

Average Length of Stay in Short-Stay Hospitals: Demographic Factors

United States-1968

Statistics are presented on the utilization of short-stay hospitals based on data collected in the Hospital Discharge Survey from a national sample of hospital records of discharged patients. Average length of stay is presented by patient characteristics of age, sex, marital status, and color and for patients with deliveries in conjunction with hospital characteristics of size, ownership or control, and geographic region in which located.

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Under the legislation establishing the National Health Survey, the Public Health Service is authorized to use, insofar as possible, the services or facilities of other Federal, State, or private agencies.

In accordance with specifications established by the National Center for Health Statistics, the Bureau of the Census, under a contractual arrangement, participated in planning the survey and collecting the data.

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AVERAGE LENGTH OF STAY IN SHORT-STAY HOSPITALS: DEMOGRAPHIC FACTORS

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INTRODUCTION

Background of Study

Hospital statistics are part of the fund of health data provided by the National Center for Health Statistics for use by health workers, planners, researchers, and others. As the Nation seeks to provide better health care for its citizens, reliable information of this type becomes increasingly important.

This report presents a special analysis of average length of stay in short-stay hospitals, using data from the fourth continuous year of the Hospital Discharge Survey. Other data previously published from the 1968 survey include rate of discharges, days of care, discharge status, diagnosis, and surgery.¹⁻⁴

Scope of Study and Plan of Report

The study covers noninstitutional hospitals with six or more beds whose average patient length of stay is less than 30 days; it excludes information on the newborn, as defined by the survey.

The sample, which represents approximately 7,000 hospitals, has increased with the inclusion of two more panels—from 289 participating hospitals in the year 1967 to 413 in 1968. These additions make two things possible: 1) smaller standard errors for the same kinds of nonmedical data published in previous years and 2) more finely differentiated units of analysis.

Average length of stay is one means by which comparisons can be made in hospital utilization.

Differences in average lengths of stay between hospitals could be related indirectly to their size, ownership, or geographical location as these variables reflect differences in availability of services. But in addition to these factors, differences among hospitals could be related to the characteristics of the patients who were discharged from them. This report will look at the differences in average lengths of stay for each variable or combination of variables and show how they affect the average length of stay. First, patient characteristics for the Nation, and then for each region, will be compared and discussed. This will be followed by a presentation of hospitals by size and by ownership.

GEOGRAPHIC REGION

Sex

Although males have longer lengths of stay than females, sex as a variable does not offer a plausible reason for differences in average length of stay. The average length of stay in 1968 for the United States was 8.5 days with 9.0 days for males and 8.1 days for females (table 1). Observing that, for the Nation as a whole, females had shorter average lengths of stay than males, the assumption might be that the larger the proportion of discharged females in a region, the shorter the average length of stay. In fact the reverse was true, for the Northeast Region had about the same difference in the percentage of females over males, 20.3, as did the West Region,

19.4 (table 2), and yet the Northeast Region had the highest average length of stay, 9.9 days, and the West Region, the lowest, 7.1 days (table 1). The North Central Region with 19.8 percent difference between the sexes and the South Region with 20.1 percent followed this same pattern with respect to average lengths of stay (table 2). Therefore sex alone did not explain the difference in average length of stay between regions.

Age

Like sex, age alone does not explain length of stay. However, older people in general stay longer than others, primarily because they recuperate more slowly. In all regions, as age increased, the average length of stay increased. But differences

in average length of stay were noted when respective age groups were compared between regions. For each age group the longest average length of stay was in the Northeast and the shortest in the West Region. Among the under 15 year old group the average length of stay ranged from a high of 5.6 days in the Northeast Region to a low of 3.9 days in the West Region; for the 15-44 year olds from a high of 6.9 days to a low of 5.1 days; for those 45-64 years of age from a high of 11.7 days to a low of 8.6 days. For those aged 65 and over, the longest average length of stay (17.2 days) was also in the Northeast Region and the shortest (11.9 days) in the West Region. Between the longest average length of stay for the Northeast and the shortest length of stay for the West were the North Central and South Regions where the North Central Region at each age level had a longer average

Table A. Average length of stay, percent of days of care, and percent of discharges, by age and geographic region: United States, 1968

Geographic region	Age in years			
	Under 15	15-44	45-64	65 and over
	Average length of stay in days			
United States-----	5.0	6.1	10.0	14.2
Northeast-----	5.6	6.9	11.7	17.2
North Central-----	5.2	6.4	10.3	14.6
South-----	4.9	5.8	9.1	12.7
West-----	3.9	5.1	8.6	11.9
	Percent of days of care			
United States-----	8.4	31.0	27.3	33.0
Northeast-----	7.8	29.6	28.3	34.1
North Central-----	9.0	30.5	26.3	33.9
South-----	8.9	32.4	26.8	31.5
West-----	7.1	32.0	29.2	31.5
	Percent of discharges			
United States-----	14.2	42.8	23.2	19.6
Northeast-----	13.7	42.4	23.9	19.7
North Central-----	15.3	41.8	22.4	20.3
South-----	14.0	43.5	22.9	19.3
West-----	13.0	44.0	24.1	18.7

length of stay than the South (table A). In other words, although regions had different average lengths of stay, the relationships for age-specific groups remained constant over the regions.

These differences were analyzed in terms of percentages of age groups and percentages of days of care for each group. It was found that between the Northeast and West there was a 0.7 percent difference in respective percentage points of under 15 year old discharges and a 0.7 percentage points difference in respective days of care for this same age group but that the average length of stay for this age group was 5.6 days in the Northeast and 3.9 days in the West. The difference in average length of stay of 1.7 days between regions of the Northeast and West for this age group would appear then to be a real difference (table A).

