-of-pocket health care expenditures in the "exit" interviews from the HRS for people who die and for whom the survey schedules a follow-up interview either with the widow or with a proxy (for single decedents). These data – which includes multiple files for health care "helpers" and which are not included in the standard HRS definition of out-of-pocket expenditures -- have not been used previously (to our knowledge) and there are no official imputations for any of the HRS waves since 2000.

We have therefore completed imputations for the 2002 – 2006 waves for deceased people in the exit interviews, and present new results on the distribution of out-of-pocket expenditures. We find considerably higher estimates of out-of-pocket expenditures – as much as $10,000 on average, with the 90th percentile expenditures of $20,000 or more, and with evidence of growth over time, particularly for median expenditures, which grew during this period at an average rate of 5 percent annually in real terms. (Mean growth in spending displays rapid increases between

1998 and 2004, but there is a surprising decline in 2006 which cannot be attributed to the Medicare Part D program.)

But even these estimates may be too low if out-of-pocket expenditures are simply not reported. The potential magnitude of underestimated health care expenditures can be seen from French, et al (2006), who found a dramatic decline -- 50 percent of wealth --among single elderly people during the four years prior to death. Yet only about one-third of that decline could be explained by reported out-of-pocket expenditures. Our preliminary estimates of the decline in wealth among married households are quite similar. We find strong evidence that on average, among households with less than $2 million in total assets, the death of a spouse is associated with a decline of $42,000 in wealth, substantially more than average out-of-pocket expenditures of roughly $10,000. Indeed, we found that the level of out-of-pocket expenditures at the individual level was so highly predictive of a sharp decline in assets near death that the estimated coefficients suggested between 25 percent and more than 50 percent of true out-of-pocket expenditures had not been reported in the HRS.

Third, there remains a difficult question of the extent to which out-of-pocket expenditures are "shocks" that must be paid, or instead reflect the fact that high-income households tend to spend more money on a variety of goods and services, including home nurses, high-quality private nursing homes, or other amenities designed to help with chronic illnesses. Certainly there is a positive income elasticity of out-of-pocket health care (French and Jones, 2004).[1] We consider this question using the HRS by distinguishing among categories of out-of-pocket expenditures: "income inelastic" goods (hospital / nursing home expenditures, doctor visits,

[1] We might further expect that higher out-of-pocket expenditures from high-income households benefit not simply that household, but the child or other relative who would otherwise be providing care in the home.

prescription drugs), or "income elastic" goods typically not covered by insurance (in-home nursing services, or accommodations through ramps, housekeeping, and special beds).

We find quite dramatic differences in the income- and wealth- based differences in types of out-of-pocket expenditures among people who died during 1998-2000. While spending for hospital and nursing home is income inelastic, the in-home medical services, special facilities or services are remarkably wealth-elastic (and to a lesser extent income elastic), although these results are very sensitive to outliers, people who experienced expenses of one-hundred-thousand dollars or more.

In sum, these estimates suggest that the burden of out-of-pocket expenditures is large, with evidence of continued growth. These results are suggestive that, should current trends prevail, current baby boomers might be encountering considerably more out-of-pocket expenditure risk in the future, particularly among widows whose nest egg is depleted by caring for their spouse. A deeper but unresolved question is to what extent the highly income-elastic services are medical "necessities" which lower income households simply can't afford, or whether they are luxury goods; the Lexus version of the nursing home, for example, or hiring helpers to reduce the spouses' caretaking burdens.

II. Literature Review

There is an increasing body of evidence demonstrating that health shocks have a large negative impact on the financial security of households. Among working aged individuals, much of the financial risk stems from declines in earnings and is more prevalent than one might expect. Johnson, et al. (2005) estimate that approximately 25 percent of workers in their early 50s will face work limitations by age 62. These limitations may lead to high out of pocket medical and

rehabilitation expenses, and in many cases, to the loss of a job and the income and health insurance that accompany it. The net effect of health shocks on financial resources can thus be dramatic. Johnson et al., (2005) find that new medical conditions were responsible for a 17 percent decline in wealth, while work disabilities were responsible for a 16 percent decline. Because these are older workers, there is little time to recover from these negative shocks and well-being in retirement is likely to be adversely affected. Smith (2005) echoes these results showing significant declines in employment and rising out of pocket medical expenses following a health shock. Furthermore, he demonstrates that the effects persist long after the shock itself.

French and Jones (2004) focus on the effect of health "shocks" by isolating the new information about uninsured health care spending that might arrive in any given year. Their estimates imply that in any given year, 0.1% of families encounter a health event with a present value of current and future expenditures in excess of $125,000 (although even this large number may understate true costs).

For older individuals, the financial risk arising from health care expenditures is likely to be even greater. Health care costs for those 65 or older are several times greater than for younger individuals.[2] Furthermore, although Medicare may provide nearly universal coverage for people 65 and over, there are important expenditures that are not included, and out of pocket expenses for the elderly are again, nearly three times those for the non-elderly (Health, United States 2006 table 125). Important gaps in Medicare coverage include a 20 percent copayment and a one-day deductible for hospital stays, limited coverage for exceptionally long hospital stays, and until recently, nearly all pharmaceutical costs. Most importantly, Medicare does not cover long term

[2] In 2003 the average annual expenditure, among those with non-zero expenses was $8200 for those 65 or older compared to $2800 for those younger than 65 (Health, United States, 2006 table 125)

care needs so nursing home and home health care costs typically need to be met through other means.[3]

"Medigap" insurance (or supplemental Medicare plans) cover many of the deductibles and copayments associated with Medicare (although not long term care costs) and can reduce these out-of-pocket liabilities for many elderly, but unless paid for by an employer, require hefty premiums.[4] Unfortunately for those nearing retirement, the percentage of private-sector employers offering retiree health benefits is eroding dramatically, falling from 20 percent in 1997 to just 13 percent in 2002 (Fronstin, 2005), an enormous change in just five years. This trend towards less employer provide coverage suggests that the expenditure burden borne by the elderly is likely to increase over time as medical expenses in general continue to rise and health insurance coverage diminishes.

