Kathleen McGarry is a professor in the Department of Economics at the University of California, Los Angeles. Robert F. Schoeni is an associate professor of economics and public policy and associate research professor at the Institute for Social Research, the University of Michigan.

Medicare Gaps and Widow Poverty

by Kathleen McGarry and Robert F. Schoeni

Overview

There have been tremendous improvements in the economic status of the elderly during the past 50 years. Today, the old-age poverty rate is less than one-third of what it was in the middle of the 20th century. Yet despite these declines, poverty rates among selected groups remain high.

Of particular note are the disproportionately high rates of poverty for widows. For the past 30 or more years, the poverty rate for elderly widows has persistently been three to four times higher than that for elderly married women. Although policymakers have repeatedly expressed concern about these high rates, successful policy prescriptions have yet to be adopted. The focus of policymakers to date has been on effecting changes in sources of income, particularly through changes in pension regulations. We provide an alternative explanation that may operate in concert with changes in income: the potential for couples to spend substantial portions of their resources on the health care of a sick or dying spouse, leaving the surviving spouse in a precarious financial situation.

The potential for large out-of-pocket medical expenditures was reduced greatly by the establishment of the Medicare program in 1965. Today, nearly all elderly persons have health insurance coverage through Medicare. But Medicare has sizable gaps; most notably it does not cover extended hospital stays, most long-term care needs, and until changes taking effect in 2006, prescription drugs. Although many individuals have health insurance to supplement Medicare, a sizable portion of the population is left vulnerable to catastrophic expenditures—expenditures that frequently occur in the months just before death. These costs may be sufficiently great, and the depletion of assets to pay these bills sufficiently large, that the financial well-being of the surviving spouse is affected. Although this hypothesis has never been examined directly, it is of substantial current interest, particularly as policymakers consider further changes to Medicare.

In this article, we examine the distribution of medical out-of-pocket expenditures, the extent to which supplemental insurance (medigap) and Medicaid reduce that spending, and the magnitude of that spending relative to income. We then look at the potential effects of these expenditures on the financial well-being of the surviving spouse and simulate the impact of changes in Medicare coverage to look at the potential for improving the financial outcome for widows.

We find that medical out-of-pocket expenditures per dying individual are substantial, averaging $5,684 over the last year of life, which is significantly

higher than expenditures made during the same period by similarly aged people who did not die during our window of observation. Furthermore, these expenditures are large relative to income and thus have the potential to have a substantial negative effect on the finances of the surviving spouse. Our simulations imply that a significant amount of the decline in the financial well-being of the surviving spouse, as measured by a poverty rate adjusted for medical out-of-pocket spending, can be attributed to the out-of-pocket medical costs accruing during the decedent's last illness. We therefore argue that such expenses should play a prominent role in policy discussions.

Our article proceeds as follows: (1) we provide background information on alternative explanations for the high poverty rate of widows and describe the coverage provided by the Medicare program; (2) we discuss the Study of Aging and Health Dynamics (AHEAD) cohort of the Health and Retirement Study, the data set we use for our analysis; (3) we present descriptive evidence on the magnitude and distribution of spending; (4) we discuss regression analyses of MOOP expenditures and other factors affecting the finances of the surviving spouse and the effect of these expenditures on simulated poverty rates; and (5) we then summarize the findings.

Background

Several explanations for the disproportionately high rate of poverty among widows have been advanced in the literature, the most widely cited of which points to the potential impact of differential mortality. Because life expectancy is positively correlated with income, husbands in poor families will die at younger ages than husbands in wealthy families. At a given age then, women who are widowed have, on average, been in poorer families than those who remain married and thus have higher poverty rates (Holden, Burkhauser, and Myers 1986; Weir, Willis, and Sevak 2000).

A second explanation focuses on the obvious: a fall in income following the death of a spouse. By law, Social Security benefits are reduced when one spouse dies, typically by one-third, while the poverty line falls by just over 20 percent. This difference probably leads those with joint incomes near the poverty line while married to have income below the poverty line in widowhood. Poverty stemming from this systematic change could be alleviated by changing the Social Security benefit formula (Burkhauser and Smeeding 1994). Similarly, private pensions often provide income only for the life of the covered worker, and a widow could thus lose a potentially important source of income. Even pensions with provisions for a survivor typically have a reduction in payments when one spouse dies.[1] Finally, if the deceased spouse had been employed, the earnings stream from this source will obviously end. Although we know of no study that has examined the changes in the various components of *income* associated with widowhood, Hurd (1990) examines changes in the components of *wealth*, including changes in Social Security and pension wealth for a sample of elderly widows. His estimates suggest declines of nearly 40 percent in Social Security wealth at the time of the death of a spouse, over 60 percent in pension and annuity wealth, and 16 percent in nonhousing bequeathable wealth. This latter dimension of the decline in wealth is obviously not programmatic but could be due to bequests to nonspousal heirs, funeral and burial costs, or, as we propose here, medical expenses incurred by the deceased.

Previous studies have shown that *Medicare* expenditures are highly concentrated near death (Garber, MaCurdy, and McClellan 1998). Medicare spending on people in their last year of life accounts for 27 percent of all Medicare spending, and half of all Medicare expenditures in the last year of life occur within the last 60 days. Elderly persons near death have Medicare spending that is roughly six times larger than that of people who are not in their last year of life (Lubitz and Riley 1993; Hoover and others 2002).

While Medicare covers nearly all elderly individuals, providing substantial insurance protection against many costly procedures and services, it does not cover all potential medical expenditures. The most relevant cost-sharing components for the majority of the elderly are a $100 deductible for outpatient (Part B) care and a 20 percent coinsurance rate on subsequent outpatient expenditures.[2] Because Part B covers doctor visits, and the vast majority of elderly do visit the doctor at some point during the year, nearly all those without insurance to supplement Medicare will incur some out-of-pocket expense.[3]

Of perhaps greater importance than the $100 deductible or even the 20 percent copayment is the failure of Medicare to cover many potentially catastrophic expenses. These extremely large expenditures can arise from several causes. First, Medicare does not cover all hospital expenditures. Individuals are responsible for an $840 deductible (in 2003) per hospital admission. After that, Medicare pays the entire cost of the hospital stay for stays up to 60 days. Individuals pay a copayment of $210 per day for days 61–90 and $420 for days 91–150. Beyond day 150, Medicare pays nothing toward medical bills.[4] Although few individuals ever face such extended stays, this lack of catastrophic insurance can leave those who are seriously ill with substantial medical bills. The cost of a single month of "self-paid" inpatient care could be over $20,000.

Second, and currently of great concern in policy circles, the current Medicare program lacks a prescription drug benefit.[5] This omission can be costly. Data from the 1996 Medicare Current Beneficiary Survey show that 45 percent of total prescription drug expenditures were paid for out-of-pocket and only 4 percent were covered by Medicare (Liu and others 2000). Furthermore, average annual out-of-pocket spending on prescription drugs among the Medicare population is estimated to be $1,000 (in 2003). Treatment with some drugs can run into the tens of thousands of dollars per year; in 2003, 4 percent of Medicare beneficiaries spent at least $4,000 on prescription drugs (Kaiser 2003). With the poverty line for elderly singles at $8,825, this spending can have a substantial negative impact on well-being of those in the lower tail of the income distribution.

