Income, Assets, and Health Insurance: Economic Resources for Meeting Acute Health Care Needs of the Aged

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In this article, the authors use data from the Survey of Income and Program Participation (SIPP) to examine the relationship between economic resources and acute health care needs among the aged. The circumstances of individuals who rely on Medicare as their only form of health insurance are considered in detail because they are potentially more vulnerable when faced with health care expenses. Particular attention is given to the amount of family income and personal contingency assets held by this group and the level of out-of-pocket liability for acute care they might have been expected to face in 1984. The authors point out that their research findings would be strengthened by linkage of a more current SIPP data set to Medicare program records and the development of Medicaid eligibility simulation capability in the SIPP context.

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This article examines the relationship between economic resources and acute health care needs—that is, needs other than those related to preventive or long-term care—among the noninstitutionalized population age 65 or older. Three types of resources are considered: family income, health insurance, and contingency assets. Health care needs are discussed in terms of health status, health services utilization (physician visits and hospital stays), and estimated out-of-pocket liabilities for acute health care services. Information on economic resources, health status, and the utilization of services is taken from the 1984 panel of the Survey of Income and Program Participation (SIPP). Estimates of health care liabilities are adapted by the authors from sources external to the survey. The circumstances of individuals with Medicare coverage who do not have auxiliary private insurance (so-called Medigap policies) or Medicaid coverage are examined in some detail. Particular attention is given to a comparison of the amount of resources they hold in the form of contingency assets and the level of out-of-pocket liability they might have been expected to face in 1984.

Potentially, the elderly individual has access to multiple resources to meet the costs of acute health care services. For most, the resource of first resort is Medicare, since virtually all of the aged population are covered under that program. However, not all costs are reimbursed by Medicare, and so the aged individual must turn elsewhere to meet noncovered expenses. Those who incur noncovered expenses may be able to rely on private health insurance or a combination of private insurance and their own personal resources. Those without private insurance may still have sufficient resources of their own, in the form of either current income or savings, to deal with noncovered acute health care expenses. Finally, persons with very low income and assets may qualify for Medicaid in addition to Medicare. Aged individuals with coverage under both programs are substantially protected from liability for

acute health care costs. However, some of the aged are likely to be exposed to the risk of substantial out-of-pocket medical expense. Referred to as " 'tweeners" by Smeeding (1986), they are typically of low to lower middle income, but have too much income to qualify for Medicaid, no supplementary private health insurance, and little or no savings.

The data presented here suggest that at the time of the survey it is likely that some individuals with limited income and assets and covered only by Medicare would have had difficulty meeting typically encountered costs of outpatient prescription drugs and their liabilities for Medicare-covered services, especially when confronted by an episode of hospitalization. This situation would have been the case even if average out-of-pocket expenses had been reduced by capping those costs in a manner similar to the catastrophic provisions under the Medicare program that were enacted in 1988 and subsequently repealed.[1]

Resource Measures

Three types of resources are considered in this study: family income, contingency assets, and health insurance coverage. Each is discussed below.

Family Income

For the purposes of this study, income is defined as cash income before taxes or other deductions.[2] As is customary, the family, rather than the individual, is used as the basic unit of account for income because the co-resident family is a basic income-sharing unit—that is, in most cases, the income of each member is, to some significant degree, available to meet the needs of other family members. For this study, it is useful to view the minimum basic needs of food, clothing, shelter, and other recurring expenses of daily living as having first claim on family income.

Not only are income and expenses typically shared, but the per capita cost of meeting basic needs is convention-ally thought to be lower in larger

families than smaller ones, that is, there are economies of scale.[3] In order to reflect both the role of income in meeting a family's basic needs and the economies of scale present in the consumption of goods and services, income is transformed into a family welfare ratio, that is, family income divided by the appropriate family poverty threshold.[4] Given that the poverty threshold represents the official definition of minimum needs and includes adjustments for family size, the resulting family welfare ratio incorporates a conventional first approximation of economies of scale in the consumption of goods and services required to meet essential needs.[5]

Thus, the aged individual with a family welfare ratio below 1.00 is poor and would generally be considered unable to meet minimum consumption needs based on family cash income. The higher the family welfare ratio, the more likely that the individual would be able to devote some portion of income to discretionary purchases or to meet contingencies, such as out-of-pocket expenses associated with acute health care. Of course it is not clear the precise level at which substantial discretionary capability exists, but there must be at least some doubt about the ability of individuals in families with welfare ratios from 1.00 to 1.99 to meet substantial financial contingencies on the basis of current income. Such doubts would be particularly strong if the family welfare ratio falls in the lower part of this range (for example, from 1.00 to 1.49).[6]

The distribution of the aged by family welfare ratio at the time of the survey (1984) is summarized in table 1. Twelve percent of aged individuals had welfare ratios below 1.00. An additional 30 percent fell in the range between 1.00 and less than 2.00. Nearly three-fifths (58 percent) had family welfare ratios of 2.00 or more, and 20 percent, 4.00 or more.[7]

Contingency Assets

For this study, contingency assets are defined as assets that may be made readily available to meet an

Table 1.—Persons age 65 or older, by family welfare ratio, late 1984

Family welfare ratio	Percentage distribution
Total number (in thousands).	26,125.9
Total percent.............	100.0
Less than 1.00................	12.2
1.00-1.49.....................	15.5
1.50-1.99.....................	14.3
2.00-2.99.....................	24.3
3.00-3.99.....................	13.5
4.00 or more.................	20.1

unanticipated expense that is too large to defray from an individual's periodic income. In order to be considered available for such a contingency, an asset must be convertible to cash in a relatively short time and its conversion must not give rise to a new periodic obligation or deprive the individual of support for the usual activities of living.

Contingency assets include regular or passbook savings accounts, money market deposit accounts, certificates of deposit and other savings certificates, checking accounts of all types, money market funds, U.S. Government securities (including savings bonds), municipal and corporate bonds, other interest-bearing assets, equity in stocks and mutual fund shares, IRAs, Keogh plans, and other financial assets.[8]

There are several types of commonly held assets that are not included in this definition of contingency assets:

- those for which there is no ready market, such as privately held mortgages or a note from the sale of either a business or real estate other than one's own home;

- assets for which a market exists but for which protracted transaction times for conversion of the asset to cash are likely to be the rule, such as real estate other than the individual's own home;

- partial conversion of real estate equity to cash by means of taking out a secured loan because the result would be a new periodic obligation; and

- the equity in an individual's home,[9] in an owner-operated business, and

in personal vehicles because the conversion of such assets to cash would deprive an individual of resources required to support normal living activities.

Note that except for the exclusion of privately held mortgages and notes from the sale of either a business or real estate other than one's home, the concept of contingency assets is similar to the commonly employed concept of financial assets.

Although contingency assets could be aggregated to the family or household level, they are represented here at the individual level. This level of aggregation is motivated by two basic considerations: First, the resource is viewed as one for meeting out-of-pocket costs of acute health care, and second, if more than the individual's share of family assets is used to defray his or her personal health expenses, the insurance value of the remaining assets is reduced for other family members without a concomitant reduction in their exposure to risk. Thus, although married couples would undoubtedly tend to pool individual and joint resources to defray health costs of either spouse, such pooling serves to reduce the amount of assets available to the unaffected spouse if he or she subsequently incurs substantial out-of-pocket liability. Consequently, in this study, spouses are assigned only their respective share of marital assets.[10]

Variation in contingency asset holdings by family welfare level is shown in table 2. At the time of the survey, 84 percent of the aged held at least some contingency assets and the median amount of holdings for aged persons with at least some such assets was $11,006 (that is, half the individuals held less than that amount, and half more). As expected, ownership rates and the size of holdings increased as the family welfare ratio increased. For the poor (those with family welfare ratios below 1.00), the ownership rate was only 55 percent and the median holding for owners was only $1,201, while 95 percent of individuals in the highest welfare ratio group (with family

incomes of at least four times the poverty level) owned at least some contingency assets and the median holding for owners was $39,233.

Considerable variation in the distribution of asset amounts within each family welfare interval is evident. For example, about 45 percent of individuals with family welfare ratios below 1.00 had no contingency assets in 1984, and another 18 percent had no more than $499. The percentage of persons with no, or low, contingency assets dropped rather substantially as the welfare ratio increased. Less than 8 percent of individuals with the highest welfare ratios (4.00 or more) reported less than $500 in contingency assets. Conversely, as one moves from the lowest welfare ratios to the highest, the percentage of persons with assets of $5,000 or more grows, as does the percentage with assets of $20,000 or more. About 54 percent of the aged population had assets of $5,000 or more, ranging from a low of only 16 percent for those in families below the poverty line, to a high of 83 percent of those with welfare ratios of 4.00 or more. And while less than 3 percent of those with family welfare ratios below the poverty line had assets of $20,000 or more in 1984, 64 percent of those in the highest welfare ratio category had that level of assets.

Health Insurance Coverage

Aged persons may be covered by public and/or private health insurance plans. The major government-sponsored plans considered are Medicare and Medicaid. All persons age 65 or older who are entitled to benefits under the Social Security program (Old-Age, Survivors, and Disability Insurance—OASDI) are eligible for Medicare; therefore, virtually all the aged are Medicare covered.[11] Medicare provides two generic types of insurance coverage—Hospital Insurance (HI) and Supplementary Medical Insurance (SMI)—and pays all charges for covered services up to the allowed amount, subject to certain deductibles and coinsurance. In addition to the costs of noncovered services,

deductibles, and coinsurance, enrollees are also liable for balance billing under SMI—that is, charges above the Medicare allowed amounts for covered services from providers who have not agreed to accept payment on the basis of Medicare reimbursement rates.

Among the aged population, Medicaid is primarily available to those who are eligible for Supplemental Security Income (SSI). There are also "medically needy" persons who would not meet Medicaid eligibility criteria due to income above established Medicaid limits, but who incur sufficient medical expenses to eliminate excess income and become Medicaid eligible. (This option is not available in all States.) In general, Medicaid pays Medicare premiums, deductibles, and coinsurance for those dually entitled to Medicare and Medicaid, and also covers the cost of many health care services not covered by Medicare alone. Therefore, Medicaid provides substantial protection from out-of-pocket acute health care costs.

Effective January 1, 1991, State Medicaid programs pay the Medicare premiums, deductibles, and coinsurance for certain "Qualified Medicare Beneficiaries" (QMBs), including individuals age 65 or older with incomes below the Federal poverty level, who have countable assets at or below twice the SSI program limits, and who apply for the program.[12] These new provisions (phased in with the Medicare Catastrophic Coverage Act (MCCA) of 1988 and accelerated by the Omnibus Budget Reconciliation Act (OBRA) of 1990) were, of course, not in effect for the period covered by this study; nevertheless, they will provide substantial improvement in health insurance coverage for individuals who might otherwise have had difficulty meeting the cost of Medicare deductibles and coinsurance. However, the costs of services not covered under Medicare, such as prescription drugs, are not addressed by these provisions.[13]

Those who do not qualify for Medicare or Medicaid, and those who wish to supplement their public

coverage, may acquire private health insurance. Private plans may be employment-related, that is, available through a current or former employer or union. Costs of an employment-related plan may be paid in part or in full by the employer/union, or may be paid wholly by the covered individual. Other private plans may be purchased individually. Private health insurance plans for the aged are frequently called Medigap policies, implying that they are designed to defray some or all of acute health care costs not paid for by Medicare. The term has been used in a variety of contexts, but it is not clear to what extent these plans actually (or uniformly) meet that objective.[14] Using the 1984 SIPP data it was not possible to determine how well private health insurance coverage was coordinated with Medicare. Consequently, private coverage held in addition to Medicare is differentiated simply by source, that is, related to former employment or purchased individually.