Johnson and Penner (2004) expect that median out-of-pocket health care expenditures for retired couples will rise from $5,760 in 2000 to $16,400 in 2030, or 35 percent of their future after-tax income. And Skinner (2007) estimates that that by 2004, 6 percent of households age 75-84 in the HRS paid more than 50 percent of their income for out-of-pocket medical expenses. Furthermore, with nursing homes averaging over $75,000 a year (MetLife Mature Market Institute), the situation is likely to be particularly severe for those with long term care needs, the vast majority of which are not covered by either Medicare or medigap plans.

These costs affect the financial well-being of not just the recipient of care, but his family as well. This is particularly true at the end of life, when a surviving spouse may face not only a substantial stack of medical bills but a reduction in income as well. Long-term care costs may

[3] Medicare does provide limited (100 days) coverage of medically needed long term care following a hospital stay.

[4] Low income elderly are protected by Medicaid insurance which covers expenses not paid for by Medicare and in addition, pays premiums for Medicare Part B.

mean that children must themselves provide care for infirmed parents, potentially altering their own labor supply.

The large health care expenditures occur at the end of life Numerous studies have shown the Medicare expenditures in the last year of life are several times greater than expenditures for survivors (e.g. Lubitz, and Riley, 1993; Garber et al., 1998). And even within this time frame, expenditures skewed towards the very end of life, with more than one-third of the expenditures in the last year coming during the last month of life.

Less well-studied than Medicare expenditures are total medical costs and of primary interest to us, the out of pocket costs borne by the decedent. Hoover et al. 2002 use the Medicare Current Beneficiary Survey (MCBS) to examine total expenses during the last calendar year of life. They also study the distribution of these expenses by payee. Their findings match those for Medicare spending, with a large spike in expenses in the terminal year of life relative to the prior year. In the Hoover et al. paper, total end of life medical costs averaged $37,600 (in 1996 dollars) compared to costs of $7,300 in the preceding year. With regard to payment of these expenses, they find that just 63 percent of terminal year costs were covered for by Medicare,[5] leaving the rest to be paid for by other means.[6] Of the portion not covered by Medicare, 38 percent, or $5,200 on average was paid for out of pocket.[7] This figure is substantially larger than the $1,641 in out of pocket expenses in the preceding year.

McGarry and Schoeni (2005a) focus directly on out of pocket costs. They too find large increases in out of pocket expenses in the last year of life relative to prior years, with average out

[5] The fraction of non-terminal year costs paid for by Medicare was lower at 51 percent.

[6] These other potential payers Medicaid, supplemental insurance, and the individual himself.

[7] Costs paid for by supplemental insurance policies are also of concern, because they factor directly into the price of these policies and thus the out of pocket expenditures borne by individuals throughout their retirement years.

of pocket expenditures in the year of death $5684 compared to $3427 in the preceding year. They find similar large differences in out of pocket spending between surviving spouses and their dying partners.

One would well expect that these large costs would have a negative effect on the well-being of the surviving spouse. In a similar study using the early waves of the Asset and Health Dynamics Survey (AHEAD) McGarry and Schoeni (2005b) examine the relationship between widow poverty and the out of pocket medical expenses incurred by their deceased spouses. They show medical expenses are large relative to income, averaging 30 percent of the couple's income before death, and 70 percent of income for those in the lowest income quartile. These figures suggest that there can be substantial deterioration of financial position due to uncovered medical care. McGarry and Schoeni (2005b) estimate that if the resources spent on the deceased's medical care were amortized over the remainder of the survivor's life, poverty rates among the surviving widows would be reduced by approximately 10 percent.

Despite the large costs associated with medical spending among the elderly in general, and particularly for those near death, there is suggestive evidence that actual costs are significantly understated. For example, French, et al. (2006) estimate an average decline in wealth for single respondents during their last four years of life of 50 percent. If this decline were due in large part to health-related expenses rather than to other forms of consumption or transfers to children, then uncovered costs would indeed be burdensome. However, their data on out of pocket expenditures suggest that just one-third of this 50 percent decline can be attributed to health care costs and other expenses associated with death.

This result is puzzling in that it leaves unanswered the question of where the remaining wealth has gone. We suspect that a good portion of the missing piece can be attributed to an

under-reporting of health care costs and related expenses. Assessing the extent of under-reporting is crucial to assessing accurately the burden borne by the elderly and their surviving spouses, and importantly, for forecasting expected future expenses. Already estimates by economists and financial planners (Skinner, 2007; Munnell, Webb, and Delorme, 2006) suggest that many individuals have under-saved for retirement. Add to this lack of savings a substantial increase in projected out of pocket medical expenses and the problem facing those nearing retirement grows dramatically.