Finally, and perhaps most importantly, Medicare typically does not cover the majority of long-term care needs. Nursing homes and home health care costs can be large, with nursing homes averaging $66,000 per year in 2003 (MetLife 2003), most of which is paid for through out-of-pocket spending or Medicaid.[6]

Fortunately, not all elderly persons are exposed to these potentially catastrophic costs. For the poor elderly, additional assistance is available through the Medicaid program.[7] Medicaid provides coverage for most of the gaps in Medicare benefits, including coverage of long-term care needs. Moreover, in 1988 Congress enacted a "spousal impoverishment law" that entitled the noninstitutionalized spouse to retain a portion of the couple's assets for his or her own use and excluded it from the determination of Medicaid eligibility for the institutionalized spouse. Currently this "protected resource amount" can be as high as $90,000, exclusive of a home.

Persons who are not eligible for Medicaid may purchase private insurance (medigap) to fill in the holes in Medicare or may receive additional insurance through a former employer as part of a retiree benefits package. Medigap plans vary in the specific coverage they provide, but all plans provide coverage for hospital copayments for days 61–150, some subsequent coverage, and the coinsurance for doctor visits. Three of the 10 standardized medigap plans cover prescription drugs, but only up to a specified yearly maximum.[8] None of these medigap policies cover long-term care needs. Long-term care coverage is available through separate long-term care insurance policies, but only slightly more than 10 percent of the elderly have long-term care insurance (Finkelstein and McGarry 2003). Thus, although numerous forms of additional insurance exist, many elderly persons still face the possibility of substantial uncovered health expenditures.

Recent estimates suggest that medical out-of-pocket spending in the last year of life is very high, averaging $5,955 (scaled to 2000 dollars) for those near death compared with $1,897 for those who survive at least 1 year (Hoover and others 2002). Furthermore, approximately 18 percent of all medical costs in the last year of life are paid for out-of-pocket (Hogan and others 2001), suggesting that there is indeed a large uninsured component.

The 1995 National Research Council (NRC) report assessing the current poverty definition argued that medical out-of-pocket expenditures should be subtracted from income when measuring poverty in order to obtain a more accurate assessment of resources available to finance nonmedical consumption (Citro and Michael 1995). Given that those expenditures are particularly high among the elderly, this change would have substantial effects on estimated poverty rates for older populations (Olsen 1999). One study has concluded that subtracting medical out-of-pocket expenditures from income would lead to elderly poverty rates that are nearly twice as high as the current approach used by the Census Bureau (Johnson and Smeeding 2000). Thus, even if the income of a surviving spouse remains above the poverty line, the spouse's true standard of living, based on income available after medical bills are paid, may be much lower. Following a definition similar to that recommended by the NRC panel, we explore this issue further in our empirical work below.

Data

The data requirements for this study are extensive. Assessing the role of medical out-of-pocket expenditures on the financial well-being of the surviving spouse requires information on expenditures of the deceased spouse before his or her death and information on the income and wealth of both the couple and the surviving spouse. One therefore needs a panel data set with a sufficient number of elderly decedents and detailed information on income, wealth, and health care expenditures.

The Health and Retirement Study (HRS) satisfies these requirements. The HRS is a panel survey that follows several cohorts of elderly and near-elderly over time with interviews conducted approximately biennially. Because we focus on the role of Medicare, which is available to very few people under the age of 65, we limit our sample to the original AHEAD cohort and to spouses or partners aged 65 or older.[9] Respondents in the AHEAD sample were born in 1923 or earlier (or were married to someone in that cohort) and were therefore nearly all eligible for Medicare at the initial interview in 1993.[10] When appropriately weighted, the sample is representative of the noninstitutionalized population in this group aged 70 or older in 1993.[11] The fact that respon-

dents who enter a nursing home after the 1993 interview are followed into the institution is important for our study; data on health care costs, including nursing home expenditures, are thus available for these individuals as well.

Our AHEAD sample was interviewed again in 1995, 1998, and 2000 and will be interviewed biennially thereafter; we use data from these first four waves.[12] When a respondent dies, an "exit" interview is conducted to obtain information about the respondent's life since the most recent interview (including medical expenses) until the date of death.[13] Because the sample size for widows or widowers alone is insufficient for a detailed examination of spending patterns, our analyses are based on a combined sample of men and women who lost a spouse.

AHEAD contains comprehensive information on income, wealth, and health status of respondents. Of particular importance is the measurement of medical out-of-pocket expenditures. The wording of questions about those expenditures varies slightly across waves, becoming more detailed over time. In 1993, respondents are asked to report out-of-pocket spending in two categories: nursing home expenses and all other health care costs.[14] In 1995, 1998, and 2000, the spending categories are disaggregated into hospital and nursing home expenditures, doctor and outpatient bills, prescription drug expenses, and other medically related services such as adult day care and rehabilitation services. Exit interviews also ask about hospice care. To these expenditures we add any private health insurance premiums and Medicare Part B premiums.[15] These expenditures are not *total medical expenditures*, which would include amounts paid by Medicare and other payers, but rather the burden placed on the elderly individual and his or her spouse.[16]

The length of time covered by the AHEAD expenditure questions varies somewhat across waves. In 1993, respondents were asked about expenses in the previous year. In subsequent surveys, they were questioned about the total incurred since the previous interview. The 1995 interview thus covered 2 years of expenses; 1998, 3 years; and 2000, 2 years. For comparability across waves and for ease of comparison with the poverty thresholds, we scale expenditures at each interview to correspond to a single year. For exit interviews, the adjustment is less straightforward. In these cases, the time covered by the survey will vary by the date of death. We use two alternative methods, detailed below, to deal with this difference.

Because AHEAD targets an older cohort, mortality is high. Table 1 shows the number of couples in each wave and the number of deaths between adjacent waves. An individual must be observed in at least two interviews to be included in the sample. Over the 7-year sample period, there are 1,099 couples in which one spouse dies.[17] Our analyses will compare the medical out-of-pocket expenditures of these 1,099 married decedents with those of their surviving spouses. We will, on occasion, draw comparisons with the expenditures of couples in which neither spouse died during the 1993–2000 period. We refer to this latter group as "intact" couples.

Table 1.
Number of observations, by year of survey

Year	Number of couples	Number of deaths by next survey
1993	2,264	362
1995	1,853	391
1998	1,404	346
2000	1,083	. . .

SOURCE: Authors' tabulations based on data from the Study of Aging and Health Dynamics (AHEAD).

NOTE: . . . = not applicable.

Out-of-Pocket Medical Expenditures in the Last Years of Life

Our focus is on expenditures just before death. Because AHEAD decedents die at various points during the 1993–2000 interval, we organize the data around the time of death rather than the survey year. We label as wave *k* the interview immediately following the death—either the exit interview for the decedent or the standard biennial survey for the survivor. At this time, expenditures in the period just before death are obtained. We refer to the interview preceding the exit or biennial interview as period *k-1* and the interview following the wave *k* interview (available for survivors only) as time *k+1*. Interviews taking place two periods before and two periods after are denoted as *k-2* and *k+2*. Thus for a respondent who dies between 1995 and 1998, the 1998 exit interview will provide the time *k* information, the 1995 interview provides the time *k-1* data, and 1993 refers to time *k-2*. The spouse of the deceased respondent will have time *k* information reported in the ordinary 1998 interview, *k-1* at 1995, *k-2* at 1993, and *k+1* in 2000.

