

# Current Medicare Survey: Hospital Insurance Sample

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THE STATISTICAL system of the Social Security Administration records the use of and the charges for covered hospital and medical services under health insurance for the aged (Medicare). The system's operation depends on the receipt of hospital and medical bills sent to and paid by intermediaries and carriers throughout the country. Substantial delays in the statistical reporting of current information are inherent in this system. To obtain current estimates of hospital and medical care services used and charges incurred by covered persons, the Social Security Administration therefore conducts a continuing monthly Current Medicare Survey (CMS).

The CMS is composed of a hospital insurance sample and a medical insurance sample, both designed to provide current national program data on the volume of services and charges incurred for specified periods. Data based on the medical insurance sample have been presented in the *Health Insurance Statistics* series, published by the Office of Research and Statistics to show current data on Medicare.<sup>1</sup> This article describes the hospital insurance sample and presents monthly data on admissions, discharges, covered days, and charges for the period July 1, 1966, through December 31, 1967.

Highlights from the survey data for the first 18 months of the hospital insurance program reveal that

- covered days of care per discharge remained constant at about 14 days
- 5.3 million hospital admissions occurred in 1967, or 276 admissions per 1,000 enrollees
- covered days of hospital care totaled 74 million in 1967, or about 3,857 days per 1,000 enrollees
- a trend to small increases in utilization was apparent in terms of admission rates
- for short-stay hospitals, the total charges went

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<sup>1</sup> See *Health Insurance Statistics*, CMS Nos. 1-9. This article, in substantially the same form, appears as No. 10 in the CMS series.

from \$42 a day to \$53

—the annual rates of discharges and covered days of care per 1,000 enrollees are considerably higher for those aged 75 and over than for those aged 65-74

—there was a pattern of shorter stays with higher total charges per day for men than for women.

## HOSPITAL INSURANCE SAMPLE DESIGN

The CMS hospital insurance sample is linked with the Medicare statistical system for the collection and maintenance of data on the utilization and financing of hospital services.<sup>2</sup> The hospital insurance sample consists of a sample of hospital admissions recorded in the health insurance auxiliary file. The medical insurance sample, in contrast, is composed of a sample of persons enrolled in the supplementary medical insurance program who are interviewed monthly in their homes.<sup>3</sup>

The hospital insurance sample used to provide estimates shown in this article consists of two main components: (1) a basic sample from the current month's record of inpatient hospital admission notices received by the Social Security Administration—a 1-in-200 systematic sample of new notices recorded in the health insurance auxiliary file; (2) a supplementary sample of longer-term inpatient stays to reduce the sampling variation of overall estimates of covered days per discharge and charges—a 1-in-200 systematic sample of all admission notices with 31 days or more elapsed from the date of admission to the date of selection or recorded discharge. Provision is made to ensure that a single admission notice has one and only one chance of selection for the basic sample and exactly one chance for the supplementary sample. This sample procedure has the characteristic of giving all

<sup>2</sup> For a description of the Medicare statistical system, see Howard West, "Health Insurance for the Aged: The Statistical Program," *Social Security Bulletin*, January 1967.

<sup>3</sup> See Jack Sharff, "Current Medicare Survey: The Medical Insurance Sample," *Social Security Bulletin*, April 1967, pages 4-9.

reported admissions an independent chance of selection without clustering by hospital. Thus, all hospitals in the United States and its Territories and, in emergency cases only, in Canada may be represented in the sample.

Currently, approximately 2,000 basic sample and 1,800 potential long-term sample selections are made each month. Some selections for the basic sample are, of course, admissions that become long-term stays of 31 days or more. These cases are identified and properly weighted, as described below. Some selections for the supplementary sample actually are for short-term stays, but such cases are dropped if the discharge data received indicate a length of stay less than 31 days. An additional sampling step is involved to account for the difference between admission notices and actual admissions when more than one notice is received for an admission.

The net effect of this sample design is a 0.5-percent sample of short-term hospital admissions (stays of 30 days or less) and a 1.0-percent sample of all long-term stays (31 or more days of care).

The records used in tabulating from July 1966 to December 1966 include all admissions selected through May 23, 1967; from January 1967 to June 1967 they include selections through December 29, 1967; and from July 1967 to December 1967 they include selections through June 28, 1968. On the average, this method yields about 2,800 short-term cases and about 650 long-term cases for tabulation purposes each month.

The monthly data reported here are the results of a weighting procedure in which a separate weight is calculated and assigned to each sample component each month, with adjustment of the weight for nonresponse in each component by a simple ratio approach.<sup>4</sup> There are at least two ways of obtaining estimates of annual, semi-annual, and quarterly data from the CMS hospital insurance sample. In one method, data for a specified period may be derived by totaling the monthly estimates included in the specified period. In another, it is possible to obtain CMS estimates by first combining the data on a case-by-case basis and then weighting the combined file for the period.

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<sup>4</sup> Studies of the nonresponse cases have shown no concentration in any of the characteristics used in classifying the data.

In the second method, data for sample cases in the second component of the sample are used in a way that reduces somewhat the sampling variability contribution. The result is a somewhat smaller sampling variability for overall estimates for the period, especially in regard to estimates of charges and covered days of care. Weight adjustments for nonresponse in each component is made for the period as a whole by a simple ratio approach.

The first of these methods has been used here in providing annual, semiannual, and quarterly estimates. The second method will be used in subsequent CMS reports when data for 1968 and later periods are provided. To obtain estimates that are more nearly comparable, revised data for 1966 and 1967, based on the second method of estimation, will be shown in subsequent reports.

As changes have occurred in the procedures for processing health insurance actions to the health insurance entitlement file, it has been necessary to change the sample selection program to ensure an unbiased sampling of all inpatient hospital admission notices received. A procedural change made in the fall of 1967 provides an illustrative example of how factors may affect the validity of estimates: A change made at that time in processing the health insurance auxiliary file was not introduced in the modification of the sampling program until two selection periods had passed. The result was a nonprobability underselection in the basic sample of about 20 percent in December 1967 and 30 percent in January 1968, as determined by relating the number of basic sample selections to the number of admission notices processed. As the universe from which the sample was drawn could not be recreated, enough of those admissions actually selected were chosen by a random process and replicated to represent the cases that should have been sampled but were not. Because the characteristics of the lost cases are unknown, it is not possible to determine whether the procedure used to replace them is unbiased. If a bias exists, it will not be measured in the variance estimates shown in the table of standard errors. Any bias that might have been introduced through dealing with underselection in this way would affect the data for March–June 1968 negligibly but would have a greater effect on the data for November 1967–February 1968.