III. The Distribution of Out-of-Pocket Expenditures for People Near Death

In this section, we measure the financial risks of out-of-pocket health care expenditures for current elderly and near elderly people, so as to make inferences about expenditure risk facing the baby boom generation in a few decades hence. We begin with the data from the 1998 wave of the Health and Retirement Study. While out-of-pocket expenditures are reported for earlier waves, we were concerned that the sampling frame of the HRS might lead to misleading results in the earlier years. Specifically, the HRS initially excluded individuals living in nursing homes from the baseline samples. Thus one would expect a healthier-than-average population early in the survey, and a faster-than-average growth rate in health care expenditures as these previously healthy people become institutionalized.[8] (Note also that the necessity of an interview

[8] From 1998 onward, the HRS consists of four cohorts, the initial HRS cohort born 1931-1941 and first interviewed in 1992, the AHEAD cohort, born in 1923 or earlier and first interviewed in 1993, and two newly added groups, born in 1924-1930 and 1942-1947 and first interviewed in 1998. Because the pre-1998 surveys consist of a relatively young and relatively old groups, a sub-sample of decedents drawn from the pre-1998 years will be drawn overwhelming from the older cohort where sample selection generated by the restriction to the non-institutional population is the greatest.

may further bias the sample towards a healthier-than-average population, as those "too ill" refuse or are unable to participate.[9])

We therefore relied on the biennial 1998-2006 waves of the HRS. We focus on information provided in "exit interviews" that were asked along with the biennial core surveys. These exit interviews collect information on the medical expenses, living arrangements and other aspects of a decedent's life measured since the previous interview Unfortunately, there are no HRS-provided imputations in the exit interviews for any of the waves since 2000, so we provided our own imputations from 2002 to 2006. Because the prevalence of imputation was very high among this sample, the imputation approach is of particular importance in interpreting the results.[10]

One of the important innovations in the HRS is its efforts to elicit a range of expenditures, even if individuals cannot provide a specific number. If the respondent says that a category of spending is between (say) $5,000 and $20,000, then we would impute the midpoint of $12,500.[11] More difficult is the problem of open-ended brackets, for example if someone responds that their expenditures are more than $10,000 but are silent on how much more. For these cases we impute the conditional mean of expenditures for people who did report a dollar amount more than $10,000. Unfortunately, in several instances when imputing values in the upper most range, there are an extremely small number of reported observations on which to base the conditional mean (samples of one or two respondents) and large outliers have the potential to significant skew the result. In these handful of cases we assign the ratio of 1.1 times

[9] The HRS does attempt to obtain proxy interviews for those unable to participate. However, for single people in particular, proxy reports may be difficult to obtain.

[10] Preliminary investigation suggests that our imputations compare favorably with the earlier HRS provided values.

[11] Because of the availability of these "bracketed" responses, we are more comfortable with using our own imputations that we would be if no information were provided by the respondent.

the upper limit as our imputed value. All dollar amounts are adjusted for inflation using the implicit GDP deflator and expressed in 2006 dollars.

Out-of-pocket expenditures comprise expenditures on (a) nursing home, hospital, and hospice, (b) physician, (c) prescription drug, (d) helpers who assist with domestic tasks (each of which has a separate file in the HRS), (e) special which includes home health care or special facilities, (f) other medical expenses including special food, equipment such as a bed or chair, (g) health insurance premiums, and (h) "non-medical" expenses for housekeeping or modifying the house with ramps or lifts. It might appear that non-medical (h) and helpers (d) overlap, but in practice there is essentially no overlap; people who report non-medical expenses tend not to report helper expenses and conversely.[12] Prescription drug expenses are asked on a monthly basis for usual expenditures,[13] as is the "help" category, yet some of the responses are so large as to suggest that the respondents misinterpreted the question. Furthermore, we do not know for how long these monthly expenditures were incurred. We therefore use a conservative adjustment by multiplying the monthly responses by 3 (e.g., assuming these expenses have prevailed for 3 months) but imposing a cap of $50,000 for pharmaceutical expenditures and $100,000 for helpers.

An additional measurement issue stems from the timing of deaths. Some people die within just a few months of the last interview and expenses (other than those reported on a monthly basis) will therefore pertain to a relatively short period, while others die near the end of the period of time between core surveys and will have up to two years of out-of-pocket

[12] Among those who report either home health care or "helper" expenditures, the correlation between the two amounts (including zeros) is just 0.07 (unweighted). Furthermore, among those who report a home health care expenses only 17 percent report a "helper" expense and among those with helper expenses, only 20 percent report home health care expenses (unweighted).

[13] Respondents are asked whether the deceased was "regularly taking any prescription drugs before (his/her) death?" and if so how much was "paid out-of-pocket per month for prescriptions since" the last interview.

expenditures. Because we know the month and date of death for most of the years, as well as the timing of the previous survey, we can adjust for the length of time since the prior interview. However, we found that the averages and medians using this approach were quite close to the unadjusted approach, and so we report the unadjusted measures to capture the full range of reporting periods. .

Table 1 displays the results using the family weights (from the prior wave).[14] Average expenditures in 1998, $8922, are substantially higher than the median (2977) reflecting the dramatic skewness in out-of-pocket expenditures, even among those near death. There is a dramatic rise in average expenditures, to $10146 in 2002, before flattening in 2004 ($9975) and dropping back to $8703 in 2006. The median spending rises, however, from $2752 in 1998 to $4515 in 2006, or an annualized growth rate of 5 percentage points.

The unweighted measures are considerably higher, and exhibit continued growth through 2004, with average expenditures of $11292, and a similar climb in median expenditures. Why the difference between weighted and unweighted expenditures? Although the HRS over-sampled individuals in heavily black and Hispanic areas, we believe this sampling frame is not driving the difference. Instead, the difference stems primarily from the weights assigned to individuals in the survey. People who are in nursing homes in the HRS are given a weight of zero. If they have no community dwelling spouse, the household weight is also zero. Roughly 20 percent of people in our sample of decendents were in nursing homes in the period before their death. (The HRS has provided weights for nursing home residents in just two years and these appear to be weights relevant for constructing a representative sample of the nursing home population, not the total

[14] In the HRS, not surprisingly, decedents are not weighted so one must use the prior wave weight. There are two weights, the individual and the family. We use the family weights because there are fewer missing values (see text).

population.) Thus we expect that "true" expenditures are closer to the unweighted estimates than the weighted estimates.