Because the year of death differs across the sample (and because of attrition), the sample size will vary across periods; that is, the panel is not balanced. An individual whose spouse dies between 1998 and 2000, for instance, will not contribute observations for the periods *k+1* and *k+2* but will contribute to the *k-2* and *k-1* data. We do, however, require that all sample members be observed at least at time *k-1* and time *k*. Because there are typically 2 calendar years between waves, wave $k \pm n$ is roughly n*2 years from the last year of life.

Comparing medical out-of-pocket expenditures of decedents with those of survivors involves an additional

adjustment to the data. Because decedents could have died at any point between the two waves, the time period over which their medical expenses were incurred can vary from as little as 1 day to as much as 3 years. In the empirical work that follows, we use two alternative methods to construct a comparison. In the first, we simply compare the actual exit interview report with the 1-year amount for the survivor. Because most surveys are administered 2 years apart, if the mortality hazard is flat across this interval then the expected value of the time span covered by the exit interview is 1 year (the midpoint of the 2-year survey interval), corresponding to the 1-year reports we constructed for the surviving spouses. In fact, the average time for which the respondent survived is 14.8 months, so this measure is not too far off, on average. Our second measure scales the expenditures of the survivor to match the length of time for which her deceased spouse survived: if the decedent lived for 18 months during the period, we multiply our single-year measure of the survivor's expenditures by 18/12.[18]

Table 2 shows the comparison of average medical out-of-pocket expenditures for survivors and decedents by years before and after death. The values for time *k* are for our first method of comparison, wherein expenditures are annualized amounts for the survivor and actual reports for the decedent. For time *k**, survivor expenditures are scaled to match the time span relevant for the deceased spouse, as described above. Mean expenditures for *k** are greater, reflecting the average increase from 12 to 14.8 months (23.3 percent). Medical out-of-pocket spending for surviving spouses increases gradually over time, as one might expect if health deteriorates with age, but the changes are not dramatic. In period *k-2* the average annual expenditure is $2,438. By *k+1* it has risen to $3,507. In contrast, the expenditures for decedents show a striking increase as the end of life nears, more than doubling from time *k-2* to time *k*. Annual expenditures at time *k-2* are $2,494 for decedents—nearly identical to those of their surviving spouses—but by time *k-1* have risen to $3,427, already 35 percent higher than those for the survivors.[19] This increase is followed by an even larger jump to $5,684 in the months just before death, an amount almost 60 percent higher than the similarly scaled value of $3,634 for surviving spouses. This estimate is very similar to the estimate of medical out-of-pocket spending in the last year of life of $5,955 (expressed in 2000 dollars) reported by Hoover and others (2002) using the 1992–1996 Medicare Current Beneficiary Survey and Medicare claims data.[20]

Table 2 also shows a comparison of the total spending per couple for decedent couples with that for intact couples.[21] Because there is no date of death to establish a "time *k*," we construct comparable data for intact couples by weighting report expenditures in each survey year by the fraction of decedent couples at each time *k-2* to *k+2* whose reports pertain to that particular year.[22] Again, the means increase slightly over time, probably because of the aging of the sample. Married couples have average medical out-of-pocket expenditures of $4,580 at time *k-2* compared with $4,933 for decedent couples. Expenditures for intact couples rise to $6,959 by *k+2*. If we double the expenditure of the surviving spouse from the decedent couple in that period, they are $7,480. Thus, with the exception of the time immediately preceding death, the expenditures of the decedent and intact couples do not look substantially different.

Table 2 also presents values for median expenditures. The substantially lower value of medians relative to means points to a positively skewed distribution. The medians show a much smaller difference in expenditures for the decedents relative to those for survivors, indicating that many families are protected against catastrophic expenses.

As the end of life nears, the pattern of spending changes substantially. The specific types of expenditures for decedents in each period are shown in Table 3. In period *k-2*, the largest expenditure components are insurance premiums and prescription drugs. By period *k*, the cost of nursing home and hospital care has far surpassed the costs of prescription drugs and insurance premiums. In fact, expenditures for nursing home and hospital care are nearly twice as large as those for average insurance premiums. Median prescription drug expenditures actually fall sharply in time *k*. This decline probably stems from the greater use of hospitals by persons who are near death. Medicare provides coverage for prescription drugs used in a hospital and thus spares the individual the out-of-pocket expense.[23] The skewness of total out-of-pocket expenditures is reflected in the skewness of expenditures for nursing home and hospital care; even in period *k*, the median decedent has zero nursing home and hospital expenditures, compared with $14,500 for the 95th percentile.[24] With respect to prescription drug expenses, persons in the 95th percentile have out-of-pocket expenses of $4,515. Taking all categories together, 5 percent have expenditures of at least $25,466 in the last year of life, and 25 percent have at least $5,437. These results suggest that if the out-of-pocket expenditures of a deceased spouse are an important contributor to the poor financial status of his or her survivor, more complete coverage of care in nursing homes and hospitals and of prescription drugs could help alleviate the problem.

For comparison, Table 3 also reports the distribution of expenses for the surviving spouses. The aging of the sample causes a modest increase in nursing home, hospital, and physician services. Insurance premiums

continue to be the largest component of medical out-of-pocket spending. If this supplemental insurance is sold at an actuarially fair rate, then one would expect the benefits to approximately equal the premium costs, on average.[25] Thus the large fraction of out-of-pocket expenditures attributable to premiums is further evidence of the importance of the gaps in the Medicare program and the desire of elderly individuals for more complete coverage. Unsurprisingly, prescription drugs also remain a large expense, suggesting that although coverage of nursing home stays and longer hospital stays would help those near death, the benefits of prescription drug coverage are likely to be more broadly based.[26]

Table 2.
Annual medical out-of-pocket spending for survivors and decedents in years before and after death (in 2000 dollars)

Period	Mean	Median	Number of observations
		Individual spending	
		Surviving spouses [a]	
k-2	2,438	1,609	450
k-1	2,540	1,790	661
k	2,940	1,916	682
*k**	3,634	1,899	660
k+1	3,507	1,985	410
k+2	3,605	2,463	184
		Decedents [a]	
k-2	2,494	1,659	405
k-1	3,427	2,114	582
k	5,684	2,176	582
*k**	. . .	. . .	. . .
k+1	. . .	. . .	. . .
k+2	. . .	. . .	. . .
		Joint spending	
		Decedent couples	
k-2	4,933	3,575	395
k-1	5,979	4,290	563
k	9,321	4,444	548
*k**	. . .	. . .	. . .
k+1	3,826	2,056	338
k+2	3,740	2,264	139
		Intact couples [b]	
k-2	4,580	3,669	922
k-1	5,084	4,243	794
k	6,115	4,950	776
*k**	. . .	. . .	. . .
k+1	6,426	4,962	827
k+2	6,959	4,760	925

SOURCE: Authors' tabulations based on data from the Study of Aging and Health Dynamics (AHEAD).