## SOURCE OF DATA

Data tabulated for the hospital insurance sample are obtained from several sources. Admission data, such as date of admission and provider number, are part of the admission notices sampled. Demographic data, such as age, sex, race, and type of entitlement of the beneficiary, are extracted from the health insurance entitlement file. Information for the providers—such as type of hospital, servicing district office, State, and Census division—is obtained from the provider record.

Data relating to discharges are obtained from the processed file of bills or directly from the hospital. When the patient is discharged, the bill received and recorded in the Social Security Administration central records is used to obtain such information as date of discharge, status at discharge, total charges, noncovered charges, and deductible and coinsurance amounts. If the bill has not been received after a reasonable period of time, a field followup is initiated through the Social Security Administration district offices to secure the needed information from the hospital. If both bill and field data are available, preference for tabulation is given to data from the bill. Information for about 10 percent of all discharges tabulated for this report are based on data obtained from the hospital through the district offices. This dual approach of employing records and field followup yields usable monthly data on 97–99 percent of all sample admissions. The 1–3 percent nonresponse is handled by a simple adjustment of the weights applied in the tabulations.

## FINDINGS

The CMS-HI sample for the first 18 months of Medicare has provided the data in the tables shown here. Included are final estimates of monthly data and preliminary estimates for annual, semiannual, and quarterly periods. Annual rates per 1,000 enrolled population are projected rates based on the monthly or periodic estimates adjusted for the number of days in the month. The population base used for monthly data is an estimate of the total enrollment in the health insurance program for the month and for

periodic data is the average of the enrollment estimates for the months included.

## Covered Days of Care

The CMS-HI sample reports data only for covered days of care. Inpatient days before July 1, 1966, for all stays begun in June 1966 or earlier but extending into July are excluded. For patients who become eligible for benefits by attaining age 65 during an inpatient stay, days in months before the month of entitlement are also excluded, as well as days after the patient exhausts benefits in a benefit period. Covered days of care per discharge are thus limited to a maximum of 90 days during this period. Approximately 180,000 admissions before the beginning of Medicare were redefined for the survey as admissions on July 1, 1966. The estimate of admissions in July was raised to 647,000 and the result was a low figure (8.2 days) for covered days of care per discharge in July. The effect is also seen in the estimate of 12.8 covered days per discharge for August 1966.

The covered days of care per discharge figure is comparable to mean length of stay estimates from other surveys of the hospital experience of this age group. It may be expected, however, that the estimate based on the CMS-HI sample will be somewhat lower than the mean length of stay estimated from a sample design such as the hospital discharge survey of short stay hospitals, which continues to count days until an actual discharge or death in the hospital.<sup>5</sup> For July–December 1966, this survey shows a mean length of stay of 13.8 days—a higher figure than the CMS short-stay estimate for any one of the 6 months except September. However, the September 1966 estimates of 15.9 days for all hospital and 14.0 days for short-stay hospitals reflect a single-time phenomenon under Medicare—the 90th day of care for persons hospitalized continuously from July 1 was September 28. An extraordinarily large number of patients exhausted benefits on the latter date and were defined as discharged on September 29 so that

<sup>5</sup> Unpublished data from the Hospital Discharge Survey, conducted by the National Center for Health Statistics, Public Health Service.

the day on which benefits were exhausted would be counted as a covered day.

The number of covered days of care per discharge for all hospitals has remained fairly constant around 14 days (chart 1). Except for the first 3 months under the program, the monthly estimate ranges from 13.6 covered days per discharge to 14.3 days. Even the extreme values are not significantly different from each other. There has, therefore, been no change in average number of covered days of care per discharge that can be seen from the sample.

In addition to data on covered days of care for discharges occurring in a month, table 3 shows covered days incurred—that is, actually used in the month or period. The two estimates are very different for July 1966: 6,222,000 covered days incurred, compared with 3,732,000 covered days for discharges. This difference can be attributed to the dropping of days before July 1 from tabu-

lation; for months after September 1966, the two estimates are similar.

### Admissions

The estimated monthly total number of admissions ranged from a low of 394,000 in February 1967 to a high of 473,000 in January 1967, excluding July 1966. In terms of annual admission rate per 1,000 enrolled, January again was highest (excluding July) with a projected rate of 292 admissions per 1,000 enrolled population. August 1966 projected the lowest rate of 248 per 1,000. Fiscal and calendar years 1967 had rates of 281 and 276 per 1,000, respectively.

Although there exist statistically significant differences between the admission rates in table 1 for many pairs of months, the sample shows

CHART 1.—Covered days of care per discharge for all hospitals and for short-stay hospitals, July 1966–December 1967

