The Level and Risk of Out-of-Pocket Health Care Spending

Michael D. Hurd and Susann Rohwedder

The Level and Risk of Out-of-Pocket Health Care Spending

Michael D. Hurd
RAND

Susann Rohwedder
RAND

September 2009

Michigan Retirement Research Center
University of Michigan
P.O. Box 1248
Ann Arbor, MI 48104
http://www.mrrc.isr.umich.edu/
(734) 615-0422

The Level and Risk of Out-of-Pocket Health Care Spending

Abstract

The Health and Retirement Study (HRS) is a long-running panel survey with good measures of economic status, so it is the pre-eminent data set for studies about the economic status of the older population and economic preparation for retirement. However, the HRS expends considerably fewer resources on the measurement of out-of-pocket spending than other surveys such as the Medical Expenditure Panel Survey (MEPS) and the Medicare Current Beneficiary Survey (MCBS), which may result in its having relatively less accurate measurement of such spending. We compare the level and distribution of out-of-pocket spending in the HRS with similar measures in MEPS and MCBS in the population aged 65 or older. We find that the measures of out-of-pocket spending in the HRS are about 50% greater than those in MEPS at the mean, and very much greater at the upper points of the distribution. HRS and MCBS are in better agreement, although the HRS is higher at the mean and at the top of the distribution. The implication is that the level and risk of out-of-pocket spending on health care are exaggerated in HRS. Observation error in the HRS measurement relative to MEPS and MCBS is to be expected, but this does not explain the apparent bias. We conclude that researchers who use HRS 2004 or earlier should examine health care spending carefully, even on a case-by-case basis.

1. Introduction

Because of the general increase in health care costs, out-of-pocket spending for health care is becoming increasingly important from the point of view of the public, of public policy and of scientific studies of economic behavior. For example, economic preparation for retirement is of substantial policy concern. Yet, there is considerable controversy about the level of preparation. Hurd and Rohwedder (2006) show that the spending levels of most households shortly following retirement are consistent with their economic resources and projected paths of spending. In fact a considerable fraction of households will die with leftover wealth. Others, however, maintain that households are not well prepared financially for retirement. For example, the National Retirement Risk Index produced by the Center for Retirement Research at Boston College asserts that 61% of households are at risk of not having enough to maintain their living standards in retirement (Munnell *et al.*, 2008). Part of the difference in these findings is the estimation of current out-of-pocket spending on health care costs and projections for future costs.

Economic models of life-cycle saving and retirement that account for uncertainty of health status and health care spending use data about the level and distribution of out-of-pocket health care costs, and, in some cases, the model estimations depend critically these data. For example, in De Nardi, French and Jones (2006) a few very large out-of-pocket expenditures by people in their late 90s have, in their estimated model, an important influence on the rate of wealth change among people in their 70s. Yet, we have little understanding of the accuracy of these measurements.

We emphasize two major reasons why understanding the level and risk of out-of-pocket spending health care is important for public policy. First, the adequacy of economic preparation for retirement depends on current out-of-pocket spending for health care, its future path, and the path of the distribution of spending. Second, if budgetary constraints of Medicare require increases in out-of-pocket spending by the elderly we would like to know what the current situation actually is.

The main goal of this paper is to assess the level and distribution of out-of-pocket spending on health care in the Health and Retirement Study (HRS) and to compare these measures with similar measures from the Medical Expenditure Panel Survey (MEPS) and the

Medicare Current Beneficiary Survey (MCBS). We focus on the HRS because it is the pre-eminent data set for studies about the economic status of the older population and economic preparation for retirement, and for the estimation of models of retirement and saving behavior. Such studies require good data on economic resources which is an important feature of the HRS; the value of HRS is further increased by its being a very long panel. However, the HRS expends considerably fewer resources on the measurement of out-of-pocket spending than either the MEPS or the MCBS, so we presume their measures are more accurate than the HRS measures.

We limit the analysis to the population aged 65 or older because of the greater level of spending in the older population. Furthermore, the MCBS is approximately population-representative of that population, but not of the younger population.

2. Major issues in the measurement and interpretation of out-of-pocket spending on health care

Measurement. Because there is no central registry of out-of-pocket spending on health care, measures must rely on household surveys. Self-reports are subject to recall error, ambiguity, anchoring and so forth. As an empirical matter, reports of out-of-pocket spending vary considerably by source. Consider, for example, out-of-pocket spending excluding health care insurance as measured in Health and Retirement Study (HRS) the Medical Expenditure Panel Survey (MEPS) and the Medicare Current Beneficiary Survey (MCBS). The mean amounts differ considerably. In the 2004 HRS, which approximately covers the years 2002 and 2003, the HRS measured average out-of-pocket spending as $2200 per year among those 70-74. The 2003 MCBS estimate was $1500 and the 2003 MEPS estimate was $1400. These just show variation in the means; of course both for public policy and for economic modeling the distribution is important (to be discussed below).

