Early Effects of Medicare on the Health Care of the Aged

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WITH THE ENACTMENT of the program of health insurance for the aged on July 30, 1965, it became evident that a need existed for comprehensive and adequate baseline data with which to measure the new law's impact. The last survey of the aged that included comprehensive data on health services and medical costs had been conducted in 1963 and presented data for 1962.[1] For the purpose of evaluating changes, the results of that survey were considered inadequate and too old. Furthermore, if the survey mechanism was to be used, strict adherence to comparability between sampled populations was essential.

A new two-part survey was designed to determine patterns in use of hospital and medical care by persons aged 65 and over and in charges for such services—both before and after the implementation of Medicare. In January 1966, the Social Security Administration contracted with the Columbia University School of Public Health and Administrative Medicine and with the National Opinion Research Center of the University of Chicago to conduct such a study. This article describes the survey and summarizes the important findings.

SUMMARY FINDINGS

The Medicare program was designed to protect persons aged 65 and over against the high costs of hospital and medical care. The two-part survey revealed that the program has gone a long way toward meeting this goal. Use of hospital and medical services was also affected by the program. The following paragraphs highlight some of these early effects of Medicare.

For short-stay hospital care, the most significant change occurred in the days of care per aged person, which rose 25 percent, primarily reflecting longer hospital stays. Significantly larger increases were noted for certain segments of the aged population, including persons aged 75 and over, Negroes, residents in the South, persons residing in urban areas other than metropolitan areas, and persons in one-member family units with low incomes.

Perhaps more important than the rise in hospital use is the fact that the Medicare program has enhanced the dignity of the Nation's elderly by providing coverage for their needed hospital care and allowing them to be cared for in hospitals without regard to their personal resources. Before Medicare, a substantial proportion of the stays—17 percent—was without charges incurred; under Medicare, this percentage was reduced to 3 percent. The rate of hospital days with charges incurred rose 50 percent but was doubled for persons aged 75 and over and for Negroes. Differences between Negro and white persons with respect to these rates still exist, however, under Medicare, with Negroes having relatively fewer days with charges.

Concrete evidence that Medicare has substantially relieved the burden of the high cost of hospital care for persons aged 65 and over was found in the reduction of out-of-pocket outlays for this purpose. The proportion of total hospital charges paid directly by the patient declined from 38 percent to 7 percent, in spite of rising prices, more stays with charges incurred, and a doubling of the average hospital charges per person between the two survey periods.

The use of long-term medical institutions did not change with the introduction of Medicare, but there was a shift from the use of nursing homes to using extended-care facilities that meet the conditions of participation under the program and provide a higher level of skilled nursing

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[1] See Lenore A. Epstein and Janet H. Murray, *The Aged Population of the United States: The 1963 Social Security Survey of the Aged* (Research Report No. 19), Social Security Administration, Office of Research and Statistics, 1967.

care. Out-of-pocket expenditures for care in these long-term institutions decreased from 98 percent of charges before Medicare to 80 percent under Medicare. The impact would probably have been somewhat greater if the extended-care benefit, which began January 1, 1967, had been in effect for the full survey period.

The impact of Medicare on the use of ambulatory medical services is most significant in the shift from clinic and home visits to office visits. No significant changes, however, were found in the proportion of persons with ambulatory visits, and a slight decrease was noted in the number of reported visits per person.

When charges for ambulatory and inhospital medical visits are combined, Medicare's impact can best be assessed by comparing the direct payments by aged persons before Medicare and under Medicare. Out-of-pocket expenses for medical services decreased from 81 percent to 47 percent of the total charges, reflecting the 45 percent covered by Medicare.

The introduction of Medicare apparently had no effect on the average charges for those services not covered by the program. No changes were reported in the average charges for drugs, dental care, and optometrists.

The total impact of the program may be measured when the institutional, medical, and other charges are combined. These average charges increased about 40 percent—from $298 per person to $418—because of the larger proportion of stays and visits with charges, more days in short-stay hospitals, and higher charges in 1967 for institutional and medical services. Almost half the charges under Medicare were paid by the program, about 6 percent was paid by private health insurance, leaving 47 percent to be paid directly—a significant reduction from the 77 percent of the total paid directly before Medicare. The substantial rise, however, in the level of charges per person meant that out-of-pocket payments for all institutional, medical, and other services declined only 15 percent.

METHODOLOGY

The overall plan of the study was to interview in April and May of 1966 a nationwide sample of social security beneficiaries aged 65 and older about their use of and charges for health services in the previous year. In November and December 1967, persons in a comparable but independent sample were interviewed about their experiences during the previous year under Medicare.

An ideal sample for the study would have been one that represented all persons who would be eligible for Medicare benefits on July 1, 1966. The short time available, high costs, and the public's lack of knowledge of the program made it impractical to select a sample of housing units that would call for locating the aged persons who would be eligible for Medicare benefits. If the interviews were to be completed before July 1, 1966, it was necessary to use an available list that approximated the ideal sample.

The only list available early in 1966 was that for persons aged 65 and over who were receiving old-age and survivors insurance (OASI) benefits. It was decided, therefore, to select the sample for the "before Medicare" study from the universe of OASI beneficiaries aged 65 and older and the sample for the second phase—under Medicare—from a comparable universe.

Consideration was given to interviewing the same persons in both phases. This procedure would have had difficulties resulting from attrition through mortality and mobility and from the need to add persons who reached age 65 in the interim. There was also concern that the responses by the same persons in the second phase would be influenced by their previous interviews. For these reasons, it was decided that two independent but comparable samples of beneficiaries would be used. A detailed description of the sample selection and design, along with definitions of terms, is included in the Technical Note on page 17.

The size of the sample was selected in order to assure that for each phase the number of stays was sufficient for analysis of various subgroups with relatively moderate sampling variability. In order to have at least 1,200 stays and to allow for an expected noninterview rate of 10 percent, approximately 6,600 persons were selected for each sample. The sample selections were made independently, from the lists of OASI beneficiaries aged 65 and older as of December 31, 1965, for the first phase and as of September 29, 1967, for the second phase.

The interviewing for both phases of the study was conducted by the staff of the National Opinion Research Center (NORC) of the University of Chicago, and the interviewing staff available for other nationwide surveys was used.

Interview questions were designed to produce information on medical care utilization and charges for approximately 1 year before the date of the interview. The survey period included the 12 months before the interview month and that part of the interview month that preceded the date of interview. If, for example, the interview was conducted on May 18, 1965, the survey period would be from May 1, 1965, to May 17, 1966. Survey periods thus ranged from 12 to 13 months and averaged 12.5 months.

Comparison of the personal characteristics of the respondents showed no differences in the two samples with respect to age, sex, area, race, marital status, size of family, or family composition. The one exception to the homogeneity of the two groups on these characteristics was an increase in the proportion of beneficiaries who were women aged 75 and over. Family income, however, increased for persons from one- and two-person families because of rising incomes over the period.

UTILIZATION OF MEDICAL INSTITUTIONS

All hospitals, extended-care facilities certified for participation under Medicare, and nursing homes not participating in the program were included as medical institutions in the study. The classification of medical institution was determined from Social Security Administration records for both phases of the study. For the first phase, classification was determined after the fact.

To compare the rates of utilization of institutions for the two phases of the study, the survey used a different definition of the number of stays and days than that used in many other surveys. Most surveys base the rates on admissions or discharges during a given year and the days of care associated with each. For this study a "stay" in a medical institution refers to an episode of one or more nights during a survey period when a person was in an institution eligible for inclusion in the study. The "number of days" for a stay is the number of nights during the survey period between the admission and discharge dates that the person was in the institution.

For a person in an institution at the *beginning* of his survey period, the number of days for that stay was computed from the first day of the survey period to the date of discharge or the end of the survey period, whichever was earlier. For a person in an institution at the *end* of his survey period (the date of the interview), the number of days for that stay was computed from the date of admission or the start of the survey period, whichever was later, to the end of the survey period.

For some stays, the number of days was less than the entire length of stay in the institution. But for three-fourths of the stays with both admissions and discharge dates during the survey period, the length of stay reflects the entire stay in the institution.

The dates reported by the respondent were used to compute the numbers of days for each stay. If the dates were not reported, they were obtained for the first phase by correspondence or telephone calls to the institutions and by the same methods or from copies of Medicare claim forms for the second phase.

For the first phase, the period covered by the survey was April–May 1965 to April–May 1966. For ease of reference, this phase is referred to throughout the article as 1965 or "before Medicare." For the second phase, the period studied was November–December 1966 to November–December 1967 and is referred to as 1967 or "under Medicare."

Several measures of utilization of institutions were used for assessing the changes that have resulted from the introduction of Medicare. One significant measure is the number of stays per 100 persons. This rate is greater than the percentage of persons in institutions during the survey period since some persons may have more than one stay in the same period. Additional significant utilization measures are the number of days of care per 100 persons and the mean days of care per stay in the institution.