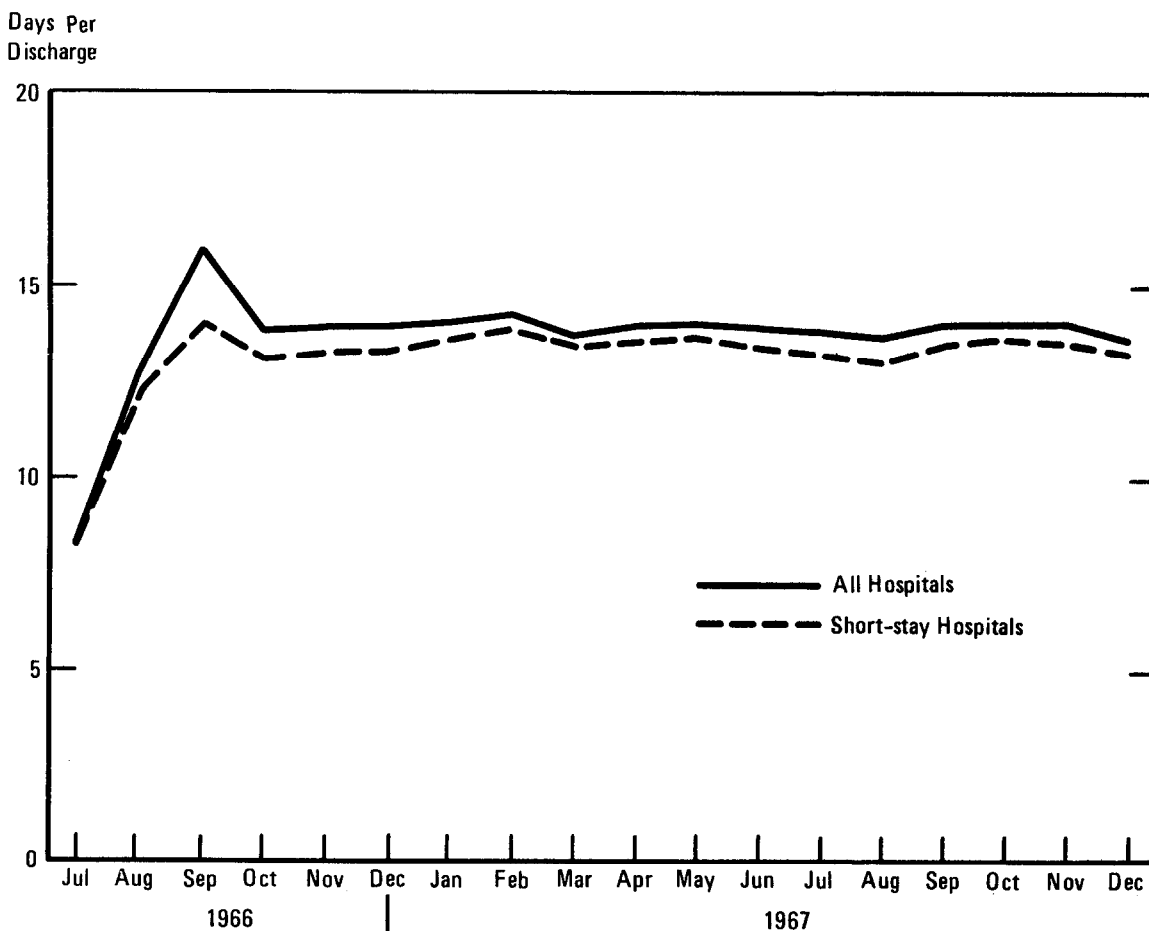


TABLE 1.—Current Medicare Survey, Hospital Insurance Sample: Estimated admissions, discharges, covered days of care per discharge, and rate per 1,000 enrollees, by period, July 1966–December 1967

Month or period <sup>1</sup>	Admissions		Discharges <sup>3</sup>		Covered days of care		
	Number (in thousands)	Annual rate per 1,000 enrollees <sup>2</sup>	Number (in thousands)	Annual rate per 1,000 enrollees <sup>2</sup>	Number (in thousands)	Annual rate per 1,000 enrollees <sup>2</sup>	Per discharge
All hospitals							
July 1966–June 1967.....	4 5,368	281	5,170	271	70,224	3,680	13.6
January–December 1967.....	5,320	276	5,299	275	74,331	3,857	14.0
July–December 1966.....	4 2,695	281	2,503	261	32,625	3,405	13.0
January–June 1967.....	2,673	281	2,667	281	37,599	3,957	14.1
July–December 1967.....	2,647	271	2,632	269	36,732	3,759	14.0
July–September 1966.....	4 1,450	303	1,248	261	15,186	3,176	12.2
October–December 1966.....	1,246	259	1,255	261	17,439	3,633	13.9
January–March 1967.....	1,326	281	1,308	277	18,506	3,925	14.1
April–June 1967.....	1,347	281	1,359	284	19,093	3,989	14.0
July–September 1967.....	1,312	270	1,312	270	18,267	3,756	13.9
October–December 1967.....	1,336	272	1,320	269	18,465	3,761	14.0
1966:							
July.....	4 647	402	453	282	3,732	2,319	8.2
August.....	400	248	388	241	4,976	3,089	12.8
September.....	403	258	406	260	6,478	4,149	15.9
October.....	433	268	421	260	5,791	3,584	13.7
November.....	409	261	418	267	5,828	3,723	13.9
December.....	404	250	417	257	5,821	3,595	13.9
1967:							
January.....	473	292	446	275	6,331	3,905	14.1
February.....	394	268	405	276	5,826	3,972	14.3
March.....	460	283	457	281	6,349	3,902	13.8
April.....	459	291	449	285	6,316	4,004	14.0
May.....	454	279	467	287	6,619	4,059	14.1
June.....	433	274	443	281	6,159	3,902	13.9
July.....	443	271	436	267	6,037	3,700	13.8
August.....	443	270	445	271	6,119	3,734	13.7
September.....	426	268	431	271	6,111	3,836	14.1
October.....	444	269	431	260	6,083	3,679	14.1
November.....	430	274	435	272	6,165	3,851	14.1
December.....	453	273	454	274	6,217	3,757	13.6
Short-stay hospitals							
July 1966–June 1967.....	4 5,264	276	5,076	266	66,248	3,471	13.1
January–December 1967.....	5,245	272	5,220	271	70,895	3,678	13.6
July–December 1966.....	4 2,632	275	2,449	256	30,336	3,166	12.4
January–June 1967.....	2,632	277	2,627	277	35,911	3,780	13.7
July–December 1967.....	2,613	267	2,593	265	34,983	3,580	13.5
July–September 1966.....	4 1,403	293	1,214	254	13,936	2,915	11.5
October–December 1966.....	1,229	256	1,235	257	16,400	3,416	13.3
January–March 1967.....	1,307	277	1,288	273	17,645	3,742	13.7
April–June 1967.....	1,325	277	1,239	280	18,266	3,817	13.6
July–September 1967.....	1,293	266	1,290	265	17,278	3,553	13.4
October–December 1967.....	1,320	269	1,303	265	17,705	3,606	13.6
1966:							
July.....	4 616	383	439	273	3,640	2,262	8.2
August.....	391	243	382	237	4,791	2,974	12.5
September.....	396	254	393	252	5,504	3,525	14.0
October.....	427	264	414	256	5,437	3,365	13.1
November.....	404	258	412	263	5,486	3,504	13.3
December.....	398	246	409	253	5,478	3,383	13.3
1967:							
January.....	464	286	437	270	5,956	3,674	13.6
February.....	387	264	399	272	5,587	3,809	13.9
March.....	455	280	451	277	6,102	3,750	13.5
April.....	453	287	442	280	6,015	3,813	13.6
May.....	447	274	461	283	6,359	3,900	13.7
June.....	425	270	437	277	5,893	3,733	13.4
July.....	437	268	429	263	5,743	3,520	13.3
August.....	436	266	437	267	5,765	3,518	13.1
September.....	420	264	424	266	5,771	3,623	13.6
October.....	439	265	424	256	5,824	3,523	13.7
November.....	434	271	429	268	5,871	3,668	13.6
December.....	447	270	450	272	6,009	3,631	13.3