Type of spending.

Spending on drugs prior to 2006 will differ from spending in 2006 or later because of Medicare Part D.[1] Thus, what we can find in the latest public release of HRS (2006) for drug spending is not a very good guide of what we will find in HRS 2008 and later waves.

---

[1] Even spending in 2006 is not strictly comparable with spending in 2007 and later because of part-year enrollment associated with the start-up of Part D.

Spending on nursing home requires particular consideration from a theoretical point of view. Because of Medicaid, amounts spent by a single person on long-term end-of-life stay have practically no value. Said differently, except for considerations of the quality of the nursing home, the optimal wealth path *ex post* will reach zero at nursing home entry. While a single 70 year-old will engage in buffer stock saving to be able to meet contingency spending for medical services and drugs, he or she will not engage in buffer stock saving to be able to meet nursing home costs. Economic models that treat out-of-pocket spending by single people on nursing homes in the same manner as spending on other health care costs will misestimate utility function parameters and the welfare costs of buffer stock saving. These considerations are likely to be quantitatively important because most long-term residents of nursing homes are single women for whom out-of-pocket spending for nursing home stays has no value. For a couple where one spouse must enter a nursing home for long-term stay the situation is quite different. Money spent on the nursing home has value to the other spouse. However, because the healthy spouse typically cares for the unhealthy spouse until that spouse is very unhealthy (and therefore closer to death) it is relatively infrequent that one spouse is in long-term nursing home stay and the other spouse is in the community. For these reasons, long-term care insurance is not particularly valuable which implies that the perceived utility loss associated with the risk of out-of-pocket spending on nursing homes is not large (Brown and Finkelstein, 2004).

Household composition. It is important to distinguish household composition because the interpretation of out-of-pocket spending by a couple is different from that for a single person. The case of the nursing home is especially relevant. But in addition the expected lifetime of a couple is relatively short which means that the high level of spending by a couple will not persist for the expected lifetime of either spouse.

Life-cycle spending versus cross-section spending. Although statements about the age variation in out-of-pocket spending typically depend on observations of spending in cross-section data, spending on health care services will follow a life-cycle path that differs from observations in cross-section. Just as life-cycle wealth paths cannot be inferred from cross-section wealth levels, so life-cycle paths of out-of-pocket spending on health care cannot be inferred from cross-section levels. The reasons are essentially the same: younger cohorts have more economic resources than older cohorts did at comparable ages, and those with more economic resources spend more out-of-pocket than those with fewer resources. For example, in

the Consumption and Activities Mail Survey (CAMS) out-of-pocket spending adjusted for age is about $2000 greater among couples in the top wealth quartile than among couples in the bottom wealth quartile. For singles the difference is about $1700. Because the wealthy survive longer than the poor, average spending by survivors will increase with age even if there is no change in spending by individuals.

3. Data

Our main data set is the Health and Retirement Study (Juster and Suzman, 1995). The HRS is a biennial panel survey that collects data on a wide range of economic, labor force and health topics from about 20,000 persons aged approximately 51 or older.[2] Because it has complete measures of income, wealth and pension rights, it is the premier data set for studying retirement, saving behavior and economic preparation for retirement. The HRS queries about all categories of out-of-pocket spending on health care services including prescription drugs. However, it spends less interviewing effort on such spending relative to several other surveys, raising the possibility that its measure has greater variance and possible bias compared with measures from other surveys.

The Medical Expenditure Panel survey is a rotating two-year household panel survey of community-dwelling persons. Because its main focus is on health care spending it spends considerable survey effort in accurate data collection. In addition to the household survey, MEPS includes a medical provider component (including pharmacies) that obtains additional data on health care spending. The providers are identified by the respondent and the data obtained from them augment the self-reports. Because of the substantial effort expended on their collection we expect the MEPS data to be of high quality. However, the MEPS has two drawbacks. It does not include nursing home residents, and so has incomplete data on an important component of out-of-pocket spending; its sample of the older population is small relative to the HRS.

The Medicare Current Beneficiary Survey is a rotating four-year panel survey of persons enrolled in Medicare Part A or B or both who may reside in the community or in long-term care facilities. The MCBS has a focus on health and functional status, health care expenditures and

---

[2] See http://hrsonline.isr.umich.edu/

health insurance, and spends extra effort relative to the HRS to obtain data on these elements. In particular

> "…respondents are requested to record medical events on calendars provided by the interviewer, and they are also asked to save Explanation of Benefit forms from Medicare, as well as receipts and statements from private health insurers. To assist in reporting data on prescription medicines, respondents are asked to bring to the interview bottles, tubes, and prescription bags provided by the pharmacy."[3]

We expect that these written records and additional effort will produce high quality data on health care spending. The main drawback of the MCBS is that its coverage of the population less than 65 is limited to disabled enrollees.