Comparison of the proportions of persons in institutions of all kinds in the two survey periods indicates no significant differences. In each of the periods, about 1 out of 5 persons was in one or more institutions (table 1). In the analysis that follows, the results of the findings for the

TABLE 1.—Institution utilization rates, by type of institution, 1965 and 1967

Type of institution	Percent with stays		Rate per 100 persons				Mean number of days			
			Number of stays		Days of care		Per person with stays		Per stay	
	1965	1967	1965	1967	1965	1967	1965	1967	1965	1967
Institutions, total	18.9	20.2	26.3	28.9	1,151	1,122	60.9	55.4	43.7	38.8
Hospitals	17.2	19.0	23.0	25.4	450	509	26.1	26.8	19.5	20.0
Short-stay hospitals	16.7	18.6	22.2	24.7	314	392	18.9	21.2	14.2	15.9
Long-stay hospitals	.8	.6	.9	.7	136	116	164.5	180.1	155.9	167.7
Extended-care facilities and nursing homes	2.8	2.9	3.3	3.5	701	613	246.1	212.4	212.5	177.3
Extended-care facilities	1.1	1.7	1.3	2.0	235	289	212.0	171.7	183.6	147.5
Nursing homes	1.8	1.3	2.0	1.5	465	324	255.9	246.3	230.9	216.1

two phases of the study are analyzed separately for short-stay hospitals and for extended-care facilities and nursing homes.[2]

Utilization of Short-Stay Hospitals

A variety of factors affect the rate of use of hospitals by a given population group. Advancing age, especially among persons aged 65 and over, is often accompanied by declining health and frequently results in hospitalization. Other important factors are hospital insurance coverage, income and employment, marital status, living arrangements, and availability of physicians and of hospital facilities.

Besides these economic and demographic characteristics that influence the rate of use of short-stay hospitals, the overall health status of the population is a major consideration, particularly in comparing the rates of hospital use during two different periods. If an influenza epidemic, for example, had occurred in one period under analysis, adjustments would have to be made in the data to eliminate the effect of the epidemic. Fortunately, the two survey periods under discussion were relatively free of such epidemics.

When the use of short-stay hospitals by OASI beneficiaries aged 65 and over in the two periods is compared, no significant differences in overall frequency are revealed. In both periods the aged person had about 1 in 6 chances of going to a short-stay hospital. A significant change was indicated, however, in the mean number of days per person spent in short-stay hospitals. Before Medicare, the aged person with one or more stays had an average stay of about 19 days during the survey period. Under Medicare the average number of days rose to 21 days. This average counts all the days of care for persons with multiple admissions.

Each person with one or more stays in both periods had about 1.3 hospital stays. About three-fourths of those who were hospitalized in both survey periods had one stay, about one-fifth had two stays, and about one-twentieth had three or more stays, as the figures below indicate:

Item	1965	1967
Number of persons (in thousands)	14,281	15,393
No hospital stays	11,902	12,538
Reporting hospital stays	2,379	2,855
Percent reporting hospital stays	100	100
1 stay	75	77
2 stays	19	17
3 or more stays	6	6

For every 100 aged persons, there were 22.2 hospital stays in 1965. The average number of days per hospital stay was 14.2, which represented 314 days of care for every 100 aged persons or an average of 3.1 days of care per person (table 2).

In 1967 the rate of hospital stays rose slightly but not significantly to 24.7 per 100 aged persons. The average number of days per stay, however, went up 12 percent to 15.9 days. The result was a 25-percent increase in the total number of days of care per person—3.9 days, compared with 3.1 days before Medicare.

Factors Affecting Short-Stay Hospital Use

The factors affecting rates of use of short-stay hospitals among aged persons are age, sex,

[2] All significance tests in this section and throughout the article are at the 5-percent level.

TABLE 2.—Short-stay hospital utilization rates, by selected personal characteristics, 1965 and 1967

Characteristic	Rate per 100 persons				Mean number of days per stay	
	Number of stays		Days of care			
	1965	1967	1965	1967	1965	1967
All persons	22.2	24.7	314	392	14.2	15.9
Age and sex:						
65–74	21.2	21.8	314	306	14.8	14.0
75 and over	24.0	29.7	315	540	13.1	18.2
Men	23.0	25.0	325	396	14.1	15.8
65–74	22.3	23.0	336	343	15.0	14.9
75 and over	24.3	28.5	307	483	12.6	17.0
Women	21.5	24.5	306	390	14.2	15.9
65–74	20.3	20.9	297	278	14.6	13.3
75 and over	23.8	30.7	322	584	13.6	19.0
Race:						
White	22.7	25.5	320	396	14.1	15.6
Negro	14.3	13.0	237	351	16.6	26.9
Region:						
South	22.4	26.1	242	389	10.8	14.9
Other regions	22.1	24.2	345	394	15.6	16.3
Area of residence:						
Metropolitan, large	17.2	21.2	312	361	18.1	17.0
Metropolitan, small	21.2	21.4	311	372	14.6	17.4
Other urban	21.4	30.0	251	431	11.8	14.4
Rural	27.3	28.2	353	417	12.9	14.8
Family income, by size of family:						
One-person family	25.4	26.3	444	615	17.5	23.4
Under $1,000	21.1	23.7	318	674	15.1	28.5
1,000–1,999	25.5	25.2	406	653	15.9	26.0
2,000–2,999	23.8	27.3	478	424	20.1	15.5
3,000 or more	32.2	24.5	645	544	20.0	22.2
Two-person family	20.6	24.3	248	297	12.1	12.2
Under $2,000	19.1	20.8	206	240	10.8	11.5
2,000–2,999	18.1	21.9	287	313	15.8	14.3
3,000–3,999	20.4	25.2	221	279	10.8	11.1
4,000 or more	22.3	27.9	241	354	10.8	12.7
Families of three or more persons [1]	21.6	23.4	297	318	13.7	13.6

[1] Data by income are omitted because figures generally do not meet standards of reliability of precision.

race, income, hospital insurance status, and other economic and demographic factors. The data for the pre-Medicare period from this survey generally confirm the findings of the 1963 Social Security Survey of the Aged.[3]

Advancing age was associated with more frequent use of hospitals, although the differences were greater in the 1963 survey than in the first phase of this survey. In both the 1963 and 1965 surveys, men were hospitalized more frequently than women but there was little difference between the sexes in the average number of days per stay. No clear pattern of differences in the use of short-stay hospitals was discernible among persons with different levels of income. Persons in one-member family units, however, tended to be hospitalized more often than persons in larger families.

As in the 1963 survey, persons with hospital insurance were reported in the 1965 survey as entering hospitals more frequently than those who were not insured. They had, however, shorter average stays (table 3).

TABLE 3.—Short-stay hospital utilization rates, by type of private health insurance coverage, 1965

Type of health insurance	Rate per 100 persons		Mean number of days per stay
	Number of stays	Days of care	
Total	22.2	314	14.2
No health insurance	18.8	312	16.6
Hospital only	24.8	359	14.5
Hospital and surgical	24.8	319	12.9
Hospital, surgical, and medical	23.8	337	14.1
Hospital, surgical, and other	24.9	248	9.9
Other, excluding hospitals	17.3	231	13.3

Before Medicare, hospital use rates, by race, showed significant differences. The 1965 survey revealed that white persons were hospitalized at a rate substantially higher than the rate for Negroes—22.7 stays per 100 white persons, compared with 14.3 stays per 100 Negro persons. On the average, the Negroes' stay was slightly longer, and the number of days of care per 100 white persons was thus one-third higher than the number for Negroes. Persons in rural areas had higher rates for use of short-stay hospitals than those in metropolitan and other urban areas.

Under Medicare, coverage of the major portion of the cost of short-stay hospital care resulted in significant increases in hospital use for several segments of the aged population. As previously noted, the increase in the number of days of care per 100 aged persons included in the survey was 25 percent between the two survey periods. Significantly larger increases in days of care per 100 persons—ranging from 39 percent to 112 percent—were noted for persons aged 75 and over, for Negroes, for residents in the South, for persons residing in urban areas other than metropolitan areas, and for persons in one-member family units with low incomes.

The 71-percent increase in the number of days of short-stay hospital care per 100 persons aged 75 and over may indicate the considerably greater hospital use by the very old persons not covered by this survey. Exclusion of the persons not receiving OASI benefits meant omission of the relatively youngest and oldest persons aged 65 and over.

[3] See Lenore A. Epstein and Janet H. Murray, *ibid.*, pp. 115–156.

Before Medicare the nonbeneficiaries generally were persons still employed and not drawing cash benefits and older persons who had never been covered by the social security program or were not dependents or survivors of anyone with coverage. The first group, of course, are relatively healthier and probably use less hospital care; the latter group are older and probably use more hospital care. Of the 19.1 million persons aged 65 and over in the hospital insurance program as of July 1, 1966, about 2.6 million persons not entitled to OASI or railroad retirement cash benefits were omitted from the study. About 1.6 million persons, or 61 percent of this group, were aged 75 and over.[4]

If the experience of those aged 75 and over was the same among nonbeneficiaries as it was among OASI beneficiaries, substantial increases in hospital use undoubtedly occurred with the introduction of Medicare. Obviously, the availability of comprehensive hospital insurance coverage under Medicare for this older population group resulted in substantially greater use of short-stay hospitals.

Comparisons With Other Surveys

Two major nationwide sample surveys conducted by the National Center for Health Statistics (NCHS) of the Public Health Service have produced data on hospital utilization for persons aged 65 and over before and after Medicare was introduced. The Health Interview Survey, based on household interviews, has reported annual data since 1963 in its *Current Estimates* on the number of short-stay hospital discharges, total days of care, and average length of stay by age and sex of the respondent. The data reported from that source are generally comparable to those obtained from the study reported here, except that the Health Interview Survey is limited to household interviews of the noninstitutional population and this Columbia University study interviewed persons in institutions if they were receiving OASI benefits. This study, of course, does not include all the aged population. Both surveys exclude persons who died during the survey period.