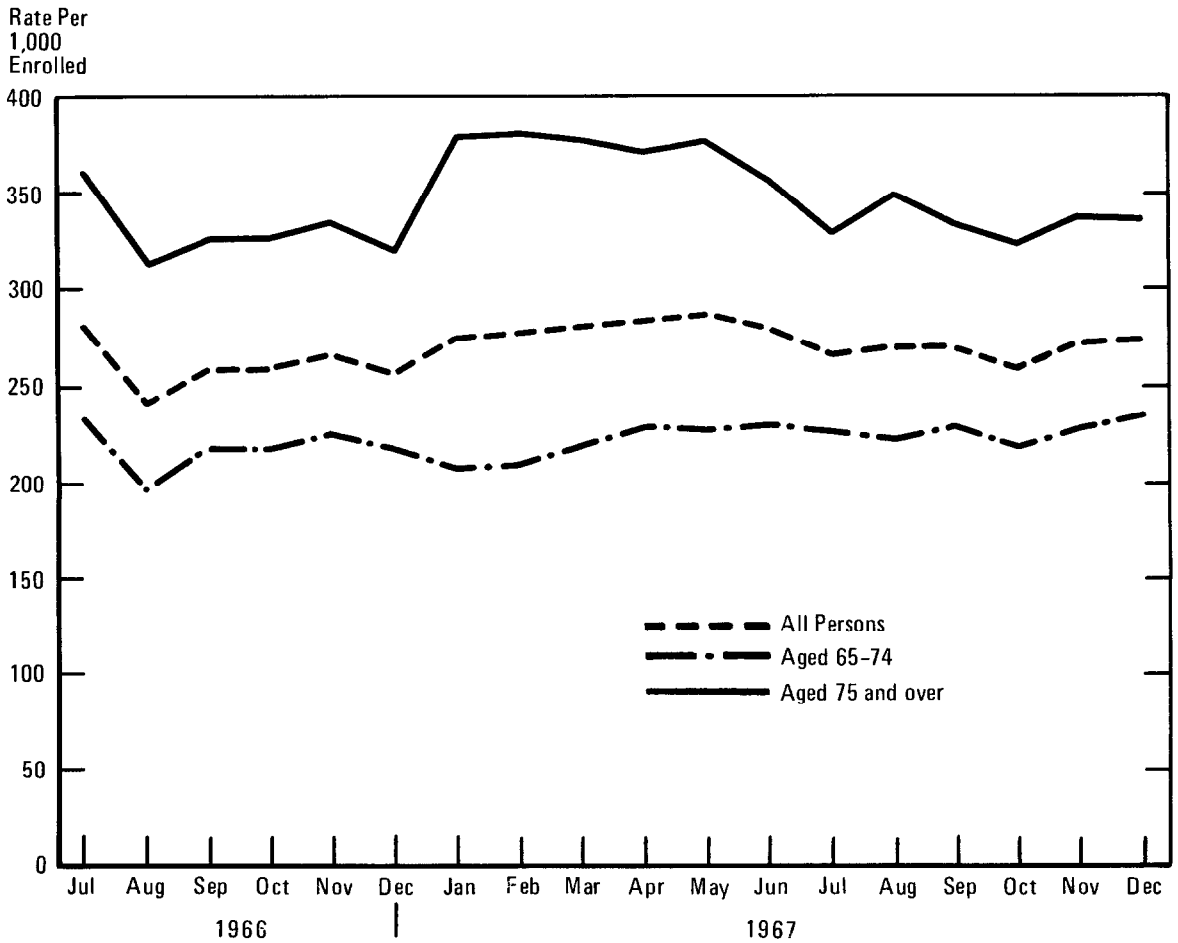
<sup>1</sup> Annual, semiannual, and quarterly data subject to revision as explained in the text.

<sup>2</sup> Based on average enrollment for the specified period.

<sup>3</sup> Includes termination of covered inpatient care without discharge.

<sup>4</sup> Includes approximately 180,000 admissions before July 1, 1966.

CHART 2.—Annual rate of discharges per 1,000 enrolled population, for all hospitals, by age and by month, July 1966–December 1967



no consistent trend toward an increasing admission rate in the first 18 months' experience taken as a whole. As shown below, however, admission

Month	Annual admission rate	
	1966	1967
August.....	248	270
September.....	258	268
October.....	268	269
November.....	261	274
December.....	250	273

rates for the 5 months of the period August–December 1967 are all higher than those for the same month in 1966.<sup>6</sup> The consistency of the

<sup>6</sup> There is no evidence of an influenza outbreak during the 18 months described in this report. See *Morbidity and Mortality Weekly Report*, volume 16, No. 63, National Communicable Disease Center, November 1968.

pattern of increase from 1966 to 1967 for each of these five pairs of months is not likely to occur by chance alone.<sup>7</sup> A trend to small increases in utilization in terms of admission rate is thus indicated. A similar analysis of annual rates of discharges and covered days of care points in the same direction but not so forcefully, since the discharge rate of 260 per 1,000 enrolled is the same for October 1966 and October 1967. The number of covered days of care in all hospitals shows a higher annual rate for September 1966 than September 1967, but, for short-stay hospitals only, the rates for all 5 months of 1967 are higher than the rates for the corresponding months of 1966—an indication that the all-hospital estimate was inflated by the unusual number

<sup>7</sup> The probability of this having occurred by chance is less than .05 using the sign test.