4. Results

We give an example of measuring out-of-pocket spending in the HRS in Table 1. It shows measured out-of-pocket spending by single persons in three waves of HRS data merged. The mean increases sharply with age; the median also increases at about the same percentage rate but it is much lower. The 90th percentile is much larger than the median. The maximum is very large indeed leading to doubt that it was accurately measured.

Spending in general, and not just for health care services, is difficult to measure because of recall error, so that extreme values may be partly due to measurement error. To investigate that issue we present in Table 2 data relating to spending by households, where in the case of couples we have summed spending by both spouses. The table shows spending by the top 1% of spenders and by the top 10 spenders. The spending data come from merged HRS waves in 2002, 2004 and 2006 and are referred to as spending at t. In the top 1%, mean two-year spending is recorded to be about $116 thousand. We ask whether independent data suggest these households could have spent that amount. Household income in the wave preceding the measurement of spending averaged about $39 thousand; wealth in the preceding wave was about $407 thousand and wealth in the same wave averaged $383 thousand.[4] Thus during the two years of spending, total income was about $78 (2*$39) thousand and wealth declined by $24 thousand.[5] In the absence of any revaluation of wealth, these figures imply that the households spent $102

---

[3] 2003 Appendix A. Technical Documentation For the Medicare Current Beneficiary Survey accessed from /mcbs/downloads/HHC2003appendixA.pdf

[4] Because we have not selected on large values of income or wealth, we presume our measures of those quantities are unbiased.

[5] Income changed very little between t-2 and t so we just use income measured at t-2.

thousand on all spending items. Thus they could not have spent $116 thousand on health care. If we think that only financial wealth is available to finance health care spending the implication is the same.

The medians show in a similar way that the large values of out-of-pocket spending are likely to include substantial observation error: median two-year income plus wealth reduction totaled about $58 thousand, yet median two-year out-of-pocket spending was about $90 thousand. Spending by the top 10 spenders is even more obviously strongly influenced by observation error: mean spending was $477 thousand yet total assets at t-2 were just $283 thousand.

A possible reason for the observation error is imputation for item nonresponse. The HRS asks about the use of health care services in a number of categories such as out-patient doctor visits. If a respondent affirms service use, she is asked about out-of-pocket spending. Most respondents with service use report a value but some responded with a "don't know" or "refuse." Follow-up bracketing questions place the spending in a range such as $2,500-$3,000, and, in the processing of the data for public release, values of such components of total spending are imputed. To address the issue of whether imputation is responsible for the outliers, in Table 3 we show average spending, income and wealth among those households whose spending is in the middle 20% of the spending distribution (i.e. from the 40th to the 60th percentile). The respondents are classified according to whether any out-of-pocket spending item was imputed. Among those in the middle of the distribution of out-of-pocket spending the rate of item nonresponse is fairly low: just 23% of respondents had an imputation for any item of spending. Spending is approximately independent of imputation status as are income and wealth. There is little wealth change, implying that out-of-pocket spending for health care was financed out of income.

For comparison in Table 4 we show the same statistics for those households in the top 1% of the distribution of out-of-pocket spending. The rate of imputation is much greater: about 53% of households had at least one imputation. This higher rate is to be expected: high spenders will have spending in more categories, resulting in higher total risk of item nonresponse in at least one category. But what is notable is that spending is even a little higher among those with no imputations. It is also notable that both income and wealth are higher, providing some validation for the higher average because out-of-pocket spending is a normal good. We conclude

that imputation may contribute to the large outliers in spending, but they are not primarily responsible for them.

Out-of-pocket spending on prescription drugs is particularly difficult to measure in a household survey because of the heterogeneity in purchasing patterns. Some people take a particular medication on a regular monthly basis: for them a single question about monthly spending will, when annualized, give a good estimate of yearly spending. Other people take drugs only infrequently in response to a health event: during a health episode spending may be substantial. Annualizing spending from a particular month will result in no spending among a large group of such people, and in a very large value among a small group. The population average will be accurate but the process will generate large outliers.

The HRS in 2004 asked those who say they "regularly take prescription medications" the following question about costs:

> On average, about how much have you paid out-of-pocket per month for these prescriptions in the last two years?[6]

This monthly amount is then converted to a two-year measure by multiplying by 24. Error can be introduced by respondents reporting actual spending in the last month or two even though spending is episodic. More serious error would occur if a respondent reported a yearly amount rather than an monthly amount. In any case it is likely to be difficult for a respondent to remember the details of spending over a 24 month period and to be able to report an average monthly amount.