The four major categories of health insurance coverage to be considered are:

- Medicare and employment-related private insurance,
- Medicare and other private insurance,
- Medicare only, and
- Medicare and Medicaid.

The relative importance of these different groups is shown in table 3. In 1984, 70 percent of the aged population was covered by both Medicare and some form of supplemental private health insurance. Thirty percent had Medicare and private coverage based on their current or former employment (or that of their spouse). Forty percent had private coverage that they purchased on their own in addition to Medicare. Eight percent were covered by Medicare and Medicaid, a combination that provides quite complete coverage of medical expenses. Approximately 20 percent of the aged, however, were covered only by Medicare, leaving them potentially more vulnerable to out-of-pocket liabilities than the other groups.[15]

Resources of Health Insurance Coverage Groups

Income and asset resources available to the aged in 1984 varied significantly across and within health insurance coverage groups.[16] Aged persons who were covered by both Medicare and some form of additional private health insurance tended to have more financial resources than did those with other forms of coverage. Within this group, those with private coverage based on former employment fared better than those who purchased private coverage on their own. Those with both Medicare and Medicaid tended to have the fewest resources; those with only

Table 3.—Percentage distribution of health insurance coverage among the population age 65 or older, late 1984

Health insurance coverage group	Distribution of persons age 65 or older
Total number (in thousands)...........	26,125.9
Total percent	100.0
Medicare and private.........	70.0
Employment related	29.8
Other private..............	40.2
Medicare only..............	19.9
Medicare and Medicaid [1]......	7.9
Other or not covered [2].......	2.2

[1] Includes 1.1 percent with Medicare, Medicaid, and private coverage.
[2] Consists of 0.1 percent with Medicaid and private coverage, 0.4 percent with Medicaid only, 1.1 percent with private only, one sample case with CHAMPUS coverage (0.0 percent), and 0.7 percent reported as not covered.

Medicare occupied an intermediate position. These patterns are documented in tables 4 and 5.

Comparison of Coverage Groups

The general ranking of the health insurance coverage groups with regard to the family welfare ratio is shown in table 4. Eighty-three percent of those covered by Medicare and employment-related private insurance had welfare ratios of 2.00 or more, as did 58 percent of those covered by Medicare and other forms of private insurance.

Table 2.—Percentage distribution of personal contingency assets, by family welfare ratio for persons age 65 or older, late 1984

Contingency asset amount	Total	Family welfare ratio					
		Less than 1.00	1.00 to 1.49	1.50 to 1.99	2.00 to 2.99	3.00 to 3.99	4.00 or more
Total number (in thousands).	26,125.9	3,197.0	4,057.8	3,748.8	6,350.9	3,528.1	5,243.3
Total percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Less than $500.................	25.3	62.2	40.6	26.3	17.5	13.6	7.8
None	16.3	44.6	27.3	15.4	9.7	8.0	4.7
$1-$499	9.0	17.6	13.3	10.9	7.8	5.6	3.1
$500-$4,999	21.1	21.9	30.3	27.5	22.4	17.9	9.3
$5,000 or more	53.7	15.9	29.1	46.2	60.2	68.4	82.9
$20,000 or more..............	30.8	2.7	9.8	21.5	29.8	42.1	64.3
Median amount for asset holders...........	$11,006	$1,201	$2,916	$6,003	$11,006	$16,826	$39,233

At the other extreme are those persons covered by Medicare and Medicaid; about 51 percent had family welfare ratios below 1.00, and another 31 percent had welfare ratios between 1.00 and 1.99, with about three-fourths of the latter between 1.00 and 1.49.[17] Those with only Medicare coverage occupied an intermediate position. Nineteen percent had welfare ratios below 1.00, 43 percent fell in the range 1.00-1.99, and 38 percent had welfare ratios of 2.00 or more.

Not only did those covered by Medicare and private insurance tend to have higher family welfare ratios than other coverage groups, they also tended to have higher contingency asset amounts.[18] As seen in table 5, median contingency assets among asset holders were highest for those with Medicare supplemented by private coverage ($15,000 for those with employment-related private insurance and $12,500 for those with other private insurance). Furthermore, 67 percent of those with Medicare and employment-related health insurance had contingency assets of $5,000 or more, and 40 percent had asset values of $20,000 or more. Only 15 percent reported less than $500 in contingency assets. The distribution of the amount of asset holdings among those with other forms of private insurance was quite similar.

Not surprisingly, aged persons covered by both Medicare and Medicaid tended to have relatively low contingency asset amounts in addition

to low family welfare ratios. Almost 60 percent had no personal contingency assets, and another 19 percent had assets of less than $500. In fact, only about 8 percent of this coverage group had assets of $1,500 or more (data not shown). The median asset amount for those with positive asset values was only $500.

Once again, those who relied solely on Medicare for their health insurance coverage occupied a middle position. The median amount of contingency assets for contingency asset owners was about $5,400, much higher than for the Medicare-Medicaid group, but much lower than for those with private coverage and about half the median for all aged persons with contingency assets. Slightly more than a fourth of the aged with only Medicare reported no contingency assets and fully 39 percent reported less than $500. Yet 39 percent also reported $5,000 or more of assets and 20 percent reported $20,000 or more.

Because individuals in the Medicare-only group are relatively more exposed to the risk of substantial out-of-pocket expenses when faced with an acute health care episode, and because many have, at best, only modest financial resources with which to meet such expenses, their economic resources are considered in more depth in the following section.[19]

The Medicare-only group.—As noted above, the 20 percent of the aged with

only Medicare tended to fall in an intermediate position in terms of income and contingency assets when compared with those who have Medicare and private coverage on the one hand and those with Medicare and Medicaid coverage on the other. What more can be said about the distribution of contingency assets within the Medicare-only population? Specifically, how does the distribution of contingency assets vary according to family welfare ratio? As shown in table 6, the distribution of personal contingency assets by family welfare ratio among the Medicare-only group followed the expected pattern. The lower the welfare ratio the higher the percentage of individuals with no contingency assets or with only very modest amounts. Thus, 41 percent of individuals with family welfare ratios below 1.00 reported no contingency assets, and 62 percent in this group reported none or less than $500 of such assets. Although the percentage of persons with no contingency assets or less than $500 in assets fell as family welfare ratio rose, a substantial proportion of individuals continued to report no contingency assets or only very modest amounts at family welfare intervals well above the poverty level.

On the other hand, significant proportions of individuals in each family welfare ratio interval had at least modest amounts of contingency assets. Even among persons with family welfare ratios below 1.00, for

Table 4.—Percentage distribution of health insurance coverage groups, by family welfare ratio for persons age 65 or older, late 1984

Health insurance coverage group	Total number (in thousands)	Family welfare ratio						
		Total percent	Less than 1.00	1.00 to 1.49	1.50 to 1.99	2.00 to 2.99	3.00 to 3.99	4.00 or more
Total [1]	26,125.9	100.0	12.2	15.5	14.3	24.3	13.5	20.1
Medicare and private	18,288.3	100.0	5.5	12.0	14.2	27.8	16.1	24.4
Employment related	7,783.6	100.0	2.4	5.9	8.9	30.1	21.6	31.1
Other private	10,504.7	100.0	7.9	16.5	18.1	26.0	12.1	19.4
Medicare only	5,188.2	100.0	19.2	25.0	18.1	19.8	7.7	10.2
Medicare and Medicaid	2,066.9	100.0	50.7	23.9	7.5	9.3	4.2	4.4

[1] Includes persons not shown separately who are covered by private health insurance, but not Medicare; persons with other forms of public coverage; and those with no public or private coverage.

example, 17 percent reported contingency assets of at least $5,000. Beginning at family welfare ratios equal to or exceeding 1.5 times the poverty level, sizable proportions of individuals (17 percent or more) reported contingency asset amounts in excess of $20,000. In the highest interval (4.00 or more), fully 56 percent reported contingency assets of $20,000 or more.

Another way to characterize the level of contingency assets is to consider the median amount for those who own at least some of the asset. As seen above, the overall median for the Medicare-only group holding contingency assets was $5,406; but the median varied substantially by family welfare level, ranging from $1,065 for those with family incomes below the poverty threshold, to over $30,000 for persons with family welfare ratios of 4.00 or more. Across the four lowest welfare categories the median about doubled at each successive level, until reaching a plateau at about $11,000 for the two intervals spanning the 2.00-3.99 range.

This overview of the distribution of personal contingency assets among the Medicare-only group indicates that there is likely to be a great deal of variability in the ability of individuals to defray health care costs not met by Medicare on the basis of their own

resources. Those with relatively high incomes and substantial contingency assets do possess a significant capability for meeting out-of-pocket expenses for acute care. Clearly, however, there are a significant number of individuals with no personal contingency assets or with only very modest amounts. Undoubtedly, some would be eligible for Medicaid. Still others might obtain assistance via the "spend down" provisions of the Medicaid program (as discussed above). In the final analysis, however, it is likely that some significant fraction of these individuals would have had real difficulty in meeting other than nominal out-of-pocket medical expenses. The possible extent of such liability is addressed in the section on the Medicare-only coverage group beginning on page 9.

Health Status and Utilization of Health Services

For aged persons, income and asset levels tend to vary markedly by type of health insurance coverage. Do health status and utilization of health services also show significant variation by type of coverage? [20]

The SIPP module on health and disability provides information on the

general health status of each adult. This measure characterizes the perceived health status of an individual based on self-assessment or the assessment of another person from the household, usually a family member acting as a proxy. [21] Using this measure, approximately 55 percent of the aged population overall was reported to be in good health, and 45 percent in fair or poor health. As table 7 shows, however, general health status varied substantially by health insurance coverage group. [22] Persons with Medicare and private coverage were more likely to be reported in good health than were persons in the sample as a whole (and, the health status of those with Medicare and employment-related insurance was rated above those with Medicare and private insurance purchased on their own). Those with Medicare and Medicaid were the most likely to be reported in fair or poor health. Those with only Medicare were in an intermediate position; they were more likely to be in good health than those with Medicare and Medicaid, but less likely to be in good health than those with Medicare and some form of private insurance.

Tables 8 and 9 provide information on the relationship between the utilization of selected health services

Table 5.—Percentage distribution of personal contingency assets, by health insurance coverage for persons age 65 or older, late 1984

Contingency asset amount	Total [1]	Type of health insurance coverage				Medicare only	Medicare and Medicaid
		Medicare and private					
		Total	Employment related	Other private			
Total number (in thousands)	26,125.9	18,288.3	7,783.6	10,504.7		5,188.2	2,066.9
Total percent	100.0	100.0	100.0	100.0		100.0	100.0
Less than $500	25.3	14.8	14.1	15.2		39.2	78.6
None	16.3	7.8	6.9	8.4		26.8	59.2
$1-$499	9.0	7.0	7.2	6.8		12.4	19.4
$500-$4,999	21.1	21.7	19.1	23.6		21.8	17.1
$5,000 or more	53.7	63.6	66.8	61.2		39.0	4.4
$20,000 or more	30.8	37.3	39.5	35.6		19.8	1.8
Median amount for asset holders	$11,006	...	$15,006	$12,502		$5,406	$500

[1] Includes persons not shown separately who are covered by private health insurance, but not Medicare; persons with other forms of public coverage; and those with no public or private coverage.

and type of health insurance coverage. [23] The extent to which the various coverage groups reported doctor visits for the past 12 months is shown in table 8. These data are only partially consistent with the reports of self-rated health status. The Medicare and Medicaid group, reporting the largest share in fair or poor health, were also the most likely to report four or more doctor visits and the least likely to report no doctor visits.

