Current Medicare Survey: The Medical Insurance Sample

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The January issue of the Social Security Bulletin carried a full description of the statistical program established to record and maintain data on the utilization and charges for medical care services covered under the health insurance program for the aged. The statistical system is based on the receipt by the Social Security Administration of bills presented to and paid by fiscal intermediaries throughout the country. Considerable delays in the statistical reporting of current information are inherent in the billing system. The Social Security Administration has therefore initiated a continuing monthly Current Medicare Survey (CMS) to provide current estimates of the hospital and medical care services used and of the charges incurred by persons covered under the program. This article describes the medical insurance sample of the CMS and presents information for July, August, and September 1966—the first 3 months of the program's operation. A subsequent article will describe the hospital insurance sample of the CMS and report data for the initial months of the program.

CMS HIGHLIGHTS

PERIODIC HOUSEHOLD interviews of persons enrolled in the medical insurance program for the aged form the basis for the medical insurance sample of the CMS. Information on the use of and charges for medical care and related services has been collected since the beginning of the program. Highlights of the first 3 months of the program's operation (without adjustments for seasonal variations) reveal that

—during July 1966, approximately one-third of the medical insurance enrollees—5.6 million persons—used medical services covered under the program, and of this total, about 10 percent met the $50 deductible during the month

—charges per person using covered medical services in July averaged $31

—utilization of medical services increases somewhat with age, is greater for women than men, but does not vary materially by region

—the number of enrollees utilizing medical services and total charges incurred remained relatively unchanged in August and September

—approximately the same number of people met the deductible in July, August, and September

—about 2 million persons or 11 percent of the enrollees met the deductible by the end of September

—by the end of the first quarter of operation, charges potentially reimbursable by the program totaled about $227 million.

The health insurance program for the aged, popularly known as "Medicare," went into effect on July 1, 1966. The program comprises two related parts: The hospital insurance program (HI) provides financial assistance in paying part of the cost of hospital care, post-hospital extended care and home health services, and outpatient hospital diagnostic services. The supplementary medical insurance program (SMI) provides for payment of part of the charges for physicians' and other medical services.

The statistics for the medical insurance program depend upon receipt by the Social Security Administration of copies of bills transmitted to and paid by about 50 intermediaries throughout the country. It was anticipated, and actual experience during the first months of the program's operation has demonstrated, that there are time lags and delays of varying duration in the receipt and payment of bills by the intermediaries. Several factors contribute to this delay. Beneficiaries may accumulate their bills until the charges exceed the $50 deductible. This process may present special problems to the aged who have difficulties in fully understanding this part of the program. For the beneficiaries whose bills are not assigned to physicians, delays occur when they must present receipted bills to the intermediaries for reimbursement.

Knowledge of the volume of services and charges incurred for specified periods is helpful for administrative purposes to provide a current picture of the extent of obligations incurred by

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the Federal Government and to estimate the future claims against the trust fund. The CMS is intended to produce program information on a statistical basis about 3 months after the reference period. It will provide, considerably in advance of the time when data become available from operating records, national estimates of the number of persons receiving medical care and related services and the charges incurred, including deductibles and coinsurance.

SMI SAMPLE DESIGN

To obtain information on the utilization and charges for medical care and related services under the medical insurance program, the survey design calls for monthly personal interviews of nearly 4,000 persons selected from the primary 5-percent statistical sample of those enrolled in this part of the health insurance program.[1] The sample, chosen to be self-weighting within 105 primary sampling units, represents the 17.5 million persons residing in the 50 States and the District of Columbia who were enrolled for medical insurance benefits as of July 1, 1966. Persons selected in July remained in the sample through the end of December 1966. A sample of persons was selected for interviews starting in October 1966. This group will remain in the survey for 15 months. The cycle was determined by the fact that any expenses incurred by an individual in the last 3 months of a calendar year and applied to the deductible for that year may be carried over and applied to the deductible for the next calendar year.

The SMI sample, used to provide estimates in this report, consists of: (1) A basic sample of 3,800 individuals who will normally remain in the sample for 15 months and (2) a small incremental sample drawn to include persons "aging in" to the universe and added to the sample each month.