To find how the measurement of spending on drugs affects the distribution of spending, we compare total out-of-pocket spending by individuals with out-of-pocket spending excluding spending on prescription drugs. Table 5 shows that there are large differences in measured spending according to whether drugs are included. For example, the overall mean is more than twice as large when drug spending is included, and the median is even greater as a proportion. The differences persist throughout the distribution, although in the highest age bands the difference is diminished.

---

[6] In 2006 HRS changed the questions about spending for prescription drugs because of the introduction of Medicare Part D. Apparently as a consequence estimated spending for prescription drugs dropped substantially.

Both the MEPS and MCBS are more focused on health and health care spending than the HRS and so expend greater effort in the collection of spending data. As such they provide good reference points against which to compare HRS spending. However, an important limitation of the MEPS is that it only includes community-residing persons; that is, it excludes nursing home residents. Therefore, in comparisons of HRS and MCBS with MEPS we limit them to the community-based population.

Table 6 shows measured out-of-pocket spending from the HRS, MCBS and MEPS. Mean levels are always higher in the HRS than in the MCBS or the MEPS. From the point of view of risk, that is the probability of very large out-of-pocket spending, the HRS records much higher values: in the age band 65-69, the 90th percentile is $3750 in the HRS compared with about $3000 in the MEPS and $2700 in the MCBS. This difference at the 90th percentile persists qualitatively at all age bands. But particularly at the 99th percentile the differences between the three surveys are substantial. For example, in the age band 85 or older, the HRS records much higher values than the MCBS or MEPS, but the latter two are certainly not in agreement. To the extent that the absence of outliers signals better data quality, the MEPS seems to be a more accurate source of data on out-of-pocket spending. However, spending on nursing homes is an important aspect of total spending, and the population of nursing home residents is an important sub-population both from the scientific and from the policy perspectives. The lack of data on that population makes MEPS less useful than were it to cover the entire population.

Table 7 has a similar comparison between HRS and MCBS, which cover the entire population aged 65 or older. The medians are remarkably similar for all and in all age bands. The means for all are similarly close but at younger ages the HRS means are abut 50% higher. This difference is due to some large outliers in HRS at younger ages. For example, in the age band 65-69 the 99th percentile in the HRS is about $26 thousand compared with just $12 thousand in MCBS. This difference in the 99th percentile does not persist at older ages, however, where the entire distributions are very close. It is not at all obvious why there should be such differences at younger ages but not at older ages.

5. Persistence of spending at the household level.

The spending levels and distributions that we have presented are cross-section and describe spending in the population at a moment-in-time by age. However, the risk of very large spending should be ascertained over time because of serial correlation in spending at the individual level: some individuals have persistently bad health and are, therefore, persistently high spenders, and some individuals have persistently good health and are, therefore, persistently low spenders. We illustrate this persistence by transition probabilities between spending quartiles, the probability that spending will be in some particular quartile in wave t, conditional on spending quartile in wave t-1. Table 8 has such probabilities for single persons. The probabilities are averaged over three transitions between four waves of HRS, 1998, 2000, 2002 and 2004. Were spending perfectly persistent the conditional probabilities would all lie on the diagonal; were there no persistence there would be 25 percent probabilities in each cell. It is apparent that there is considerable persistence, but by no means is it complete. For example, the probability that someone with spending in the lowest quartile in wave t-1 would have spending in the lowest quartile in wave t is almost 60%; yet, the probability that person would have spending in the highest quartile in wave t is about 9%.

Table 9 has analogous transition probabilities for married persons, but the persistence is a little weaker than for single persons. This is to be expected because of the greater likelihood that one of two people will change spending levels compared with the likelihood that just one person will.

An implication of Tables 8 and 9 is that the distribution of spending in panel data will be different from a scaled-up cross-section distribution. In our previous comparisons between HRS, and MCBS and MEPS, we converted two-year HRS figures to one-year figures by dividing the HRS quantities by two. This calculation should preserve means, but not the other points on the distribution. For example, the maximum spender in one year is unlikely to be the maximum spender in the succeeding year. Thus the two-year maximum will be less than the sum of the one-year maxima when the one-year maxima are calculated without respect to the panel nature of the data. Similarly at the bottom of the distribution the two-year minimum will be greater than the sum of the one-year minima. An implication is that the method we used in calculating the MCBS and MEPS distributions inflates the variance of two-year spending relative to the variance of actual two-year spending.

We show this in Table 10 which has several measures of the distribution of spending from MCBS and MEPS. The entries labeled "MEPS sum" simply add the quantiles from 2002 MEPS and 2003 MEPS. For example, among those 65-69 the 10th percentile (p10) was $50 in 2002 MEPS and it was $39 in 2003 MEPS (not shown), so that p10 of "MEPS sum" is $89. These values should be about twice the values for MEPS in Table 6: any differences are due the use of MEPS 2002 in Table 10 and to the use of a sample restricted to those who were in both MEPS 2002 and 2003. The entries labeled "MEPS panel" give the quantiles of the sum of 2002 and 2003 spending in panel. Both "MEPS sum" and "MEPS panel" use the same observations.[7] The entries for "MCBS sum" and "MCBS panel" are calculated in a similar manner over spending by 65-69 year-olds in the MCBS. The last panel of Table 10 has analogous figures for the population 65 or older.