Those with both Medicare and private coverage were somewhat more likely to report no physician contact, and a good deal less likely to report four or more visits than those with both Medicare and Medicaid coverage. (Differences in reported health status between those with Medicare and employment-related private coverage and those with Medicare and private policies purchased on their own were not reflected in the utilization of physician services.) Given that those covered only by Medicare were reported to be in better health than those in the Medicare-Medicaid group, but in somewhat worse health than those with Medicare and private coverage, other things being equal, their utilization of physician services would also be expected to be intermediate between the two. This was not the case. Those with only Medicare were the least likely to report doctor visits in the past 12 months.

Information on the number of hospital stays by coverage group is given in table 9. Overall, about 20 percent of the aged reported one or more hospital stays in the past 12 months; about 6 percent reported two or more stays. With the exception of modestly higher utilization of hospital services by the Medicare-Medicaid group, however, differences in self-rated health status by type of coverage are not reflected in the distribution of hospital stays by type of insurance coverage.

Medicare-only Group: Contingency Asset Holdings and Estimated Levels of Health Care Liability

The levels of family income and personal contingency assets vary by health insurance coverage group as does health status (and, to a lesser extent, utilization of services). Aged persons who are covered by Medicare alone tend to have lower income and asset levels and tend to be in poorer health than those in the Medicare-private coverage group, but they have higher income and assets and better health status than those in the Medicare-Medicaid group. Up to this point, the discussion has only provided a very generalized characterization of the ability of individuals with only Medicare coverage to meet out-of-pocket costs of acute health care. Reviewing what is known or may be reasonably be inferred about the level of out-of-pocket liabilities that these individuals might have faced will bring this issue somewhat more into focus.

Character of Health Care Liability Information

Two types of information about the level and distribution of health care liabilities are presented below. The first was developed by Gornick and her colleagues (Gornick, Beebe, and Prihoda 1983) and pertains to the size distribution of liabilities (gross of any third party payments) for Medicare coinsurance and deductibles. The second, a set of hypothetical average annual liabilities faced by enrollees experiencing different kinds of hospital stays, was developed by the present authors on the basis of estimates by Christensen and Kasten for 1988 (1988a, 1988b).

This second set of estimates employs a broader definition of liability, including amounts stemming from outpatient prescription drugs and SMI balance billing charges as well as those attributable to Medicare coinsurance and deductibles. In both instances, it is well to note that the estimates represent liabilities, not actual expenditures. This distinction is important, because providers do not always collect 100 percent of billed charges, and so patients with insufficient resources may not ultimately be held responsible for full payment of all outstanding medical bills. [24]

Table 6.—Percentage distribution of personal contingency assets, by family welfare ratio for aged persons in the Medicare-only coverage group, late 1984

| Contingency asset amount | Total | Family welfare ratio | | | | | |
		Less than 1.00	1.00 to 1.49	1.50 to 1.99	2.00 to 2.99	3.00 to 3.99	4.00 or more
Total number (in thousands)	5,188.2	994.6	1,298.9	936.5	1,027.2	399.4	531.6
Total percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Less than $500	39.2	61.9	46.8	38.6	28.3	19.7	15.7
None	26.8	41.3	34.2	24.1	19.4	15.1	9.7
$1-$499	12.4	20.6	12.6	14.5	8.9	4.6	6.0
$500 to $4,999	21.8	21.2	27.5	23.0	18.4	24.0	11.6
$5,000 or more	39.0	17.0	25.7	38.5	53.3	56.2	72.7
$20,000 or more	19.8	2.8	8.1	16.8	29.7	33.4	56.4
Median amount for asset holders ...	$5,406	$1,065	$2,034	$5,004	$11,710	$10,901	$30,443

The estimate developed by Gornick and her colleagues was constructed on the basis of Medicare program data for 1976, 1978, and 1980, and projected to calendar year 1984. As they note, their estimate covers only Medicare deductibles and coinsurance stemming from Medicare-covered services and is not differentiated by the presence of ancillary coverage (Gornick, Beebe, and Prihoda 1983, p. 33), so it does not fully reflect the Medicare-only group's out-of-pocket liabilities for acute health care. Most importantly, since the estimate pertains only to liabilities arising from Medicare-covered services, it does not include out-of-pocket liabilities for outpatient prescription drugs. The estimate also does not take into account SMI balance billing charges. Since the Christensen and Kasten estimates for 1988 (1988b, table 4) suggest that on average the cost of outpatient prescription drugs alone amounted to at least half the liability attributable to Medicare deductibles, coinsurance, and balance billing charges, other things being equal, these two limitations necessarily contribute to a significant understatement of the level of out-of-pocket expenses faced by the Medicare-only enrollees in 1984.

On the other hand, the Gornick estimate is not differentiated by the presence of supplemental coverage (for example, private insurance and Medicaid) and there is reason to believe that utilization, and thus costs and liabilities, are somewhat less per capita for Medicare-only enrollees than the other two groups (Christensen, Long, and Rodgers 1987). For example, Christensen and Kasten (1988b, tables 5 and 7) estimated that the 1988 liability faced by the Medicare-only group to be 93 percent of the average for all Medicare enrollees. Other factors aside, this limitation of the Gornick estimate would lead to a modest overstatement of the expense faced by Medicare-only enrollees for covered services. However, it is reasonable to assume that the omission of outpatient drug expense and balance billing charges

outweighs the opposite effect of lower utilization by the Medicare-only group. On balance, then, the estimate by Gornick and her colleagues likely represents a quite conservative portrayal of the out-of-pocket expense faced by Medicare-only enrollees in 1984.

We derived two sets of estimates of hypothetical annual average out-of-pocket costs faced by Medicare-only enrollees experiencing different types of hospitalization episodes in 1984 from simulations prepared by Christensen and Kasten for 1988 that we adjusted downward to more plausibly represent liabilities that might have been incurred in 1984. The estimates provide a useful portrayal of the general level of liability that members of the Medicare-only group would have faced, on average, had they been hospitalized in

that year. As noted, their estimates of out-of-pocket costs include Medicare coinsurance and deductibles, plus balance billing charges (Christensen, personal communication), and outpatient prescription drugs. One set corresponds to the general configuration of the Medicare program as it existed in 1984, that is, without caps on hospitalization and outpatient prescription drug costs. A second set was developed to represent, in a general way, the level of out-of-pocket costs that the Medicare-only group might have faced if hospitalization and outpatient prescription drug costs had been capped in a manner consistent with the subsequently repealed provisions of the 1988 MCCA. These were developed from the "existing law" estimates using percentage reductions simulated by Christensen

Table 7.—General health status of the aged, by type of health insurance coverage, late 1984

Health insurance coverage group	Total number (in thousands)	General health status		
		Total percent	Good or better [1]	Fair or poor
Total [2]	26,125.9	100.0	54.9	45.1
Medicare and private	18,288.2	100.0	60.6	39.4
Employment related	7,783.6	100.0	65.6	34.4
Other private	10,504.7	100.0	56.9	43.1
Medicare only	5,188.2	100.0	46.2	53.8
Medicare and Medicaid	2,066.9	100.0	25.4	74.6

[1] Includes persons rated in excellent, very good, or good health.
[2] Includes persons not shown separately covered by private health insurance, but not Medicare; persons with other forms of public coverage; and those with no public or private coverage.

Table 8.—Number of doctor visits reported by the aged for the past 12 months, by health insurance coverage, late 1984

Health insurance coverage group	Total number (in thousands)	Doctor visits in past 12 months			
		Total percent	None	1-3	4 or more
Total [1]	26,125.9	100.0	18.7	35.2	46.0
Medicare and employment-related private	7,783.6	100.0	18.1	37.5	44.5
Medicare and other private	10,504.7	100.0	17.2	37.8	45.1
Medicare only	5,188.2	100.0	24.1	31.0	45.0
Medicare and Medicaid	2,066.9	100.0	12.6	23.9	63.5

[1] Includes persons not shown separately who are covered by private health insurance, but not Medicare; persons with other forms of public coverage; and those with no public or private coverage.

and Kasten for the effect of a full implementation of the MCCA caps. Details on the derivation of the estimates are given in the Technical Appendix.

Distribution of Liability for Medicare Coinsurance and Deductibles

Gornick and her colleagues estimate that the average liability attributable to Medicare coinsurance and deductibles for all enrollees was $339 in 1984 and was distributed as follows: [25]

Amount of liability	Percentage distribution
Total	100.0
$0-$500	81.2
$501 or more............	18.8
$501-$1,500	14.7
$1,501 or more.........	4.1

Thus, according to their estimates, 81 percent of Medicare enrollees faced $500 or less in liability for Medicare coinsurance and deductibles, about 15 percent had liabilities of $501 to $1,500, and 4 percent had liabilities of $1,501 or more. How does the distribution of contingency assets held by the Medicare-only coverage group in 1984 compare with these levels of liability? The answer is given in table 10.

Although 19 percent of the enrollees likely faced a liability for Medicare coinsurance and deductibles of more than $500, overall 39 percent reported less than $500 in contingency assets. Sixty-two percent of enrollees in the lowest family welfare ratio interval had less than this amount, with the percentage steadily falling to 16 percent

in the highest family welfare ratio interval. However, the percentage of individuals with less than $500 remained substantial (20 percent) even at family welfare levels of 3.00-3.99, and was considerably higher at lower welfare ratio levels. Obviously, all of these individuals would have had to rely on resources other than contingency assets if faced with a liability of $500 or more.

According to Gornick's estimate, a relatively small group (4 percent) faced a liability stemming from Medicare coinsurance and deductibles of more than $1,500. Overall, about half of the Medicare-only enrollees would not have been able to defray such an expense on the basis of their personal contingency assets. This would be the case for about three-fourths of those in the lowest family welfare ratio category, but would decline to slightly more than one-fifth in the highest welfare ratio category. However, the percentage unable to meet this level of expense does not fall below 40 percent until reaching family welfare levels of 2.00 or more.

On the other hand, 61 percent of the enrollees reported $500 or more in assets, and 50 percent reported $1,500 or more. The percentage of individuals able to defray this latter level of liability almost tripled between the lowest and highest family welfare ratio categories, rising from a low of 27 percent to a high of 79 percent.

Table 9.—Number of hospital stays reported by the aged in the past 12 months, by health insurance coverage, late 1984

Health insurance coverage group	Total number (in thousands)	Hospital stays in past 12 months			
		Total percent	None	1	2 or more
Total [1]	26,125.9	100.0	79.6	14.4	6.0
Medicare and employment-related private	7,783.6	100.0	79.9	14.4	5.6
Medicare and other private	10,504.7	100.0	80.2	14.3	5.6
Medicare only..............	5,188.2	100.0	79.8	13.6	6.6
Medicare and Medicaid.......	2,066.9	100.0	73.2	17.4	9.4

[1] Includes persons not shown separately who are covered by private health insurance, but not Medicare; persons with other forms of public coverage; and those with no public or private coverage.

Table 10.—Percentage distribution of personal contingency assets, by family welfare ratio for aged persons in the Medicare-only coverage group, late 1984

Contingency asset amount [1]	Total	Family welfare ratio					
		Less than 1.00	1.00 to 1.49	1.50 to 1.99	2.00 to 2.99	3.00 to 3.99	4.00 or more
Total number (in thousands)....	5,188.2	994.6	1,298.9	936.5	1,027.2	399.4	531.6
Total percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Less than $500	39.2	61.9	46.8	38.6	28.3	19.7	15.7
$500 or more	60.8	38.1	53.2	61.5	71.7	80.3	84.3
$500 to $1,499	10.4	11.5	12.1	11.5	10.0	6.8	5.6
$500 to $799	4.8	3.8	5.8	6.3	5.5	3.6	1.0
$800 to $1,499	5.6	7.7	6.3	5.2	4.5	3.2	4.6
Less than $1,500	49.6	73.4	58.9	50.1	38.3	26.5	21.3
$1,500 or more	50.4	26.6	41.1	50.0	61.7	73.5	78.7

[1] Intervals defined on the basis of the estimated size distribution of Medicare coinsurance and deductible amounts.