For other age groups, the differences were not so clear-cut. For instance, in the West Region among the 15-44 year old discharged patients, there was a difference in discharges of 1.6 more percentage points than the Northeast and a difference in days of care of 2.4 more percentage points. Yet the average length of stay for the Northeast was longer than for the West. The West, with its smaller increase in percent discharged for this age group and a more than proportionate percentage increase in days of care, had a 1.8 days shorter average length of stay than the Northeast (table A).

In the same way the 45-64 year olds in the West showed 0.2 percentage points more in respective percentages of discharges than the Northeast and 0.9 percentage points more in days of care, but again the West showed a shorter average length of stay by 3.1 days (table A). For those 65 years and over, the Northeast had 1.0 percentage point more discharges than did the West and 2.6 percentage points more days of care, but also showed a longer average length of stay than the West by 5.3 days (table A). So, even though increase in age increased the average length of stay, it did not fully explain it.

Age and Sex

When age and sex are considered concomitantly, it is possible to learn more about the differences associated with average length of stay.

When age and sex are combined, females under age 15 had shorter average lengths of stay than did males in all regions except the West where females' average length of stay exceeded that of males by one-fifth of a day. In the Northeast and South females stayed one-fifth of a day less, and in the North Central, four-fifths of a day less than did males (table 1).

For the 15-44 year olds, again females averaged shorter lengths of stay than males, ranging from 1.2 days shorter in the North Central to 2.4 days shorter in the Northeast (table 1).

Unlike the 15-44 year olds, females 45-64 years of age averaged more than males by one-tenth of a day in the South and West and one-fifth of a day more in the North Central Region but one-half day shorter stay than males in the Northeast Region (table 1).

Similarly, for those 65 years and over, females averaged 1.2 days longer stay per hospital episode than did males in the United States. In the Northeast females averaged 2 days longer with 18.1 days average stay, but only one-half a day longer in the West with 12.1 days average length of stay (table 1).

Generally speaking, females under 65 years of age had shorter lengths of stay than did males and females 65 years and over had longer lengths of stay than males. Regional differences in average length of stay for different sizes of hospitals, ownership of hospitals, or both are correlated with age and sex. Other characteristics of patients will also be explored in conjunction with average length of stay.

HOSPITAL SIZE

The average length of stay by hospital size showed that as the size of the hospital increased, the length of stay increased from 7.1 days in small hospitals (6-99 beds) to 10.3 in large hospitals (500 or more beds). This is to be expected since larger hospitals perhaps deliver care to more seriously ill patients or handle more complicated cases which require longer stays.

The national length of stay pattern by hospital size held true for each region as well, although the Northeast Region exceeded the North Central Region by an increasing length of stay as the size of the hospital increased. In turn, the North

Central Region's average length of stay exceeded that of the South in the same way. The West Region also followed this trend for small and medium-size hospitals, but there was a sharp decline (1.2 days) from the length of stay for the South to that of the West for small hospitals as opposed to a more gradual decline between these regions for the medium-size hospitals (table 1).

Age

The average length of stay increased by hospital size in all regions for all ages except for those 65 and over in the South and West. In the South the pattern was broken only in large hospitals where the average length of stay decreased from medium to large hospitals. In the West Region, the average length of stay decreased from small to medium-size hospitals among females only (table 1). Why didn't the average length of stay increase in all regions as age and hospital size increased? Explanations may lie in the distributions of patients by marital status (if marital status is used as an indicator of living arrangements) and/or the distribution of patients 65 years and over or the distribution of females with deliveries.

Marital Status

Married persons, who generally have someone at home to care for them in the recuperative stage, can leave the hospital somewhat sooner than the unmarried. Of persons 15 years of age and over, 59 percent were married. Of the patients 15 years of age and over, 13.1 percent married persons and 5.7 percent unmarried persons were discharged from small hospitals; 37.3 percent married and 16.1 percent unmarried, from medium hospitals; and 8.5 percent married and 4.8 percent unmarried, from large hospitals (table 3).

In small hospitals for all persons over 14 years of age the unmarried averaged 2.6 days longer stay than did the married. In medium hospitals, the stay was 2.9 days longer and in large hospitals, 2.4 days longer (table 4).

The unmarried persons aged 15-44 in small hospitals averaged 0.4 of a day longer than did the married; in medium hospitals, 0.8 of a day;

and in large hospitals, 1.3 days longer. For the 45-64 year olds it was 1.9, 2.7, and 2.6 days longer, respectively, for the unmarried. For those 65 years and over who were unmarried, it was 2 days, 2.3 days, and 2.4 days longer, respectively, for small, medium, and large hospitals (table 4).

Therefore the proportions of unmarried at various ages in the three sizes of hospitals explained part of the differences in average lengths of stay.

Deliveries

The national average length of stay for females with deliveries is relatively short, 4.3 days (table B). Because of the larger number of these patients, the average length of stay for all patients is lowered. As seen previously for the country as a whole and the four regions individually in all sized hospitals combined, as age increased, average length of stay increased for both males and females. However, when looking at the length of stay by hospital size, the notable exception is for females 15-44 years of age in large hospitals, where the average length of stay, instead of being longer than for those under 15 years of age, was shorter. However, it increased sharply for the 45-64 year old group (table 1). Since the 15-44 age group was the one where 99 percent of the deliveries occurred and it was this category of diagnosis which had a relatively short average length of stay (table B), it would seem that deliveries helped to lower the average length of stay for this age group as a whole. But why did the average length of stay decline from the under 15 year old females to the 15-44 year old females in large hospitals only?