It is apparent that summing the cross-section quantiles inflates the measure of variance relative to the panel quantiles. For example, the 99th percentile of spending in MEPS panel among those 65-69 is $11,278 compared with the sum of the 99th percentiles ($14,638). At the bottom of the distribution the differences are much smaller in absolute value (although not in relative terms) and also act to increase variance. The levels and pattern in MCBS are similar and also show an increase in variance.

An implication is that our comparisons of HRS with MEPS and MCBS in Tables 6 and 7 understated the difference in variance: had we used panel measures of variance for MEPS and MCBS the differences between them and HRS would have been even greater. A more accurate comparison should be based on MEPS and MCBS panels.

Table 11 has such comparisons. The population is restricted to the non-institutionalized population so that we can use MEPS. Spending in HRS is measured in 2004 as approximately two-year spending "since the last interview," which we take to be spending in 2002 and 2003. Therefore we compare 2004 spending in HRS with the sum of spending in 2002 and 2003 from MCBS and from MEPS over panel observations.[8] The HRS entries are just twice the entries in

---

[7] Sample sizes for MEPS panel are considerably smaller than the 2003 cross-section sample because MEPS is a two-year panel: the 2003 cross-section as in Tables 6 and 7 uses observations from the 2002 and 2003 panels whereas the MEPS panel observations are based on just the 2002 panel. We used this same reduced sample in the "MEPS sum" so as to compare spending across the same populations.

[8] There is a (small) mismatch between the spending reference period: a median HRS respondent would have been interviewed in about June 2004 so that spending would refer to the latter half of 2002, 2003 and the first half of 2004. MEPS and MCBS spending refers to 2002 and 2003. We have not attempted to correct for this mismatch which would vary for each HRS respondent.

Table 6. The MCBS and MEPS means are about 8% and 7% higher than twice the means in Table 6. In principal these measures should be the same, and the difference implies that survivors in panel have somewhat higher spending than those who do not survive in panel.[9] This difference is to be expected because higher income and wealth are associated with higher survivor probabilities, and those with greater income and wealth tend to spend more out-of-pocket. The major difference, however, is between HRS and the other two surveys: among those 65-69, mean spending in HRS is about twice as great, and among all those 65 or older mean spending is about 50% higher. At the upper part of the distributions the differences are considerable greater.

In Table 12 we have based our results on HRS 2004, but it is possible that HRS in other years is closer to MCBS and MEPS, and so we would like to make at least one other comparison. HRS 2006 cannot be easily compared with prior waves of HRS. Because of the introduction of Medicare Part D, the HRS question sequence about spending on prescription drugs was altered. Possibly as a consequence, measured drug spending was substantially lower than in 2004, even among those not affected by Part D. Furthermore, HRS 2006 cannot easily be compared with either MCBS or MEPS because the appropriate reference period for those surveys is prior to the introduction of Part D whereas the HRS reference period partly includes Part D participation for some HRS respondents. Therefore, we compare HRS 2002 with MCBS and MEPS 2000 and 2001. These comparisons are shown in Table 12, and they are calculated in the same manner as those in Table 11. They show the same general levels and patterns as the comparisons in Table 11.

In Table 13 we summarize the comparisons between the measures of out-of-pocket spending. We take the measurements in MEPS to be the most accurate because of the greater survey effort. The table shows the percentage difference between the MEPS measurement and the HRS measurement, and between the MEPS measurement and the MCBS measurement, in all cases calculated over the population 65 or over, and, in the case of MEPS and MCBS, in panel. Two-year spending in 2002 and 2003 was 56.5% higher at the mean as measured in HRS 2004

---

[9] Both calculations ignore end-of-life spending as they are based on interviews with survivors.

than it was as measured in MEPS in 2002 and 2003. The MCBS was just 1.3% higher than the MEPS measure. At the 95th percentile HRS is 55.5% higher than MEPS.[10]

These 2002 and 2003 percentage deviations are similar to the 2000 and 2001 percentage deviations as shown in the bottom of the table. At least for this additional comparison the HRS records substantially greater out-of-pocket spending health care spending than either MCBS or MEPS.

6. Conclusions

The measures of out-of-pocket spending in the HRS are about 50% greater than those in MEPS at the mean, and very much greater at the upper points of the distribution. HRS and MCBS are in better agreeement, although the HRS is higher at the mean and at the top of the distribution. The implication is that the level and risk of out-of-pocket spending on health care are exaggerated in HRS. Observation error in the HRS measurement relative to MEPS and MCBS is to be expected because HRS is a general purpose survey with two-year periodicity, and so it cannot expend the resources on the measurement of spending that MCBS and MEPS are able to do. But this does not explain the apparent bias.