The second source of data reporting on changes in hospital use is the Hospital Discharge Survey, also conducted by the National Center for Health Statistics. That survey produces, on a continuing basis, national hospital patient statistics based on hospital medical records. Included are all hospitalized persons, whether discharged alive or dead.

The survey periods for the two National Center for Health Statistics surveys are not exactly the same as those in the present study and the level of the selected measures of hospital use vary. The rates of change in hospital use for persons aged 65 and over shown by the NCHS surveys are, however, generally in line with those found in the study discussed in this article. The comparative utilization data in table 4 show that the rates of change in hospitalization or discharge rates increased 10–11 percent under Medicare from the pre-Medicare period; increases in average length of stay ranged from 9 percent to 12 percent; and increases in the rates for days of care ranged from 19 percent to 25 percent.

TABLE 4.—Comparison of short-stay hospital utilization for persons aged 65 and over from three surveys, before and under Medicare, 1965–67

Survey and measure	Before Medicare	Under Medicare	Percent increase
Columbia University Study:[1]			
Hospital stays per 100 aged persons	22.2	24.7	11.3
Days of care per 100 aged persons	314	392	24.8
Mean number of days per stay	14.2	15.9	12.0
National Health Survey:[2]			
Discharges per 100 aged persons	16.5	18.3	10.9
Days of care per 100 aged persons	210	252	20.0
Mean number of days per discharge	12.7	13.8	8.7
Hospital Discharges Survey:[3]			
Discharges per 100 aged persons	26.4	28.9	9.5
Days of care per 100 aged persons	344	409	18.9
Mean number of days per discharge	13.0	14.1	8.5

[1] Before Medicare period refers to April–May 1965—April–May 1966; under Medicare period refers to November-December 1966—November-December 1967. Data from table 2.

[2] Before Medicare period refers to fiscal year 1966; under Medicare period refers to fiscal year 1967. Data from *Vital and Health Statistics*, Series 10, Nos. 37 and 43.

[3] Before Medicare period refers to calendar year 1965; under Medicare period refers to calendar year 1967. Data from *Vital and Health Statistics*, Series 13, No. 3, and a forthcoming supplementary issue of *Health Vital Statistics Report* (volume 19), "Utilization of Short-Stay Hospitals—Summary of Nonmedical Statistics: United States, 1966 and 1967."

Surgery

One very important measure of the change in the utilization of short-stay hospitals is the fre-

[4] *Medicare 1966—Health Insurance for the Aged, 1966, Section 2: Persons Enrolled in the Health Insurance Program*, Social Security Administration, Office of Research and Statistics, 1970, page 8.

quency of the use of surgical services. Since many persons aged 65 and over might have delayed inhospital elective surgery pending the coverage for such care under Medicare, for both phases of the study information was obtained on surgery performed during stays in short-stay hospitals (table 5).

TABLE 5.—Short-stay hospital utilization rates, with and without surgery, by age and sex, 1965 and 1967

Age and sex	All persons		With surgery		Without surgery	
	1965	1967	1965	1967	1965	1967
	Stays per 100 persons					
All persons	22.2	24.7	5.9	7.9	16.3	16.9
65–74	21.2	21.8	6.1	7.5	15.1	14.3
75 and over	24.0	29.7	5.5	8.4	18.5	21.3
Men	23.0	25.0	6.4	8.0	16.7	17.0
65–74	22.3	23.0	6.5	7.9	15.8	15.1
75 and over	24.3	28.5	6.1	8.3	18.2	20.2
Women	21.5	24.5	5.5	7.7	16.0	16.7
65–74	20.3	20.9	5.8	7.3	14.5	13.6
75 and over	23.8	30.7	5.0	8.5	18.7	22.1
	Days of care per 100 persons					
All persons	314	392	89	129	225	264
65–74	314	306	89	117	224	189
75 and over	315	540	88	149	227	390
Men	325	396	104	130	221	266
65–74	336	343	105	119	230	224
75 and over	307	483	101	148	206	335
Women	306	390	77	128	228	262
65–74	297	278	77	115	220	163
75 and over	322	584	77	150	245	434
	Mean number of days per stay					
All persons	14.2	15.9	15.0	16.4	13.9	15.6
65–74	14.8	14.0	14.8	15.5	14.9	13.3
75 and over	13.1	18.2	15.6	17.7	12.4	18.3
Men	14.1	15.8	16.1	16.2	13.4	15.6
65–74	15.0	14.9	16.3	15.1	14.5	14.9
75 and over	12.6	17.0	15.8	17.9	11.6	16.6
Women	14.2	15.9	14.0	16.5	14.3	15.6
65–74	14.6	13.3	13.4	15.8	15.1	11.9
75 and over	13.6	19.0	15.4	17.5	13.1	19.6

Under Medicare, the frequency of use of short-stay hospitals for surgery was one-third higher than in the earlier period; the rate went from 5.9 to 7.9 stays per 100 persons. The increase occurred for both men and women and was larger for persons aged 75 and over. Because the mean number of days per hospital stay with surgery rose, the number of days of care per 100 persons showed a 45-percent increase for all persons and a 70-percent increase for persons aged 75 and over.

Investigation of the type of surgery performed revealed that the rate of cataract surgery more than doubled, rising from 0.34 stays per 100 persons before Medicare to 0.89 under Medicare. Another type of surgery with substantial increases was cholecystectomy. The rate for this surgery tripled, going from 0.18 per 100 persons before Medicare to 0.52 under Medicare.

CHARGES FOR SHORT-STAY HOSPITAL CARE

The Medicare program was designed primarily to protect persons aged 65 and over against the high and often catastrophic costs of hospital and medical care. One of the specific objectives of this study was to ascertain the extent to which this goal was achieved. Two measures were used for this purpose. One is the comparison of utilization rates for those with and without incurred charges, with the recognition that before Medicare many aged persons had received needed medical care through public or private aid. The other measure relates to the out-of-pocket expenditures for aged persons. In comparing total charges incurred for services during the two phases of the study, it was recognized that prices for such services had risen substantially. The extent to which the Medicare program contributed to this price rise cannot be identified from results of this survey.

A hospital stay was defined as one "with charges" if there was a bill from the institution to the person, family, Medicare, and/or private insurance. If there were no such bills—that is, if payment was made entirely by the Veterans Administration, a welfare program, voluntary organizations, or workmen's compensation—the hospital stay was classified as one "without charges." If Medicare paid part of the bill and welfare funds paid the balance, the stay was classified as "with charges."

In this survey the amount of hospital charges incurred was the amount of charges reported by the institution plus any charges for services by anesthetists, radiologists, and pathologists who provided care for the condition in the institution only. This working rule was developed to improve comparability of amounts in both phases. Such a rule was necessary because of (1) the many different procedures for billing for hospital-based physicians, (2) changes in these procedures when Medicare started, and (3) respondents' lack of information about different types of charges by institutions.

Hospital Use With Charges Incurred

Before Medicare, 83 percent of the hospital stays had charges incurred; under Medicare this proportion increased to 97 percent. This substantial rise was to be expected because a large part of the charges for short-stay hospital care of the elderly was covered by welfare programs before Medicare. These charges under public programs shifted to the Medicare program.

The use rates shown in table 6 for hospital stays with and without charges clearly indicate the impact of Medicare. The number of stays with charges per 100 persons rose 30 percent in the later period. Reflecting the 14-percent increase in length of stay, the number of days of care per 100 persons rose 50 percent. The hospital use rates for stays without charges were reduced substantially: the number was only 30 days per 100 aged persons under Medicare, compared with 72 days before Medicare. Under Medicare, 85 percent of the days without charges in short-stay hospitals were in Federal hospitals—mainly those of the Veterans Administration.

TABLE 6.—Short-stay hospital utilization rates, with and without charges incurred, by selected personal characteristics, 1965 and 1967

Characteristic	Rate per 100 persons							
	With charges incurred				Without charges incurred			
	Number of stays		Days of care		Number of stays		Days of care	
	1965	1967	1965	1967	1965	1967	1965	1967
All persons	18.5	24.0	243	363	3.8	0.7	72	30
Age and sex:								
65–74	18.4	21.1	241	271	2.8	.7	73	35
75 and over	18.5	29.1	245	519	5.6	.6	72	20
Men	18.1	23.7	214	331	4.9	1.3	111	65
65–74	18.3	21.5	210	264	4.0	1.5	125	79
75 and over	17.8	27.5	221	441	6.5	1.0	86	42
Women	18.7	24.3	265	387	2.8	.2	41	3
65–74	18.5	20.7	265	275	1.8	.2	32	3
75 and over	19.1	30.4	265	581	4.8	.3	59	3
Race:								
White	19.3	24.9	253	372	3.4	.6	67	24
Negro	6.1	10.9	96	234	8.2	2.1	141	117
Region:								
South	17.9	25.0	186	342	4.6	1.1	58	46
Other regions	18.7	23.7	267	371	3.4	.5	78	23
Area of residence:								
Metropolitan, large	14.8	20.5	238	351	2.6	.7	76	10
Metropolitan, small	17.0	20.5	222	311	4.3	.9	89	62
Other urban	18.2	29.3	216	404	3.1	.6	35	27
Rural	23.0	27.7	284	407	4.3	.5	69	10
Size of family:								
One-person family	19.6	25.7	305	563	6.0	.6	140	52
Two-person family	17.7	23.6	208	275	2.8	.8	40	23
Families of three or more persons	18.8	22.7	242	304	2.9	.7	55	15

Substantial across-the-board increases occurred in the later period in rates of stays and days with charges. For all categories of persons shown in table 6, the number of days of care per 100 persons went up. This use measure, of course, combines the effect of the change in the rate of hospital stays and the mean number of days per stay. It is the magnitude of increases for several segments of the population in the number of days with charges per 100 persons that is of special interest. The overall rate increased 50 percent, but for persons aged 75 and over and for Negroes the rate more than doubled. Differences between Negro and white persons with respect to these rates still exist under Medicare, with Negroes having lower rates of days with charges and higher rates of days without charges.