SMI SURVEY PROCEDURES AND DATA COLLECTION

The basic sampling unit is the individual beneficiary. To obtain current information on medical insurance benefits, the beneficiaries are contacted periodically to supply the required information. Personal interviews, utilizing a questionnaire and a diary form, are conducted by the Bureau of the Census acting as a collector of data for the Social Security Administration. Experienced field interviewers obtain information about the use of medical care and related services during the preceding month. A careful editing and screening process identifies those items not covered by the program, and, up to the present, only bills incurred for covered services have been coded and tabulated. Charges are accumulated so that the total covered charges for an individual may be located along a continuum from any point below the deductible to any point above.

The questionnaire and diary form are designed to obtain the following items of information: name and address of respondent, date and place of doctor visits, type of physician, condition treated, other medical services received, including covered medical services received in the hospital and nursing home, as well as X-rays, medical tests, ambulance services, and the like. Also included are questions relating to the total amount of the bill, the portion not covered by the program, and the source of payment.

No attempt is made to ascertain charges or services for hospital-based physicians such as pathologists and radiologists, except where the patient is aware of such treatment and is billed separately for the physician's services.

Information on the dollar amount of the physician's bill is often unknown because no bill had been received by the date of the interview. The interviewer attempts to obtain this information in the following month. Experience has proven that the doctor's bill is frequently available during the follow-up interview.

There are several instances where the bill information is not normally available to the beneficiary, regardless of the elapsed time. Welfare beneficiaries, for example, would not generally know the amount of the doctor's bill. Where no information on charges is available, an estimating procedure was established that is based on the assumption that charges will be the same for similar services rendered in the same area. For example, a doctor's home visit in a specific city is valued at the amount last reported in the sample for this type of service in the same geographic area.

[1] For a description of the 5-percent sample, see Howard West, "Health Insurance for the Aged: The Statistical Program," *Social Security Bulletin*, January 1967.

The nonresponse rate, where no interview was obtained, amounted to 9 percent in July, 8 percent in August, and 8 percent in September. Two techniques were employed to impute the required data: First, for persons known to be hospitalized during the survey month and, therefore, not available for interview, the imputation was based on the hospital experience of reported persons. Second, a random substitution of experience of other persons in the same color, sex, and age group was used.

The monthly survey results were derived by multiplication of the sample data by a single weight obtained from the ratio of an independent estimate of the persons enrolled in the medical insurance program as of the beginning of the month to the sample population. For July, tabulated enrollment data were employed as the independent figure. For August, enrollment data were independently estimated by adjusting the July 1 tabulated enrollment for increments of persons reaching age 65 and for decrements of persons who died or dropped from enrollment. The estimated August 1 enrollment was used in a similar manner as a basis for deriving the estimated September 1 enrollment figures.

Special efforts are made to obtain the data for persons in the sample who died during the survey month because these individuals probably had higher utilization of medical services during the survey month than that of other persons. The results of the first month's attempt to obtain this information pointed to the desirability of postponing the interview with the next of kin or any other proxy respondent until the following month. On this basis, interviews were obtained for 93 percent of the known deaths occurring between July 1, 1966, and September 30, 1966.

CMS FINDINGS ON SMI

During the first month of the program's operation, approximately 5.6 million aged persons, or about one-third of the 17.5 million persons enrolled, used medical services covered under the medical insurance program (table 1).[2] No adjustment was made for seasonal variation. Excluded

TABLE 1.—Current Medicare Survey, Medical Insurance Sample: Estimated number and distribution of medical insurance enrollees, by selected characteristics and use of medical services, July–September 1966