Finally, the average liability of the 15 percent of individuals incurring Medicare coinsurance and deductible charges of $501-$1,500 was approximately $800 (estimate not shown). About half the individuals with contingency assets in that interval would have been able to meet an $800 liability while the other half would not.

Asset Holdings Compared with Liabilities Associated with Hospitalization

Hypothetical estimates of average annual enrollee liability associated with selected kinds of hospitalization episodes are given in table 11. Also shown is the percentage of enrollees with only Medicare coverage at the time of the survey whose contingency assets would have been insufficient to meet such an expense if incurred.

The upper panel of the table presents a view of liabilities based on the general configuration of the Medicare program in 1984. The lower panel is intended to suggest the average annual out-of-pocket costs for acute care that individuals might have faced had the hypothetical liabilities been generally consistent, relatively speaking, with those simulated by Christensen and Kasten under a full implementation of the MCCA.

The average annual liability associated with each of three different types of hospitalization episode is presented: one stay, no coinsurance days; two or more stays, no coinsurance days; and one or more stays, with coinsurance days. [26] Christensen and Kasten estimated that in 1988 about 13 percent of Medicare-only enrollees would face the first type of episode, incurring the lowest total annual liability under either of the two program configurations considered. About 7 percent might have experienced the second type of episode, while only about 0.7 percent experienced the third (and most costly) type of hospital stay. The probabilities of experiencing these sorts of hospitalization episodes were likely quite similar in 1984. [27]

The hypothetical total average annual out-of-pocket liability for Medicare-only enrollees in 1984 by type of hospitalization episode, given the general provisions of the law at that time, is estimated to have been $1,265 for one stay with no coinsurance days; $2,060 for two or more stays and no coinsurance days; and $6,331 for one or more stays with coinsurance days. Based on these estimates, 49 percent could not have met the average annual liability involving the least expensive of the three hospitalization episodes on the basis of their personal contingency assets. Relying solely on personal contingency assets, the proportion of enrollees who would have been unable to meet the average annual liability if faced with a hospitalization episode involving two or more hospital stays but no coinsurance days was only moderately higher (54 percent overall).

Table 11.—Percent of aged Medicare-only individuals with contingency assets less than hypothetical average annual liability costs for all acute care services, by type of annual hospitalization experience, Medicare program configuration, and family welfare ratio, late 1984

Type of annual hospitalization experience by Medicare program configuration	Estimated percent of all enrollees in group [1]	Hypothetical average annual liability per enrollee [2]	Percent unable to meet average annual liability by family welfare ratio interval						
			Total	Less than 1.00	1.00 to 1.49	1.50 to 1.99	2.00 to 2.99	3.00 to 3.99	4.00 or more
No caps on hospital costs or outpatient prescription drugs, 1984 law									
One stay, no coinsurance days	13.4	$1,265	48.6	72.1	58.6	49.0	37.4	23.8	19.5
Two or more stays, no coinsurance days	6.5	2,060	54.2	75.3	67.2	54.9	41.9	31.3	22.2
One or more stays, with coinsurance days	.7	6,331	64.7	86.7	76.8	66.6	50.7	48.9	29.8
With caps on hospital costs and outpatient prescription drugs [3]									
One stay, no coinsurance days	13.4	977	45.1	67.5	54.2	44.9	34.8	23.8	17.8
Two or more stays, no coinsurance days	6.5	1,203	48.1	71.6	57.7	47.9	37.4	23.8	19.5
One or more stays, with coinsurance days	.7	1,216	48.1	71.6	57.7	47.9	37.4	23.8	19.5

[1] Size of the enrollee groups defined by use and insurance coverage before the MCCA as estimated by Christensen and Kasten for 1988 (1988b, table 8).

[2] In addition to hospitalization costs, includes annual liability for all other Medicare-covered services, including balance billing and outpatient drugs. Liability for Medicare-covered services is estimated net of Medicare reimbursements.

[3] Pre-1988 law adjusted to represent the approximate effect of introducing catastrophic coverage similar to MCCA using percentage reductions simulated by Christensen and Kasten for 1988.

Source: See table A9 in the Technical Appendix for utilization rates and hypothetical average annual liability per enrollee. Contingency asset distributions estimated from the 1984 SIPP wave 4 public use file.

When the most expensive of the three types of episodes is considered, a somewhat larger proportion of individuals (65 percent) would have found themselves unable to defray the average hypothetical cost using their contingency assets.

For all three types of episodes, the usual pattern of variation by family welfare interval is observed. Faced by the most expensive episode, a clear majority of individuals at family welfare levels below 2.00 would have been unable to meet the average annual liability on the basis of their personal contingency assets. At welfare ratios between 2.00 and 3.99, enrollees are about evenly divided between those who could and could not meet the estimated liability on the basis of their assets. Only at welfare levels of 4.00 and above would those unable to meet the average annual liability be in the clear minority.

Given a program configuration generally consistent with a full implementation of the 1988 MCCA, that is, with caps on patient liability for hospital and outpatient prescription drug costs, the picture is very similar except for the most expensive type of episode (one or more stays with coinsurance days). For this type of episode there do appear to be notable, if modest, reductions in the proportion of individuals whose contingency assets would have been insufficient to meet the average annual liability. Without caps on liability for hospital and outpatient prescription drug costs, an estimated 65 percent of the group would have been unable to meet the average annual out-of-pocket cost; with the caps in place the percentage falls to 48. Only at family welfare ratios below 1.50 would a majority of individuals have been unable to meet the liability on the basis of their personal contingency assets. Of course, since the extensions of Medicaid coverage provided for under the 1988 MCCA have been retained, individuals with Medicare coverage who are poor by program standards and with countable assets below $4,000 ($6,000 for a couple) will be eligible for assistance to

defray SMI premiums, deductibles, and coinsurance associated with covered services.

Given the large reductions in average annual liabilities associated with caps on liability of the sort contemplated by the 1988 law (reductions of 23, 42, and 81 percent, respectively, for the three levels of utilization), the percentage of the Medicare-only group able to meet out-of-pocket costs on the basis of their contingency assets might have been expected to increase more dramatically. That this was not the case is due to the large share of individuals who held very modest amounts of these sorts of assets; that is, 45 percent held less than $977, the lowest level of average annual liability involving hospitalization that was considered. Furthermore, only about one-fourth of those who could not meet the $6,331 liability associated with the most intensive utilization pattern under the pre-1988 program configuration would be able to meet the average annual liability of $1,216 stemming from the same level of utilization with caps like those provided by the MCCA.

Summary and Future Research

This study has provided additional descriptive documentation of the variation in economic resources among the aged and how traditional measures of resources, such as income and assets, vary according to type of health insurance coverage. Most of the findings are consistent with prior research. One novel feature of the study was the portrayal of how contingency assets vary by family welfare ratio and type of coverage. Comparison of the distribution of contingency asset amounts with hypothetical estimates of out-of-pocket liabilities for acute health care in the most vulnerable group (those with only Medicare coverage) also proved to be of interest.

It is clear that the cost of medical care services for the aged is an issue of great importance and one that will remain at the front of policy debate for the foreseeable future. On the one hand

is the concern for the financial burden that health care costs represent for the aged. On the other is the large and growing claim that the Medicare and Medicaid programs make on public revenues. One of the reasons for undertaking this study was to alert the wider community to the potential that SIPP offers to those who will be engaged in the debate over health care for the aged. [28]

In the short to medium term, the specific research reported here could be strengthened in a number of ways. Most obviously, it could be redone using more recent SIPP panels that are better aligned in time with available estimates of out-of-pocket liabilities. Also, the health circumstances of both spouses in aged married-couple families might be compared to determine how frequently both members are likely to face substantial out-of-pocket liabilities. Less straightforward, but equally important, would be the introduction of additional refinements to the income measure. Most specifically, it would be useful to determine the amounts of income available after fixed expenses for basic needs, such as shelter and food, and taxes have been met. The simulation of Medicaid eligibility would also yield a better representation of the alternatives available to the aged with only Medicare coverage when faced by costs for acute care that exceed their personal resources.

The Office of Research and Statistics (ORS), Social Security Administration, has recently begun development of a SIPP-based Federal SSI simulation model that would serve to identify nonparticipating Medicaid eligibles in those States that employ the same eligibility criteria for both SSI and Medicaid (Vaughan and Wixon 1991, Wixon and Vaughan 1991). Extension of the model to deal with Medicaid coverage of SMI premiums, deductibles, and coinsurance of Qualified Medicare Beneficiaries (QMBs) would also be feasible in principle once the model has been implemented on current SIPP data sets. However, simulation of general Medicaid eligibility in States with

criteria more restrictive than those of the SSI program or with programs for the medically needy clearly lies beyond the scope of this current SSI modeling effort. Finally, it would be worthwhile to estimate the effect of contingency asset holdings on the level of health services utilization.

Over the long term, the greatest improvements would come through matching the SIPP records to Medicare program files. Matching would provide much better estimates of liabilities stemming from Medicare-covered services gross of private insurance, and support more credible simulations of the costs and impacts of alternative program arrangements.

Notes

[1] This study was initiated after enactment of the Medicare Catastrophic Coverage Act (P.L. 100-360). The analysis was completed after provisions of the law capping hospitalization and outpatient prescription drug costs were repealed. However, the 1988 provisions extending Medicaid benefits to certain aged and disabled "qualified Medicare beneficiaries" were retained and are discussed in the section on health insurance coverage on page 5.

[2] The cash income concept employed by the SIPP for subannual periods includes all income amounts received from earnings, public and private transfers (except interhousehold transfers), and property income. Excludes rebates, refunds, loans, capital gain or loss from the sale of assets, and accrued interest on Individual Retirement Accounts (IRAs), Keogh plans, and U.S. savings bonds.

[3] Of course, economies of scale are not present for all classes of expenditures. In particular, there is little reason to presume economies of scale in expenditures for acute health care, and this basic difference between health expenditures and other types of household expenses will affect how contingency assets are treated.

[4] See the Technical Appendix for the operational definition of the welfare ratio in the SIPP context.

[5] The official poverty thresholds employ an equivalence scale that nominally accounts for the effects of family size and composition for persons with incomes at the official poverty level. It is not certain that the same equivalence scale should be used to adjust for family size and composition differences at middle or upper income levels or even for families with incomes considerably below the official thresholds. However, no widely accepted alternative to the equivalence scale incorporated in the poverty thresholds is available.

[6] Families with incomes between 1.00 and 1.25 times the poverty threshold are generally termed "near poor," and in some instances Federal means-tested programs are designed to provide families above 125 percent of the poverty level with assistance. For example, Food Stamp eligibility is extended to households with gross incomes up to 130 percent of the poverty line; Low-Income Home Energy Assistance payments may be made to families with incomes under the greater of 150 percent of the poverty level or 60 percent of the State's median income; and under certain circumstances, infants and pregnant women may be covered under Medicaid when family income is at or below 185 percent of the poverty level. State Medicaid programs pay the Medicare Hospital Insurance (Part A) premium of disabled persons with incomes below 200 percent of the Federal poverty level who lost previous Medicare benefits because they returned to work.

[7] Although these estimates are taken from the SIPP and are based on a comparison of 4-month incomes to one-third of official annual poverty thresholds price-indexed to the months covered by the survey reference period, they are quite similar to those obtained from the more usual sources (for example, Bureau of the Census 1986c table 6, p. 23).

[8] For the nonaged, IRAs and Keogh plans can not be utilized without incurring a substantial penalty. They may be drawn down at will by the aged. However, to the extent the aged depend on them to provide a regular source of income, their use to defray the expense of a medical contingency, as with other income-producing assets, may lead to later hardship. As of 1984, these assets were relatively rare among the aged. They were held by only 9 percent of aged households and accounted for just under 3 percent of aged household net worth (Bureau of the Census 1986a, pp. 4 and 9).