The third row in Table 1 shows total (weighted) spending adjusted for age groups and whether the household is single or coupled. This pattern displays a steadier growth during the time period, albeit with the decline in 2006. The annual growth rate in out-of-pocket expenditures from 1998-2006 is 1.9 percent; just looking at 1998 through 2004 yields a much higher 4.7 percent annual growth rate.

Specific categories of expenditures are also shown in Table 1. The decline in out-of-pocket expenditures is explained largely by a fall in nursing home and hospital expenses; this may be driven by a decline in just a few outliers. (Out-of-pocket expenditures at the 90^{th} percentile of the weighted data rose slightly during this period, from $19,089 in 1998 to $21, 307 in 2006.) Prescription drug expenditures grow rapidly (almost too rapidly between 2000 and 2002), but decline somewhat in 2006; this may be the consequence of the introduction of Medicare Part D. Finally, health insurance premiums exhibit a steady growth during this period from $1175 in 1998 to $2059 in 2006 consistent with the decline in employer-provided coverage for retirees as well as the rising cost of health insurance in general.

In sum, we have presented evidence that out-of-pocket health care expenditures are both larger than previous estimates, and growing over time. Our next analysis, which focuses on asset changes and out-of-pocket expenditures near death, samples only couples because the quality of reported assets after the individual died is most likely better when reported by the spouse (or spousal equivalent) than when the value of the estate is reported by a child or other proxy.

IV. The Evolution of Assets When a Spouse Dies

For this analysis, we use both the core survey (when the respondent is questioned) and the exit interview, in which a proxy (spouse or family typically) is asked about wealth and other variables at the time of the respondent's death. We consider four distinct groups: those couples who survived the entire period 1998-2004 (and remained married), couples with a spouse who died between 1998-2000, between 2000-02, and between 2002-04. We excluded single people and those whose spouses died but who remarried during the two-year period between surveys.

One immediate problem with the analysis of changes in wealth and assets is the problem of outliers, shifts in assets of $2 million or more that, given the modest sample sizes of people with deceased spouses, can swamp our results. One cannot adopt logarithm models (given the existence of negative wealth and zero values of certain types of assets) nor is it straightforward to using trimming estimates. For this reason, we adopt a simple expediency – to focus on households for whom we believe out-of-pocket health care costs represents a particular risk: households with assets levels of $2 million or less in all waves.

Table 2 and Figure 1 summarize the average net household wealth among this group for the four categories of households. Initial wealth levels in 1998 were higher among the first group (no spouse died), but this is largely because of differences in age. (The adjustment approach to control for such differences is shown below.) We report average assets for each of the waves in 1998-2004, as well as changes (in dollars and as a percentage of initial wealth) during the two-year period when the spouse died, and over the entire period of analysis 1998-2004. (For couples where no spouse died, we use average change over the entire period as the "control" measure.)

The time period 1998-2004 was a robust one for wealth growth; with an overall accumulation rate of 38.1%, or an average of 12.7% per two-year wave. But among those

households where spouses died, asset accumulation is far more anemic. For spouses who died in 1998-2000, assets rose by just 0.5 percent, in 2000-02, households experienced a drop of 4.0%, and for spouses who died in 2002-04, wealth declined by 2.2%.[15] The difference in asset accumulation between those with a spouse who died (-4.6%) and those whose spouse didn't die (12.7%) yields an implicit decline in assets of more than $40,000, substantially larger than reported out-of-pocket expenditures of about $10,000.

Some part of the increase in wealth during this period may be the consequence of capital gains in housing. Thus Table 3 provides similar results for assets excluding housing. For the latter two columns, there is a pronounced decline of roughly 8 percent in wealth during the two year period when the spouse died. Table 4 presents similar data for a more restrictive definition of liquid wealth, that which would be most likely used to finance out-of-pocket health care expenditures: Stocks, bonds, certificates of deposit (CDs), Individual Retirement Accounts (IRAs), and checking/saving accounts. There is once again a stagnation or decline in liquid wealth associated with the death of the spouse.

Can these wealth declines be reasonably attributed to medical or other expenses surrounding illness and death even though reported expenditures are far too small? One source of bias would be where the respondent overestimated the value of their home prior to their death, so a decline occurred because of the revaluation of the house (perhaps surrounding a sale or

[15] One possibility is that age differences between those dying and those who survive could lead to different implicit growth rates in assets. A future version will include a propensity score weighting approach (Hirano and Imbens, 2001) to predict the likelihood of dying based on observable factors (age, education, income, sex, year) and then use the probability weights to rescale the sample so that comparisons may be made between the two groups adjusting for age differences.

probate). However, as we showed in table 3, we also found the same decline in wealth even when excluding housing wealth.[16]

We address this puzzle by using the HRS to consider the association at the household level among couples between changes in wealth and out-of-pocket expenditures. The null hypothesis – in a world of perfect measurement – would be a coefficient of one: one dollar of health expenditures would be associated with a decline of one dollar in wealth. We included covariates for age (< 55, 55-64, 65-74, 75-84, and 85+), year effects, and whether the person who died was single in the regression analysis. Using pooled data from the different waves, we estimated that the coefficient on out-of-pocket expenditures was -2.4 (unweighted) and -1.3 (weighted), which at least suggests the presence of additional unmeasured expenses associated with illness or poor insurance coverage. These effects are particularly strong among nursing home residents who are not included in the weighted regressions (because of their zero weights). Out-of-pocket expenditures affected primarily financial wealth, with very modest effects for housing wealth.