NOTES: The medical out-of-pocket expenditures at time *k* are the surviving spouse's annual expenditures and the total expenditures accrued by the decedent since the previous interview. For the decedent, the length of the period over which expenditures are reported can vary from 1 month to 3 years. To allow for direct comparability with expenditures by the decedent, *k** reports the survivor's expenditures at time *k* scaled to equal the length of time for which the deceased spouse was alive.

. . . = not applicable.

a. The number of observations differs for surviving spouses and decedents because of missing observations on expenditures.

b. Values for each time period *k-2 to k+2* are constructed for intact couples based on the weighted number of decedent couples reporting values corresponding to each calendar year (see note 22 and the associated text for more detail).

Table 3.
Annual medical out-of-pocket spending for decedents and surviving spouses, by period and type of expenditure

Type of expenditure	Mean	Median	75th percentile	95th percentile
		Decedents		
		Period k-2		
Total	2,494	1,659	2,979	6,783
Physician	287	113	395	1,156
Nursing home or hospital	325	0	0	886
Prescription drugs	1,199	271	1,016	3,389
Special services	19	0	0	0
Insurance premiums	1,687	1,262	2,319	4,467
		Period k-1		
Total	3,427	2,114	3,815	9,793
Physician	385	89	376	1,219
Nursing home or hospital	851	0	0	2,404
Prescription drugs	1,094	380	1,220	4,068
Special services	34	0	0	27
Insurance premiums	1,479	800	2,150	3,851
		Period k		
Total	5,684	2,176	5,437	25,466
Physician	398	0	200	2,093
Nursing home or hospital	2,412	0	450	14,500
Prescription drugs	990	100	900	4,515
Special services	193	0	0	600
Insurance premiums	1,354	728	1,696	5,379
Hospice	9	0	0	0
Other	178	0	0	650
		Surviving spouses		
		Period k-2		
Total	2,438	1,609	3,086	6,515
Physician	398	169	401	1,412
Nursing home or hospital	58	0	0	71
Prescription drugs	1,104	136	678	2,712
Special services	7	0	0	0
Insurance premiums	1,633	1,004	2,170	5,122
		Period k-1		
Total	2,540	1,790	3,143	6,565
Physician	312	94	282	1,130
Nursing home or hospital	142	0	0	755
Prescription drugs	626	190	637	2,535
Special services	40	0	0	16
Insurance premiums	1,514	830	2,139	4,014
		Period k		
Total	2,940	1,916	3,360	7,701
Physician	338	113	401	1,425
Nursing home or hospital	415	0	0	847
Prescription drugs	784	240	720	3,600
Special services	25	0	0	0
Insurance premiums	1,381	904	1,999	4,015

(Continued)

Table 3.
Continued

Type of expenditure	Mean	Median	75th percentile	95th percentile
		Surviving spouses (cont.)		
		Period k+1		
Total	3,507	1,985	3,508	10,797
Physician	361	100	396	1,250
Nursing home or hospital	477	0	0	1,415
Prescription drugs	811	240	900	3,042
Special services	29	0	0	10
Insurance premiums	1,819	1,050	1,944	4,146
		Period k+2		
Total	3,605	2,463	4,024	9,614
Physician	313	120	430	1,500
Nursing home or hospital	533	0	0	1,000
Prescription drugs	1,069	360	1,440	3,600
Special services	55	0	0	240
Insurance premiums	1,631	1,046	2,020	3,666

SOURCE: Authors' tabulations based on data from the Study of Aging and Health Dynamics (AHEAD).

Regression Analyses

To formalize the patterns depicted in the descriptive tables, we estimate a set of regressions that allow for a more systematic quantification of the changes in medical out-of-pocket expenditures as the date of death approaches. The regression analyses also allow inclusion of control variables and investigation of the extent to which various factors are correlated with lower out-of-pocket spending. We focus specifically on the role of insurance. Elderly persons who have insurance in addition to Medicare—either medigap insurance or long-term care insurance—have purchased this insurance in the belief that it will "protect" them from catastrophic expense. Similarly, individuals who are covered by Medicaid are likely to be sheltered from the adverse effect of medical expenditures.

The approach we use is similar to the one used in the program evaluation literature. The sample consists of all couples who were married in 1993. The unit of analysis is the couple-wave; if a couple is observed for all four waves, it contributes four observations. The standard errors are adjusted to allow for correlation within couples across waves (that is, Huber–White sandwich estimates). The baseline model is depicted in equation (1).

$$MOOP_{it} = \alpha + \sum_{k=-3}^{+2} \beta_k D_{it}^k + \beta_{Year} Year_t + \beta_X X + \varepsilon_{it} \quad (1)$$

The dependent variable is total medical out-of-pocket (MOOP) spending for couple (not individual) *i* in wave *t*. The key covariates are dummy variables indicating the "distance from death." D_{it}^k denotes the value of this dummy variable for couple *i* at time *t* in which the spouse dies in wave *k*. Thus, D_{it}^{-2} equals one if the current wave of observation is two waves before the wave of death, with death occurring in wave *k=0*. Data are available for at most two waves after *k=0* (for a respondent who dies between the first two waves) and at most three waves before *k=0* (for a respondent who dies between the last two waves). The dummy variables are all equal to zero for couples in which neither spouse died during the survey periods. The indicators *k+1* and *k+2* thus control for the expected smaller expenditures for the surviving spouse relative to those for the (two-person) intact couple. The vector of dummy variables for each year *(YEAR)* account for systematic increases in out-of-pocket spending over time.[27] We include indicators for three types of insurance coverage: Medicaid, medigap, and long-term care. Medicare coverage alone is the omitted category.[28] The set of control variables *X* in this baseline model also include race and ethnicity (non-Hispanic white, non-Hispanic black, non-Hispanic other, and Hispanic), income, income squared, schooling, and age. For variables that differ across spouses, we use the values for the decedent spouse or the male for intact couples. We take our measure from the 1993 survey. (The mean values of these variables for the two groups are presented in Table A-1.)

The estimates for this regression analysis are presented in Table 4. The β_k parameters demonstrate, at each period, the difference in medical out-of-pocket

spending between couples in which one spouse died and couples in which neither spouse died. Three *waves* before death—or roughly *7 years* before death—surviving and decedent couples did not have significantly different out-of-pocket spending; the coefficient estimate is nearly zero ($40).

Differences begin to arise two waves before death with a statistically significant difference of $538. Out-of-pocket spending increases further as death nears: the gap is $713 in the wave just before death. In the year of death, the difference between the two types of couples is dramatic, with a gap of $2,579. This difference holds even with our controls for demographic characteristics and health insurance coverage. Not surprisingly, a couple's medical out-of-pocket spending declines substantially after death—$2,700–$2,800—when there is only one surviving spouse.