A suggestion for researchers using data from the HRS waves of 2004 or earlier would be to examine health care spending on a case-by-case basis looking for patterns in the panel data that would indicate large observation error. For example, if someone does not have the resources to support financially the reported spending, there may be a presumption of positive observation error. This type of case-by-case analysis is difficult, however, because of the arbitrariness of which observations to classify as in error and which observations not to classify. An alternative is to use simple Bayesian methods to shrink reported spending to a prior benchmark. The benchmark would be spending in MEPS and the amount of shrinkage would be related to the variance of spending in the HRS relative to MEPS.

Beginning with HRS 2006 actual out-of-pocket spending on prescription drugs should decline because of Medicare Part D. But, more importantly the risk of large out-of-pocket spending will be sharply reduced for the great majority of those 65 or older because of protection

---

[10] This number is calculated from the 95th percentile in HRS of $13,100 and the 95th percentile in MEPS of $8411 (Table 11).

against catastrophic drug spending.   Thus our comparisons of spending from HRS with spending from MEPS and MCBS will not be relevant for these later waves of HRS.

References

Brown, Jeffrey, and Amy Finkelstein, 2004, "Supply or Demand: Why is the Market for Long-Term Care Insurance So Small?" NBER Working Paper 10782.

De Nardi, Mariacristina, Eric French, and John Bailey Jones, 2006, "Differential Mortality, Uncertain Medical Expenses, and the Saving of Elderly Singles," Working Paper 2005-13, Federal Reserve Bank of Chicago

Hurd, Michael D. and Susann Rohwedder, 2006, "Alternative Measures of Replacement Rates," University of Michigan Retirement Research Center, WP 2006-132.

Juster, F. T. and Richard Suzman, 1995, "An Overview of the Health and Retirement Study," *Journal of Human Resources*, 30, S7-S56.

Munnell, Alicia, Mauricio Soto, Anthony Webb, Francesca Golub-Sass, and Dan Muldoon, 2008, "Health Care Costs Drive Up the National Retirement Risk Index," IB#8-3, Center for Retirement Research at Boston College.

Table 1. Distribution of two-year out-of-pocket spending by single persons, pooled HRS 2002, 2004, 2006 (2004$)

	Mean	Percentile points						
		0	10	25	50	75	90	100
65-69	3168	0	0	147	952	2701	6440	555994
70-74	3716	0	0	203	1024	3136	7070	400798
75-79	4455	0	0	365	1350	3600	7550	492619
80-84	5064	0	0	368	1452	3863	8674	576800
85 or older	8251	0	0	253	1543	5486	19960	233675

Source: Authors' calculations

Table 2. Two-year average out-of-pocket spending by households between years t-2 and t and income and wealth. Average of top 1% of spenders and of top 10 observations. Pooled HRS 2002, 2004, 2006 (2004$)

	top 1%		top 10 observations	
	Mean	Median	Mean	Median
OOP spending	115,877	90,247	477,321	434,213
Household income	38,698	24,173	48,874	13,585
Household wealth at t-2	407,079	145,000	282,912	113,917
Household wealth at t	383,787	134,929	328,792	78,338
Household financial wealth at t-2	205,049	31,593	52,790	2,100
Household financial wealth at t	171,988	26,000	18,803	5,000

Source: Authors' calculations

Table 3. Two-year out-of-pocket spending, income and wealth of households by middle 20% of spenders by whether any spending was imputed. Age 65 or older. Pooled HRS 2002, 2004, 2006 (2004$)

	N	spending	income	wealth t-1	wealth t
Means					
no imputations	5382	3551	50945	455800	506026
some imputations	1622	3718	45846	425798	432231
Medians					
no imputations	5382	2004	34491	210000	219451
some imputations	1622	1977	29448	197715	208750

Source: Authors' calculations

Table 4. Two-year out-of-pocket spending, income and wealth of
households by top 1% of spenders by whether any spending was imputed.
Age 65 or older. Pooled HRS 2002, 2004, 2006 (2004$)

	N	spending	income	wealth t-1	wealth t
Means					
no imputations	213	120375	46572	537279	537007
some imputations	244	90249	32126	333707	282335
Medians					
no imputations	213	86853	34004	215118	236256
some imputations	244	77280	19538	87758	86314

Source: Authors' calculations

Table 5. Annualized out-of-pocket spending by individuals, total and total excluding drugs. HRS
2004.