Sources of Payment

The change in the amount paid for hospital care directly by the aged person is, of course, one of the most important measures of the effectiveness of Medicare. The program pays the cost of covered services in a participating hospital for as many as 90 days in a benefit period (a period beginning with the first day of hospitalization and ending 60 days after discharge from a hospital or an extended-care facility). Full payment is made for the first 60 days of hospitalization after a deductible amount has been paid. During the second survey period, the deductible was $40. For each remaining 30 days in the benefit period, the patient paid a coinsurance amount of $10 a day.

In the first phase of the study, charges incurred were classified as paid by private insurance or out of pocket. In the second phase, one additional category was added—the payments made under Medicare.

As previously noted, the level of charges incurred would be expected to increase between the two phases of the study because of rising prices. In the first phase of the study, short-stay hospital charges incurred per person aged 65 and over was $86 during the survey period. This amount had doubled to $169 in the second phase. Part of the increase reflects the substantially larger number of hospital stays with charges incurred, and part,

of course, the higher charges for hospital care.[5]

One measure of the change in hospital charges is the "daily service charges" component of the Bureau of Labor Statistics Consumer Price Index (CPI). From fiscal year 1966 to calendar year 1967—the two periods that are closest to those studied—this component rose 26.4 percent.

The "daily service charges" component of the CPI represents the amount charged to adult inpatients for routine nursing care, room, board, and minor medical and surgical supplies. It excludes such additional charges incorporated in the hospital bill as those for laboratory work, X-rays, operating room, and special nursing. Another measure of hospital costs is the figure for the average hospital expense per patient day, prepared by the American Hospital Association. Between the two survey periods, the reported increase in this measure was 21.7 percent—from $47.71 per patient day in fiscal year 1966 to $58.06 in calendar year 1967.[6]

Of the total short-stay hospital charges incurred per person in the first phase of the survey, 62 percent was paid by private health insurance and the remainder was paid directly by the patient (table 7). In the second phase of the study, Medicare paid the major portion—85 percent—of the charges incurred, private health insurance paid 8 percent, and the patient paid 7 percent. This shift (from 38 percent to 7 percent) in the proportion of the total hospital charges paid out of pocket is clear evidence that Medicare, in spite of rising prices, has substantially relieved the burden of the cost of hospital care for persons aged 65 and over. For each segment of the population, this substantial decrease in the proportion paid directly by the patient was evident.

[5] For an analysis of the factors affecting increased hospital costs, see Dorothy P. Rice and Loucele A. Horowitz, "Trends in Medical Care Prices," *Social Security Bulletin*, July 1967.

[6] See "Hospital Indicators" in each midmonth issue of *Hospitals*, Journal of the American Hospital Association.

TABLE 7.—Short-stay hospital charges incurred per person, by source of payment and selected personal characteristics, 1965 and 1967

Characteristic	1965				1967				
	Charges per person	Percentage distribution			Charges per person	Percentage distribution			
		Total	Private insurance	Out-of-pocket		Total	Medicare	Private insurance	Out-of-pocket
All persons	$86	100.0	61.6	38.4	$169	100.0	85.1	8.4	6.5
Age and sex:									
65–74	84	100.0	63.9	36.1	142	100.0	85.3	9.7	5.0
75 and over	91	100.0	57.6	42.4	216	100.0	84.9	7.0	8.1
Men	85	100.0	61.4	38.6	159	100.0	86.0	8.2	5.8
65–74	85	100.0	62.8	37.2	147	100.0	84.5	10.3	5.2
75 and over	84	100.0	59.0	41.0	178	100.0	88.1	5.2	6.7
Women	88	100.0	61.7	38.3	177	100.0	84.5	8.6	6.9
65–74	83	100.0	64.8	35.2	138	100.0	85.9	9.2	4.9
75 and over	97	100.0	56.6	43.4	245	100.0	83.1	8.0	8.9
Race:									
White	91	100.0	61.4	38.6	176	100.0	84.9	8.6	6.5
Negro	23	100.0	76.2	23.8	72	100.0	89.5	2.9	7.6
Region:									
South	70	100.0	54.1	45.9	131	100.0	78.9	12.3	8.8
Other regions	93	100.0	64.0	36.0	185	100.0	86.9	7.3	5.8
Area of residence:									
Metropolitan, large	89	100.0	69.6	30.4	239	100.0	87.9	6.3	5.8
Metropolitan, small	96	100.0	66.5	33.5	153	100.0	88.1	7.0	4.9
Other urban	67	100.0	53.2	46.8	155	100.0	83.4	10.2	6.4
Rural	83	100.0	52.1	47.9	143	100.0	79.1	11.7	9.2
Family income, by size of family:									
One-person family	97	100.0	57.0	43.0	203	100.0	82.2	9.0	8.8
Under $1,000	58	100.0	57.1	42.9	194	100.0	86.7	4.2	9.1
1,000–1,999	69	100.0	56.9	43.1	208	100.0	81.3	4.6	14.1
2,000–2,999	100	100.0	67.8	32.2	170	100.0	88.8	8.9	2.3
3,000 or more	178	100.0	56.2	43.8	162	100.0	84.4	13.1	2.5
Two-person family	81	100.0	64.0	36.0	143	100.0	86.3	8.7	5.0
Under $2,000	55	100.0	47.4	52.6	102	100.0	89.1	5.5	5.4
2,000–2,999	71	100.0	69.8	30.2	116	100.0	86.7	7.8	5.5
3,000–3,999	81	100.0	67.5	32.5	130	100.0	90.0	6.0	4.0
4,000 or more	109	100.0	67.9	32.1	202	100.0	85.1	11.0	3.9
Families of three or more persons [1]	86	100.0	63.2	36.8	193	100.0	87.2	6.9	5.9

[1] Data by income are omitted because figures generally do not meet standards of reliability of precision.

CARE IN EXTENDED-CARE FACILITIES AND NURSING HOMES

The hospital insurance program provides up to 100 days of covered care in a participating extended-care facility that meets the requirements of the law. Coverage is provided following a hospital stay of at least 3 days or longer and within 14 days of hospital discharge. The program pays for all covered services for the first 20 days of care. For the remaining 80 days of covered care, the patient paid $5.50 during the period covered by this survey.

These extended-care provisions did not go into effect until January 1, 1967, so the benefit was available for only part of the second phase of the study. The results, therefore, only partly reflect the impact of Medicare on the use of extended-care facilities.

As previously indicated, long-term medical institutions were classified as nursing homes and extended-care facilities. Nursing homes were defined as those institutions primarily engaged in providing skilled nursing care to inpatients but not participating as extended-care facilities under the program. Extended-care facilities were those that met the requirements of the higher level of nursing care needed for participation in the program. For the first phase of the study, this classification was determined from Social Security Administration records after the Medicare program went into effect.[7]

Table 1 shows that no significant change occurred in the overall use of these long-term care medical institutions. In both phases of the study, almost 3 percent of the persons aged 65 and over were in such institutions. The average number of days per person with one or more stays in such facilities was well above 200. Before Medicare, the total number of days per 100 aged persons in long-term care institutions was 701; under Medicare, the total declined slightly to 613 days.

The significant change that did occur between the two periods was the shift in the type of institutions for long-term care of aged persons. Use of extended-care facilities increased substantially, and there was a corresponding decline in the use of nursing homes. In the pre-Medicare survey period, the rate was 1.3 stays per 100 aged persons in homes later classified as extended-care facilities; it was about one and one-half times higher in nursing homes—2.0 days per 100 persons. In the second phase of the study, the rates were reversed. The number of days of care per 100 persons increased 23 percent for extended-care facilities and decreased 30 percent for nursing homes.

Since the conditions for participation for extended-care facilities under Medicare require a higher level of skilled nursing care than that for nursing homes, the shift to use of the former undoubtedly means that under Medicare aged persons in such institutions are receiving more skilled nursing care.

For long-term care as for short-term hospital care, a substantial proportion of the stays before Medicare—three-fourths of the total—were stays with charges incurred. Under Medicare, this proportion increased to 93 percent. For extended-care facilities, the proportion of stays with charges incurred was even higher—96 percent.

The impact of Medicare may be seen in the proportions of incurred charges paid by Medicare and paid directly by the patient, after taking into account private health insurance payments. Mean charges incurred per stay in extended-care facilities declined between the two periods, but for stays in nursing homes the average was higher in the second phase of the study (table 8). The lower average charges per stay in extended-care facilities in 1967 reflected the shorter stays rather than the level of care. On a per day basis, the charges were slightly higher in extended-care facilities than in nursing homes—$10 compared with $7.