The direct effects of the insurance variables point to a strong protective effect of Medicaid for all in the sample. Here we estimate that Medicaid reduces annual medical out-of-pocket spending by $1,620. The positive and significant coefficient on the indicator of medigap coverage reflects the cost of premiums for these plans.[29]

In the second set of estimates, we interact our health insurance measures with an indicator for the year of death. This method provides us with an estimate of the role of insurance in protecting against the extremely large expenditures we observe at this time.[30] We find no evidence that having long-term care or medigap insurance significantly lowers out-of-pocket spending in the year just before death, but spending *is* substantially lower among those with Medicaid coverage. Specifically, the interaction of Medicaid with D_{it}^0 (- $4,429) more than offsets the direct effect of the year of death, D_{it}^0 (+ $2,640). Unfortunately, because the number of observations in each cell is small when the data are cut as finely as they are here, our standard errors are large. Although we believe these results provide a strong suggestion of the direction of the effect and demonstrate the important role played by Medicaid in buffering the widow from the effects of large medical costs associated with a dying spouse, we caution against reading too much into the specific magnitudes of the coefficient estimates.

We repeat this exercise with the ratio of medical out-of-pocket expenditures to income as the left-hand-side variable (bottom panel of Table 4). The general conclusions are the same, although the standard errors are again large and the estimates are therefore imprecise. However, they do point to substantial out-of-pocket expenditures relative to income in the year preceding death, a protective effect of Medicaid, and a particularly strong Medicaid effect at the time of death.

Medical Out-of-Pocket Expenditures and Widows' Poverty

The estimates presented thus far document the dramatic increase in medical out-of-pocket expenditures near death and therefore the potential for these expenditures to affect the financial well-being of the surviving widow. They do not, however, directly demonstrate how large any potential effect might be. Are large out-of-pocket expenditures accruing to persons in the lower tail of the income distribution who may indeed suffer greatly? Or are the largest expenditures being borne primarily by persons of substantial means, who may be choosing to purchase more costly care (for example, private hospital rooms, more expensive nursing homes, or elective surgery)?

Distribution of Medical Out-of-Pocket Expenditures Relative to Income

We begin to explore this question by examining the distribution of out-of-pocket expenditures relative to income (see Table 5, which also reports the mean and median ratio of such expenditures to income). We also include the fractions of the population spending more than 20 percent and more than 40 percent of their income on medical care. When both spouses are alive, income is defined as the joint income of the couple in the calendar year preceding the interview, and out-of-pocket spending is the sum of the expenditures for each spouse. For time *k* income, we compare total out-of-pocket expenditures of the couple with the income of just the surviving spouse. This approach provides a measure of the relative size of the health care burden as actually felt by the survivor, given her new financial circumstances.[31]

As is shown in Table 5, the average ratio of expenditures to income rises sharply near death. Before death, the mean ratio is 0.19 to 0.24, and the median ratio is 0.11 to 0.13. Thus, on average, these married couples spent approximately one-fifth of their income on health care. In period *k*, one spouse has died, and expenditures increase while income decreases. The mean ratio of expenditures to income thus rises sharply to 0.52.[32] The median also rises to 0.24. Unsurprisingly, once the spouse (and his expenditures) is gone, the ratio of medical out-of-pocket expenditures to income returns to its initial level.

Table 5 also reports the relevant statistics for couples who remain intact throughout the survey period. Expenditures as a fraction of income rise somewhat over time as the couples age, but the peak is just 0.24, similar to that for surviving spouses.

The percentage of the sample incurring expenses of greater than 20 percent and greater than 40 percent of income is also shown in Table 5. Even when both spouses

Table 4.
Medical out-of-pocket spending for couples and ratio of that spending to income

	Baseline		Interactions	
	Coefficient	Standard error	Coefficient	Standard error
		Out-of-pocket medical spending		
Waves from death D^k_{it}				
-3	40.4	303.4	45.6	302.9
-2	538.3 *	305.4	531.0 *	305.9
-1	712.9 **	330.2	700.5 **	329.5
0 (wave of death)	2,579.3 **	570.6	2,640.2 **	887.6
+1	-2,662.3 **	387.8	-2,675.1 **	388.0
+2	-2,814.7 **	611.2	-2,829.3 **	611.3
Insurance status				
Medicare only [a] (reference)	. . .	. . .	. . .	. . .
Has Medicaid	-1,620.3 **	538.9	-1,041.1 *	585.3
Has medigap	1,755.1 **	250.0	1,721.5 **	240.6
Has long-term care	364.3	360.2	360.0	297.4
Interactions				
Medicaid*wave of death			-4,428.7 **	1,053.1
Medigap*wave of death			310.0	1,122.7
Long-term care*wave of death			-36.9	1,916.4
R^2	0.072		0.074	
Number of observations	5,924		5,924	
		Ratio of out-of-pocket medical spending to income		
Waves from death D^k_{it}				
-3	-0.051 *	0.026	-0.050 *	0.026
-2	-0.018	0.017	-0.017	0.017
-1	0.034	0.033	0.034	0.033
0 (wave of death)	0.310 **	0.057	0.401 **	0.104
+1	0.027	0.052	0.031	0.053
+2	0.015	0.058	0.018	0.058
Insurance status				
Medicare only [a] (reference)	. . .	. . .	. . .	. . .
Has Medicaid	-0.173 **	0.041	-0.124 **	0.038
Has medigap	0.032	0.023	0.051 **	0.020
Has long-term care	0.005	0.028	0.010	0.020
Interactions				
Medicaid*wave of death			-0.301 **	0.116
Medigap*wave of death			-0.118	0.113
Long-term care*wave of death			-0.049	0.111
R^2	0.038		0.040	
Number of observations	4,201		4,201	

SOURCE: Authors' tabulations based on data from the Study of Aging and Health Dynamics (AHEAD).

NOTES: Both models include controls for race and ethnicity, income, income squared, schooling, age, dummy variables indicating calendar year, and a constant term. Sample is limited to those with positive income. Standard errors are adjusted for multiple observations per individual or couple.

* = statistically significant at the 10 percent level.

** = statistically significant at the 1 percent level.

. . . = not applicable.

a. Also includes 146 observations reporting no health insurance coverage.

are alive, one-fifth to one-third of couples (both decedent and intact couples) have medical expenses equal to at least 20 percent of income. Roughly 10 percent have expenses equal to at least 40 percent of income several years before death. But the burden of medical out-of-pocket expenditures jumps during the year of death, with 55 percent of decedent couples spending at least 20 percent and 33 percent paying at least 40 percent.

Nonhousing Wealth

Wealth provides an additional gauge of well-being, and Table 5 also reports the median value of nonhousing bequeathable wealth.[33] The median value falls substantially, by approximately one-third, from time *k-2* to *k+2*. This decline in nonhousing bequeathable wealth is somewhat larger than that found by Hurd (1990). Although it certainly could reflect, to some extent, bequests made to heirs other than the spouse, it may also reflect the use of assets to pay for the decedent's out-of-pocket medical expenses.[34]

Poverty Rates

We also examine poverty rates, by year, for our sample of couples in which one spouse dies. In the periods before death, the poverty rate using the standard Census Bureau definition is just 4 percent, similar to published statistics (Dalaker and Proctor 2000). In period *k*, this fraction jumps dramatically to 12 percent and remains high in the 2 years following the death of a spouse (Table 6).[35] These estimates highlight the fact that the majority of elderly people who are poor in widowhood were not poor while their spouses were alive, that is, the sample of survivors experiencing poverty rates on the order of 12 percent are the same individuals who faced poverty rates of just 4 percent before their spouse died.[36] Note that despite the difficulty in measuring income and poverty at time *k*, estimates of poverty in that year are quiet similar to those in the subsequent years, although there is a jump in the proportion poor at time *k+2*.[37]

To assess the importance of medical out-of-pocket expenditures farther up in the income distribution, we also examine the change in the fraction of couples with income below 200 percent of the relevant poverty line. This figure rises from 23 percent at time *k-2* to 43 percent at time *k* and remains at a slightly higher level for the rest of the sample period.