					Percentile points				
		mean	p10	p25	p50	p75	p90	p95	p99	max
65-69	total	2086	5	220	720	1800	3767	5850	25580	420000
	excl drugs	811	0	20	160	530	1520	2550	8000	302400
70-74	total	2354	0	240	755	1925	4530	7200	28800	218250
	excl drugs	740	0	8	150	525	1450	2500	10000	69750
75-79	total	2566	0	300	892	2080	4200	6426	30050	268250
	excl drugs	828	0	5	150	542	1500	2500	12861	89542
80-84	total	2957	32	300	1000	2310	5200	11270	36405	180750
	excl drugs	1327	0	10	172	600	1700	4500	27600	76545
85+	total	4405	0	240	1020	3400	9600	24540	60588	127245
	excl drugs	2783	0	0	130	850	5000	18015	54416	82104
All	total	2677	0	250	830	2126	4750	8100	36006	420000
	excl drugs	1126	0	10	150	560	1590	3500	24000	302400

Source: Authors' calculations

Table 6. Annual out-of-pocket spending on health care services by individuals 2003. Excludes nursing home residents. Average, median, 90th, 95th and 99th percentile points. Weighted.

Age	Data	n	mean	p50	p90	p95	p99
65-69	HRS	3339	2017	720	3750	5785	21950
	MCBS	2148	1309	713	2672	4171	9601
	MEPS	977	1232	676	2963	4055	8539
70-74	HRS	2605	2219	750	4320	6750	25320
	MCBS	2105	1543	851	3158	4599	9847
	MEPS	967	1401	816	3233	4903	8332
75-79	HRS	1982	2387	880	4075	6015	21650
	MCBS	1934	1658	923	3373	5038	11908
	MEPS	762	1626	887	3553	5016	9826
80-84	HRS	1529	2363	980	4550	8420	28900
	MCBS	1809	1646	938	3354	4745	12799
	MEPS	507	1833	1075	3419	4888	8878
85 or over	HRS	1166	2398	950	5400	7500	25150
	MCBS	1568	1931	1005	4289	5985	17800
	MEPS	367	1864	1087	4293	6130	10949
All	HRS	10621	2240	810	4200	6550	24610
	MCBS	9564	1563	854	3242	4743	11447
	MEPS	3580	1514	828	3379	4888	9315

Source: Authors' calculations based on 2003 MCBS and MEPS and 2004 HRS.

Table 7 Out-of-pocket spending by individuals, including nursing home residents, HRS and MCBS. 2003. Weighted

HRS	N	mean	p10	p25	p50	p75	p90	p95	p99	max
65-69	3368	2086	5	220	720	1800	3767	5850	25580	420000
70-74	2646	2354	0	240	755	1925	4530	7200	28800	218250
75-79	2024	2566	0	300	892	2080	4200	6426	30050	268250
80-84	1603	2957	32	300	1000	2310	5200	11270	36405	180750
85+	1422	4405	0	240	1020	3400	9600	24540	60588	127245
All	11063	2677	0	250	830	2126	4750	8100	36006	420000
MCBS										
65-69	2183	1403	64	276	720	1513	2833	4354	11538	133511
70-74	2140	1673	115	388	862	1783	3329	4847	11861	132147
75-79	2016	2136	135	441	946	1924	3897	6189	29939	81950
80-84	2000	2942	146	451	1026	2196	5069	12125	37502	241122
85+	2048	4790	156	481	1295	3674	12037	25260	53553	93172
All	10387	2324	110	384	898	1942	4171	7533	33691	241122

Source: Authors' calculations based on 2003 MCBS and 2004 HRS.

Table 8. Percent distribution of out-of-pocket spending in wave t conditional on spending quartile in wave t-1, HRS waves 1998, 2000, 2002 and 2004. Single persons. Panel

quartile in wave t-1	quartile in wave t				
	lowest	2nd	3rd	highest	all
lowest	58.8	20.8	11.8	8.7	100.0
2nd	19.9	41.2	24.7	14.1	100.0
3rd	9.3	23.9	39.9	26.9	100.0
highest	8.6	12.3	24.7	54.5	100.0

Source: Authors' calculations

Table 9. Percent distribution of spending in wave t conditional on spending quartile in wave t-1, HRS waves 1998, 2000, 2002 and 2004. Married persons. Panel

	quartile in wave t				
quartile in wave t-1	lowest	2nd	3rd	highest	all
lowest	47.1	26.4	15.6	11.0	100.0
2nd	22.2	33.0	26.1	18.8	100.0
3rd	13.3	24.1	34.3	28.2	100.0
highest	10.9	17.4	26.5	45.1	100.0

Source: Authors' calculations

Table 10. Two measures of the distribution of two-year total out-of-pocket spending by individuals. Non-institutionalized population. MEPS and MCBS 2002 and 2003. Weighted

		p10	p25	p50	p75	p90	p95	p99
65-69	MEPS sum	89	535	1370	2826	4843	7693	14638
	MEPS panel	151	710	1455	2707	4755	7572	11278
	MCBS sum	141	581	1423	2964	5237	8020	18248
	MCBS panel	307	787	1653	3020	5268	7364	13547
All 65+	MEPS sum	171	696	1734	3455	6420	9326	16036
	MEPS panel	302	845	1923	3606	5889	8422	14092
	MCBS sum	206	727	1651	3317	6150	9030	20735
	MCBS panel	363	897	1868	3460	5974	8327	18257