Alternatively, the additional wealth loss could be associated with *other* factors such as increased consumption or *inter vivos* transfers, but it would seem unlikely that such expenditures would be correlated with health care costs. There is no reason to suspect that people with a severe medical shock would be going on vacations or giving money to their children.[17]

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[16] One explanation for the drop in assets would be a sudden rise in consumption as people who know they are going to die enjoy (e.g.) one last trip to Hawaii. However, physicians and other health professionals have a great deal of trouble predicting when people will die, outside of a small subset of diseases, and typically chronically ill patients are unlikely to be able to enjoy large-ticket spending items that aren't related to accommodating their illness.

[17] It is possible that unusually high medical expenses would lead to asset shifting to qualify for Medicaid, but this type of estate planning typically takes place well before the death occurs because of "lookback" provisions by which Medicaid can trace asset transfers just prior to applying for Medicaid status. An additional complication is life insurance, which might appear as part of the wealth of the surviving spouse, but not appear in the couple's assets prior to death.

V. The Income and Wealth Elasticity of Specific Categories of Out-of-Pocket Expenditures

The HRS keeps track of different types of out-of-pocket medical expenditures. We hypothesize that these different types of health care costs may exhibit very different elasticities with regard to income and especially wealth, which may yield a different interpretation of out-of-pocket expenditure "shocks" as income-elastic commodities which can help to accommodate chronic illness and poor health. We present simple tabulations of out-of-pocket expenditures by income quartiles and wealth quartiles in the HRS for our sample of people dying between 2000 and 2006. Thus this is a more inclusive sample of people because it includes single decedents and those with assets above $2 million. Because we consider only quartiles of the data, however, measurement issues in wealth and income are likely to be less problematic than in our analysis of asset data.

Table 5 shows out-of-pocket expenditures, first by income quartiles (Q1 the lowest, Q4 the highest) and then by wealth quartiles, with medians shown in brackets. Total expenditures range from an average of $8,861 for the lowest quartile, $12,133 for the second, $12,915 for the third quartile, and $14,097 for the fourth. (The log difference in expenditures is shown in the final column; expenditures are roughly 46 percent higher for Q4 compared to Q1.) Thus the income elasticity is not monotonic, and may further be skewed by one person in the highest income group who paid over one million dollars during the two-year period, nearly all of which was for nursing home care.[18] Because medical expenses are highly skewed, we also report the median values for total expenditures. We see the same pattern—expenditures increase sharply

[18] Anecdotal evidence suggests that it is certainly not difficult to spend this much money out-of-pocket for round-the-clock nursing care, for example, but obviously only those who can afford it will receive such care.

with income with the median expenditure for the highest income quartile equal to nearly twice that of the lowest.

The income elasticity of nursing home and hospital care is surprisingly small, with the top quartile spending very near the same as the bottom, $2893 versus $2369.[19][20] (The medians are zero for all quartiles. What accounts for the higher spending in Q4 is "special" out-of-pocket expenditures (which according to the HRS codebook consists of in home medical care, special facilities, or services for in-home care), $939 compared to $190 in Q1, money spent on "helpers" and non-medical expenditure.

There is a much sharper association between out-of-pocket medical expenditures and their initial 1998 *wealth* than for income, again shown in Table 5. Total expenditures range from $8,162 for the bottom quartile of wealth to $16,643 for the top quartile. The results shown here suggest that having wealth is more predictive of spending on out-of-pocket health care expenditures than the flow of income, and that prescription drugs, nursing homes, and hospital costs are not the primary determinants of why out-of-pocket expenditures are so much higher for high wealth groups. (The much higher insurance payments might suggest why, as they are likely covered against more contingencies). Instead, wealth buys one the opportunity to pay for health insurance, in-home medical services, special food and equipment, and modifying the house with ramps and hiring housekeepers. Whether these services are provided by unpaid family members or Medicaid for the lower wealth groups is not well understood.

[19] In the early waves of the HRS, hospital and nursing home expenses were combined into a single category. In later waves the two are separated. We repeated our analysis using just the later waves and found somewhat greater differences between the highest and lowest income quartiles in hospital spending and less nursing home costs and the reverse for the two wealth quartiles

VI. Conclusions

Many hold a dismal view of the baby boomer's prospects for retirement. For example, the National Retirement Risk Index at the Center Retirement Research finds nearly half of American families are "at risk" of falling short of having a sufficient retirement income (Munnell, et. al., 2007). On the other hand, a recent New York Times article questioned whether baby boomers were saving too *much* for their retirement (Darlin, 2007), citing among others research by Scholz, Seshadri, and Khitatrakun (2006) claiming that more than 80 percent of households near retirement had prepared adequately for their retirement.

Skinner (2007) suggested that neither view had addressed adequately the looming problem of the growth in out-of-pocket health expenditures. If out-of-pocket expenditures continue to rise at their historical rates, and if employers continue to drop retiree health benefits, then current baby boomers could be facing a "perfect storm" of high uninsured costs when they retiree and begin to face expensive chronic illnesses in their 70s and 80s. And if the results of French, et. al. (2006) are correct – that medical expenditures could burn through one-half of assets prior to death – and the predictions of Fronstin (2006) or Johnson and Penner (2004) come true, baby boomers would be well advised to save even more – or conversely, give up on saving for retirement and hope that Medicaid provides adequate coverage for elderly people who run out of assets.

But one can still ask whether these doomsday predictions are overblown, given how difficult it is to find pervasive risks of out-of-pocket expenditures in standard surveys for all but a small fraction of respondents. Our preliminary results suggest a middle ground. Estimated declines in wealth are estimated to be as much as 17 percent of total wealth (including the house), or more than $40,000 in the sample we consider. Thus the estimate is smaller than in

French et al (2006) in percentage terms, although not much different in dollar terms. As well, these estimates are more than three times reported out-of-pocket expenditures.