By the official definition of poverty, surviving spouses are indeed less well off than intact couples, and the differences are dramatic. However, because this measure takes no account of medical or other expenditures in determining needs, it may convey a biased estimate of economic well-being. We therefore look at poverty rates using other assumptions.

Subtract All Medical Out-of-Pocket Spending from Income. Following a recommendation of the National Research Council panel (Citro and Michael 1995), we ask how our assessment of well-being would change if medical out-of-pocket expenditures were subtracted from income. This definition of poverty implicitly assumes that all costs are paid for out of current income and that

Table 5.
Medical out-of-pocket spending, income, and wealth of decedent and intact couples

Period	Ratio of out-of-pocket spending to income		Percentage with out-of-pocket spending greater than—		Income (2000 dollars)		Median nonhousing wealth (2000 dollars)
	Mean	Median	20 percent of income	40 percent of income	Mean	Median	
				Decedent couples			
k-2	0.19	0.11	0.30	0.10	34,612	28,184	62,937
k-1	0.24	0.13	0.34	0.14	37,728	28,392	64,406
k	0.52	0.24	0.55	0.33	27,543	17,314	65,499
k+1	0.22	0.11	0.26	0.11	25,800	18,248	48,596
k+2	0.21	0.10	0.25	0.13	26,519	18,440	42,000
				Intact couples			
k-2	0.15	0.10	0.21	0.05	44,471	32,189	129,890
k-1	0.15	0.11	0.24	0.05	47,368	33,975	144,792
k	0.19	0.12	0.27	0.08	49,577	35,441	157,760
k+1	0.20	0.12	0.30	0.10	49,258	33,554	140,702
k+2	0.24	0.13	0.33	0.12	47,267	30,913	116,800

SOURCE: Authors' tabulations based on data from the Study of Aging and Health Dynamics (AHEAD).

fewer resources are thus available for consumption of other goods. With this change in the definition, the poverty rate in the periods before death (*k-2* and *k-1*) rises from 4 percent to approximately 14 percent, a greater change than the doubling of poverty found by Johnson and Smeeding (2000) for all elderly but consistent with the rise in the importance of medical out-of-pocket expenditures as death nears. This measure also shows a sharp spike in the year of death, reaching 36 percent. However, unlike the standard Census Bureau poverty rate, this adjusted rate actually falls substantially following the death of a spouse, from 36 percent to 22 percent, reflecting the abrupt decline in out-of-pocket expenditures once the ill spouse dies.

Subtract Medical Out-of-Pocket Spending of Surviving Spouse Only. To isolate more directly the potential effects of medical spending of the dying spouse, we simulate an adjusted poverty rate by assuming that all of the out-of-pocket expenditures of the dying spouse—but not those of the survivor—are covered by other sources (perhaps a "widow's insurance" that compensates surviving spouses for this burden). That is, in calculating the adjusted poverty rate, we subtract from income only the out-of-pocket spending of the surviving spouse. The adjusted poverty rates are much lower under this scenario: in the year of death, the adjusted rate is "just" 27 percent instead of 36 percent. Moreover, as one would expect, the poverty rate does not recover in the period following the death of the spouse.

Subtract All Medical Out-of-Pocket Spending but Assume Full Medicare Coverage. Hospital and nursing home expenditures are particularly large for decedents in the period before their deaths, and prescription drug expenditures are relatively larger in other periods, as shown in Table 3. Policymakers have recently passed legislation providing some prescription drug coverage through Medicare and are working to make long-term care insurance more attractive. (For example, special tax treatment for premiums for some long-term care policies has already been established.) We thus simulate the effect of changes in Medicare coverage along these lines under two sets of assumptions:

- We analyze the effect of prescription drug coverage by assuming that no elderly person faces any out-of-pocket cost for prescription drugs. This expansion of coverage is more generous than that

Table 6.
Poverty rates for couples in which one spouse dies, using alternative assumptions, by wave before or after death (in percent)

	k-2	*k-1*	*k* (death)	*k+1*	*k+2*
	Standard Census Bureau definition of poverty				
Poor	4	4	12	11	18
Below 200 percent of poverty	23	25	43	44	44
	Poverty definition adjusted for medical out-of-pocket spending (MOOP)				
Subtract all MOOP from income					
Poor	14	15	36	22	29
Below 200 percent of poverty	35	37	63	53	55
Subtract only MOOP of surviving spouse from income					
Poor	10	10	27	22	29
Below 200 percent of poverty	30	33	55	53	55
Subtract all MOOP from income but assume full coverage for prescription drugs					
Poor	11	11	29	19	26
Below 200 percent of poverty	33	34	59	51	54
Subtract all MOOP from income but assume full coverage for nursing home and hospital stays					
Poor	13	15	30	21	26
Below 200 percent of poverty	35	35	61	51	54

SOURCE: Authors' tabulations based on data from the Study of Aging and Health Dynamics (AHEAD).

NOTE: MOOP = medical out-of-pocket spending.

which will be provided by the Medicare Modernization Act, but it nonetheless conveys the potential impact of an expansion in coverage on poverty.

- We look at a Medicare expansion that would provide complete coverage for nursing home and hospital stays. This expansion would be the equivalent of a generous long-term care policy and a generous medigap plan.

To implement these simulations we subtract medical out-of-pocket expenditures from income, as above, but exclude from those expenditures, in turn, the cost of prescription drugs and then the cost of nursing home and hospital stays (Table 6).[38] With complete coverage of prescription drugs, our adjusted poverty rates fall in the years before death by up to 21 percent, from 14 or 15 percent (when all out-of-pocket spending is subtracted from income) to 11 percent (assuming full coverage for prescription drugs). In the year of death and the subsequent two waves, the change is similar, falling by 10 percent to 20 percent. The change in the fraction of the sample with adjusted income below 200 percent of the poverty line also falls, but by substantially less.

Nursing home and long hospital stays are typically concentrated in the year just before death. Therefore, it is not surprising that offering coverage for these services would only affect poverty rates very near death. In periods *k-2* and *k-1*, the adjusted poverty rates are reduced by no more than a single percentage point, while in the year of death the effect is nearly identical to that of prescription drug coverage: the simulated poverty rate falls from 36 percent to 30 percent. On first glance, this small change may be somewhat surprising given the very high cost of long-term care. However, although nursing home costs are indeed much larger than prescription drug totals, nursing home care is substantially less common than prescription drug use, so coverage of prescription drugs affects many more individuals.