With respect to source of payment for care in extended-care facilities, Medicare significantly

TABLE 8.—Long-term institutional mean charges incurred per stay, by type of institution and source of payment, 1965 and 1967

Source of payment	Total		Extended-care facilities		Nursing homes	
	1965	1967	1965	1967	1965	1967
Mean charges per stay with charges	$1,544	$1,450	$1,831	$1,413	$1,366	$1,503
Total percent	100.0	100.0	100.0	100.0	100.0	100.0
Medicare		18.4		32.3		
Private insurance	1.7	1.6	1.9	2.0	1.6	.9
Out-of-pocket	98.3	80.0	98.1	65.7	98.4	99.1

[7] Stays in other institutions were not considered "stays." All medical care for persons living in these institutions was classified as care "at home."

reduced out-of-pocket payments. The impact would probably be even greater if that benefit had been in effect for the full survey period. In 1965, all but 2 percent of the incurred charges in extended-care facilities was paid directly by the patient. In the second phase of the study, Medicare paid 32 percent of the charges incurred, private insurance paid 2 percent, and the remaining 66 percent was paid by the patient.

AMBULATORY MEDICAL VISITS

Medicare's supplementary medical insurance program pays 80 percent of the allowed charges for physicians' services and other medical services after the patient has met a deductible of $50 during a calendar year. To preclude the possibility of having to meet the deductible twice in a short period of time, a carryover provision was instituted. Accordingly, covered medical expenses that are incurred in the last quarter of the year and counted toward the deductible in that year are also credited toward the deductible for the following year.

Physicians' services (including home, hospital, and office visits) are covered under the program, as well as diagnostic services, X-rays or other radiation treatments, surgical dressings, splints, casts, braces, and rental or purchase of durable medical equipment.

The higher rates of stays in short-stay hospitals under Medicare also produced increases in the medical services for patients in these facilities. This section discusses, for both phases of the study, the use and charges for ambulatory medical services, including physicians' visits in the home and office, visits to a clinic, emergency room, or health center, and visits to a private laboratory.

When all these types of ambulatory visits are combined, the study shows no significant differences between the two periods in the proportion of persons with such visits. The mean number of reported visits declined slightly from 6.6 per person in 1965 to 6.1 per person in 1967. The tabulation in the next column sums up the data on the proportion with visits and the average number, by place of visit.

The only available nationwide survey reporting ambulatory visits before Medicare and under the program reports somewhat comparable findings. The National Health Survey, in its household interview survey, reported the mean number of visits per person, by age, for two periods—fiscal years 1964 and 1967.[8] In fiscal year 1964, 6.7 visits per person aged 65 and over were reported; in fiscal year 1967, the mean dropped to 6.0 visits.

Place of visit	Percent with visits		Mean number of visits	
	1965	1967	1965	1967
Total	73.2	74.3	6.6	6.1
Private physician	68.5	71.9	5.9	5.7
Home	14.2	11.2	.8	.5
Office	64.6	69.1	5.1	5.1
Clinic, emergency room, health center	14.2	8.6	.8	.3
Private laboratory	0	2.2	0	.1

Although the study reported here showed no significant changes in the proportion of persons with ambulatory visits, substantial shifts for place of visit were reported under Medicare. Relatively more persons saw physicians in the office; fewer had home visits. The greatest shift was in the proportion with clinic visits. Before Medicare, 1 out of 7 aged persons reported visits to a clinic, emergency room, or health center. Under Medicare, about 1 in 12 persons reported such visits.

The percentages with clinic visits declined for each segment of the population, but the relative drop was greatest for those residing in rural areas and smallest for persons in large metropolitan areas (table 9). There was a considerable reduction in the proportion of Negroes with clinic visits —from 25 percent before Medicare to 14 percent under Medicare. For white persons, the proportions with clinic visits were considerably lower—13 percent before Medicare and 8 percent under Medicare. A substantial gap still exists under Medicare, therefore, between the proportions of Negro and of white persons with such visits.

CHARGES FOR MEDICAL SERVICES

Data on charges for medical services were obtained in both phases of the study for both

[8] Public Health Service, National Center for Health Statistics, National Health Survey, *Volume of Physician Visits, United States, July 1966–June 1967* (Series 10, No. 49).

TABLE 9.—Percent of persons with reported ambulatory medical visits by place of visit and selected personal characteristics, 1965 and 1967

Characteristic	All visits		Private physicians' visits						Clinic visits	
			Total		Home		Office			
	1965	1967	1965	1967	1965	1967	1965	1967	1965	1967
All persons	73.2	74.3	68.5	71.9	14.2	11.2	64.6	69.1	14.2	8.6
Age and sex:										
65–74	73.4	74.0	68.5	71.7	11.0	8.6	66.3	70.2	14.8	8.9
75 and over	72.9	74.8	68.5	72.4	20.3	15.8	61.5	67.4	13.0	8.0
Men	68.9	70.5	63.1	67.4	11.2	10.0	59.8	65.1	14.5	8.8
65–74	69.1	70.5	62.7	67.7	8.0	7.5	61.0	66.5	15.3	8.5
75 and over	68.7	70.6	63.8	66.9	16.7	14.0	57.8	62.8	13.0	9.2
Women	76.6	77.2	72.8	75.4	16.7	12.2	68.5	72.2	14.0	8.4
65–74	76.7	76.7	73.0	74.7	13.3	9.3	70.5	73.0	14.5	9.2
75 and over	76.6	78.1	72.5	76.7	23.3	17.2	64.8	71.0	13.1	7.1
Race:										
White	73.3	74.7	69.1	72.7	14.5	11.6	65.2	69.8	13.4	8.2
Negro	72.2	68.5	58.7	60.6	9.9	6.2	56.1	58.8	25.2	14.4
Region:										
South	74.4	74.0	69.6	71.7	11.7	8.6	66.9	69.7	12.9	6.5
Other regions	72.7	74.5	68.0	72.0	15.3	12.4	63.7	68.9	14.7	9.5
Area of residence:										
Metropolitan, large	73.4	76.9	68.3	72.6	16.7	14.3	64.5	68.7	17.6	14.4
Metropolitan, small	72.8	72.6	68.3	69.9	13.5	10.0	64.2	67.5	14.5	9.4
Other urban	71.3	75.2	69.1	73.8	13.5	12.8	65.4	70.5	9.4	6.1
Rural	74.5	73.9	68.6	72.8	13.6	9.6	64.9	70.5	13.9	4.8
Family income, by size of family:										
One-person family	70.5	73.0	65.0	70.1	13.1	11.6	61.0	67.4	14.2	9.3
Under $1,000	66.0	66.4	60.7	62.8	17.3	13.6	56.7	58.3	13.6	8.1
1,000–1,999	72.1	72.2	65.5	68.9	11.7	10.3	60.6	67.3	14.6	9.5
2,000–2,999	75.5	73.6	70.3	71.0	9.6	10.5	68.2	68.5	18.0	7.8
3,000 or more	71.8	78.1	67.7	76.3	13.1	12.1	64.5	73.5	12.4	9.4
Two-person family	74.3	75.5	69.4	73.4	13.5	10.4	66.3	70.9	14.3	8.2
Under $2,000	70.3	70.2	66.4	67.1	15.2	11.5	62.5	63.1	11.6	8.2
2,000–2,999	71.6	72.7	65.2	70.7	12.6	9.4	61.6	68.1	15.7	7.4
3,000–3,999	74.2	76.3	68.9	74.4	13.7	10.4	66.2	72.2	13.7	9.5
4,000 or more	80.4	80.2	75.9	78.2	12.5	9.8	74.1	76.4	16.2	8.8
Families of three or more persons [1]	74.4	72.9	71.3	70.6	17.7	13.3	65.7	66.8	13.9	8.7

[1] Data by income are omitted because figures generally do not meet standards of reliability of precision.

ambulatory medical services and inhospital surgical and medical services.

In the first phase of the study when charges were paid entirely by welfare funds, the care was classified as "without charges." For prepaid care, with charges not known to the beneficiary, an amount was imputed for charges incurred and for private insurance payments.

In the second phase of the study, if a respondent said that welfare funds paid the charges and if there was medical insurance coverage under Medicare, it was assumed that claims for charges above the deductible would be filed with Medicare and that the welfare program took care of the deductible and coinsurance amounts. For prepaid care, charges were also imputed and Medicare payments were computed, with the deductible and coinsurance amounts considered as private insurance payments.

Mean charges incurred for medical services per person (including charges for inhospital and ambulatory care) increased almost 45 percent—from $66 before Medicare to $95 under Medicare (table 10). As indicated earlier, part of the increase resulted from the rise in the proportion of persons with charges incurred, especially for those who were hospitalized. The following tabulation shows the proportion of persons with charges incurred for medical services by place of service, for the two phases of the study.

Place of service	1965	1967
Total	68.3	72.1
Private physician	67.2	70.8
Inhospital [1]	15.0	18.4
Ambulatory [1]	59.5	60.7
Clinic, emergency room, health center	5.2	6.2
Private laboratory	0	2.1

[1] Inhospital refers to care in and out of institutions for conditions involving one or more stays. Ambulatory refers to care for conditions with no stays. (See Technical Note.)