TABLE 2.—Current Medicare Survey, Hospital Insurance Sample: Total and covered charges, and reimbursable charges for discharges,<sup>1</sup> by period of discharge, July 1966–December 1967

Month or period <sup>2</sup> of discharge	Total charges			Covered charges		Reimbursable charges	
	Amount (in millions)	Per discharge	Per day	Amount (in millions)	Percent of total	Amount (in millions)	Percent of total
All hospitals							
July 1966–June 1967	\$3,171.8	\$614	\$45	\$3,104.9	97.9	\$2,555.1	80.6
January–December 1967	3,638.4	687	49	3,564.6	98.0	2,935.8	80.7
July–December 1966	1,394.5	557	43	1,364.5	97.8	1,117.5	80.1
January–June 1967	1,777.3	666	47	1,740.5	97.9	1,437.6	80.9
July–December 1967	1,861.1	707	51	1,824.2	98.0	1,498.2	80.5
July–September 1966	624.6	500	41	610.8	97.8	498.9	79.9
October–December 1966	769.9	613	44	753.7	97.9	618.6	79.1
January–March 1967	856.5	655	46	838.3	97.9	693.6	81.0
April–June 1967	920.8	678	48	902.2	98.0	744.0	80.8
July–September 1967	911.0	694	50	893.6	98.1	733.6	80.5
October–December 1967	950.1	720	51	930.6	98.0	764.5	80.5
1966:							
July	155.7	343	41	151.9	97.5	121.2	77.8
August	213.9	551	42	209.1	97.7	171.7	80.2
September	255.0	628	39	249.8	97.9	206.0	80.7
October	248.7	591	42	243.8	98.0	201.3	80.9
November	261.7	626	44	255.8	97.7	207.7	79.3
December	259.5	623	44	254.1	97.9	209.7	80.8
1967:							
January	288.7	636	44	277.8	97.9	229.5	80.8
February	273.7	676	46	267.9	97.8	222.5	81.2
March	299.0	654	47	292.6	97.8	241.7	80.8
April	305.4	680	48	299.5	98.0	244.7	80.1
May	319.8	684	48	312.8	97.8	258.6	80.8
June	295.6	667	47	289.8	98.0	240.7	81.4
July	298.4	684	49	293.5	98.3	242.7	81.3
August	308.7	690	50	300.0	97.8	246.4	80.3
September	306.0	710	50	300.1	98.0	244.6	79.9
October	307.5	714	50	301.1	97.9	248.5	80.8
November	316.1	727	51	309.1	97.7	254.6	80.5
December	326.4	719	52	320.4	98.1	261.5	80.0
Short-stay hospitals							
July 1966–June 1967	\$3,099.2	\$611	\$47	\$3,033.4	97.9	\$2,496.2	80.5
January–December 1967	3,569.6	684	50	3,497.0	98.0	2,880.0	80.7
July–December 1966	1,352.7	552	45	1,323.2	97.8	1,083.9	80.1
January–June 1967	1,746.5	665	49	1,710.1	97.9	1,412.3	80.9
July–December 1967	1,823.1	703	52	1,786.9	98.0	1,467.7	80.5
July–September 1966	600.6	495	43	587.2	97.8	479.5	79.8
October–December 1966	752.1	609	46	736.0	97.9	604.4	80.4
January–March 1967	840.5	653	48	822.7	97.9	680.8	81.0
April–June 1967	906.0	676	50	887.4	98.0	731.5	80.7
July–September 1967	888.5	689	51	871.4	98.1	715.4	80.5
October–December 1967	934.6	717	53	915.5	98.0	752.3	80.5
1966:							
July	154.1	351	42	150.4	97.5	119.8	77.7
August	210.4	551	43	206.0	97.8	169.0	80.2
September	236.0	601	42	230.9	97.8	190.8	80.8
October	242.9	587	44	238.1	98.0	196.4	80.8
November	255.5	620	46	249.6	97.6	202.8	79.3
December	253.8	620	46	248.4	97.8	205.2	80.8
1967:							
January	277.0	634	46	271.1	97.8	223.9	80.8
February	268.4	672	48	262.8	97.9	218.3	81.3
March	295.1	654	48	288.8	97.8	238.6	80.8
April	299.9	679	49	294.0	98.0	240.2	80.0
May	315.5	684	49	308.6	97.8	254.8	80.7
June	290.6	666	49	284.8	98.0	236.5	81.3
July	291.1	679	50	286.5	98.4	236.8	81.3
August	298.0	682	51	291.3	97.7	239.2	80.2
September	299.5	706	51	293.6	98.0	239.4	79.9
October	302.4	714	51	296.0	97.8	244.5	80.8
November	310.2	723	52	303.3	97.7	249.7	80.4
December	322.0	716	53	316.2	98.1	258.2	80.1

<sup>1</sup> Includes termination of covered inpatient care without discharge.

<sup>2</sup> Annual, semiannual, and quarterly data subject to revision as explained in the text.

TABLE 3.—Current Medicare Survey, Hospital Insurance Sample: Covered days of care, covered days for discharges,<sup>1</sup> and rate per 1,000 enrollees, by period, July 1966–December 1967.