The proportion of deliveries to total discharges was 10.4 percent of discharges in small hospitals, 12.0 percent in medium hospitals, and 13.8 percent in large hospitals (table B). So in terms of size, large hospitals, which had a larger proportion of discharges with deliveries than other size hospitals, were largely responsible for the shorter average lengths of stay for women in the childbearing ages.

Therefore variations in the pattern of decreasing length of stay in the 15-44 age group nationally can be ascribed to the influence of the obstetric experience and to the fact that large

Table B. Average length of stay for deliveries, percent of discharged females with deliveries, and percent of total discharges with deliveries, by bed size of hospital and geographic region: United States, 1968

Bed size and geographic region	Deliveries		
	Average length of stay in days	Percent of deliveries of total females discharged	Percent of deliveries of total discharges
<u>All bed sizes</u>			
United States-----	4.3	19.9	11.9
Northeast-----	5.0	21.7	13.0
North Central-----	4.6	20.1	12.0
South-----	3.8	18.4	11.0
West-----	3.6	20.2	12.0
<u>6-99 beds</u>			
United States-----	3.8	17.5	10.4
Northeast-----	5.1	20.8	11.5
North Central-----	4.2	21.5	13.1
South-----	3.2	12.9	7.6
West-----	3.6	21.1	12.9
<u>100-499 beds</u>			
United States-----	4.4	20.0	12.0
Northeast-----	5.0	21.5	13.0
North Central-----	4.6	19.5	11.7
South-----	3.8	19.4	11.7
West-----	3.6	19.1	11.3
<u>500 beds or more</u>			
United States-----	4.5	23.2	13.8
Northeast-----	4.9	22.8	13.8
North Central-----	4.7	24.8	12.2
South-----	4.4	26.2	16.0
West-----	3.8	23.5	13.7

hospitals had a larger percentage of deliveries than other size hospitals.

Regionally the average length of stay for deliveries without regard to hospital size was shortest for hospitals in the West followed in increasing average lengths of stay by hospitals in the South, North Central, and Northeast Regions. Regardless of the size of the hospital, the longest average length of stay for deliveries was in the

Northeast Region. But unlike the other three regions, the average length of stay for deliveries in the Northeast Region decreased as the size of the hospital increased (table B). Part of the Northeast Region's longer average length of stay for deliveries may be due to the fact that it had a higher percentage of obstetrical surgery than any other region.²

As the size of the hospital increased, the proportion of discharges with deliveries to total discharges increased in the Northeast and South. The North Central Region on the other hand, had the highest percentage of deliveries in its small hospitals (13.1). The West Region had a lower percentage of deliveries in its medium than in its small hospitals, but in its large hospitals the national pattern was followed (table B). The reasons for these deviations from the national pattern are not clear; the expectation would be that complications associated with deliveries were proportionally distributed by region. Some differences may be explained by variations among regions in health plans, administrative decisions, philosophies of medical care, or other factors beyond the scope of this report.

Patients 65 Years and Over

In addition to deliveries among those 15-44 years of age, the distribution of discharges among those 65 years and over can be seen as an explanation of variations in average length of stay. It has been noted that the younger the patient age group, the shorter its average length of stay. Those 65 years and over with the longest average lengths of stay, therefore, tend to increase the average length of stay for a hospital. The average length of stay for males 65 and over was 13.6 days and for females, 14.8 days.

Males 65 years and over represented 8.9 percent of the discharges and 14.2 percent of the

days of care. Females in the same age group comprised 10.7 percent of all discharges and utilized 18.8 percent of the days of care (table 2 and figure 1).

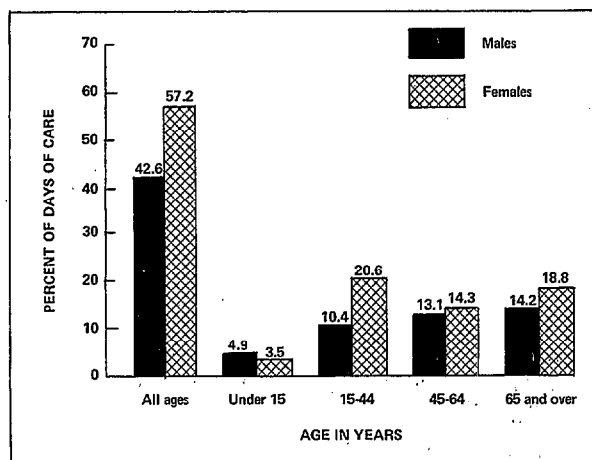


Figure 1. Percent of days of care by age and sex: United States, 1968.

Regionally, the West had the lowest percentages of discharges and one of the two lowest percentages of days of care for those aged 65 and over (table A). Sex ratios in the four regions help to explain the differences. The West discharged only 115 females to every 100 males 65 and over, whereas the other three regions varied from 120 to 125 females 65 and over for every 100 males in this age group (table C).

Table C. Sex ratios of discharges and days of care for patients aged 65 and over by geographic region: United States, 1968

Geographic region	Females discharged per 100 males	Days of care for females per day for males
United States-----	121	1.3
Northeast-----	120	1.4
North Central-----	121	1.3
South-----	125	1.4
West-----	115	1.2

Correlating sex ratios of discharges with sex ratios of days of care it is seen that for every day of care for males, there were 1.3 days of care for females 65 and over, nationally. For the West there was only 0.2 of a day more for females than males, which indicates that females were hospitalized longer than males in all regions except the West, where the male and female stays were of more equal duration (table C). Therefore the West differed from other regions for the 65 years and over group in three ways—they had a smaller percentage of their discharges in this age bracket; they had a smaller ratio of discharged females to males; and they had a smaller differential in days of care for males and females 65 years and over.

Color

Patients with deliveries and the patient characteristics of age, sex, and marital status have been examined. Another patient variable which seems to have had an influence on average length of stay is color.