Characteristic	Total	Enrollees using no services	Enrollees using services		
			Total [1]	Deductible not met	Deductible met [2]
	July 1966				
Total number (in thousands)	17,507	11,872	5,635	4,697	607
Total percent	100.0	67.8	32.2	26.8	3.5
Age: [3]					
65–74	100.0	68.7	31.2	26.4	3.2
75–84	100.0	67.0	33.1	27.2	3.7
85 and over	100.0	63.8	36.3	28.8	4.4
Sex:					
Men	100.0	71.6	28.4	23.0	3.8
Women	100.0	65.0	35.0	29.7	3.2
Census region: [4]					
Northeast	100.0	67.4	32.6	27.9	3.2
North Central	100.0	68.5	31.6	25.3	3.6
South	100.0	68.5	31.5	26.8	3.1
West	100.0	65.9	34.2	28.1	4.7
	August 1966				
Total number (in thousands)	17,533	11,958	5,575	4,248	1,079
Total percent	100.0	68.1	31.8	24.3	6.1
Age: [3]					
65–74	100.0	70.0	30.0	22.5	6.2
75–84	100.0	66.0	34.0	27.1	5.7
85 and over	100.0	61.1	38.8	26.9	8.5
Sex:					
Men	100.0	71.1	29.0	21.4	5.9
Women	100.0	66.0	33.9	26.4	6.3
Census region: [4]					
Northeast	100.0	68.1	31.9	24.5	6.2
North Central	100.0	68.2	31.6	24.1	6.0
South	100.0	69.7	30.3	23.6	5.3
West	100.0	64.9	35.1	25.2	8.0
	September 1966				
Total number (in thousands)	17,561	11,964	5,597	3,761	1,538
Total percent	100.0	68.1	31.9	21.4	8.8
Age: [3]					
65–74	100.0	70.1	29.9	20.3	7.9
75–84	100.0	65.7	34.2	23.2	9.5
85 and over	100.0	61.9	38.1	22.5	13.0
Sex:					
Men	100.0	72.7	27.3	17.4	8.2
Women	100.0	64.8	35.3	24.4	9.2
Census region: [4]					
Northeast	100.0	68.3	31.7	21.1	9.0
North Central	100.0	67.2	32.7	22.4	8.6
South	100.0	70.3	29.7	21.0	7.1
West	100.0	65.5	34.4	20.7	11.7

[1] Includes those using services for which a bill is not expected.
[2] Includes those for whom the first $50 of covered expenses have been met by the end of the month and for whom a chargeable expense has been incurred during the month.
[3] Age attained in 1966.
[4] Based on mailing address of enrollee when selected for sample.

are services and charges by hospital-based physicians such as pathologists and radiologists. Included are persons using covered services for which a bill is not expected. All services performed by relatives are included, for example, as

[2] See "Enrollment in the Health Insurance Program for the Aged," *Social Security Bulletin*, March 1966, pp. 21–24.

well as those provided by government agencies such as health departments, with the possibility that these services may in the future become chargeable to the program. Charges are not imputed, however, to those services for which a bill will not be rendered.

Although information was collected during the field interview on the use of noncovered services, such as eyeglasses and routine physical examinations, the information on use of services presented here refers only to covered services. On this basis, an aged person purchasing eyeglasses during July, without a visit to a physician for any covered services, is classified here as having used no covered services.

Of the 5.6 million enrollees using covered services in July, approximately 600,000 persons or about 10 percent had used services with charges totaling $50 or more and thus met the deductible during the first month of the program's operation.

Use of medical services among the aged differs to some extent by age and sex. The CMS provides some evidence that the proportion using covered medical services increased with age—from 31 percent of persons aged 65–74 to 36 percent of persons aged 85 and over. A somewht larger proportion of the aged women use medical services than aged men. There are, however, no material regional differences in the use of medical services.

Total charges of $167 million were incurred in July by the 5.3 million persons using covered medical services and for whom bills have been rendered or are expected to be rendered. This total represents an average of $31 per person using such services (table 2). As expected, when the dollar amounts are allocated to the deductible status of the enrollees, a different picture emerges. For the 4.7 million persons who had used medical services and incurred charges of less than the $50 deductible during July, the aggregate charges amounted to $57 million, or an average of $12 per person. By contrast, for the estimated 607,000 persons who had incurred charges of more than the $50 deductible during July, the average amount per person was about $181. On an aggregate basis, total charges for this group amounted to approximately $110 million.

For the first month of the program's operation, all but the first $50 and 20 percent of the remaining charges are potentially reimbursable, on the assumption that all charges are classified as reasonable by the intermediary.[3] On this basis, about $64 million or 58 percent of the total charges for the group of aged persons meeting the deductible in the first month are potentially reimbursable. This percentage rises somewhat in succeeding months as the same individuals continue to use additional medical services and the deductible amounts have already been accounted for. By the end of the third quarter of 1966, potentially reimbursable charges amounted to approximately $227 million.