[9] It might be argued that the elderly may use reverse mortgages to obtain access to the equity in their homes without incurring a new periodic obligation or depriving themselves of a place to live, but such arrangements are not widely available and are experimental.

[10] In the SIPP it is possible to identify assets held jointly by the married couple, those each member of the couple holds solely in his or her own name, and each married person's share of assets held jointly with persons other than a spouse. In constructing this measure of contingency assets, each spouse is assigned the asset amount held in his or her own name, the share of assets held jointly with persons other than their spouse, and one-half of jointly held marital assets. Alternatively, each spouse could have been given exactly half of the total amount of contingency assets held by the couple. More detail on the construction of the contingency asset measure is given in the Technical Appendix.

[11] In 1984, 26,305,000 persons age 65 or older were covered by both HI and SMI, 807,000 by HI only and 459,000 by SMI only (Social Security Administration 1987, p. 236).

The HI deductible was $356 for the first 60 days of inpatient hospitalization during a benefit period (the corresponding amount for 1992 is $652). From the 61st to 90th day of the benefit period, the patient is responsible for coinsurance equal to one-fourth the deductible on a daily basis ($89 in 1984 and $163 in 1992). Persons hospitalized for more than 90 days during a single benefit period may use, at their option, up to 60 additional hospital days from the so-called "lifetime reserve." The daily coinsurance amount for lifetime reserve days is equal to one-half the HI deductible ($178 in 1984 and $326 in 1992). (A benefit period begins on the first day a patient is hospitalized and ends when the patient has not been an inpatient for at

least 60 consecutive days. There is no limit to the number of benefit periods that an enrollee may have.) In 1984, the annual deductible under SMI was $75 ($100 in 1992). After the deductible is met, the enrollee is liable for coinsurance equal to 20 percent of Medicare-allowed charges for SMI-covered services. Assignment rates under SMI increased after 1984 with the introduction of pricing incentives for physicians. (The assignment rate refers to the proportion of providers agreeing to accept payment on the basis of Medicare-allowed amounts.) In 1987, limits were placed on maximum allowable charges for nonparticipating physicians, and beginning in 1991, providers who do not accept assignment may charge no more than 125 percent of Medicare-approved fees; no more than 120 percent in 1992 and, after 1992, no more than 115 percent.

[12] Caution should be used in drawing inferences about the size of the QMB-eligible population based on family welfare ratio distributions presented in this study. Although the welfare ratios employed here and the poverty criteria used to determine income eligibility are both derived from the official statistical thresholds released by the Census Bureau, there are a number of significant differences in how the poverty criteria are employed in practice in the two contexts.

The poverty cut offs employed for determining income eligibility under the QMB program are based on the poverty guidelines issued by the Department of Health and Human Services (see "Poverty Income Guidelines for 1992," pp. 43-46 in this issue). The guidelines represent a simplified version of the official thresholds. However, income counting and family size rules under the QMB program are different than those employed in the statistical measure of poverty used by the Census Bureau. For example, the Census Bureau income concept includes all regular money income, excludes noncash income, and measures family size on the basis of the total number of persons living in the same household who are related by birth, marriage, or adoption. Because the QMB program uses income counting rules employed by the Federal SSI program, specified amounts of money income from transfers and earnings are disregarded and certain types of noncash income are counted. Poverty thresholds for only families of size one (nonmarried persons) and two (married couples) are employed

and only the countable income of the nonmarried individual or couple is considered, regardless of the presence of other relatives in the household.

[13] See Social Security Administration (1991, pp. 62-66) and Waid (1990, pp. 171-172) for information regarding Medicaid provisions.

[14] The OBRA of 1990 requires the establishment of standards for Medigap policies. Companies that offer insurance to supplement Medicare must offer a "core" package of basic benefits and a maximum of nine additional coverage packages. These packages, to be designed by the National Association of Insurance Commissioners, will be standardized to facilitate comparison shopping.

[15] About 2 percent of the aged had other types of coverage or reported no coverage. These groups were too small to support reliable estimates and so are not discussed. Also, although veterans and career military retirees (and their dependents and survivors) are generally eligible for military-related health benefits in addition to those discussed here, this type of coverage is not considered.

[16] The interrelationship of income, assets, and health insurance coverage is complex. Our description of the variation in income and asset levels by coverage groups should not be taken to imply any particular causal relationships among the variables.

[17] There are, of course, persons who qualify for Medicaid based on low personal income but have relatively higher welfare ratios because of the income of other family members who are not part of the Medicaid eligibility unit. Thus, 18 percent of individuals with Medicare and Medicaid have family welfare ratios of 2.00 or more.

[18] Farley and Wilensky (1985) use data from the 1977 National Medical Care Expenditure Survey (NMCES) to investigate the alternatives offered by savings and insurance for protecting against the financial risks posed by poor health. Their study is restricted to the nonelderly and they present evidence that savings may act as a substitute for more complete coverage among families with at least some private health insurance. However, they also find that the value of assets owned by families with neither private nor public insurance was typically well below that of families with at least some private coverage.

[19] Individuals with private insurance coverage in addition to Medicare do incur some out-of-pocket liability, but it is likely to be at appreciably lower levels than those with only Medicare coverage. For example, Christensen and Kasten (1988a, 1988b) estimated that in 1988, 19 percent with private coverage faced an out-of-pocket liability for Medicare-covered services plus outpatient prescription drugs of $500 or more. Two percent were estimated to have incurred more than $1,500 in out-of-pocket expense, and the average annual out-of-pocket cost for enrollees with hospital stays fell in the range of $400 to $500. Without better information on the nature of the specific type of private coverage held by Medicare enrollees in the sample, it is not possible to identify which subgroups among those with private coverage are likely to face significant out-of-pocket costs, nor to relate such costs to enrollees' financial resources.

[20] The interrelationship of coverage, health status, and utilization of health services is clearly very complex. Our description of the patterns of variation of health status and the utilization of services by type of coverage should not be taken to imply any particular view about the causal nature of these relationships.

[21] Approximately 77.6 percent of the aged in the study sample were self-respondents; the remainder of the respondents were proxies. In the Technical Appendix, the SIPP health status measure is compared with the same measure obtained from the National Health Interview Survey.

[22] All differences noted in the following discussion are statistically significant at the 0.05 level. Tests of significance were based on generalized variance parameters estimated by Bye and Gallicchio (1988) directly from the SIPP public use files. As discussed by Bye and Gallicchio, when Social Security and related populations are of interest, their generalized parameters are preferred over the program participation parameters given by the Census Bureau.

[23] The annual number of physician visits and hospital stays was obtained in the SIPP module on health and disability. Comparisons of the SIPP estimates to those from the National Health Interview Survey are given in the Technical Appendix.

[24] Incidentally, according to SIPP data, about 17 percent of the aged had an outstanding medical debt at time of

interview. The median and mean amounts of such debt were, respectively, $151 and $702.

[25] The particular categories given here differ from those presented by Gornick, Beebe, and Prihoda. The procedure used to obtain the distribution according to these categories is explained in the Technical Appendix.

[26] Stays involving coinsurance days are episodes of hospitalization that involve more than 60 inpatient days during the course of one benefit period and which therefore involve patient liability for the daily coinsurance amount. Although stays involving coinsurance days are quite rare, they generate much higher liabilities.

[27] The SIPP data for 1984 indicate that 20.4 percent of all aged persons reported at least one overnight hospital stay in the 12 months prior to interview, with 14.4 percent reporting just one stay, and 6 percent reporting two or more stays. The Christensen and Kasten estimates for all Medicare-covered in 1988 are as follows: 21.4 percent with one or more stays, 14.1 percent with one stay and no coinsurance days, and 6.8 percent with two or more stays and no coinsurance days (1988b, table 8).

[28] Wilensky (1985) has also called attention to the potential contribution of the SIPP for research on health insurance coverage, disability, and health care utilization. We have approached these issues from a somewhat different perspective, using the survey's health-related information to better understand the economic circumstances of the elderly.

Technical Appendix: Source of Estimates

Data Base

For this study, the basic data were taken from the 1984 panel of the Survey of Income and Program Participation (SIPP). More specifically, the study relied on demographic, income, asset, and basic health insurance coverage information obtained from the SIPP wave 4 public use file together with health status and health services utilization information and details about health insurance coverage collected in the wave 3 SIPP topical module.

The data from wave 3 were matched on a person-by-person basis to the wave 4 file. Subsequently, the records of married, spouse-present individuals were combined to facilitate analyses of married couples. The linkage of married individuals into couples was also required in order to construct health insurance coverage variables and person-level measures of contingency assets. (The construction of these variables is discussed below.) The file allowed construction of all the usual wave 4 cross-sectional estimates of persons, families, and households, as well as the representation of each married individual in terms of the characteristics of his or her spouse. Although the data file was enhanced in response to the needs of the current study, it had been under development for some time as part of a larger effort at the Social Security Administration (SSA) to exploit the SIPP as a source of information on the social and economic characteristics of Social Security beneficiaries, Supplemental Security Income (SSI) recipients, and the aged and disabled populations from which they are drawn (for example, Grad 1989, Radner 1989, Vaughan 1989, and Vaughan and Wixon 1991).

The universe for this study is the civilian noninstitutional population of the 50 States and the District of Columbia who were age 65 or older as of August-November, 1984. However, since the analytical requirements of the study required the union of data from the wave 3 and 4 cross-sectional files, the representation of this universe was based on wave 4 sample persons who were also interviewed in wave 3. As

shown in table A1, these individuals represented 98 percent of the complete universe, and therefore this restriction had little, if any, practical impact on the study results.

Variable Construction

Family welfare ratio.—This ratio is designed to show the relationship of total family income to the family poverty threshold. Total family income on the SIPP (F*TOTINC) [1] is reported on a monthly basis for each of the four months in the wave 4 reference period. These four amounts were summed to provide a 4-month total family income amount for the individual. A family poverty threshold also appears on the file for each individual for each month of the reference period (F*_POV). It represents an annual, rather than monthly amount, but is adjusted to reflect the price level in a given month and takes into account family size and composition on a monthly basis. The four separate thresholds for the interview period were summed and then divided by 12 to obtain an average 4-month poverty threshold appropriate to the survey reference period. The welfare ratio was then constructed by dividing the 4-month family income amount by the 4-month average poverty threshold amount. [2]

The distributions of aged individuals by family welfare ratio based on the SIPP for August-November 1984 and the Current Population Survey (CPS) for calendar year 1984 are given in table A2. Clearly, the two distributions are very similar.

Table A1.—Study universe: Weighted and unweighted counts of population age 65 or older in wave 4, and in wave 3 overlap with wave 4

Element	Total (number in thousands) [1]	Sample counts
Total wave 4, August-November average.....	26,580.5	5,745
Wave 3 overlap	26,125.9	5,630
As a percent of wave 4.......................	98.3	98.0
Wave 3, not interviewed	454.6	115
As a percent of wave 4.......................	1.7	2.0

[1] Weighted as of the last month of survey reference period (August-November, 1984).

Health insurance coverage recode.—Medicare and Medicaid coverage (CARECOV4 and CAIDCOV4, respectively) were defined on an individual basis as of the fourth month of the wave 4 reference period. Determining the nature of private coverage was more complicated.

The SIPP respondents might have reported private health insurance coverage in their own name (SC1536 = 1), or they might have been covered on someone else's policy (SC1537 = 1). If covered in their own name during the wave 4 reference period, the characteristics of their policy were determined from their own record. For example, the policy may or may not have been associated with a current or former employer or union (SC1548), and if employment-related, may or may not have been paid in part or in full by that employer or union (SC1550).