We have also noted the surprisingly large income elasticity of out-of-pocket expenditures. These are not simply copayments and deductibles for hospitals and physicians (although such expenses are the dominant fraction of out-of-pocket spending for the lower quartiles of income), but instead the largely uninsured expenses associated with making life easier for severely ill people and their caregivers – housekeepers, lifts, ramps, home health, and visiting nurses. While we don't yet know whether high income households are substituting paid care for unpaid care (by children or other relatives), we can rule out the hypothesis that these additional out-of-pocket expenses are entirely the result of "exogenous" shocks arising from hospitals billing for copayments and nursing home bills.

Finally, getting actual estimates of out-of-pocket expenditures are clearly critical for making accurate predictions of future risk. As well, we may not want to simply project health care costs forward in a mechanical way; clearly the evidence from this study is that out-of-pocket expenditures tend to be higher when people have the wealth to afford such services. But it would certainly appear that technology growth is encouraging the provision of ever more services to assist in the care and treatment of the chronically ill, from GPS tracking devices for patients with Alzheimer's Disease, to "smart" houses for the elderly that alert medical providers if sensors detect abnormally low levels of movement (for example) or elevated blood pressure. We have also found that it is important that estimates include the cost of medically-related items (such as ramps, special food, etc.) as these appear to be substantial.

There are several additional limitations to our study. First, we have not considered the family as an insurance market, so that elderly households who do suffer medical setbacks can

expect to receive financial transfers from children or other relatives. There are certainly questions in the HRS about transfers received from others but these are of questionable reliability. Two percent of the AHEAD respondents (age 70+) report receiving transfers, but nearly 10 percent of HRS respondents report making transfers to their parents. It could be that people don't like to admit to receiving assistance, or that the error is simply due to the fact that they are unaware of the transfer -- the daughter pays the phone bill the hospital bill but the mother never knows about it. Alternatively, givers may have a more inclusive definition of what corresponds to a gift. Another way that the family may insure is through time help and shared living arrangements as substitutes for long-term care.

A second limitation is that we don't know how reported medical expenses by the HRS respondents correspond to "true" bills issued by health care providers. We may be underestimating true costs because of inability to pay – hospitals or physicians may settle for 50 cents on the dollar, for example. Nonetheless, our results suggest an important role for out-of-pocket medical expenditures in the financial burdens of a surprisingly large fraction of elderly people.

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Figure 1: Net Household Wealth by Year in Which Spouse Died: 1998-2004