For color, as for other characteristics, as age increased, average length of stay with one exception increased, but in each age group the average length of stay for white patients was shorter than that for all other patients (figure 2). Although there were more patients discharged for whom color was not stated than there were for

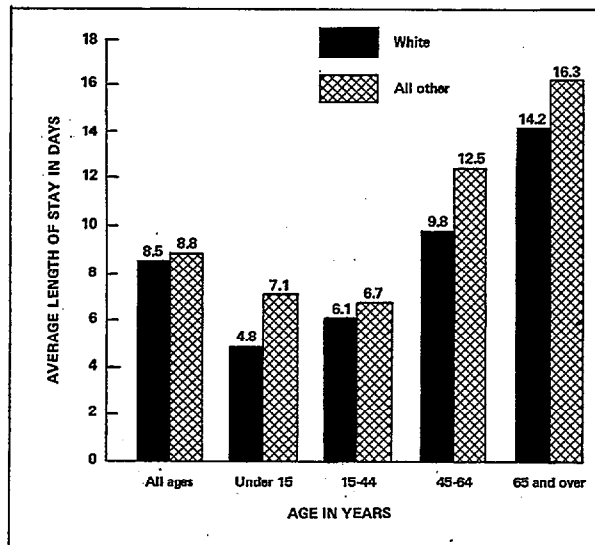


Figure 2. Average length of stay by color and age: United States, 1968.

patients other than white, the distribution of those for whom color was not stated suggests that they were proportional by color to those for whom it was stated (table D). However, on the basis of the estimated numbers of those for whom color was stated, the average length of stay for white patients was 8.5 days and for all others, 8.8 days (table 4).

Table D. Average length of stay by geographic region and bed size of hospital and color of patient: United States, 1968

Geo-graphic region	Bed size												
	All bed sizes				6-99 beds			100-499 beds			500 beds or more		
	Total	White	All other	Not stated	Total	White	All other	Total	White	All other	Total	White	All other
United States--	Average length of stay in days												
	8.5	8.5	8.8	7.9	7.1	7.2	6.8	8.5	8.5	8.5	10.3	10.3	10.5
Northeast--	9.9	9.9	11.4	8.1	8.3	8.3	5.7	9.6	9.6	10.0	12.2	12.0	13.3
North Central---	8.8	8.8	8.4	8.7	7.6	7.7	6.5	8.6	8.6	8.5	10.5	10.8	9.0
South-----	7.8	7.7	8.4	7.6	7.1	7.2	7.4	7.9	7.8	8.1	8.8	8.4	9.7
West-----	7.1	7.2	7.2	6.7	5.9	6.2	5.3	7.3	7.3	7.6	8.9	9.0	8.5

And again, as the size of the hospital increased, the average length of stay also increased, but white persons had longer lengths of stay than all others in small hospitals; the same lengths of stay in medium-size hospitals; and one-fifth of a day shorter stay in large hospitals (table D).

Although the average length of stay increased within each geographic region as the age of patients and the size of the hospital increased, the average-length-of-stay pattern was not consistent among regions when color was considered. For instance, the shortest average length of stay for white persons and for all others was in the West (7.2 days) yet white patients in small and large hospitals had longer average lengths of stay than all other patients in this region (table D).

In the South, on the other hand, white patients had shorter average lengths of stay than all others in hospitals of all sizes. The North Central Region was just the reverse, since in hospitals of all sizes the average length of stay for white patients was longer than for all others. The Northeast Region also had a longer average length of stay for white patients in its small hospitals, but in its medium- and large-size hospitals, the opposite was true (table D).

The main differences then were that trends in the North Central and South were exactly opposite and that in small hospitals in the South only white patients had shorter average lengths of stay than all other patients.

The first difference may be explained partly by the proportions of white persons 65 years and over discharged in the respective regions. The expectation was that the North Central Region, with longer average lengths of stay for white persons in this age group, would have had a larger proportion of white persons discharged than did the other regions and that the South Region, with shorter average lengths of stay for white persons, would have discharged a smaller proportion of white persons in this age group than did the other regions. This indeed was the case; the North Central Region had the highest proportion (96.7 percent) and the South, the lowest proportion (87.3 percent) of white discharges. The difference may also lie in the fact that the North Central Region had the highest proportion of white married discharges (93.6 percent) and the South the lowest (87.4 percent) (table E). The type of ownership may also have been operating as a reason for these regional differences.

Table E. Percent distributions of discharges for married persons over 14 years of age and 65 years and over, by color according to geographic region: United States, 1968

Patient characteristic	Geographic region			
	Northeast	North Central	South	West
<u>15 years and over</u>				
Total-----	100.0	100.0	100.0	100.0
White-----	92.8	93.6	87.4	90.5
All other-----	7.2	6.4	12.6	9.5
<u>65 years and over</u>				
Total-----	100.0	100.0	100.0	100.0
White-----	95.9	96.7	87.3	93.8
All other-----	4.1	3.3	12.7	6.2

¹Percents of those for whom color was stated.

HOSPITAL OWNERSHIP (CONTROL)

Ideally, a comparison of hospitals by hospital ownership for each region should be made, but sampling errors on this cross-tabulation are too large. However, hospital ownership by patient characteristics can give some additional insights into differences in average length of stay.

Voluntary hospitals had the longest average length of stay (8.6 days) followed closely by government hospitals with 8.3 days and proprietary hospitals with 7.2 days (table 5). Related to these data is the fact that most of the large hospitals which have the longest average lengths of stay are voluntary hospitals.

Sex

The average stay for males in voluntary hospitals was 9.2 days and in government hospitals 9.1 days, but the average length of stay for males in proprietary hospitals was approximately 2 days shorter (7.2 days). For females the average length of stay in government hospitals was 7.7 days, about one-half day less than in voluntary hospitals, which had 8.3 days (table 5).