The following tabulation presents the estimated charges for persons using medical services in each of the first 3 months of the program, categorized by their deductible status.

[In thousands]

Type of charge	July	August	September
Total	$166,867	$167,367	$164,993
Deductible not met	56,983	45,457	39,230
Deductible met:			
Total	109,884	121,910	125,763
Amount reimbursable	63,629	80,275	82,857

The use of medical services in August and September 1966 by aged beneficiaries of the medical insurance program remained about the same as in the first month of the program's operation. About 32 percent of the enrollees used medical services in each month. These figures are not additive because many of the same persons use services in successive months. In August and in September, as in July, there were indications of the increasing use of services with advancing age, and a somewhat higher proportion of women than men continued to utilize medical care services (table 1).

Total charges incurred in August and in September also remained at about the same level as in July—approximately $165 million or $31 per enrollee using medical services. When the enrollees and their incurred charges are distributed according to their deductible status, the picture changes significantly for each of the months. During July, approximately 4 percent of the enrollees had met

[3] "Reasonable charges" are based on the customary charges for similar services generally made by the physician or other person, as well as the prevailing charges in the locality for similar services. They may not be higher than the charge applicable for the carrier's own policyholder for comparable services under comparable circumstances.

the deductible and the amount incurred averaged approximately $181. In August, 6 percent of the enrollees had used some services and met the deductible by the end of the month, but their charges averaged $113. About 9 percent had used some services during September and met the deductible by the end of the month, and the average charge for this group declined to approximately $82.

This successively decreasing average charge for the enrollees using services in a given month who have already met the deductible is undoubtedly a function of the pattern of expenditures for medical services by aged persons. It is likely that initial large expenditures resulting from an illness requiring hospital care are often followed by additional smaller outlays for follow-up physician visits. Thus, the calculation of average charges in August and September among persons who have already met the deductible involves an increasing number of persons who have met the deductible in previous months and use little services in the month of calculation, and an increasing number of persons who have partially met the deductible in previous months and meet the deductible with relatively small charges incurred during the current month. In addition, there are some persons who may have met the deductible in July but did not use any services in the months following. Likewise, others may have met the deductible in August but did not use services in September.

A cumulative picture of the number and percent of the enrollees meeting the deductible by the end of each month is shown in table 3. An initial group of 607,000 met the deductible in July, and another group about the same size reached this amount by the end of August. By September's

TABLE 2.—Current Medicare Survey, Medical Insurance Sample: Estimated average charge per medical insurance enrollee using medical services, by selected characteristics and deductible status, July–September 1966

Characteristic	Total [1]	Deductible not met	Deductible met [2]	
			Total	Potentially reimbursable [3]
	July 1966			
Total	$31	$12	$181	$105
Age: [4]				
65–74	32	12	192	113
75–84	31	12	175	100
85 and over	28	13	132	66
Sex:				
Men	33	12	158	87
Women	31	12	201	121
Census region: [5]				
Northeast	31	12	195	116
North Central	32	11	181	105
South	30	11	191	113
West	34	15	148	78
	August 1966			
Total	$31	$11	$113	$74
Age: [4]				
65–74	33	11	116	77
75–84	26	11	98	64
85 and over	42	9	144	94
Sex:				
Men	33	11	115	76
Women	30	11	112	73
Census region: [5]				
Northeast	32	11	116	77
North Central	31	10	119	76
South	25	11	90	58
West	40	12	129	88
	September 1966			
Total	$31	$10	$82	$54
Age: [4]				
65–74	28	10	73	47
75–84	34	11	90	59
85 and over	45	10	106	71
Sex:				
Men	38	11	96	65
Women	27	10	72	47
Census region: [5]				
Northeast	33	11	85	58
North Central	31	10	84	54
South	30	10	89	59
West	30	12	63	40

[1] Based on number of enrollees using covered services, excluding persons for whom a bill is not expected.
[2] Based on number of enrollees for whom the first $50 of covered expenses have been met by the end of the month and for whom a chargeable expense has been incurred during the month.
[3] Excludes the first $50 and 20 percent of the remaining charges and assumes that all charges are classified as reasonable by the intermediary.
[4] Age attained in 1966.
[5] Based on mailing address of enrollee when selected for sample.