Part of the increase between the two survey periods in per capita charges for medical services reflects the rise in physicians' fees. Between fiscal year 1966 and calendar year 1967, the phy-

TABLE 10.—Charges per person for medical services, by source of payment and selected personal characteristics, 1965 and 1967

Characteristic	1965				1967				
	Charges per person	Percentage distribution			Charges per person	Percentage distribution			
		Total	Private insurance	Out-of-pocket		Total	Medicare	Private insurance	Out-of-pocket
All persons	$66	100.0	19.4	80.6	$95	100.0	45.1	7.8	47.1
Age and sex:									
65–74	68	100.0	21.8	78.2	91	100.0	43.6	8.0	48.4
75 and over	64	100.0	14.9	85.1	102	100.0	47.5	7.5	45.0
Men	62	100.0	21.0	79.0	92	100.0	46.9	8.7	44.4
65–74	62	100.0	22.2	77.8	89	100.0	45.5	8.5	46.0
75 and over	62	100.0	18.8	81.2	98	100.0	49.1	9.0	41.9
Women	70	100.0	18.3	81.7	97	100.0	43.8	7.2	49.0
65–74	72	100.0	21.5	78.5	92	100.0	42.2	7.7	50.1
75 and over	66	100.0	11.7	88.3	105	100.0	46.3	6.3	47.4
Race:									
White	69	100.0	19.8	80.2	98	100.0	45.3	8.0	46.7
Negro	34	100.0	11.5	88.5	51	100.0	39.2	3.5	57.3
Region:									
South	59	100.0	18.2	81.8	86	100.0	44.2	8.1	47.7
Other regions	69	100.0	19.9	80.1	99	100.0	45.5	7.7	46.8
Area of residence:									
Metropolitan, large	85	100.0	15.4	84.6	117	100.0	47.7	6.1	46.2
Metropolitan, small	68	100.0	22.3	77.7	92	100.0	42.6	8.6	48.8
Other urban	56	100.0	17.0	83.0	95	100.0	46.5	6.1	47.4
Rural	56	100.0	21.1	78.9	81	100.0	44.8	9.7	45.5
Family income, by size of family:									
One-person family	64	100.0	17.5	82.5	98	100.0	48.1	7.2	44.7
Under $1,000	44	100.0	8.7	91.3	87	100.0	56.0	5.2	38.8
1,000–1,999	46	100.0	17.5	82.5	91	100.0	49.1	4.3	46.6
2,000–2,999	86	100.0	21.0	79.0	86	100.0	39.9	8.7	51.4
3,000 or more	97	100.0	17.5	82.5	108	100.0	47.4	10.3	42.3
Two-person family	67	100.0	20.9	79.1	94	100.0	43.6	8.5	47.9
Under $2,000	47	100.0	11.6	88.4	70	100.0	42.9	4.6	52.5
2,000–2,999	55	100.0	21.8	78.2	78	100.0	44.8	8.5	46.7
3,000–3,999	71	100.0	19.7	80.3	93	100.0	41.9	6.2	51.9
4,000 or more	91	100.0	25.7	74.3	121	100.0	44.4	11.3	44.3
Families of three or more persons [1]	69	100.0	18.5	81.5	93	100.0	44.8	6.6	48.6

[1] Data by income are omitted because figures generally do not meet standards of reliability of precision.

sicians' fee component of the CPI increased 10.9 percent.

As for hospital charges, the impact of Medicare on charges for medical services can best be assessed by comparing the direct payments before Medicare and under Medicare. Of the total charges per person incurred for medical services in and out of the hospital before Medicare, private insurance paid about one-fifth and four-fifths was paid directly by the patient. In the second phase of the study, 45 percent was covered by Medicare, 8 percent by private insurance, and the patient paid 47 percent. The direct outlays by the patient include the deductible and coinsurance amounts, unfiled claims, and disallowed charges. Premium payments that are matched by general revenues are not included in these figures.

SERVICES NOT COVERED BY MEDICARE

Information was collected in both phases of the study on the use of and the charges for those services not covered by Medicare. The three types of services not covered by Medicare that had the largest amounts of charges incurred were dental care, drugs, and optometrists' services.

The proportion of persons with charges for dental services increased from 21 percent to 23 percent. Mean charges per person with charges for dental services declined from $71 to $69. For all persons in the survey, mean charges for these services remained about $15.

There was a significant decrease from 84 percent to 77 percent of persons with reported charges for drugs, both prescribed and not prescribed. Mean charges for drugs per person in the survey dropped slightly from $59 to $57.

Charges for optometrists were incurred by about 19 percent of the persons in the survey both before Medicare and under the program. Mean charges per person with charges rose from $32 in 1965 to $34 in 1967, and mean charges per person in the survey were $6 in both periods.

TOTAL INSTITUTIONAL, MEDICAL, AND OTHER CHARGES

The extent to which Medicare covers the charges for the different types of institutional and medical services varies considerably, as table 11 indicates. Coverage of charges for short-stay hospital care is, of course, more nearly adequate under Medicare than coverage of charges for the other services. The second phase of the study showed that 85 percent of the mean charges per person for hospital care was reimbursed by Medicare. By contrast, about half that proportion (45 percent) of the charges for medical services, both inhospital and ambulatory, was covered by Medicare—because of the deductible and coinsurance amounts and the unfiled claims and disallowed charges paid by the patient. Charges per person for long-stay hospital care and for care in extended-care facilities and nursing homes are covered by Medicare to an even smaller extent—38 percent and 18 percent, respectively. Dental care and drugs are not covered by Medicare and charges for these services are mainly out of pocket. If welfare agencies or other voluntary organizations paid all of the bill for any of these services, these payments were not counted as charges incurred.

The impact of Medicare on the proportion covered by the program and the residual portion that must be met by private insurance or by the person directly can be seen when the combined charges for all institutional, medical, and other services are compared for the two survey periods. The following tabulation shows the mean charges per person, distributed by source of payment.

Source of payment	1965		1967	
	Mean charges	Percent of total	Mean charges	Percent of total
Total	$298	100.0	$418	100.0
Medicare			199	47.5
Private insurance	69	23.0	24	5.7
Out-of-pocket	230	77.0	196	46.8

The average per person for institutional, medical, and other bills was 40 percent higher in 1967 than it was in 1965. This rise was mainly the result of the larger proportion of institutional stays and physicians' visits with charges incurred, more days in short-stay hospitals, and higher charges in 1967 for these services. Private insurance payments declined two-thirds between the two periods. Although Medicare paid almost half the total charges for the aged persons in the survey, direct payments declined only 15 percent.

An examination of the data in table 12 reveals some differences among the various population groups in the mean charges per person that mainly reflect different patterns of use of medical services as well as variations in charges per unit of services. In both survey periods, higher mean charges were reported for persons aged 75 and over, for women, and for white persons. Higher mean charges were also reported in both survey periods for those living in regions other than the South, for persons living in large metropolitan areas, for one-person families, and for persons with higher incomes.

TABLE 11.—Total institutional, medical, and other charges incurred per person, by source of payment and type of service, 1965 and 1967

Type of service	1965				1967				
	Charges per person	Percentage distribution			Charges per person	Percentage distribution			
		Total	Private insurance	Out-of-pocket		Total	Medicare	Private insurance	Out-of-pocket
Total	$298	100.0	23.0	77.0	$418	100.0	47.5	5.7	46.8
Hospitals, total	91	100.0	59.1	40.9	172	100.0	84.2	8.3	7.5
Short-stay	86	100.0	61.6	38.4	169	100.0	85.1	8.4	6.5
Long-stay	4	100.0	7.2	92.8	3	100.0	37.7	.2	62.1
Extended-care facilities and nursing homes	39	100.0	1.7	98.3	47	100.0	18.4	1.6	80.0
Medical services	66	100.0	19.4	80.6	95	100.0	45.1	7.8	47.1
Dental care	15	100.0	1.3	98.7	16	100.0		.2	99.8
Drugs [1]	59	100.0	.8	99.2	57	100.0		1.6	98.4
Allied health services [2]	20	100.0	1.1	98.9	17	100.0	7.7	1.6	90.7
Other [3]	8	100.0	6.2	93.8	14	100.0	5.3	2.7	92.0

[1] Prescribed and nonprescribed drugs.

[2] Charges for services of physical, occupational, and speech therapists, professional nurses, home health aides, chiropractors, podiatrists, optometrists, psychologists, and hearing-aid technicians.

[3] Includes extra charges in institutions not covered by Medicare, ambulance services, equipment and appliances, and other medical services, not elsewhere classified.

TABLE 12.—Total institutional, medical, and other charges incurred per person, by source of payment and selected personal characteristics, 1965 and 1967