Sex and Age

For each type of ownership as for each size hospital, as age increased, average length of stay increased. In government hospitals, females in all age groups except those 65 years and over, excluding deliveries, had shorter lengths of stay than males (table 5). When deliveries were included, the average stay was again shorter for females in the childbearing ages and for females under 45 years of age. This followed the same pattern for these ages when other variables such as geographic region and size were considered (table 1).

The pattern in voluntary hospitals was somewhat similar. In voluntary hospitals when lengths of stay of males were compared with those of females excluding deliveries, females up to 45 years of age had shorter stays and those over 45, longer average lengths of stay. As with other types of hospital ownership when deliveries were included

females under 45 had shorter lengths of stay than males. But for those 65 years and over, the stay of females was 1.2 days longer than that of males.

Unlike voluntary and government hospitals, females in proprietary hospitals, excluding deliveries, had 0.4 day longer length of stay than males. Longer stays for these females was the case for all ages except the 15-44 year group, where the difference was only one-tenth of a day (table 5).

Marital Status

For all discharges 15 years of age and over, the unmarried had longer lengths of stay than the married by 2.8 days for all types of hospital ownership (table 6). In government hospitals, marital status made as much of a difference as 3.6 days longer stay for the unmarried; in voluntary hospitals, 2.7 days; and in proprietary hospitals, 1.4 days (table 6).

The average length of stay for the unmarried persons 15-64 years of age increased from voluntary to government hospitals. For persons 15-44 years of age it increased from 6.8 days in voluntary hospitals to 7.2 days in government hospitals. For persons 45-64 years of age the increase was from 12.0 days in voluntary hospitals to 12.6 days in government hospitals (table 6). Why should this have been when there was a decline in length of stay for married persons? It seemed to be due primarily to the influence of unmarried males 15-64 years of age. There was in fact a higher proportion of unmarried males 15-44 years of age in government than in voluntary or proprietary hospitals and a much higher proportion than among those 45-64 years of age. One answer to the puzzle of why only males 45-64 years of age in government hospitals had longer stays than females was that the largest proportion of unmarried males (20.4 percent) was found in this type of hospital compared with 13.8 percent in voluntary and 10.6 percent in proprietary hospitals (figure 3).

There was only one exception to the general trend that the unmarried in each age group had a longer length of stay than did the married; this was for unmarried persons 15-44 years of age in

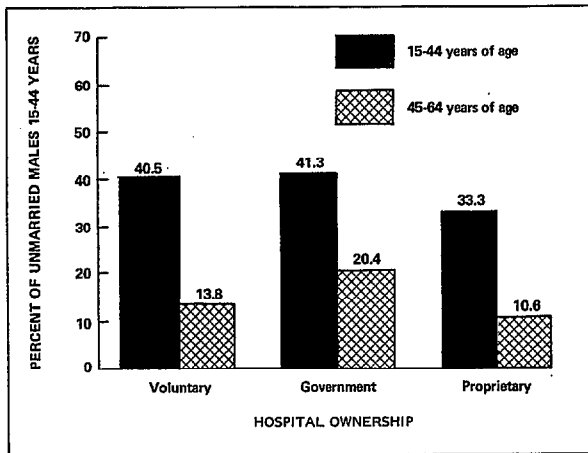


Figure 3. Percent of discharged unmarried males 15-64 years of age by hospital ownership: United States, 1968.

proprietary hospitals who had a one-half day shorter stay than their married counterparts (table 6).

Deliveries

One probability is that proprietary hospitals had a smaller proportion of deliveries than the other two types. Since most deliveries occurred among those identified as married and deliveries lowered average lengths of stay in 15-44 year old groups, a smaller proportion of deliveries in proprietary hospitals could have resulted in a slightly longer length of stay in this type of hospital.

Indeed, the data showed that proprietary hospitals had only 4.3 percent of their female patients 15-44 years of age discharged with deliveries as opposed to 6.1 percent for voluntary and 6.2 percent for government hospitals (figure 4). This would seem to explain the exception of proprietary hospitals to the general trend of shorter average lengths of stay for the unmarried as opposed to the married 15-44 patients.

SIZE AND OWNERSHIP OF HOSPITAL

Average length of stay increased from small (7.1 days) to large (10.3 days) hospitals (table 4) and average length of stay decreased from voluntary (8.6 days) to government (8.3 days) to pro-

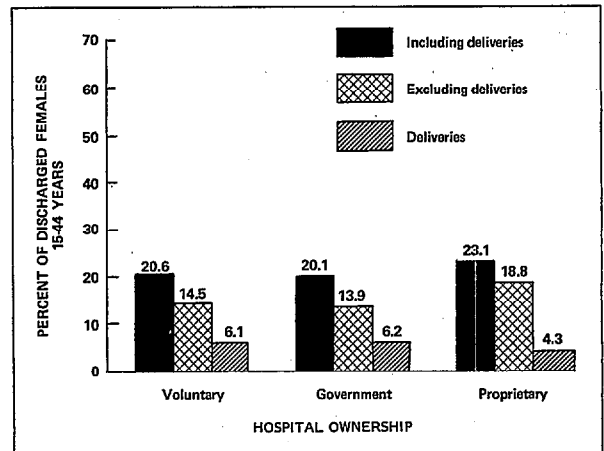


Figure 4. Percent of discharged females 15-44 years of age with and without deliveries, and percent of deliveries, by hospital ownership: United States, 1968.

proprietary hospitals (7.2 days) (table 5). Ownership, taken in conjunction with hospital size, showed that small hospitals followed the expected trend of decreasing lengths of stay from voluntary to government but that the average length of stay for medium-size hospitals, while it decreased from voluntary to government, increased from government to proprietary. For large-size hospitals, the average length of stay increased from voluntary to government (table F). (No attempt will be made to explain the proprietary figures due to their very high relative standard error.)