Month or period <sup>2</sup>	All hospitals				Short-stay hospitals			
	Covered days incurred <sup>3</sup>		Covered days for discharges <sup>3</sup>		Covered days incurred <sup>3</sup>		Covered days for discharges <sup>3</sup>	
	Number (in thousands)	Annual rate per 1,000 enrollees <sup>4</sup>	Number (in thousands)	Annual rate per 1,000 enrollees <sup>4</sup>	Number (in thousands)	Annual rate per 1,000 enrollees <sup>4</sup>	Number (in thousands)	Annual rate per 1,000 enrollees <sup>4</sup>
July 1966–June 1967.....	73,478	3,850	70,224	3,680	69,094	3,621	66,248	3,471
January–December 1967.....	74,129	3,846	74,331	3,857	70,786	3,673	70,895	3,678
July–December 1966.....	35,695	3,725	32,625	3,405	32,992	3,443	30,336	3,166
January–June 1967.....	37,783	3,977	37,599	3,957	36,101	3,800	35,911	3,780
July–December 1967.....	36,346	3,719	36,732	3,759	34,684	3,549	34,983	3,580
July–September 1966.....	18,039	3,773	15,186	3,176	16,314	3,412	13,936	2,915
October–December 1966.....	17,656	3,678	17,439	3,633	16,679	3,474	16,400	3,416
January–March 1967.....	18,763	3,979	18,506	3,925	17,938	3,805	17,645	3,742
April–June 1967.....	19,020	3,974	19,093	3,989	18,163	3,795	18,266	3,817
July–September 1967.....	18,091	3,720	18,267	3,756	17,175	3,531	17,278	3,553
October–December 1967.....	18,255	3,719	18,465	3,761	17,509	3,566	17,705	3,606
1966:								
July.....	6,222	3,867	3,732	2,319	5,668	3,523	3,640	2,262
August.....	5,931	3,681	4,976	3,089	5,333	3,310	4,791	2,974
September.....	5,886	3,770	6,478	4,149	5,312	3,402	5,504	3,525
October.....	5,739	3,544	5,791	3,584	5,409	3,340	5,437	3,365
November.....	5,812	3,717	5,828	3,723	5,518	3,529	5,486	3,504
December.....	6,105	3,774	5,821	3,595	5,752	3,556	5,478	3,383
1967:								
January.....	6,466	3,989	6,331	3,905	6,172	3,807	5,956	3,674
February.....	5,948	4,055	5,826	3,972	5,689	3,878	5,587	3,879
March.....	6,348	3,902	6,349	3,902	6,078	3,736	6,102	3,750
April.....	6,414	4,066	6,316	4,004	6,141	3,894	6,015	3,813
May.....	6,501	3,987	6,619	4,059	6,239	3,827	6,359	3,900
June.....	6,105	3,868	6,159	3,902	5,782	3,664	5,893	3,733
July.....	6,041	3,703	6,037	3,700	5,721	3,506	5,743	3,520
August.....	6,124	3,737	6,119	3,734	5,821	3,552	5,765	3,518
September.....	5,926	3,720	6,111	3,836	5,633	3,536	5,771	3,623
October.....	6,178	3,737	6,083	3,679	5,894	3,565	5,824	3,523
November.....	6,121	3,824	6,165	3,851	5,889	3,678	5,871	3,668
December.....	5,956	3,599	6,217	3,757	5,726	3,460	6,009	3,631

<sup>1</sup> Includes termination of covered inpatient care without discharge.

<sup>2</sup> Annual, semiannual, and quarterly data subject to revision as explained in the text.

<sup>3</sup> Represents covered days of inpatient care used during the specified

month or period.

<sup>4</sup> Based on average enrollment for the specified period.

<sup>5</sup> Represents covered days of care used in stays for discharges in the specified month or period and may include days used in earlier months or periods.

of admissions for which benefits were exhausted in September 1966.

For data other than charges, most of the CMS tables display both the estimate and the annual rate per 1,000 enrolled. The actual numbers measure the total inpatient hospital use covered by Medicare. The rate data, however, permit analysis of possible changing patterns of use by the aged as a group because increases in numbers created by a growing population, as well as differences created by the number of days in the month, can be eliminated. In presenting data from this survey, no attempt has been made to relate the number of admissions in a period to the number of persons who may have been hospitalized once or more than once in the period.

### Charges

Total charges per day rose steadily from \$42 in July 1966 to \$53 in December 1967 for short-

stay hospitals, as shown by the data in table 2. This increase, coupled with the growth in the HI population, explains the rising total charges. The upward trend in total charges is shown by a significant increase between each pair of calendar quarters except the second and third quarters of 1967. An interesting feature of the charge data is the consistency of the proportion covered (98 percent) and the proportion reimbursed (80.5 percent) throughout the 18-month period.

### Age and Sex

The patterns of hospital utilization for the two age groups in table 4 are significantly different. The annual rate of discharges per 1,000 enrolled is much higher for the group aged 75 and over than for those aged 65–74 (chart 2). The older group averaged 15.1 covered days of care per discharge in 1967 in contrast to 13.0 days for



those in the age group 65-74. Total charges per day, however, are less for those aged 75 and over.

There is a pattern of shorter stays with higher total charges per day for men. A comparison of discharge rates for men and women shows that men are about 10 percent more likely than women to be hospitalized (table 5). Because of the larger number of older women, however, their aggregate number of hospital stays is considerably greater than the number for men. The data in chart 3, based on discharges in 1967 for all hospitals, illustrate the differing utilization rates by men and women and by age group. The data on covered days of care per 1,000 reflect the variation in discharge rate and covered days of care per discharge.

### RELIABILITY OF ESTIMATES

Since the estimates are based on a sample, they may differ somewhat, because of sampling

CHART 3.—Covered days of care per 1,000 enrolled population, by sex and by age, 1967

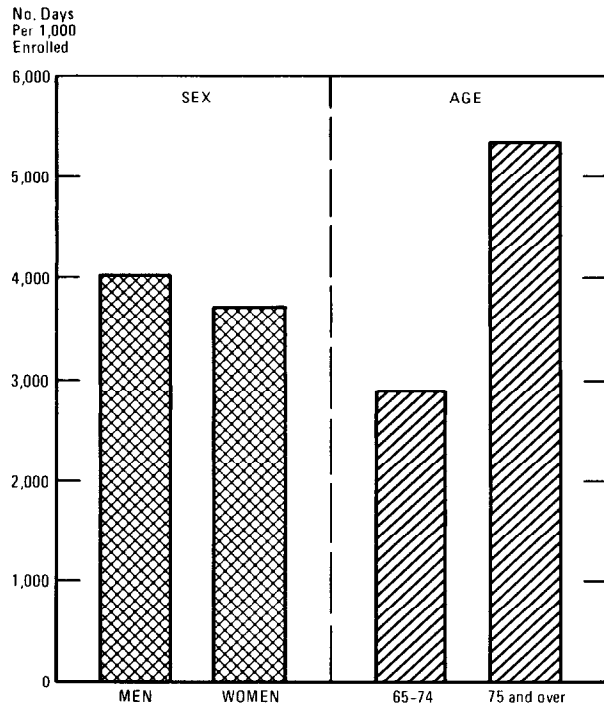


TABLE 4.—Current Medicare Survey, Hospital Insurance Sample: Estimated number of discharges<sup>1</sup> in all hospitals, covered days of care, rates per 1,000 enrollees, and total charges per day, by age and period of discharge, July 1966–December 1967