However, if the respondent reported coverage on another person's policy, he or she was not questioned concerning the nature of that policy. The characteristics of a policy were only collected from the primary insured person. If the respondent was married, spouse-present (MS _4 = 1), it was possible to check the spouse's portion of the linked record to determine the nature of the health insurance. First, it was necessary to confirm that the spouse's policy indeed covered the individual in question. The spouse's record might indicate that all household members were covered (spouse's SC1554 = 1), or that specific persons were covered. (Spouse's items SC1556 through SC1564 list the person numbers of covered individuals.) If the spouse's data confirmed coverage, the characteristics of that coverage were extracted from the spouse's portion of the record. If the spouse's data did not confirm coverage, or if the respondent was not married, the nature of the private coverage could not be determined. [3]

Table A3 provides the results of the health insurance coverage recode, and compares these results to published figures from the SIPP for 1984, the National Medical Care Expenditure Survey (NMCES) for 1977, and the National Health Interview Survey (NHIS) for 1984.

Our SIPP estimates are consistent with the SIPP-based estimates published by the Census Bureau and those from the NMCES and the NHIS. The modest nominal difference between the 1977 NMCES and the 1984 SIPP estimates of the percent of the aged covered by private insurance may reflect in part the increase in private insurance coverage for the aged over time. (See Ries 1987, tables 25-27, and Mueller 1972, 1974.)

The SIPP and 1984 NHIS estimates are very similar also. Differences in the proportion shown as covered by both Medicare and Medicaid are at least in part attributable to lack of comparability in the tabulated categories.

A person-level contingency asset variable.—In the SIPP context, the value of each type of asset held by an individual is typically determined by asking about three separate kinds of holdings: (1) those owned solely by the individual, (2) if married, those owned jointly with the individual's spouse, and (3) the individual's share of assets owned jointly with persons other than a spouse. For married persons living with a spouse, only the first member of the couple interviewed is asked about the value of each particular type of jointly held asset. This procedure parallels, and indeed is built upon, the collection procedure for asset income. On files released to the public, income from jointly held assets is split between husbands and wives, and so person-level asset income amounts reflect each individual's share of income from jointly held marital assets. However, this splitting procedure is not carried out for asset values, and so person-level asset amounts cannot be constructed by relying solely on information contained on the sample person's record.

Consequently, in order to construct a person-level measure of contingency assets, given the capabilities of the computer processing software used in the study, it was necessary to physically link spouses' records to permit the proper allocation of jointly owned asset amounts between husbands and wives. Once a file was produced in which each married person's record had the entire record of his or her spouse attached, allocation of joint asset values was straightforward. Half of the jointly held amount was assigned to each spouse and summed with amounts held in the sample person's own name and amounts representing the sample person's share of assets held jointly with persons other than a spouse. The public use file fields used to construct the contingency asset variable are given in table A4.

Health status.—Information on health status (TM8334) was collected in the

Table A2.—Comparison of the percentage distribution of persons age 65 or older, by family welfare ratio: SIPP compared with CPS

	Source	
Family welfare ratio	Survey of Income and Program Participation [1]	Current Population Survey [2]
Total number (in thousands)	26,126	26,818
Total percent	100.0	100.0
Less than 1.00	12.2	12.4
1.00-1.49..	15.5	16.7
1.50-1.99..	14.3	13.5
2.00-2.99..	24.3	20.6
3.00-3.99..	13.5	13.2
4.00 or more	20.1	23.6

[1] Based on 4-month family income, wave 4, 1984 panel.
[2] Based on 1984 calendar-year income (Bureau of the Census 1986c, table 6, p. 23).

wave 3 topical module on health and disability. It is basically a subjective, self-rated measure of the sample person's health; however, 22 percent of the responses for persons age 65 or older were provided by proxy respondents. The question was worded as follows: "Would you say [the sample person's] health in general is excellent, very good, fair, or poor?" Table A5 shows the distribution of all the SIPP aged and those who acted as self-respondents (in other words, excluding proxy respondents) by health status, and provides a comparison to the distribution for the same question as administered in the 1984 National Health Interview Survey.

Clearly, reported health status among the aged was higher in the NHIS than in the SIPP, regardless of whether or not the SIPP universe is limited to those who were self-respondents; that is, the percentages reported to be in "excellent" or "very good" health were lower and the percentages reported to be in "fair" or "poor" health were higher in the SIPP than in the NHIS. However, the distribution of health status of SIPP self-respondents was very similar to that of the entire SIPP aged population. We have no explanation for why the two surveys yield different estimates, but it does seem that the differences are not likely to be associated with type of respondent.

Although estimates of the level of general health status in the aged population appear to be somewhat different in the two surveys, the ranking of health insurance coverage groups by health status is the same (table A6). Thus based on the percentage in each coverage group reported to be in fair or poor health, both surveys show those with Medicare and Medicaid coverage to be in the worst health, those with Medicare and private insurance to be in the best health, and those with only Medicare coverage to be in an intermediate position.

Health services utilization.—Two items were used to measure the utilization of services among the aged: annual physician visits (TM8498) and annual hospital stays (TM8486). Health utilization reports from the SIPP are compared with those from the NHIS

Table A3.—Comparison of the structure of health insurance coverage among the aged, by selected sources of coverage

	SIPP, 1984			NMCES (1977) [2]	NHIS (1984) [3]
		Census Bureau			
Type of coverage	SSA authors' coding [1]	Total number (in thousands)	Total percent		
Total..............................	100.0	[4] 26,432	[4] 100.0	100.0	100.0
Private health insurance......................	[5] 72.2	[4] 19,124	[4] 72.4	[6] 68.1	73.8
Private health insurance related to past or current employment of self or other family member	30.9	[4] 8,275	[4] 31.3	...	...
Private or government	99.3	[4] 26,269	[4] 99.4	99.5	99.1
Medicare................................	97.8	[7] 25,785	[7] 97.6	...	95.6
Medicare only	19.9	...	...	20.4	17.5
Medicare and private	71.1	...	...	65.2	67.9
Group plans..........................	30.0	...	...	23.7	...
Individual plans........................	40.3	...	...	41.4	...
Type unknown........................	[8] .9	...	...	...	...
Medicare and Medicaid	[9] 7.9	...	...	[10] 10.6	[11] 4.7
Medicaid................................	8.4	[7] 2,231	[7] 8.4	12.0	6.4
Military-VA health coverage.................	...	...	...	...	5.1
Other................................	...	...	...	[12] 3.8	...

The symbol ... denotes not available.

[1] Distribution based on persons belonging to the SIPP universe as of the last month of the wave 4 reference period who were also interviewed in wave 3.

[2] See Cafferata (1984, tables 1-4).

[3] See Ries (1987).

[4] Third quarter 1984. See Bureau of the Census (1986b, table 10, pp. 36-37).

[5] Including 227,000 persons who report private coverage under another person's policy, but that person is not identified among the other members of the household.

[6] Includes those with private insurance described in footnote 12.

[7] Table 1, p. 13 from the basic source cited in footnote 4. Base for percentage is taken from table 1 (26,422) as it differs slightly from the one appearing in table 10.

[8] Individuals with private coverage on another person's policy, type of policy unknown.

[9] Includes individuals with private coverage in addition to Medicare and Medicaid.

[10] Includes those with Medicare and Medicaid as well as Medicaid covered described in footnote 12.

[11] Excludes individuals with private coverage in addition to Medicare and Medicaid.

[12] Includes 1.4 percent of the elderly population with Medicaid in addition to private insurance and Medicare, 1.5 percent with only private insurance, 0.5 percent with no insurance at all, and 0.4 percent with other public and/or private insurance but not including Medicare.

for 1984 in table A7. The estimates from the two surveys are similar.

Development of Health Care Liability Estimates

One of the key aspects of the study is the relationship between assets and out-of-pocket liabilities for acute health care.[4] Because the 1984 SIPP panel did not collect information on health care expenditures or liabilities we had to rely on external sources to represent these variables for the study. We have not been able to locate direct estimates of out-of-pocket costs for the aged that pertain to the 1984 period and provide cost size distributions by type of health insurance coverage and income level.[5]

Gornick, Beebe, and Prihoda (1983) provide distributions of aged Medicare enrollees by size of their Medicare coinsurance and deductible liability for 1980 based on program data. They also

Table A4.—Asset variables used to construct personal contingency assets, wave 4 topical module, 1984 panel of the Survey of Income and Program Participation

Type of asset or debt	Variable name		Starting location and length, 1st spouse [2]		Permissible values (according to Census documentation)
	1st spouse	2nd spouse [1]			
Interest-bearing assets					
Amounts held at financial institutions: [3]					
Owned jointly with spouse...........	SC4314	SSC4314	6016	5	-0003 = none; 0 = NIU; amt = 1-90,000
Owned in own name	SC4322	SSC4322	6021	5	-0003 = none; 0 = NIU; amt = 1-60,000
Amounts of other interest-earning assets:[4]					
Owned jointly with spouse...........	SC4414	SSC4414	6026	6	-0003 = none; 0 = NIU; amt = 1-170,000
Owned in own name	SC4422	SSC4422	6032	6	-0003 = none; 0 = NIU; amt = 1-170,000
U.S. savings bonds					
Face value[5]	TM8208	STM8208	6232	4	0000 = NIU; 0001 = value already reported; amt = 2-7,000
Checking accounts [6]					
Balance	TM8204	STM8204	6227	4	-003 = none; 0000 = NIU; amt = 1-3,000
Stocks and mutual fund shares [7]					
Owned jointly with spouse:					
Market value	TM8034	STM8034	6061	9	-0003 = none; 00000 = NIU; amt = 1-999,999,999
Associated secured debt	TM8040	STM8040	6071	6	00000 = NIU; amt = 1-999,999
Owned in own name:					
Market value	TM8044	STM8044	6078	9	-0003 = none; 00000 = NIU; amt = 1-999,999,999
Associated secured debt	TM8050	STM8050	6088	6	00000 = NIU; amt = 1-999,999
Individual retirement accounts [8]					
Balance or market value	TM8264	STM8264	6316	5	00000 = NIU; amt = 1-15,000
Keogh accounts [8]					
Balance or market value	TM8288	STM8288	6331	5	00000 = NIU; amt = 1-80,000
Other financial assets					
Equity	TM8132	STM8132	6182	9	-0003 = none; 00000 = NIU; amt = 1-999,999,999

NIU denotes not in universe.

[1] These are the variable names assigned to the spouses' portion of the record in the authors' special spouse file. They do not appear on the Census public use file.

[2] Starting location on the Census public use file as well as the authors' special spouse file.

[3] Regular or passbook savings accounts, money market deposit accounts, certificates of deposit or other savings certificates, or NOW, Super NOW, or other interest-earning checking accounts. Excludes IRAs or Keogh plans. Note that Census documentation indicates that the value for none is "-0000," although none is actually represented by "-0003" on the file.

[4] Money market funds, U.S. Government securities, municipal or corporate bonds, or other interest-earning assets. Excludes IRAs or Keogh plans.

[5] If value already reported in another household member's record, this field carries a "1."

[6] Noninterest bearing.

[7] Excludes stock in owner-operated incorporated businesses.

[8] May include interest-bearing assets and stocks or mutual fund shares.

Table A5.—Distribution of persons age 65 or older, by general health status: All SIPP aged, SIPP aged self-respondents, and all aged persons, NHIS

| General health status | 1984 SIPP | | 1984 NHIS[1] |
	Total	Self-respondents	
Total number (in thousands)..........	26,126	20,281	26,302
Total percent	100.0	100.0	100.0
Excellent	8.8	9.4	15.9
Very good..................	14.6	15.5	20.4
Good	31.5	31.9	31.5
Fair	27.0	26.8	20.9
Poor......................	18.1	16.4	11.3

[1] Source: Ries 1987, table 20, p. 46. Persons age 65 or older, excluding those with unknown health status.