The question then is why did small and medium hospitals decrease their average lengths of stay as they moved from voluntary to government ownership and large-size hospitals increase theirs for these same types of ownership? The answer is not clearcut, for it was noted that in small hospitals at all age and sex levels, the average length of stay decreased from voluntary to government hospitals. This would seem to indicate that small government hospitals had shorter average lengths of stay than small voluntary ones. While small voluntary hospitals had the shortest lengths of stay, how they differed from small government hospitals had to be determined.

Did small voluntary hospitals differ from small government hospitals in percentages of patients 65 years and over, in percentages of deliveries, or in percentages of married persons;

Table F. Average length of stay in voluntary and government hospitals by size, and by age and sex of patient: United States, 1968

Age and sex	Type of hospital					
	Voluntary			Government		
	Small	Medium	Large	Small	Medium	Large
	Average length of stay in days					
Both sexes, all ages-----	7.5	8.6	9.9	6.9	7.8	11.1
Male-----	7.7	9.1	11.0	7.2	8.4	13.0
Under 15 years-----	4.7	5.0	6.1	3.5	5.3	10.3
15-44 years-----	5.4	7.4	9.1	4.7	6.8	11.5
45-64 years-----	7.8	10.1	12.2	7.5	10.1	14.0
65 years and over-----	12.4	13.8	15.9	11.3	12.6	18.3
Female, including deliveries-----	7.3	8.2	9.2	6.8	7.4	9.7
Under 15 years-----	4.0	4.5	6.1	3.1	4.9	10.6
15-44 years-----	4.7	5.7	6.8	4.4	5.0	6.9
45-64 years-----	8.6	10.1	11.9	6.9	9.9	13.9
65 years and over-----	14.2	15.2	15.7	12.2	16.2	17.5
Female excluding deliveries-----	8.2	9.1	10.5	7.4	8.6	11.6
Under 15 years-----	4.0	4.5	6.1	3.1	4.9	10.8
15-44 years-----	5.3	6.5	8.3	4.9	5.8	8.6
45-64 years-----	8.6	10.1	11.9	6.9	9.9	13.9
65 years and over-----	14.2	15.2	15.7	12.2	16.2	17.5

did large voluntary hospitals differ from large government hospitals in these same variables; and finally, did small voluntary hospitals differ from large government hospitals in these same variables in a way which would explain these differences?

It can be seen in table G that of the three patient variables—over 65 years of age, married, and those with deliveries—the shorter average length of stay of small voluntary hospitals was primarily attributable to the fact that their percentage of deliveries was larger than that of

government hospitals of the same size group. Using the same three variables, the longer average length of stay of large government hospitals was essentially due to the fact of their smaller percentage of married patients (tables F and G).

Between small voluntary and large government hospitals, the characteristic which appears to have made the most difference was their respective percentages of married patients although respective percentage of deliveries also contributed to these differences. The differences between them in percentage points were 8.8 more for small

Table G. Comparison of discharges of small and large voluntary and government hospitals in percentage of patients 65 years and over, of deliveries, and of married patients: United States, 1968

Characteristic	Large voluntary	Large government	Small voluntary	Small government
	Percent of discharges			
Patients 65 years and over-----	17.9	13.7	22.5	27.3
Patients with deliveries-----	21.8	25.6	20.8	16.4
Married patients-----	69.1	48.4	65.3	68.0

voluntary for the 65 years and over group; 4.8 percentage points more for large government hospitals on deliveries; and 16.9 more percentage points for small voluntary hospitals in terms of married patients (table G). The conclusion is that the percentage of married patients had the biggest influence on average length of stay.

Tables 7-10 are not, per se, the subject of analysis in this report but are included since they contain the rounded base figures of the unrounded estimates used in computation of the report's average lengths of stay and percentages. They also enable the reader to determine the standard errors for these computations.

CONCLUSION

Average lengths of stay have been examined in terms of the size, geographic region, and ownership of the hospitals in conjunction with their patients' characteristics. Generalizations emerging from this analysis are that:

1. The older the patient, the longer the average length of stay.

2. The larger the hospital, the longer the average length of stay.
3. A voluntary hospital episode was associated with the longest, and a proprietary hospital with the shortest average length of stay.
4. Unmarried patients over 14 years of age had longer lengths of stay than the married.
5. Deliveries shortened the average length of stay of those 15-44 years of age.

No generalizations could be made with reference to color except that nationally, white persons had shorter stays than all others.

Explanations have been made to account for some of the differences in average length of stay in different types of short-stay hospitals. Some small observable differences may be explained fully by sampling errors (see section on Reliability of Estimates in appendix I). Other factors beyond the scope of this report to which differences may be attributed are variations in types of diagnoses; inappropriate hospital days, administrative decisions, regional philosophies of medical care, and similar factors.