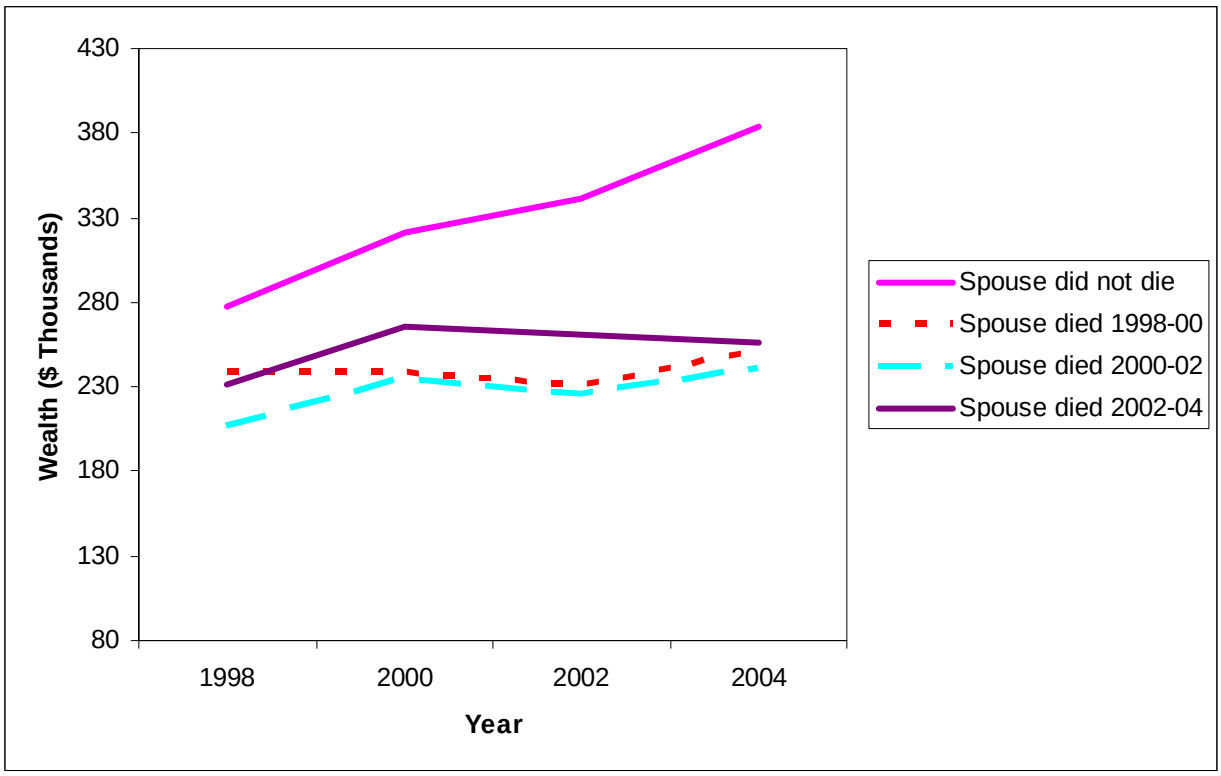
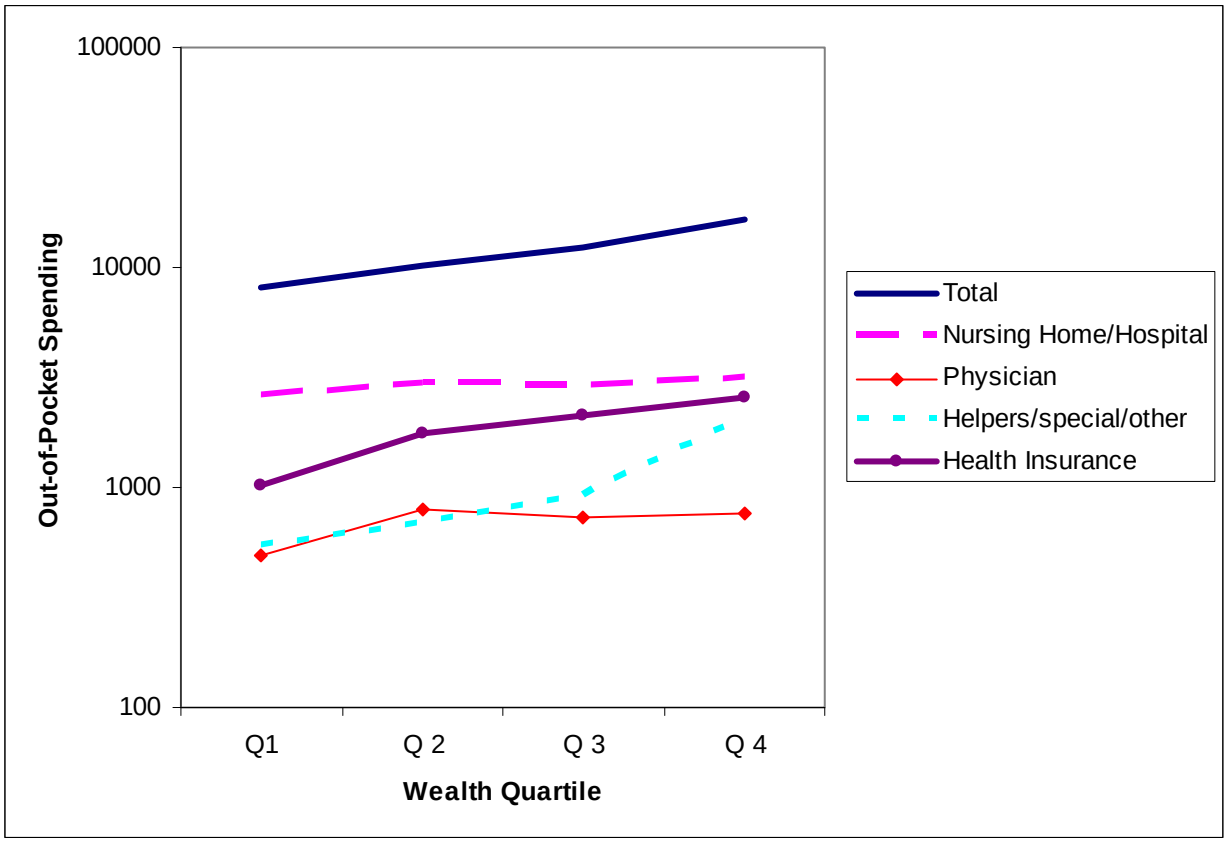


Figure 2: Out-of-Pocket Health Care Expenditures, by Wealth Quartile



Source: HRS Exit Interview, 2002. Notes: Vertical Axis is logarithmic scale. "Special" out of pocket expenditures denotes "...in-home medical care/special facilities or services/in-home medical care, special facilities or services". "Non-Medical" is "….such as modifying the house with ramps or lifts, hiring help for housekeeping or other household chores or for assisting with personal needs." See Table 5 for additional categories.

Table 1: Mean and Median Out of Pocket Health Care Expenditures: Total and by Category, in 1998--2006 Exit Interviews

Year

	1998	2000	2002	2004	2006
Total (weighted)	8922 [2977]	9481 [2961]	10146 [4441]	9975 [4145]	8703 [4515]
Total (unweighted)	9521 [2752]	9814 [2933]	11092 [4100]	11292 [3955]	9330 [4292]
Total (adjusted by age & marital status)	7368 [2980]	8387 [3083]	9372 [4439]	9790 [4153]	8546 [4440]
Nursing Home/Hospital/ Hospice	2688 [0]	3717 [0]	3262 [0]	3157 [0]	2489 [0]
Physician	604 [0]	504 [0]	806 [0]	841 [0]	739 [0]
Prescription Drugs	298 [57]	300 [98]	1259 [342]	1251 [321]	947 [180]
Helpers	1624 [0]	1127 [0]	371 [0]	1151 [0]	1128 [0]
Special*	874 [0]	683 [0]	418 [0]	732 [0]	427 [0]
Other Medical**	156 [0]	445 [0]	192 [0]	161 [0]	182 [0]
Health insurance†	1175 [663]	1468 [842]	2149 [1285]	1878 [1368]	2059 [1662]
Non-Medical***	1303 [0]	1236 [0]	1688 [0]	803 [0]	732 [0]

Source: HRS 1998-2006 exit interviews (with imputations). All means and distributions weighted by prior wave family weights, except as noted. Definition of categories: [Special*] ...in-home medical care/special facilities or services/in-home medical care, special facilities or services; [Other Medical**] ...expenses not covered by insurance, such as medications, special food, equipment such as a special bed or chair, visits by doctors or other health professionals, or other costs; [Non-Medical***] ….such as modifying the house with ramps or lifts, hiring help for housekeeping or other household chores or for assisting with personal needs? † Include premiums for Medicare part b and long term care insurance as well as medigap and other privately purchased policies.