TABLE 3.—Current Medicare Survey, Medical Insurance Sample: Estimated number and percent of enrollees meeting the deductible by the end of each month, by selected characteristics, July–September 1966

Characteristic	1966		
	July	August	September
Number (in thousands)	607	1,198	1,978
Percent of enrollees [1]	3.5	6.8	11.3
Age: [2]			
65–74	3.2	6.8	10.7
75–84	3.7	6.4	11.6
85 and over	4.4	9.8	15.6
Sex:			
Men	3.8	6.8	10.9
Women	3.2	6.8	11.5
Census region: [3]			
Northeast	3.2	6.6	10.9
North Central	3.6	7.2	11.7
South	3.1	5.7	9.6
West	4.7	8.7	14.3

[1] Based on the estimated number of enrollees in the medical insurance program as of the beginning of each month.
[2] Age attained in 1966.
[3] Based on mailing address of enrollees when selected for sample.

end, about 2 million persons, or 11 percent of the enrollees, had reached the deductible. The evidence of increasing use with increasing age continued to manifest itself.

At the end of the third month of program operation, there was no material difference between the proportion of men and women who had met the deductible. Regional variations were, however, evident. A somewhat higher proportion of the aged enrollees in the West (14 percent) than in the South (10 percent) had met the deductible by the end of September—a reflection perhaps of both the relatively higher utilization and higher charges in the West.

RELIABILITY OF ESTIMATES

Since the estimates are based on a sample, they may differ somewhat from the figures that would have been obtained if the same data had been collected for the entire universe of enrolled persons and the same collection procedures used. The data may also differ from the results of statistical compilation of data from the administrative records. As in any data collection, the results are subject to errors of response, reporting, and processing as well as being subject to sampling variability. On the other hand, statistical compilations of data from the administrative records may be subject to errors of omission or incompleteness as well as processing and, where sampling is employed, may also be subject to sampling variability.

The standard error is primarily a measure of sampling variability—that is, of the variations that occur by chance, because a sample rather than the whole universe was used. As calculated for this report, the standard error also partially measures the effect of response errors but does not measure any systematic biases in the data. The chances are about 68 out of 100 that an estimate from the sample would differ from the result for the entire universe, with the same procedures and methods used, by less than the standard error. The chances are about 95 out of 100 that the differences would be less than twice the standard error. The chances are about 99 out of 100 that the differences would be less than two and one-half times the standard error.

For this report, a group of items have been selected for which approximations to the standard errors have been estimated. Similar approximations of the standard errors of other estimates could be calculated. At the start of this statistical program, sampling variability estimates are shown only for some data in order to illustrate the range of variability in the basic data. In order to derive standard errors that would be applicable to the wide variety of items presented and that could be prepared at a moderate cost, a number of approximations would be required. The necessary experimentation to enable the generalization to be carried out is under way. In subsequent reports, as soon as possible, generalized tables of standard errors will be provided.

The medical insurance sample of the CMS estimates that 1,978,000 persons had met the $50 deductible during the first quarter of operation. The standard error is about 125,000. The chances are 68 out of 100 that the result based on the CMS collection procedures for the entire universe would be between 1,853,000 and 2,103,000. Approximately the same number of persons met the deductible in July, August, and September. The estimate of about 600,000 for July or August has a standard error of about 65,000. The estimate of 780,000 for September has a standard error of about 80,000. It is estimated that approximately 5.6 million persons have been using services covered by the program each month. The standard error is about 180,000. Chances are about 68 out of 100 that the number of persons using these services lies within the range of 5.42 million and 5.78 million in each month.

The aggregate amount of reimbursable charges for the first 3 months of the program among the 1,978,000 who have met the deductible has been estimated to amount to about $227 million. The standard error is about $18 million. The survey has estimated that the average amount of total charges in September among persons using services and meeting the deductible by the end of September is $82. The standard error is about $11.

The estimates developed from the medical insurance sample of the CMS are based in part on the memory or knowledge of one person. The memory factor in data derived from field surveys probably produces underestimates, because the tendency is to forget minor or irregular items. Other errors of reporting may result from misunderstanding as to the scope of the program's coverage.