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Table 1. Average length of stay in days by age and sex of patient, geographic region, and bed size of hospital: United States, 1968

Geographic region and bed size	Both sexes, all ages	Male				
		All ages	Under 15 years	15-44 years	45-64 years	65+ years
Average length of stay in days						
United States -----	8.5	9.0	5.2	7.3	10.0	13.6
6-99 beds -----	7.1	7.3	4.2	5.2	7.6	11.6
100-499 beds -----	8.5	9.0	5.0	7.3	10.1	13.7
500 beds or more -----	10.3	11.7	7.6	10.1	12.8	16.6
Northeast -----	9.9	10.7	5.7	8.7	12.0	16.1
6-99 beds -----	8.3	7.9	4.1	6.3	7.5	13.2
100-499 beds -----	9.6	10.3	5.4	8.3	11.7	15.4
500 beds or more -----	12.2	14.1	8.4	11.3	15.5	20.7
North Central -----	8.8	9.2	5.5	7.3	10.2	14.0
6-99 beds -----	7.6	7.8	4.7	5.1	8.4	11.8
100-499 beds -----	8.6	8.9	5.4	6.9	9.9	14.1
500 beds or more -----	10.5	11.7	7.2	10.3	12.4	17.0
South -----	7.8	8.3	5.0	6.9	9.0	12.2
6-99 beds -----	7.1	7.3	4.5	5.4	7.7	11.5
100-499 beds -----	7.9	8.4	4.7	7.1	9.3	12.6
500 beds or more -----	8.8	10.1	7.8	9.6	11.2	12.1
West -----	7.1	7.6	3.8	6.4	8.5	11.6
6-99 beds -----	5.9	6.0	3.0	4.4	6.6	10.8
100-499 beds -----	7.3	7.9	3.8	6.8	8.7	11.6
500 beds or more -----	8.9	10.2	6.5	8.6	11.5	14.3

Table 1. Average length of stay in days by age and sex of patient, geographic region, and bed size of hospital: United States, 1968—Con.

Female, including deliveries					Female, excluding deliveries				
All ages	Under 15 years	15-44 years	45-64 years	65+ years	All ages	Under 15 years	15-44 years	45-64 years	65+ years
Average length of stay in days									
8.1	4.8	5.7	10.0	14.8	9.0	4.8	6.5	10.0	14.8
7.0	3.8	4.8	7.8	13.0	7.7	3.8	5.3	7.8	13.0
8.1	4.6	5.6	10.1	15.2	9.1	4.6	6.4	10.1	15.2
9.4	7.5	6.8	12.4	16.2	10.8	7.6	8.4	12.4	16.2
9.4	5.5	6.3	11.5	18.1	10.6	5.5	7.2	11.6	18.1
8.6	4.1	5.3	9.5	16.4	9.5	4.1	5.5	9.5	16.4
9.1	4.9	6.0	11.3	17.7	10.2	4.9	6.7	11.3	17.7
11.1	8.5	7.9	13.4	21.1	12.9	8.6	10.0	13.5	21.1
8.5	4.7	6.1	10.4	15.2	9.4	4.7	7.0	10.4	15.2
7.5	3.7	5.1	8.7	13.3	8.4	3.7	5.8	8.7	13.3
8.4	4.3	6.1	10.2	15.7	9.3	4.3	7.0	10.2	15.7
9.7	7.3	7.1	12.7	15.8	11.1	7.4	8.7	12.7	15.8
7.4	4.8	5.3	9.1	13.2	8.2	4.8	6.1	9.1	13.2
7.0	4.2	4.9	7.6	12.2	7.5	4.2	5.5	7.6	12.2
7.5	4.8	5.4	9.5	14.0	8.4	4.8	6.2	9.5	14.0
7.9	6.8	6.0	11.4	12.9	9.2	6.9	7.2	11.4	12.9
6.7	4.0	4.6	8.6	12.1	7.4	4.0	5.3	8.6	12.1
5.9	3.3	4.1	6.8	12.9	6.5	3.3	4.4	6.8	12.9
6.8	4.0	4.6	8.9	11.7	7.6	4.0	5.2	8.9	11.7
8.1	7.7	6.1	11.6	12.5	9.4	7.7	7.6	11.6	12.5

Table 2. Percent of discharges by age and sex of patient, geographic region, and bed size of hospital: United States, 1968

Geographic region and bed size	Both sexes, all ages	Male				
		All ages	Under 15 years	15-44 years	45-64 years	65+ years
Percent of discharges						
United States -----	100.0	39.9	8.0	12.0	11.1	8.9
6-99 beds -----	22.1	8.9	1.7	2.6	2.3	2.2
100-499 beds -----	62.5	24.8	5.2	7.3	7.0	5.4
500 beds or more -----	15.4	6.2	1.1	2.1	1.8	1.2
Northeast -----	100.0	39.7	7.8	11.2	11.6	8.9
6-99 beds -----	8.9	3.9	0.7	1.1	1.2	1.0
100-499 beds -----	73.6	28.9	5.9	8.0	8.5	6.5
500 beds or more -----	17.5	6.9	1.2	2.1	2.0	1.5
North Central -----	100.0	40.0	8.6	11.6	10.6	9.2
6-99 beds -----	18.5	7.2	1.4	2.0	1.6	2.2
100-499 beds -----	64.0	25.5	5.8	7.3	6.9	5.5
500 beds or more -----	17.5	7.2	1.4	2.3	2.1	1.4
South -----	100.0	39.8	7.8	12.5	11.0	8.6
6-99 beds -----	31.5	12.9	2.3	4.0	3.5	3.1
100-499 beds -----	54.7	21.6	4.5	6.6	6.0	4.5
500 beds -----	13.7	5.3	1.0	1.9	1.4	0.9
West -----	100.0	40.2	7.3	12.7	11.4	8.7
6-99 beds -----	29.4	11.4	2.4	3.6	3.1	2.4
100-499 beds -----	59.2	24.1	4.3	7.3	7.0	5.5
500 beds or more -----	11.4	4.7	0.6	1.9	1.4	0.8

Table 2. Percent of discharges by age and sex of patient, geographic region, and bed size of hospital: United States, 1968—Con.