Table 2: Total Household Wealth By Status of Spouse (Thousands of $)				
	No Spouse Died	Spouse Died 1998-2000	Spouse Died 2000-2002	Spouse Died 2002-2004
1998	277.7	238.0	206.7	230.9
2000	320.8	238.5	235.2	265.1
2002	341.7	229.8	225.9	261.5
2004	383.4	251.2	240.6	256.5
Dollar Change in Assets At Death*	35.2	0.5	-9.3	-5.0
% Change in Assets at Death*	12.7%	0.2%	-4.0%	-2.2%
Dollar Change: 1998 -2004	105.7	13.2	33.9	25.6
% Change: 1998 - 2004	38.1%	5.5%	16.4%	11.1%
Sample Size	4,450	334	386	345
Estimates in brackets remove an outlier household reporting $6.7 million in debt in 1998. Weighted averages using 1998 family sample weights. Sample consists only of those with less than $2 million in assets in any year. *For couples where no spouse died, we used the unweighted average over entire period.				

Table 3: Total Household Wealth Less Housing Wealth: By Status of Spouse (Thousands of $)				
	No Spouse Died	Spouse Died 1998-2000	Spouse Died 2000-2002	Spouse Died 2002-2004
1998	181.8	149.3	123.7	143.2
2000	210.4	147.9	142.9	161.7
2002	209.8	133.8	130.9	156.0
2004	226.0	137.5	140.9	144.4
Dollar Change in Assets At Death*	14.7	-1.4	-12.0	-11.6
% Change in Assets at Death*	8.1%	-0.9%	-8.4%	-8.1%
Dollar Change: 1998 -2004	44.2	-11.8	17.2	1.2
% Change: 1998 - 2004	24.3%	-7.9%	13.9%	0.8%
Sample Size	4,450	334	386	345
Estimates in brackets remove an outlier household reporting $6.7 million in debt in 1998. Weighted averages using 1998 family sample weights. Sample consists only of those with less than $2 million in assets in any year. *For couples where no spouse died, we used the unweighted average over entire period.				

Table 4: Household Wealth in Stocks, Bonds, CDs, IRAs, and Checking Accts: By Status of Spouse (Thousands of $)				
	No Spouse Died	Spouse Died 1998-2000	Spouse Died 2000-2002	Spouse Died 2002-2004
1998	116.4	101.4	90.2	95.6
2000	141.9	102.5	110.1	114.1
2002	140.2	100.7	104.6	118.2
2004	150.3	102.0	108.1	107.4
Dollar Change in Assets At Death*	11.3	1.1	-5.5	-10.8
% Change in Assets at Death*	9.7%	1.1%	-5.0%	-11.3%
Dollar Change: 1998 -2004	33.9	0.6	17.9	11.8
% Change: 1998 - 2004	29.1%	0.6%	19.8%	12.3%
Sample Size	4,450	334	386	345
Weighted averages using 1998 family sample weights. Sample consists only of those with less than $2 million in assets in any year. * For couples where no spouse died, we used the unweighted average over entire period.				

Table 5: Mean [median] Out of Pocket Health Care Expenditures: Total and by Category, in 2000--2006 Exit Interviews

Income Quartiles

	Q 1	Q 2	Q 3	Q 4	Ln(Q4) - ln(Q1)
Total	8861 [3300]	12133 [5921]	12915 [6562]	14097 [6467]	0.46
Nursing Home/Hospital	2369 [0]	3755 [0]	2709 [0]	2893 [0]	0.20
Physician	534 [0]	667 [0]	731 [0]	847 [0]	0.46
Prescription Drugs	245 [21]	298 [91]	377 [85]	328 [80]	0.29
Helpers	193 [0]	228 [0]	251 [0]	559 [0]	1.06
Special*	190 [0]	465 [0]	493 [0]	939 [0]	1.60
Other Medical**	174 [0]	202 [0]	177 [0]	357 [0]	0.72
Health insurance†	1139 [638]	1740 [1062]	2199 [1817]	2383 [1962]	0.74
Non-Medical***	994 [0]	975 [0]	1444 [0]	1219 [0]	2.50

Wealth Quartiles (including housing)

	Q1	Q 2	Q 3	Q 4	Ln(Q4) - ln(Q1)
Total	8162 [2798]	10307 [5392]	12419 [6187]	16643 [7632]	0.71
Nursing Home/Hospital	2602 [0]	2979 [0]	2907 [0]	3165 [0]	0.11
Physician	488 [0]	795 [0]	736 [0]	769 [0]	1.87
Prescription Drugs	256 [11]	286 [64]	344 [85]	360 [102]	1.10
Helpers	99 [0]	154 [0]	295 [0]	660 [0]	1.29
Special*	305 [0]	285 [0]	403 [0]	1110 [0]	0.77
Other Medical**	138 [0]	252 [0]	230 [0]	296 [0]	2.08
Health insurance†	1015 [638]	1768 [1062]	2107 [1859]	2544 [2145]	0.92

Non-Medical***	330 [0]	395 [0]	1014 [0]	2635 [0]	2.08

Source: HRS 2000-2006 exit interviews (with imputations). Definition of categories: [Special*] ...in-home medical care/special facilities or services/in-home medical care, special facilities or services; [Other Medical**] ...expenses not covered by insurance, such as medications, special food, equipment such as a special bed or chair, visits by doctors or other health professionals, or other costs; [Non-Medical***] ….such as modifying the house with ramps or lifts, hiring help for housekeeping or other household chores or for assisting with personal needs? † Include premiums for Medicare part b and long term care insurance as well as medigap and other privately purchased policies.