Characteristic	1965				1967				
	Charges per person	Percentage distribution			Charges per person	Percentage distribution			
		Total	Private insurance	Out-of-pocket		Total	Medicare	Private insurance	Out-of-pocket
All persons	$298	100.0	23.0	77.0	$418	100.0	47.5	5.7	46.8
Age and sex:									
65–74	266	100.0	26.4	73.6	339	100.0	49.0	6.7	44.3
75 and over	359	100.0	18.3	81.7	552	100.0	45.9	4.8	49.3
Men	267	100.0	25.4	74.6	382	100.0	49.7	6.1	44.2
65–74	247	100.0	27.6	72.4	331	100.0	51.3	7.4	41.3
75 and over	301	100.0	22.4	77.6	467	100.0	47.9	4.6	47.5
Women	324	100.0	21.4	78.6	446	100.0	46.0	5.5	48.5
65–74	280	100.0	25.6	74.4	346	100.0	47.3	6.2	46.5
75 and over	409	100.0	15.8	84.2	618	100.0	44.7	4.8	50.5
Race:									
White	310	100.0	23.1	76.9	434	100.0	47.7	5.8	46.5
Negro	132	100.0	19.0	81.0	199	100.0	43.7	2.0	54.3
Region:									
South	248	100.0	20.2	79.8	362	100.0	42.3	7.2	50.5
Other regions	320	100.0	23.9	76.1	442	100.0	49.3	5.2	45.5
Area of residence:									
Metropolitan, large	388	100.0	20.6	79.4	568	100.0	50.0	4.4	45.6
Metropolitan, small	310	100.0	26.3	73.7	397	100.0	47.6	5.3	47.1
Other urban	249	100.0	18.5	81.5	406	100.0	44.6	5.9	49.5
Rural	245	100.0	23.2	76.8	340	100.0	46.2	7.9	45.9
Family income, by size of family:									
One-person family	393	100.0	17.7	82.3	554	100.0	42.8	5.0	52.2
Under $1,000	294	100.0	12.7	87.3	516	100.0	46.1	3.1	50.8
1,000–1,999	251	100.0	19.6	80.4	491	100.0	47.2	3.3	49.5
2,000–2,999	352	100.0	24.7	75.3	452	100.0	43.4	5.7	50.9
3,000 or more	718	100.0	16.6	83.4	623	100.0	34.5	5.9	59.6
Two-person family	253	100.0	26.8	73.2	349	100.0	49.3	6.6	44.1
Under $2,000	183	100.0	18.6	81.4	248	100.0	52.0	3.6	44.4
2,000–2,999	221	100.0	28.4	71.6	282	100.0	49.3	6.0	44.7
3,000–3,999	269	100.0	26.5	73.5	339	100.0	50.7	4.7	44.6
4,000 or more	328	100.0	30.5	69.5	473	100.0	49.4	8.5	42.1
Families of three or more persons [1]	277	100.0	24.9	75.1	407	100.0	53.1	4.9	42.0

[1] Data by income are omitted because figures generally do not meet standards of reliability of precision.

For persons aged 75 and over and for women, whose average charges are higher, the proportion paid directly by the patient was also greater in both survey periods, with a significantly large amount left to be paid out of pocket. In 1967, the amount left to be paid by the patient, after the payments made through Medicare and private insurance, was $272 per person aged 75 and over, but for those aged 65–74 it was only $151.

Technical Note

The estimates presented here are based on data obtained in the two-part survey on the early effects of Medicare on the health care of beneficiaries of old-age and survivors insurance (OASI) aged 65 and over. The two surveys were conducted under Social Security Administration contracts with the School of Public Health and Administrative Medicine, Columbia University, which performed the data processing and analysis and with the National Opinion Research Center (NORC), University of Chicago, which was responsible for the interviewing.

SAMPLE DESIGN AND SELECTION

For each phase the size of the sample was selected in order to assure that the number of hospital stays was large enough for analysis of various subgroups with relatively moderate sampling variability. In order to have at least 1,200 stays and allow for an expected noninterview rate of 10 percent, approximately 6,600 persons were selected for each sample.

The sampling frame for the first phase was the list of OASI beneficiaries aged 65 and older as of December 31, 1965. The sampling frame for the second phase was derived from the health insurance tape as of September 29, 1967. To obtain a universe comparable to that of the first phase, the following categories were excluded: persons

receiving only railroad benefits; "special age-72" beneficiaries; those receiving only supplementary medical insurance benefits; persons for whom welfare agencies pay the premium; and those eligible for OASI benefits but receiving only hospital benefits.

Because the interviewing was conducted by the staff of NORC, the 72 primary sampling units and the rates of selection within each primary sampling unit were determined by NORC in accordance with their plan for selecting samples of persons of all ages in the United States.

The rates of selection for each primary sampling unit were applied by the Social Security Administration to the two sampling frames described above in order to select systematic samples of beneficiaries in each of the units. Because the lists for each phase were larger than the desired 6,600, systematic samples were deleted from the lists to obtain the samples of beneficiaries from whom interviews were to be sought.

In summary, there were two comparable and independent multistage probability samples of OASI beneficiaries aged 65 and older in conterminous United States.

DATA COLLECTION

To be certain of comparability for the two periods, it was important that the wording and order of the questions in the interview schedules be as similar as possible in both phases. Major changes in the second phase were additional questions to obtain details about Medicare payments and the deductible and coinsurance amounts. Some improvements also were made in technical details.

The basic design of the interview schedules was adapted from that previously used in nationwide studies conducted for the Health Information Foundation. The interview was structured to ask first about more serious and more expensive illnesses and then to ask about illnesses requiring less care.

First, the respondent was asked about all health care, charges, and costs related to conditions for which there were stays in a hospital or other institution. Second, similar questions were asked about major conditions—that is, conditions with at least three physician visits in a year, conditions for which costs of at least $50 were incurred in one year, or specific chronic conditions for which medical care had been received during the past year. Finally, questions were asked about minor illnesses.

The questions were designed to produce data about medical care utilization and charges for approximately one year before the date of the interview. To facilitate recall by respondents, the working rule for interviewers was as follows: "A year ago means any time since the first day of the month in which you are interviewing, but in the previous calendar year." The end of the period for which services and charges were to be reported was the day before the date of the interview. This time period is called the survey period. Survey periods ranged from 12 to 13 months and averaged 12.5 months.

In order to check validity of recall, questions on utilization of ambulatory medical care were asked about both the "past 4 weeks" and the rest of the survey period. The "4 weeks" was defined as the 4 calendar weeks ending on the day before the date of the interview.

In the first phase, 98 percent of the interviews were completed in April and May 1966, and the survey period was April–May 1965 to April–May 1966. In the second phase, 96 percent of the interviews were completed in November and December 1967 and the survey period was November–December 1966 to November–December 1967.

Interviewers were instructed to speak to the beneficiary himself whenever possible and to consult other members of the family if necessary. The respondent reported for himself in about 56 percent of the interviews; in an additional 29 percent, the respondent and another person talked to the interviewer.

In the first phase, the average length of interview was 1 hour; in the second phase, the average length of interview was 1 hour and 20 minutes. Longer interviews in the second phase reflect additional time needed to get details about Medicare payments and questions on attitudes about Medicare.

In the first phase, interviews were obtained for 5,803 persons, or 89 percent of the designated sample. There were 5,771 interviews, representing a completion rate of 87 percent, in the second phase.

DATA PROCESSING

The data processing and analysis were performed by the Columbia University School of Public Health and Administrative Medicine. All interview schedules were carefully reviewed for completeness and consistency of responses according to detailed editing instructions. If information on stays was missing or inconsistent, data were collected by letters or telephone calls to institutions or insurance companies, or from copies of Medicare claim forms.

Because many respondents did not recall or understand details about charges and Medicare payments, elaborate procedures were needed to reconstruct for each case the financial information for the entire survey period.

For about 10 percent of the cases involving use of medical care in the second phase, charge information was not reported. Three reasons accounted for unknown charges: facts not known or not reported by the respondent, welfare payments, and prepaid care. In these cases, charges per visit or per day of care in an institution were imputed from a randomly selected case, using data from the same form and question with regard to care from the same type of facility.

ESTIMATION

The data presented in this article are weighted data from the interviews. The weight assigned to each individual case was the product of the basic weight, a noninterview adjustment factor, and a ratio-estimate factor.

Since interviews were not obtained for 11 percent of the designated sample in the first phase and for 13 percent in the second phase, a noninterview adjustment factor was assigned to each interviewed person. For each phase, these factors were computed for each of 28 groups defined by age, sex, area, and region.

Ratio-estimate factors were computed for each of 26 race-sex-age groups in each phase in order to obtain the sum of the weights for each group approximately equal to the number of beneficiaries in the universes from which the sample was selected. The numbers of beneficiaries aged 65 years and older in the groups included in the sampling frames were as of December 1965 for the first phase and as of the end of September 1967 for the second phase.

The sum of the weights for the interviews in the first phase was 14,281,220; and the sum for the interviews in the second phase was 15,392,960.

RELIABILITY OF THE ESTIMATES

Since the estimates presented here are based on samples, they may differ somewhat from the figures that would have been obtained from interviews with all persons in the universes. Particular care should be exercised in the interpretation of figures based on small numbers of cases and in small differences between figures. As in all survey work, the results are subject to errors of response and nonreporting as well as sampling variability.

TABLE A.—Approximate sampling variability of selected indexes about services and charges during survey period

Description of index	Value of index		Estimated standard error	
	1965	1967	1965	1967
Stays per 100 persons:				
Short-stay hospitals, total	22.2	24.7	1.06	1.44
With surgery	5.9	7.9	.44	.49
Without surgery	16.3	16.9	.83	1.18
With charges	18.5	24.0	1.03	1.44
Without charges	3.8	.7	.44	.15
Extended-care facilities	1.3	2.0	.21	.25
Nursing homes	2.0	1.5	.20	.24
Days per 100 persons:				
Short-stay hospitals, total	314	392	16	24
With surgery	89	129	8	10
Without surgery	225	264	14	22
With charges	243	363	16	21
Without charges	72	30	10	7
Extended-care facilities	235	289	49	44
Nursing homes	465	324	52	53
Percent of persons with one or more stays in:				
Any type of institution	18.9	20.2	.74	.86
Short-stay hospitals	16.7	18.6	.76	.82
Extended-care facilities	1.1	1.7	.19	.20
Nursing homes	1.8	1.3	.19	.19
Percent of persons with one or more ambulatory medical visits:				
Total	73.2	74.3	.74	.83
With charges	67.4	71.1	.76	.92
Without charges	9.8	5.8	.75	.43
Mean charges incurred per person:				
Institutions, medical, and other services, total	$298	$418	$12.3	$19.3
Institutions	130	219	6.9	14.4
Short-stay hospitals	86	169	5.0	12.3
Extended-care facilities	18	27	4.2	3.6
Nursing homes	21	20	2.9	3.5
Medical services	66	95	3.0	3.5
Mean out-of-pocket outlays per person:				
Institutions, medical, and other services, total	$230	$196	$10.2	$7.1
Institutions	75	50	5.6	4.3
Short-stay hospitals	33	11	2.5	1.3
Extended-care facilities	17	18	4.0	2.9
Nursing homes	21	20	2.9	3.5
Medical services	54	45	2.4	1.6

The standard error is primarily a measure of sampling variability—that is, of variations that occur by chance because a sample rather than the entire population is surveyed. The chances are about 68 out of 100 that an estimate from the sample would differ from a figure about the population 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.