Note: MEPS sum quantiles are calculated by adding the quantiles from the 2002 and 2003 distributions. MEPS panel quantiles are calculated from the sum of spending in 2002 and 2003. Both use same panel observations. N = 1574 MEPS; N =6133 MCBS

Source: Authors' calculations

Table 11. Two year total out-of-pocket spending by individuals, 2002 and 2003, non-institutionalized population, HRS 2004, and MEPS and MCBS 2002 & 2003 panel. Weighted

		N	mean	p10	p25	p50	p75	p90	p95	p99
65-69	HRS	3339	4034	20	450	1440	3600	7500	11570	43900
	MCBS	1242	2570	307	787	1653	3020	5268	7364	13547
	MEPS	388	2167	151	710	1455	2707	4755	7572	11278
70-74	HRS	2605	4438	0	480	1500	3740	8640	13500	50640
	MCBS	1461	2747	327	868	1792	3444	5764	8006	16672
	MEPS	431	2808	330	942	2006	3663	5764	7408	15948
75-79	HRS	1982	4774	2	600	1760	4100	8150	12030	43300
	MCBS	1228	3132	385	963	1962	3486	6026	8216	24084
	MEPS	326	2638	302	766	1788	3598	6057	8399	11786
80-84	HRS	1529	4726	88	600	1960	4300	9100	16840	57800
	MCBS	1158	3032	405	978	2089	3730	6323	8750	17749
	MEPS	246	4232	594	1245	2672	4531	7517	10186	21626
85+	HRS	1166	4797	0	504	1900	5150	10800	15000	50300
	MCBS	1044	3354	436	986	2198	4214	7170	9397	19869
	MEPS	183	3001	289	895	2202	4356	6135	9475	15190
All	HRS	10621	4480	20	500	1620	4020	8400	13100	49220
	MCBS	6133	2901	363	897	1868	3460	5974	8327	18257
	MEPS	1574	2864	302	845	1923	3606	5889	8422	14092

Source: Authors' calculations

Table 12. Two year total out-of-pocket spending by individuals, 2000 and 2001, non-institutionalized population, HRS 2002, and MEPS and MCBS 2000 & 2001 panel. Weighted

		N	mean	p10	p25	p50	p75	p90	p95	p99
65-69	HRS	3280	3421	0	340	1200	3000	7200	11380	39200
	MCBS	1223	2140	227	614	1421	2429	4438	6344	11811
	MEPS	265	1877	98	418	1213	2449	4110	6609	13546
70-74	HRS	2542	3190	0	374	1280	3500	7200	10400	29120
	MCBS	1638	2576	244	698	1588	3067	5458	8161	15677
	MEPS	316	2091	76	550	1296	2814	4695	6241	11286
75-79	HRS	2001	3588	0	480	1444	3600	7377	11450	31400
	MCBS	1233	2655	325	824	1863	3302	5786	7876	13487
	MEPS	258	2203	139	604	1393	2787	4995	6817	10924
80-84	HRS	1561	4254	48	500	1560	4175	8934	13000	37750
	MCBS	1168	2817	341	852	1867	3424	5934	8603	16218
	MEPS	181	2548	219	700	1660	2966	6362	7123	19232
85+	HRS	1112	4282	0	464	1680	4800	9700	16432	50922
	MCBS	1018	3076	273	852	1920	3756	6435	9020	21863
	MEPS	141	3003	339	925	1836	4181	6451	7415	23948
All	HRS	10496	3615	0	418	1370	3600	7500	12072	37027
	MCBS	6280	2573	267	731	1638	3082	5508	7876	15236
	MEPS	1161	2247	139	609	1401	2879	4949	6938	13052

Source: Authors' calculations

Table 13. Two-year total out-of-pocket spending by individuals in HRS and MCBS compared with MEPS: percent in excess (or deficit) of MEPS. Non-institutionalized population.

	mean	p50	p75	p90	p95	p99
2002 & 2003						
HRS	56.4	-15.8	11.5	42.6	55.5	249.3
MCBS	1.3	-2.9	-4.0	1.4	-1.1	29.6
MEPS	0.0	0.0	0.0	0.0	0.0	0.0
2000& 2001						
HRS	61.4	-2.2	25.0	51.5	74.0	183.7
MCBS	14.1	16.9	7.1	11.3	13.5	16.7
MEPS	0.0	0.0	0.0	0.0	0.0	0.0

Source: Authors' calculations