Discussion

The Medicare program has been a tremendous success and is extremely popular (Blendon, Brodie, and Benson 1997). However, it does not provide full coverage for all types of care, most notably very long hospital stays, most long-term care needs, or, until 2006, prescription drugs. These gaps leave many elderly persons vulnerable to potentially large medical out-of-pocket expenditures. The elderly may purchase supplemental insurance to cover these expenses, but the premiums for these insurance plans are often quite costly and coverage may still be incomplete.[39] Furthermore, out-of-pocket expenditures are likely to be largest near death, when negative health shocks are most common.

Our study complements previous analyses by focusing on spending near death and shows that out-of-pocket spending averages almost $6,000 in the last year of life, an amount more than 50 percent higher than at other points in old age. We also find that elderly persons with Medicaid are well protected against these elevated costs and experience no higher out-of-pocket spending in the months and years just before death than in other years in old age. This result indicates that public programs indeed have the potential to shelter individuals from dramatic spikes in health care expenditures near death.

To gauge more accurately the economic burden of these expenses, we compare out-of-pocket spending with annual income. We find that out-of-pocket spending near death, and even well before death, is quite high relative to income. Five to 7 years before the death of a spouse, medical out-of-pocket spending for the average couple is approximately 19 percent of their annual income and rises as the time of death nears. If these expenditures are met by drawing down assets, they can have a long-lasting impact on the financial well-being of the surviving spouse.

Previous studies have found that accounting for out-of-pocket spending in poverty estimates, as recommended by the National Research Council's panel, leads to much higher poverty rates among the elderly (Johnson and Smeeding 2000). We look at the potential effects of that spending on poverty rates, specifically in the years just before death, and the likely lingering economic effects for surviving spouses. Because of the unusually high levels of out-of-pocket spending to assist a dying spouse, poverty rates adjusted for out-of-pocket spending surge with the death of a spouse.

We show further that expanding public coverage to include prescription drugs and nursing home or long-term hospital stays would significantly lower out-of-pocket medical spending. Complete coverage of prescription drug expenditures (a more generous proposal than called for in the Medicare Modernization Act) would lower adjusted poverty rates by approximately 20 percent. Alternatively, if nursing home and extended hospital stays were covered, we estimate that poverty rates would not be affected for persons not near death but would be 17 percent lower for those in the last year of life. These estimates provide some guidance as to the potential effects of proposals to alter current programs.

Appendix

The mean values of race and ethnicity, schooling, age, income, wealth, and insurance coverage are shown for decedent and intact couples in Table A-1.

Table A-1.
Characteristics of respondents in 1993, by mortality outcomes

Characteristic	Decedent couples	Intact couples
Race and ethnicity		
White (non-Hispanic)	0.83	0.86
Hispanic	0.06	0.05
Black	0.10	0.07
Years of schooling	11.3	11.5
	(3.8)	(3.8)
Age		
Husband	77.6	74.9
	(6.0)	(4.6)
Wife	74.6	71.2
	(6.6)	(6.0)
Income (dollars)	31,337	38,460
	(28,587)	(44,401)
Wealth (dollars)	237,103	332,684
	(308,478)	(528,279)
Insurance coverage		
Medicaid	0.06	0.04
Any medigap	0.75	0.80
Employer-provided	0.29	0.22
Self-purchased	0.46	0.58
Long-term care	0.13	0.14
Number of observations [a]	582	1,114

SOURCE: Authors' tabulations based on data from the Study of Aging and Health Dynamics (AHEAD).

NOTES: Sample consists of couples married in 1993. Decedent couples are those for whom there are observations at death and in the period preceding the death of the spouse. Intact couples are those who are married and both alive throughout the window of observation and are observed for at least two waves.

Standard deviations are in parentheses.

a. The number of observations differs across variables because of missing values.

Notes

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[1] Policymakers have long recognized the potential deleterious effects of single-life pensions. Both the Employee Retirement Income Security Act (ERISA) and the Retirement Equity Act (REACT) represent legislative attempts to encourage the use of joint-and-survivor pensions over single-life pensions.

[2] The Medicare program consists of two parts, Parts A and B. Part A of Medicare covers hospital expenses and is available without charge to those who have paid into the system during their working lives or who have spouses who are covered. Part B, broadly speaking, covers doctor visits. Enrollees pay a premium to purchase Part B coverage. The premium is set to equal just one-quarter of the actuarial value of the coverage. Approximately 95 percent of those with Part A coverage also have Part B coverage.

[3] In wave 1 of AHEAD, 90 percent of respondents had at least one visit to a doctor's office (Hurd and McGarry 1997).

[4] Medicare also provides a lifetime reserve of 60 days of coverage to be applied where needed.

[5] The Medicare Modernization Act of 2003 will provide some coverage of prescription drugs beginning in 2006.

[6] In 1996, 41 percent of nursing home expenses were paid for by Medicaid and 32 percent with out-of-pocket funds (Liu and others 2000).

[7] Individuals are eligible for Medicaid if they have sufficiently low income and assets. The exact levels vary by state. In states with medically needy programs, individuals can become eligible for Medicaid if their medical out-of-pocket expenditures are sufficiently large.

[8] Medigap plans are strictly regulated. Insurers are limited to offering plans from a set of 10 standardized plans that include specified levels of coverage.

[9] Medicare also covers some of the disabled. In 2001, approximately 86 percent of those covered by Medicare were aged 65 or older (Social Security Administration 2004).

[10] We do not use the younger HRS cohorts. In addition to being too young to qualify for Medicare at the start of the survey, respondents in the original HRS cohort (birth years 1931–1941) were not asked adequate questions about medical out-of-pocket expenditures until 1996, thus limiting the window of time for which we could capture spending.

[11] Although the elevated mortality risk experienced by this age group makes it ideal for studying transitions to widowhood, it does mean that our results cannot speak to the issue of out-of-pocket medical expenses for those who die at younger ages. Such expenditures near death for those younger than 65 are likely to be particularly interesting in that few individuals will be covered by Medicare but many will be covered by employer-provided insurance. The burdens facing these younger widows would be an important topic for future work.

[12] Data for 2002 are currently available, but the 2002 exit interview—a key source of data for our study—is still in preliminary form. Also, the 2002 wave contains more detailed categories of medical out-of-pocket expenditures than previous interviews, and our investigation suggests that this change in questioning severely hampers cross-wave comparisons.

[13] The person who completes this proxy interview is typically a spouse. If the surviving spouse is unavailable, the proxy respondent is a knowledgeable family member or friend.

[14] In the first wave of the survey, expenditures for married couples are measured jointly; the survey does not identify which spouse incurred the costs. To estimate a per person expenditure, we assign half of the couple's total medical out-of-pocket expenditures to each spouse. Although less than ideal, this decision should not alter our conclusions to any significant extent. An examination of later waves suggests that between 55 percent and 60 percent of these expenditures can be attributed to the spouse who dies in the subsequent wave. A rule-of-thumb approximation of 50 percent thus appears to be a reasonable simplification that errs on the side of suggesting "too small" a rise in expenditures during the last year of life.