Approximate standard errors of selected indexes of utilization and charges are shown in table A. These standard errors illustrate the sampling variability of the estimates shown here.

Testing for significant differences between the values of an index in 1965 and 1967 was done by the Student's t test, using the estimated standard errors for each index. For example, the value of t in comparing the number of stays in short-stay hospitals per 100 persons was:

$$t = \frac{|22.2 - 24.7|}{\sqrt{(1.06)^2 + (1.44)^2}} = 1.4$$

Since this value of t is less than 2, the critical value of the 5-percent level of significance, one infers that the rates of stay were not significantly different in the two time periods.

DEFINITIONS OF TERMS

Age.—For first phase, age attained in 1965; for second phase, age attained in 1967.

Ambulatory medical visit.—Visit by or to a doctor at home, or in office, clinic, emergency room, health center, or private laboratory. Includes care by nurse and laboratory technician in office, clinic, etc.

Area of residence.—Large metropolitan: ten largest standard metropolitan statistical areas in 1960; small metropolitan: all other standard metropolitan statistical areas in 1960; other urban: counties outside standard metropolitan statistical areas with largest town 10,000–49,999 in 1960; rural: counties outside standard metropolitan statistical areas with no town of 10,000 or more in 1960.

Charges incurred.—Charges incurred by person, family, Medicare, and/or insurance. Includes estimates for prepaid care and excludes payments by welfare or Medicaid.

Clinic.—Outpatient department and emergency room of a hospital, clinic of a health department, clinic of an agency, Veterans Administration clinic, industrial clinic, mobile unit, and health center not known to be a prepaid center or group practice.

Days in institution.—The number of nights during a stay in an institution that were in the survey period.

Family income.—Income from all sources before taxes during the calendar year preceding the year of interview—1965 for the first phase and 1966 for the second phase.

Home visit.—Visit by private medical doctor to patient's home. Includes visit to institution not classified as extended-care facility or nursing home.

Institution.—All hospitals participating and not participating in Medicare program, participating extended-care facilities, and nursing homes that do not qualify as extended-care facilities under Medicare.

Long-stay hospital.—A hospital with average stay of 30 days or more.

Office visit.—Visit to private doctor in office, health center, or group practice. Includes emergency care by private doctor in emergency room of hospital.

Private insurance payments.—Payments by insurance companies for charges for health services; includes estimates for prepaid care and excludes workmen's compensation payments, weekly payments when not in institutions, and settlements of accident liability cases.

Private physician.—Medical doctor and osteopath in private practice, including a doctor with own office, with office in medical center, on staff of prepaid center, and in private group practice. Includes care by nurse or technician on staff of a private doctor or group.

Race.—Based on interviewers' observations of respondents. Persons were classified as white, Negro, and other (oriental, Asian Indian, and American Indian).

Short-stay hospital.—A hospital with average stay under 30 days.

Size of family.—Number of related persons living as a family unit; respondent living in an institution was considered a one-person family.

South.—The 16 States and District of Columbia

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TABLE M-3.—Selected social insurance and related programs: Beneficiaries of cash payments, 1940–70

[In thousands. For explanatory footnotes on programs, see table M-1]

At end of selected month	Retirement and disability					Survivor				Railroad temporary disability [4]	Unemployment		
	OASDHI [1]		Railroad [1]	Federal civil service	Veterans	OASDHI	Railroad	Federal civil service	Veterans [5]		State laws [5]	Railroad [4]	Training allowances [6]
	Retirement [2]	Disability											
December:													
1940	148	----	146	65	610	74	3	----	323	----	667	74	----
1941	266	----	153	69	617	167	4	----	318	----	523	22	----
1942	347	----	155	73	624	252	4	(7)	316	----	193	3	----
1943	406	----	159	77	649	342	4	(7)	323	----	64	1	----
1944	504	----	164	84	956	451	4	(7)	373	----	93	1	----
1945	691	----	173	92	1,534	597	4	(7)	698	----	1,743	13	----
1946	936	----	185	106	2,314	707	4	(7)	849	----	1,914	70	----
1947	1,166	----	212	122	2,335	812	79	1	937	31	1,217	47	----
1948	1,395	----	226	133	2,296	920	113	5	963	38	1,369	42	----
1949	1,709	----	242	148	2,343	1,034	128	13	971	36	1,955	167	----
1950	2,326	----	256	161	2,366	1,152	142	25	1,010	32	838	35	----
1951	2,993	----	267	171	2,391	1,386	150	35	1,020	29	798	32	----
1952	3,456	----	358	182	2,461	1,569	153	44	1,063	40	673	42	----
1953	4,200	----	381	199	2,552	1,781	162	53	1,095	36	1,172	69	----
1954	4,898	----	403	216	2,631	1,989	183	65	1,128	36	1,452	134	----
1955	5,788	----	427	234	2,707	2,172	206	74	1,156	36	912	48	----
1956	6,677	----	443	256	2,765	2,451	216	85	1,180	33	980	53	----
1957	8,205	150	463	292	2,819	2,774	226	96	1,170	38	1,684	102	----
1958	9,148	268	485	323	2,898	3,015	237	132	1,193	36	1,806	129	----
1959	9,932	460	523	350	2,972	3,312	246	143	1,222	36	1,630	83	----
1960	10,599	687	553	379	3,064	3,558	256	154	1,393	34	2,165	102	----
1961	11,655	1,027	567	408	3,137	3,812	262	167	1,547	31	1,993	75	(7)
1962	12,675	1,275	585	438	3,177	4,103	270	182	1,653	30	1,585	59	3
1963	13,262	1,452	594	465	3,195	4,321	278	197	1,750	31	1,609	49	21
1964	13,697	1,563	600	494	3,204	4,539	286	214	1,848	29	1,351	41	51
1965	14,175	1,739	620	522	3,216	4,953	291	227	1,924	25	1,035	30	75
1966	15,437	1,970	630	564	3,194	5,360	299	240	1,995	23	936	18	65
1967	15,907	2,141	641	588	3,175	5,659	309	258	2,077	21	989	39	67
1968	16,264	2,335	647	613	3,171	5,963	318	274	2,151	25	941	19	61
1969	16,595	2,488	651	636	3,179	6,229	321	288	2,208	23	1,084	16	52
1970	17,100	2,666	653	697	3,209	6,469	326	308	2,301	22	2,027	21	57
1969													
December	16,595	2,488	651	636	3,179	6,229	321	288	2,208	23	1,084	16	52
1970													
January	16,626	2,505	652	642	3,169	6,273	322	290	----	27	1,539	21	53
February	16,721	2,518	649	649	3,161	6,309	323	292	----	30	1,718	19	58
March	16,821	2,543	649	654	3,164	6,350	323	294	2,256	29	1,676	19	62
April	16,711	2,539	649	657	3,170	6,329	324	296	----	29	1,626	20	62
May	16,740	2,550	649	659	3,175	6,347	324	297	----	25	1,555	14	63
June	16,819	2,568	648	662	3,181	6,367	325	299	2,284	28	1,475	12	62
July	16,853	2,557	648	666	3,186	6,342	325	301	----	25	1,520	12	62
August	16,955	2,579	649	670	3,193	6,376	325	302	----	25	1,618	17	61
September	17,004	2,581	651	676	3,196	6,405	325	303	2,250	25	1,487	17	66
October	17,028	2,622	652	682	3,201	6,420	325	304	----	24	1,484	21	62
November	17,058	2,645	653	690	3,204	6,444	326	306	----	24	1,660	19	61
December	17,100	2,666	653	697	3,209	6,469	326	308	2,301	22	2,027	21	57

[1] Includes dependents.

[2] Beginning Oct. 1966, includes special benefits authorized by 1966 legislation for persons aged 72 and over and not insured under the regular or transitional provisions of the Social Security Act.

[3] Monthly number at end of quarter.

[4] Average number during 14-day registration period.

[5] Average weekly number. For programs included see table M-1, footnote 10.

[6] Unemployed workers in training under the Area Redevelopment Act of 1961 (November 1961–June 1966) and the Manpower Development and Training Act of 1962.

[7] Less than 500.

Source: Based on reports of administrative agencies.

EARLY EFFECTS OF MEDICARE

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that are classified by the Census as South Atlantic, East South Central, and West South Central regions.

Stay in institution.—An episode of one or more nights during the survey period when person was in an institution eligible for inclusion in study.

Survey period.—The period of time beginning 12 months before the month of the interview and that part of the interview month that preceded the date of the interview. The survey period was of varying length for each person and averaged 12.5 months per person. The survey periods were primarily April–May 1965 to April–May 1966 for the first phase and November–December 1966 to November–December 1967 for the second phase.