Table A6.—Percent of persons age 65 or older reported in fair or poor health status, by type of health insurance in 1984: SIPP and NHIS

Type of health insurance coverage	SIPP	NHIS[1]
Total	45.1	32.0
Medicare and private	39.4	29.0
Medicare only...........	53.8	39.0
Medicare and Medicaid	74.6	61.0

[1] Christensen, Long, and Rodgers (1987, table 3).

Table A7.—Percentage distribution of persons age 65 or older, by number of physician visits and hospital stays in the past 12 months, SIPP and NHIS, 1984

Utilization of health services	SIPP	NHIS[1]
Physician visits		
Total number (in thousands)........	26,126	26,318
Total percent	100.0	100.0
None	18.7	18.1
1-3....................	35.2	38.3
4 or more	46.0	43.6
Hospital stays		
Total number (in thousands)........	26,126	26,433
Total percent	100.0	100.0
None	79.6	80.3
1......................	14.4	13.8
2 or more	6.0	5.9

[1] Ries 1987, table 20, p. 46. The NHIS total for physician visits excludes those with number of visits unknown.

projected these distributions to the 1984 period. However, their estimates did not account for balance billing charges or the costs of noncovered services (most particularly outpatient prescription drugs) and their distribution of liability was not differentiated by the presence of supplemental coverage, for example, private insurance and/or Medicaid. More comprehensive and disaggregated estimates by Christensen, Long, and Rodgers (1987) and Christensen and Kasten (1988a and 1988b) suggest that liability distributions for Medicare-covered services differ somewhat according to the presence and type of auxiliary coverage, and that outpatient prescription drugs play a major role in determining total acute care liability. For example, Christensen and Kasten (1988b, p. 11) estimate that in 1988 enrollee liability for outpatient prescription drugs amounted to half the combined liability for Medicare coinsurance, deductibles, and balance billing charges prior to payments by private insurers and Medicaid. Finally, for those with private insurance or Medicaid coverage, total out-of-pocket expenses were substantially reduced or virtually eliminated. [6] Christensen and Kasten provided requisite estimates (the distribution of enrollee liabilities for Medicare-covered services including balance billing charges, plus outpatient prescription drug expense with adjustment for the effects of private insurance and Medicaid), but for 1988 rather than 1984. In addition, their 1988 estimates pertain to Medicare

enrollees of all ages, not just the aged, and are not restricted to the noninstitutional population. [7] Despite the limitations presented by both sets of estimates (those by Gornick and her colleagues for 1984 and by Christensen and Kasten for 1988), given certain caveats and adjustments, we have adapted them for use in this study.

Liability for Medicare coinsurance and deductibles.—The Gornick, Beebe, and Prihoda (1983, p. 33) estimates covered only "those out-of-pocket costs arising from Medicare deductibles and coinsurance. . . . other out-of-pocket costs for which beneficiaries are liable—such as premiums for Part B participation, charges above the allowed charges on unassigned Part B claims, or costs for noncovered services . . ." were not considered. For this reason, the estimate necessarily understates the total out-of-pocket costs for acute health care experienced by Medicare enrollees. Their estimate for 1984 (column 2 of table A8) was based on projections of data for 1976, 1978, and 1980 taken from the Continuous Medicare History Sample (CMHS), a research file linking all claims submitted by a 5-percent sample of Medicare enrollees.

Because the size categories that they employed for the distribution of enrollees by amount of liability were not appropriate for purposes of the current study, their distribution was adjusted to correspond to the desired size categories, that is, those employed by Christensen and Kasten in their simulation (see columns 3-5 and the interpolation addendum to the table). First, the percent of enrollees per dollar of class width was calculated for the size classes of the original distribution ($462-$605 and $1,242-$1,535) that contained the breakpoints ($500 and $1,500) of the desired size classes—that is, the percentage of enrollees in the interval was divided by the width of the interval in dollars. This calculation was repeated for the adjacent intervals ($352-$461 and $1,536-$1,876) closest to the same breakpoints. Using these two estimates and the distribution

Table A8.--Selected estimates of acute health care costs not reimbursed by Medicare, 1984 and 1988

Estimated distribution of Medicare enrollees age 65 or older by Medicare coinsurance and deductible liability category, 1984						Adjusted copayment category before implementation of Public Law 100-360, 1988 [1,4]			
Selected categories from the distribution as originally estimated [1,2]		Derivation of modified distribution							
		As modified based on --							
Liability category [col. 1]	Total enrollees [col. 2]	Observed interval containing the unobserved breakpoint [col. 3]	Closest adjacent observed interval [col. 4]	Average [3] [col. 5]	Liability category [1] [col. 6]	All Medicare enrollees [5] [col. 7]	With private insurance [col. 8]	Medicare only [col. 9]	Adjusted copayment category [col. 10]
1. **Total**	**100.0**	**100.0**	**100.0**	**100.0**	**Total**	**99.9**	**100.0**	**100.0**	**Total**
2. **$0-$461**	**79.7**	**81.0**	**81.5**	**81.2**	**$0-$500**	**78.2**	**81.0**	**63.6**	**$0-$500**
3. $352-$461	5.1	...	...	...	...	...	...	...	...
4. **$462-$1,535**	**16.4**	...	...	...	...	...	...	...	...
5. $462-$605	4.8	...	...	...	...	...	...	...	...
6. ...	...	[6] 1.3	[7] 1.8	...	$462-$500	...	...	...	...
7. ...	...	14.9	14.5	14.7	**$501-$1,500**	16.8	17.0	22.8	**$501-$1,500**
8. ...	...	[8] 3.5	[9] 3.0	...	$501-$605	...	...	...	...
9. $606-$1,241	9.8	9.8	9.8	...	$606-$1,241	...	...	...	...
10. $1,242-$1,535	1.8	...	...	...	...	...	...	...	...
11. ...	...	[10] 1.6	[11] 1.7	...	$1,242-$1,500	...	...	...	...
12. ...	...	4.1	4.0	4.1	**$1,501 or more**	4.9	2.0	13.6	**$1,501 or more**
13. ...	...	[12] .2	[13] .1	...	$1,501-$1,535	3.2	1.5	8.4	$1,501-$2,500
14. **$1,536 or more**	**3.9**	3.9	3.9	...	$1,536 or more	1.7	.5	5.2	$2,501 or more
15. $1,536-$1,876	1.3	...	...	...	...	...	...	...	...

Note: The symbol "..." denotes not applicable.

[1] Excludes health insurance premium costs.

[2] As estimated by Gornick, Beebe, and Prihoda (1983, table 7, p. 39). Includes only the costs of Medicare-reimbursable services as defined at the time of the estimate. Excludes costs of outpatient prescription drugs and insulin.

[3] The sum of columns 3 and 4 divided by 2.

[4] As simulated by Christensen and Kasten (1988b, table 7, p. 16). Includes the costs of Medicare deductibles and copayments, including balance billing charges, plus outpatient prescription drugs and insulin, all net of third party payments from private insurance and Medicaid for all Medicare enrollees. Does not reflect adjustments for subsequent revisions of CBO's estimates of expenditures for outpatient prescription drugs.

[5] Includes enrollees with Medicaid coverage not shown separately.

[6] See the interpolation addendum; row 2, column 6.

[7] See the interpolation addendum; row 1, column 6.

[8] Row 5, column 2 minus row 6, column 3, this table.

[9] Row 5, column 2 minus row 6, column 4, this table.

[10] Row 10, column 2 minus row 13, column 3, this table.

[11] Row 10, column 2 minus row 13, column 4, this table.

[12] See the interpolation addendum; row 3, column 6.

[13] See the interpolation addendum; row 4, column 6.

Interpolation addendum, 1984 estimates, table A8

| Unobserved interval and intervals used to estimate size of the unobserved interval [col. 1] | Percent of enrollees in observed interval [1] [col. 2] | Derivation of the estimated percent of enrollees per dollar of expenditure | | Size of unobserved interval to be estimated, in dollars [2] [col. 5] | Estimated percentage in the unobserved interval [3] [col. 6] |
		Algorithm [col. 3]	Estimate [col. 4]		
$462-$500 based on: [4]					
1. $352-$461 interval [5]	5.1	5.1/(462-352) =	0.04636	39	1.8082
2. $462-$605 interval [6]	4.8	4.8/(606-462) =	0.03333	39	1.3000
$1,501-$1,535 based on: [4]					
3. $1,242-$1,535 interval [6]	1.8	1.8/(1536-1242) =	0.00612	35	0.2143
4. $1,536-$1,876 interval [5]	1.3	1.3/(1877-1536) =	0.00381	35	0.1334

[1] From detailed distribution estimated by Gornick, Beebe and Prihoda (1983, table 7, p. 39).

[2] One plus the upper bound of the unobserved interval minus the lower bound of the unobserved interval.

[3] Column 4 multiplied by column 3.

[4] Unobserved interval.

[5] Observed interval with an upper or lower bound closest to the upper bound of the unobserved interval.

[6] Observed interval containing the break point of the unobserved interval.

developed by Gornick and her colleagues (given in column 2), a range was created for the desired size distribution categories (columns 3 and 4). As a final step, the values in columns 3 and 4 were averaged (see column 5), yielding the size distribution that is compared with the size distribution of personal contingency assets in the body of the article.

For comparative purposes, the Christensen and Kasten estimate of the size distribution of enrollee liability net of payments by private insurers and Medicaid for 1988, differentiated by type of collateral insurance coverage, is given in columns 7-9. (Their distribution includes an estimate of liability for outpatient prescription drugs in addition to enrollees' liabilities

for Medicare-covered services, including balance billing, and is adjusted to net out the portion of total liability assumed by private insurance and Medicaid.) Perhaps the most interesting comparison is between column 5 (the modified version of the estimate by Gornick and her colleagues for all enrollees for 1984) and column 9 (the Christensen and Kasten simulation of liability for Medicare-only enrollees in 1988). Clearly, the 1988 distribution reflects a higher liability. For example, only 64 percent of enrollees in 1988, compared with 81 percent in 1984, are estimated to have had liabilities of $500 or less. This difference is most likely due to the strong upward trend in health care costs during this period and the inclusion of estimates of balance billing charges and the cost of outpatient prescription drugs for the latter year.

Hypothetical annual liabilities involving hospital stays.—The second class of liability estimates employed in the current study deals with liabilities faced by enrollees experiencing selected types of hospital stays. The estimates were constructed based on simulations by Christensen and Kasten (1988a, 1988b), which they developed to estimate the effects of the catastrophic provisions introduced to the Medicare program under Public Law 100-360. They began by simulating enrollee liability under pre-catastrophic law conditions for Medicare-covered services during calendar year 1988. As part of their basic simulation, they also included adjustments for the costs of outpatient prescription drugs (a noncovered item prior to Public Law 100-360 and after its repeal in 1989) and that part of patient liability assumed by private insurers and Medicaid. Their estimates of liability were differentiated by level of service utilization, for example, no reimbursable services, no hospital stays but utilization of other services, utilization involving various levels of hospital care, and so forth. Since the central focus of their simulation activity was to assess the impact of the new catastrophic provisions, they also

simulated the effect of the new law assuming full implementation in 1988.

The Christensen and Kasten 1988 estimates of spending for outpatient prescription drugs over the period 1987-94 were revised in 1989 (Long and Gordon 1989). However, their estimates of enrollee liability by level of utilization for 1988—the estimates that formed the basis of the 1984 enrollee liabilities in our earlier work (Del Bene and Vaughan 1989)—were not recomputed (Christensen, personal communication). The 1989 Congressional Budget Office revisions were substantial (Long and Gordon 1989, p. 23; Citro and Hanushek 1991, pp. 206-207); the estimate of aggregate government outlays for prescription drugs in the 1990-94 period doubled and the estimate for the average annual expenditure in 1988 for outpatient prescription drugs consistent with these revisions increased on the order of 40 percent. [8] Consequently, we decided to make our own adjustments to the original Christensen and Kasten 1988 estimates.