Month or period <sup>2</sup> of discharge	Aged 65-74					Total charges per day	Aged 75 and over					Total charges per day
	Discharges		Covered days of care				Discharges	Covered days of care			Total charges per day	
	Number (in thousands)	Annual rate per 1,000 enrollees <sup>3</sup>	Number (in thousands)	Annual rate per 1,000 enrollees <sup>3</sup>	Per discharge			Number (in thousands)	Annual rate per 1,000 enrollees <sup>3</sup>	Per discharge		
July 1966–June 1967	2,617	220	33,094	2,778	12.6	\$47	2,532	353	36,837	5,137	14.6	\$43
January–December 1967	2,678	224	34,840	2,915	13.0	51	2,597	355	39,130	5,346	15.1	47
July–December 1966	1,315	219	16,032	2,670	12.2	45	1,185	331	16,551	4,627	14.0	40
January–June 1967	1,303	220	17,062	2,888	13.1	49	1,347	375	20,286	5,646	15.1	46
July–December 1967	1,375	227	17,777	2,940	12.9	53	1,250	335	18,845	5,066	15.1	48
July–September 1966	651	217	7,345	2,448	11.3	44	595	334	7,823	4,391	13.1	39
October–December 1966	664	221	8,687	2,891	13.1	46	590	328	8,729	4,862	14.8	42
January–March 1967	623	212	8,329	2,835	13.4	48	677	381	10,055	5,658	14.9	45
April–June 1967	680	229	8,733	2,940	12.8	50	670	369	10,230	5,633	15.3	46
July–September 1967	683	227	8,783	2,916	12.9	53	625	337	9,411	5,083	15.1	47
October–December 1967	692	228	8,994	2,965	13.0	54	625	333	9,434	5,030	15.1	49
1966:												
July	236	234	1,903	1,882	8.1	44	216	362	1,821	3,045	8.4	40
August	200	198	2,418	2,392	12.1	45	187	312	2,547	4,243	13.6	41
September	215	219	3,024	3,090	14.1	42	192	329	3,454	5,925	18.0	37
October	222	219	2,842	2,810	12.8	45	199	329	2,946	4,874	14.8	41
November	221	225	2,904	2,963	13.2	48	196	335	2,906	4,963	14.8	42
December	222	219	2,942	2,902	13.3	46	194	321	2,877	4,750	14.8	43
1967:												
January	210	208	2,837	2,804	13.5	47	232	381	3,453	5,664	14.9	43
February	191	209	2,616	2,862	13.7	49	211	382	3,168	5,728	15.0	46
March	221	219	2,876	2,842	13.0	49	233	379	3,435	5,587	14.7	45
April	224	229	2,846	2,905	12.7	50	222	371	3,411	5,707	15.4	47
May	230	227	2,951	2,916	12.8	51	234	378	3,626	5,861	15.5	46
June	226	231	2,936	3,000	13.0	50	214	357	3,193	5,324	14.9	46
July	230	228	2,867	2,837	12.4	53	204	329	3,144	5,064	15.4	46
August	225	222	2,957	2,914	13.1	53	218	350	3,125	5,009	14.3	48
September	227	230	2,958	3,000	13.0	54	203	334	3,142	5,178	15.5	47
October	224	219	2,939	2,872	13.1	52	205	326	3,136	4,977	15.3	49
November	227	229	3,071	3,104	13.5	55	207	338	3,075	5,028	14.9	48
December	241	236	2,985	2,922	12.4	54	213	336	3,222	5,086	15.1	51

<sup>1</sup> Includes termination of covered inpatient care without discharge.  
<sup>2</sup> Annual, semiannual, and quarterly data subject to revision as explained

in the text.  
<sup>3</sup> Based on average enrollment for the specified period.

TABLE 5.—Current Medicare Survey, Hospital Insurance Sample: Estimated number of discharges<sup>1</sup> in all hospitals, covered days of care, rates per 1,000 enrollees, and total charges per day, by sex and period of discharge, July 1966–December 1967