[15] For the poor elderly eligible for Medicaid, Medicare Part B premiums are paid for by Medicaid. We thus do not add in the cost of Medicare Part B for those reporting eligibility for Medicaid.

[16] The data on medical out-of-pocket expenditures reported in AHEAD appear to be of high quality. Reports of those expenditures in wave 2 of AHEAD, which used a similar set of questions, correspond closely with reports in the National Medical Expenditures Survey (NMES), as reported in Hill and Mathiowetz (2000). For example, the proportion reporting nonzero medical out-of-pocket spending was 32.1 percent in NMES and 32.5 percent in HRS, and the proportion reporting $1 to $1,000 was 52.4 percent in NMES and 58.3 percent in HRS.

[17] Cases in which both spouses die between the same two waves are excluded from our study. For these couples, there is no surviving widow(er), and we are less certain about the quality of the proxy reports at the exit interview.

[18] The alternative is to scale the decedent's expenditures to 1 year. We do not choose this option because we want a measure of the actual out-of-pocket costs borne by the couple or survivor when we later assess economic well-being.

[19] If we exclude observations for 1993 when data limitations force us to divide expenditures equally, the values for the surviving spouse and decedent at *k-1* are $2,641 and $3,706.

[20] Our finding of elevated medical out-of pocket spending near widowhood in the AHEAD is also consistent with estimates by Zick, Fan, and Chang (2003) using the Medical Expenditure Panel Survey, which examines new widows 40 and older over a 2-year period.

[21] Obviously the *k+1* and *k+2* reports for decedent couples pertain to the expenditures for the surviving spouse alone.

[22] For example, to construct the observation for intact couples for time *k-1*, we take a weighted average of their expenditures for 1993, 1995, and 1998 with the weights based on the fraction of decedent couples for whom time *k-1* refers to each of these years.

[23] In contrast, the median prescription drug cost for the surviving spouse (Table 3) does not fall; in fact, it rises over time.

[24] Unfortunately, AHEAD obtains only the combined amount spent on hospitals and nursing homes (except in 1993, when hospital costs are aggregated with all nonnursing home expenditures). Among Medicare beneficiaries aged 65 and older in 1999, out-of-pocket spending for long-term care ($28,928 million) was roughly six times the amount of out-of-pocket spending for combined inpatient and outpatient hospital services ($4,876 million) (Liu and Sharma 2003). This leads us to believe that the vast majority of out-of-pocket spending in this category is for long-term care. In attempting to tease out the difference in the expected out-of-pocket costs in AHEAD, we identified persons in the sample who had only nursing home use, those who had only hospital use, and those who had both; we then compared the mean expenditures for this category. Few decedents had only nursing home use, but among those who did, the distribution was quite skewed. At time *k*, for example, for the 15 decedents with a nursing home stay but no hospital stay, out-of-pocket costs averaged $3,221 compared with an average of $2,220 for those with hospital stays only. Although nursing home costs are approximately 30 percent larger at the mean, the dramatic differences are in the tails. At the 95th percentile, out-of-pocket expenditures for nursing home use only was $31,800 compared with "just" $10,000 for the 95th percentile for hospital use alone. (These results are not shown here.)

[25] Out-of-pocket premiums could actually be lower to the extent that total premiums are subsidized by former or current employers.

[26] The analyses in Tables 2 and 3 used all of the available data from each wave, which leads to an unbalanced panel. To examine the sensitivity to the unbalanced nature of the panel, all analyses were also conducted on the balanced panel—those who died between 1995 and 1998. For this sample, there are data on *k-1*, *k*, *k+1*, and *k+2*. The key patterns described above in the unbalanced panel continue to hold.

[27] Health care costs rose by 37 percent from 1992 to 2000 on the basis of the consumer price index for medical care.

[28] The 64 observations that do not report *any* health insurance coverage are included in this group.

[29] If we divide medigap policies into those provided by an employer and those self-purchased, we find that the coefficient on employer-provided insurance is still positive and significantly different from zero, but it is smaller than the coefficient for self-purchased supplemental insurance. However, the difference between the types of insurance is not significant, and because of our limited sample size (and our large standard errors), we report the combined effect.

[30] Certainly, the initial decision to purchase medigap coverage is likely to be a function of expected medical expenses. And moral hazard will play a role in increasing service use once the policy is purchased. Here we seek only to assess the extent to which supplemental insurance is protective in the time leading up to death, when medical out-of-pocket spending is particularly high, and not to untangle the effects of adverse selection and moral hazard.

[31] Recall that medical out-of-pocket expenditures for the survivor are measured on an annual basis, as is income. We will later calculate poverty rates for this sample on the basis of yearly income. When doing so, we use the poverty threshold for a single person. Because the deceased's needs are excluded from this measure, we also exclude his income. In some cases, the decedent was alive for a portion of the year before the wave *k* interview of the survivor. We experimented with including any income reported to have accrued to the decedent and taking a weighted average of the single and joint poverty lines. Because many of the deceased spouses died in the first 12 months after the prior interview, their income (and their needs) is not relevant for the widow's poverty status at time *k*. When we include the income and needs of those who did survive beyond 1 year along with their prorated needs, the resulting poverty rates remain largely unchanged.

[32] Note that this figure serves solely as a gauge of the magnitude of the expenditures relative to income. As we discussed above, some survivors benefited from the income of their deceased spouse (which is not included), and medical out-of-pocket expenditures for the decedent are, on average, for 14.8 months following the previous interview, not the 12 months preceding the wave *k* interview for the survivor.

[33] Because the focus of this article is on poverty rates, and thus income, we do not explore the levels or changes in wealth in any detail. McGarry and Schoeni (2005) investigate the relationship between medical out-of-pocket expenditures and wealth more fully. They find that medical out-of-pocket spending as a fraction of wealth decreases substantially as wealth increases, although there is little if any pattern in the relationship between income and the ratio of out-of-pocket expenses to income.

[34] Because medical costs have risen substantially since the 1970s (the time to which the Hurd (1990) data pertain), they may be an important contributing factor to the decline and thus may explain the difference in the magnitude of the decline in wealth.

[35] These estimates are slightly lower than published statistics for widows, largely because the samples included males (widowers).

[36] See McGarry and Schoeni (2005) for a detailed analysis of the role of financial status before widowhood in contributing to the high poverty rate of widows. Specifically, although many new widows enter poverty when they become widowed, a substantial share of poor elderly widows were living in poverty even before their husbands died.

[37] The sharp jump to 18 percent poor at time *k+2* is not due to a change in the sample composition. Using a balanced panel leads to a similar rise in poverty between time *k-1* and *k* and to a further increase thereafter.

[38] Disaggregated expenditures are not available in 1993, so we assume that medical out-of-pocket expenditures for prescription drugs and nursing home and hospital stays are the same portion of total out-of-pocket expenditures that they are in 1995.

Note that this is a partial effect; we ignore the likely decrease in the purchase of private insurance coverage and hence premiums that would accompany an expansion of the Medicare program. This reduction would be expected to lower the adjusted poverty rate even further.

[39] Separate insurance policies are needed to cover long-term care needs, and even medigap policies that cover prescription drugs have a limit on annual claims.

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