We used information provided by Long and Gordon (1989) about the nature of the revised estimates, together with data on drug expenditures of Medicare enrollees in 1987 from the National Medical Expenditure Survey (Department of Health and Human Services 1989; Moeller, Mathiowetz, and Cohen 1989), [9] and information from an earlier study by CBO researchers (Christensen, Long, and Rodgers 1987) to adjust Christensen's and Kasten's original 1988 estimates of enrollee liability by type of utilization. Our adjustments are intended to account, in a general way, for CBO's revised estimates of Medicare enrollees' average expenditures for outpatient prescription drugs.

Once adjusted to account for the 1989 CBO revisions to their previous estimates of outpatient drug expenditures, a set of straightforward assumptions was employed to develop estimates for 1984 based on the adjusted estimates for 1988. (The estimates given by Christensen and Kasten for 1988, as adjusted by us to

account for CBO's revised estimates of outpatient drug expenditures, are given in table A9, columns 1-3. Our estimates for 1984 appear in columns 5 and 6.)

The 1984 values were derived from the adjusted Christensen and Kasten estimates in four steps. First, we developed an estimate of 1984 mean enrollee liability gross of expenses assumed by private insurers and Medicaid. Nominally, the estimate accounts for three types of costs: (1) Medicare deductibles and coinsurance, (2) SMI balance billing charges, and (3) outpatient prescription drugs. The amount employed to represent liability for Medicare deductibles and coinsurance ($339) was taken from the estimate provided by Gornick and her colleagues as cited previously. An estimate for balance billing liability was obtained from Christensen (1991, table A4, p. 66) and converted from 1991 to 1984 dollars using implicit gross national product (GNP) price deflators provided to us by the author. The resulting amount per enrollee for balance billing is $89 in current (1984) dollars. The total representing liability for Medicare-covered services ($428) appears in row 2, column 5 of table A9 and is the simple sum of the estimates for Medicare deductibles and coinsurance plus balance billing. An amount corresponding to per enrollee liability for outpatient prescription drugs was obtained by working back to 1984 from CBO's revised estimate for 1987 (Long and Gordon 1989, pp. 25-26, 36-37, and table 8) using an estimate of the average annual rate of change in the mean annual expenditure for prescribed medicine per elderly Medicare person between 1980-87. Long and Gordon's revised CBO estimate of $305 for 1987 was based on data from the 1987 National Medical Expenditure Survey and was adjusted, by them, for presumed underreporting and higher utilization by institutionalized enrollees not covered by the survey. The estimate for the average annual rate of change in the mean annual expenditure for prescribed medicines, for 1980-87

(14.2 percent) was obtained from Moeller, Mathiowetz, and Cohen 1989, pp. 9-10. The resulting 1984 value for this component is $205 and appears in row 3, column 5, table A9.

Next, the corresponding estimate for Medicare-only enrollees (column 5, row 4) was derived by assuming that the relationship for 1988 between enrollee liability for persons with only Medicare coverage ($759, column 2, row 4) and enrollee liability gross of third party payments for all enrollees ($829, column 2, row 1) obtained in 1984 as well. This yielded $580 as the average liability for persons with only

Medicare coverage (($759/$829) x $633 = $580, column 5, row 4).

The hypothetical 1984 values for the selected levels of utilization without caps on hospitalization and outpatient prescription drug costs were derived in the third step using the further assumption that the relationship between average simulated liability for each class of utilization and the overall average liability was the same in 1984 and 1988. Thus, the estimate for the mean annual enrollee liability for the Medicare-only group in 1988 is $759 overall. The estimate for the average annual liability for a Medicare-only

enrollee experiencing one hospital stay with no coinsurance days in 1988 is $1,655, or approximately 2.2 times ($1,655/$759) the overall average for the Medicare-only group. The hypothetical overall mean for 1984 was $580, and so the amount for those with a "one stay, no coinsurance days" episode is estimated to have been $1,265, that is, ($1,655/$759 x $580) with allowance for rounding.

The final step involved deriving hypothetical costs adjusted for the effects of provisions similar to those of the MCCA providing for catastrophic care. We developed these estimates on

Table A9.—Estimated annual mean copayment liability, by enrollee group and type of utilization, 1988 and 1984

Enrollee group and type of utilization	Annual mean copayment liability per enrollee					
	1988 [1]				1984 hypothetical treatment of hospitalization and outpatient prescription drug cost	
			Estimated catastrophic law			
	Percent of enrollees in group (1)	Pre-catastrophic law (2)	Mean (3)	Mean as a percent of column 2 (4)	Uncapped [2] (5)	Capped [3] (6)
All enrollees						
1. Total [4]	...	$829	...	...	$633	...
2. Medicare-covered services	...	487	...	...	[5]428	...
3. Outpatient prescription drugs	...	342	...	...	[6]205	...
Persons with only Medicare coverage [7]						
4. Subtotal	100.0	759	$499	65.7	[8]580	[11]$381
5. No reimbursable services	37.3	106	66	62.3	[9]81	[11]50
6. No stays, other services	42.0	639	454	71.1	[9]488	[11]347
7. One stay, no coinsurance days [10]	13.4	1,655	1,280	77.3	[9]1,265	[11]977
8. Two or more stays, no coinsurance days [10]	6.5	2,696	1,574	58.4	[9]2,060	[11]1,203
9. One or more stays, with coinsurance days [10]	.7	8,288	1,590	19.2	[9]6,331	[11]1,216

The symbol ... denotes not available.

[1] Derived from Christensen and Kasten (1988b, tables 4 and 8) with adjustments by the present authors to account for CBO revisions to their original 1988 estimates of expenditures for outpatient prescription drugs.

[2] Generally consistent with Medicare provisions in effect for 1984.

[3] Assuming the same percentage reductions estimated by Christensen and Kasten for the full implementation of the MCCA.

[4] The amount of liability for Medicare deductibles, coinsurance, balance billing charges, and the estimated cost of outpatient prescription drugs, prior to adjustment for costs assumed by private insurers and Medicaid.

[5] The amount of liability for Medicare deductibles and coinsurance as estimated by Gornick, Beebe, and Prihoda (1983, table 7) plus balance billing charges for 1984 as estimated by CBO (Christensen 1991, table A4).

[6] Derived using Long and Gordon's revised CBO estimate based on the 1987 National Medical Expenditure Survey (Long and Gordon 1989, table 8) and the average annual rate of change in the mean annual expenditure on prescribed medicine per elderly Medicare person, 1980-87 (Moeller, Mathiowetz, and Cohen 1989, pp. 9-10).

[7] Although liability is not reduced for the Medicare-only group by third party payers, it is lower than the unadjusted liability for all enrollees largely because enrollees with only Medicare coverage are less likely, on average, to utilize services.

[8] Column 5, row 1 multiplied by column 2, row 4 divided by column 2, row 1.

[9] As estimated by multiplying the hypothetical 1984 gross liability for all Medicare-covered services plus outpatient prescription drugs (column 5, row 1) by the 1988 ratio of average per enrollee copayment liabilities for each 1988 utilization category (column 2, rows 5-9) to the gross liability for Medicare-covered services plus outpatient prescription drugs (column 2, row 1).

[10] Includes liabilities for all other covered services and outpatient drugs in addition to hospitalization costs.

[11] The corresponding row in column 5 multiplied by the corresponding row in column 4 divided by 100.

the basis of the relationship between average enrollee liabilities with and without the effect of the MCCA as given by the original Christensen and Kasten (1988b) estimates for 1988 (as derived from their table 8, p. 18). For each type of utilization, their simulated average enrollee liability with the catastrophic provisions in place was expressed as a percentage of the corresponding average liability under the pre-catastrophic law. These percentages are given in column 4 of the table. They were converted to ratios and multiplied by column 5. The result, given in column 6, represents the hypothetical average annual liabilities with caps on hospitalization and outpatient prescription drug costs that are generally consistent with those of the MCCA.

Because the procedures we have employed to represent out-of-pocket liabilities in 1984 by utilization category leave a good deal to be desired, the resulting estimates are labeled "hypothetical." Clearly, it would be preferable to provide a more appropriate representation of this class of expenditures for the 1984 period. However, we were not able to locate such information. Nonetheless, we believe that the estimates are adequate, given the purposes of this study. We base this conclusion on the finding that use of alternative values, even when substantially different than those finally employed, does not materially affect the conclusions to be drawn from the study. This is so because the contingency asset size distribution is very sparse in the vicinity of the hypothetical average liability levels. The significance of the thinness of the distribution is directly observable in the data presented in table 11. For example, even as the estimated average liability increases from about $1,260 for persons with one hospital stay and no coinsurance days to about $2,100 for persons with two or more stays and no coinsurance days (a 60-percent increase), the percentage of aged individuals in the Medicare-only coverage group who would be unable to meet such an expense using their

contingency assets increases from 49 to only 54 percent—or just 5 percentage points.

Notes

[1] The acronyms in parentheses represent the Census Bureau public use file variable names. The asterisk (*) that appears in some variable names stands for the survey reference month (1, 2, 3, or 4) which, when crossed with rotation group (SU-ROT), identifies a given calendar month such as August 1984.

[2] Alternatively, separate welfare ratios could have been calculated for each month and then averaged. Unless monthly poverty thresholds are constant across months in dollar terms or the monthly welfare ratios are all equal, the two approaches will yield different results. However, our tabulations show that the alternative procedure would yield results virtually identical to those reported here.

[3] There were 17 unweighted sample cases in which a married, spouse-present person indicated coverage on another's record, but their coverage was not confirmed by the spouse's data. There were 32 unweighted sample cases in which a nonmarried person indicated coverage on another's record. Beginning with the 1988 panel, the measurement procedure was modified to clarify the identity of the primary insured by obtaining that person's number if he or she was a household member, or, if the primary insured was not a household member, by so indicating.

[4] All liability estimates presented in this article pertain solely to those costs associated with acute health care services. Health insurance premiums and long-term care costs are not considered.

[5] Note, however, that it would be technically feasible to link the SIPP to Medicare record data. Then it would be possible to develop a much more accurate representation of enrollee liability for Medicare-covered services on a person-by-person basis.

[6] Their 1988 work formed the basis of the Congressional Budget Office (CBO) initial estimates of impact of the Medicare Catastrophic Coverage Act (MCCA).

[7] It is likely that acute health care costs for aged Medicare enrollees are somewhat, but not dramatically, lower than those for all enrollees. In 1984, for example, the

average annual reimbursment for all aged enrollees was 97 percent of the average for all enrollees (Social Security Administration 1987, tables 152 and 153). Also, the average annual expenditure per noninstitutionalized aged enrollee for outpatient prescription drugs in 1987 was 95 percent of the average for all noninstitutionalized enrollees (Moeller, Mathiowetz, and Cohen 1989, table 4). Finally, Long and Gordon (1989, table 8) report estimates showing that average spending on outpatient prescription drugs for noninstitutionalized enrollees amounted to 95 percent of the average for all enrollees in 1987.

[8] The revised baseline estimate for 1987 was $305 (Long and Gordon 1989, p. 25). Long and Gordon did not publish an estimate for 1988. However, they indicate an assumed annual rate of increase in expenditures for outpatient prescription drugs of 12 percent for the period 1987-94, implying an estimate of $342 for 1988. This compares with the previous estimate of $244 (Christensen and Kasten 1988b, table 4) that we utilized in our earlier research (Del Bene and Vaughan 1989).

[9] It was the appearance of the direct estimates from the 1987 National Medical Expenditure Survey that led to the CBO revisions.

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