Month or period <sup>2</sup> of discharge	Men						Women					
	Discharges		Covered days of care			Total charges per day	Discharges		Covered days of care			Total charges per day
	Number (in thousands)	Annual rate per 1,000 enrollees <sup>3</sup>	Number (in thousands)	Annual rate per 1,000 enrollees <sup>3</sup>	Per discharge		Number (in thousands)	Annual rate per 1,000 enrollees <sup>3</sup>	Number (in thousands)	Annual rate per 1,000 enrollees <sup>3</sup>	Per discharge	
July 1966–June 1967	2,363	292	31,228	3,858	13.2	\$47	2,790	254	38,748	3,526	13.9	\$44
January–December 1967	2,388	293	32,616	4,005	13.7	51	2,891	260	41,402	3,721	14.3	47
July–December 1966	1,164	286	14,706	3,610	12.6	45	1,332	242	17,822	3,235	13.4	41
January–June 1967	1,199	298	16,521	4,109	13.8	49	1,458	266	20,926	3,819	14.4	46
July–December 1967	1,188	288	16,094	3,903	13.5	53	1,433	254	20,477	3,625	14.3	49
July–September 1966	589	290	6,981	3,425	11.9	43	655	238	8,172	2,974	12.5	40
October–December 1966	575	282	7,725	3,786	13.4	46	677	245	9,651	3,496	14.3	43
January–March 1967	590	296	8,215	4,113	13.9	48	713	262	10,212	3,757	14.3	45
April–June 1967	609	301	8,307	4,104	13.6	50	745	270	10,714	3,879	14.4	47
July–September 1967	585	290	8,022	3,907	13.5	52	712	253	10,161	3,616	14.3	49
October–December 1967	594	287	8,072	3,900	13.6	54	721	254	10,315	3,634	14.3	50
1966:												
July	213	311	1,665	2,431	7.8	43	240	259	2,060	2,229	8.5	40
August	190	278	2,401	3,504	12.6	43	196	212	2,557	2,761	13.0	42
September	186	280	2,915	4,393	15.6	41	220	244	3,555	3,960	16.1	37
October	191	278	2,593	3,778	13.5	44	229	247	3,179	3,420	13.8	41
November	192	288	2,541	3,819	13.2	47	225	250	3,264	3,626	14.5	43
December	192	279	2,591	3,765	13.4	46	223	239	3,208	3,445	14.4	43
1967:												
January	191	278	2,601	3,787	13.6	46	253	271	3,704	3,965	14.6	43
February	186	300	2,652	4,268	14.2	48	217	257	3,158	3,735	14.5	45
March	213	309	2,962	4,300	13.9	49	243	259	3,350	3,571	13.8	45
April	197	296	2,790	4,179	14.1	48	250	275	3,498	3,845	13.9	47
May	209	304	2,850	4,134	13.6	51	256	272	3,745	3,980	14.6	46
June	202	303	2,667	3,999	13.1	50	239	262	3,471	3,808	14.5	46
July	194	282	2,560	3,716	13.1	51	240	254	3,447	3,656	14.3	47
August	202	292	2,695	3,895	13.3	51	241	254	3,383	3,573	14.0	49
September	199	295	2,787	4,115	13.9	51	231	251	3,332	3,619	14.4	48
October	193	277	2,691	3,856	13.9	52	236	247	3,371	3,528	14.3	49
November	194	287	2,686	3,979	13.8	53	239	258	3,444	3,720	14.4	49
December	207	297	2,695	3,866	13.0	54	246	257	3,500	3,655	14.2	50

<sup>1</sup> Includes termination of covered inpatient care without discharge.

<sup>2</sup> Annual, semiannual, and quarterly data subject to revision as explained

in the text.

<sup>3</sup> Based on average enrollment for the specified period.

variability, from the data that would have been available if the same information had been tabulated for the entire universe of hospital admissions. The data may also differ from the results of statistical compilations of information from the administrative records because of identifiable nonsampling factors in the sample or full universe processing. In addition, as noted in the discussion of the source of the data, some of the data used for these sample estimates are based on information collected independently and directly from hospitals; they may therefore differ because of differential aspects of nonsampling error. As in any data collection, then, the estimates from the Current Medicare Survey shown here are subject to errors of response, reporting, and processing, and subject to sampling variability as well. Statistical compilations of information from the administrative records, however, may also be subject to errors of omission or incompleteness as well as those related to processing and, where sampling is employed, 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 was used rather than the whole universe. To provide approximate standard errors, several simplifying assumptions were made in the preparation of the estimates of standard error shown in table 6. To some extent these rough speculated standard errors are also intended in part to measure the effect of response errors but not to measure any systematic biases in these sample estimates or the data from administrative records. The chances are about 68 out of 100 that an estimate from the Current Medicare Survey would differ from the results of the entire universe by less than the approximate standard errors shown below. The chances are about 95 out of 100 that the difference would be less than twice the standard error. The chances are about 99 out of 100 that the difference would be less than two and one-half times the standard errors shown. It may be noted that the rough approximations to the standard

TABLE 6.—Approximate standard errors for specified estimates

Item	Annual		Semiannual		Quarterly		Monthly <sup>1</sup>		July 1966		August 1966		September 1966	
	Range of applicable estimates	Stand-ard error	Range of applicable estimates	Stand-ard error	Range of applicable estimates	Stand-ard error	Range of applicable estimates	Stand-ard error	Esti-mate <sup>2</sup>	Stand-ard error	Esti-mate <sup>2</sup>	Stand-ard error	Esti-mate <sup>2</sup>	Stand-ard error
<i>Total</i>														
Number of admissions (in thousands).....	5,200-5,400	28	2,600-2,700	20	1,200-1,450	14	375-475	8	647	6	400	11	403	4
Number of discharges (in thousands).....	5,000-5,300	28	2,400-2,700	20	1,200-1,400	14	375-475	8	453	6	388	9	406	7
Covered days of care (in thousands).....	66,000-75,000	700	30,000-38,600	490	13,000-20,000	350	5,400-6,625	200	3,732	85	4,976	128	6,478	179
Charges (in millions).....	\$2,400-3,800	35	\$1,000-1,900	25	\$450-950	17	\$225-350	10	\$156	4	\$214	6	\$255	8
Covered days of care per discharge.....	13.6-14.0	.10	13.0-14.1	.15	13.9-14.1	.20	13.6-14.1	.35	8.2	.14	12.8	.28	15.9	.39
Total charges per day.....	\$45-55	.13	\$40-55	.19	\$40-55	.26	\$40-55	.45	\$41	.38	\$42	.37	\$39	.13
<i>Age and Sex Groups</i>														
Number of discharges (in thousands).....	2,200-3,000	21	1,100-1,500	15	550-750	10	175-275	6	213	4	190	7	186	6
Covered days of care (in thousands).....	30,000-42,000	520	14,000-21,000	370	7,000-11,000	260	2,000-3,800	150	1,665	61	2,401	92	2,915	128
Covered days of care per discharge.....	12.5-15.1	.14	12.2-15.1	.20	11.3-15.3	.29	12.4-15.5	.49	7.8	.19	12.6	.39	15.6	.55
Total charges per day.....	\$40-55	.19	\$40-55	.26	\$40-55	.37	\$40-55	.63	\$43	.53	\$43	.52	\$41	.18

<sup>1</sup> For any month in the 15-month period October 1966-December 1967.

<sup>2</sup> For all hospitals.

errors are shown as being applicable to a range of estimated values for some of the published characteristics.

In table 6, the total estimates apply to entries in tables 1-3 both for all hospitals and for short-stay hospitals. The age and sex group estimates apply to tables 4 and 5. Approximate standard

errors are shown for annual, semiannual, and quarterly estimates as well as for monthly data. The range of applicable estimates includes all estimates for the specified period except that July, August, and September 1966 are shown separately because of the effects of the beginning of the program.