Female, including deliveries					Female, excluding deliveries				
All ages	Under 15 years	15-44 years	45-64 years	65+ years	All ages	Under 15 years	15-44 years	45-64 years	65+ years
Percent of discharges									
59.9	6.2	30.8	12.1	10.7	47.9	6.1	19.0	12.1	10.7
13.1	1.4	6.4	2.5	2.8	10.8	1.4	4.1	2.5	2.8
37.5	4.0	19.3	7.7	6.6	30.0	3.9	11.8	7.7	6.6
9.2	0.9	5.1	1.9	1.3	7.1	0.8	3.0	1.9	1.3
60.0	5.8	31.2	12.2	10.8	47.0	5.8	18.2	12.2	10.8
4.9	0.5	2.4	0.9	1.2	3.9	0.5	1.4	0.9	1.2
44.5	4.3	22.9	9.2	8.0	34.9	4.3	13.4	9.2	8.0
10.6	1.0	5.9	2.2	1.6	8.2	1.0	3.5	2.2	1.6
59.9	6.7	30.2	11.8	11.1	47.8	6.6	18.2	11.8	11.1
11.3	1.1	5.6	2.0	2.6	8.8	1.1	3.2	2.0	2.6
38.3	4.5	19.3	7.7	6.9	30.8	4.5	11.9	7.7	6.9
10.2	1.1	5.2	2.2	1.7	8.1	1.1	3.1	2.2	1.7
59.9	6.2	31.0	11.9	10.7	48.9	6.2	20.1	11.9	10.7
18.5	1.9	8.6	3.9	4.1	16.1	1.9	6.2	3.9	4.1
33.0	3.6	17.4	6.5	5.5	26.6	3.6	11.0	6.5	5.5
8.4	0.7	5.0	1.6	1.1	6.2	0.7	2.9	1.5	1.1
59.6	5.7	31.2	12.7	10.0	47.6	5.7	19.2	12.7	10.0
18.0	2.1	9.6	3.5	2.8	14.2	2.1	5.8	3.5	2.8
35.0	3.1	17.6	7.8	6.4	28.3	3.1	11.0	7.8	6.4
6.6	0.4	4.1	1.4	0.8	5.1	0.4	2.5	1.4	0.8

Table 3. Percent of discharges by color and marital status of patient, geographic region, and bed size of hospital: United States, 1968

Geographic region and bed size of hospital	Color			
	Total ¹	White	All others	Not stated
	Percent of discharges			
United States-----	100.0	77.1	10.4	12.6
6-99 beds-----	22.1	17.9	1.7	2.5
100-499 beds-----	62.5	47.8	5.4	9.3
500 beds or more-----	15.4	11.3	3.3	0.8
Northeast-----	100.0	85.8	9.6	4.7
6-99 beds-----	8.9	6.9	0.1	1.9
100-499 beds-----	73.6	65.9	5.4	2.3
500 beds or more-----	17.5	12.9	4.1	0.5
North Central-----	100.0	74.8	6.9	18.3
6-99 beds-----	18.5	15.0	1.1	2.4
100-499 beds-----	64.0	47.0	3.2	13.9
500 beds or more-----	17.5	12.8	2.7	2.0
South-----	100.0	76.0	14.9	9.1
6-99 beds-----	31.5	25.7	3.1	2.8
100-499 beds-----	54.7	41.1	7.6	6.0
500 beds or more-----	13.7	9.2	4.2	0.3
West-----	100.0	70.9	9.1	20.0
6-99 beds-----	29.4	24.1	2.3	2.9
100-499 beds-----	59.2	36.8	5.3	17.1
500 beds or more-----	11.4	10.0	1.4	0.0

¹Includes color, age, and marital status not stated.

²Excludes marital status not stated for patients 15 years and over.

³Presently living with spouse.

⁴Single, divorced, separated, and widowed.

Table 3. Percent of discharges by color and marital status of patient, geographic region, and bed size of hospital: United States, 1968—Con.

Marital status								
All statuses, all ages ²	Married ³				Unmarried ⁴			
	Total, 15+ years	15-44 years	45-64 years	65+ years	Total, 15+ years	15-44 years	45-64 years	65+ years
Percent of discharges								
100.0	59.0	31.2	18.3	9.5	26.5	11.8	4.9	9.8
22.0	13.1	6.8	3.9	2.4	5.7	2.3	0.9	2.5
62.7	37.3	19.7	11.8	5.9	16.1	7.0	3.0	6.1
15.3	8.5	4.7	2.6	1.2	4.8	2.5	1.0	1.3
100.0	57.7	30.1	18.3	9.3	28.4	12.5	5.6	10.3
8.9	5.2	2.6	1.6	1.0	2.5	0.9	0.5	1.1
73.8	43.6	22.8	13.9	6.9	19.8	8.3	3.9	7.6
17.3	8.9	4.7	2.9	1.3	6.2	3.2	1.3	1.7
100.0	58.5	30.7	18.0	9.9	26.0	11.3	4.5	10.2
18.4	10.8	5.7	2.8	2.3	5.1	2.0	0.7	2.4
64.1	37.5	19.7	11.8	6.0	16.1	7.0	2.8	6.3
17.5	10.3	5.3	3.3	1.6	4.8	2.3	1.0	1.5
100.0	60.2	32.4	18.4	9.4	25.4	11.2	4.6	9.6
31.2	18.9	9.5	6.0	3.4	8.0	3.1	1.3	3.6
55.3	33.6	18.3	10.2	5.1	13.4	6.0	2.5	4.9
13.5	7.7	4.6	2.2	0.9	4.0	2.2	0.8	1.1
100.0	59.2	31.2	19.0	9.0	27.3	13.2	5.2	8.8
29.7	18.0	9.9	5.5	2.6	7.1	3.5	1.1	2.4
58.9	35.1	17.8	11.7	5.7	16.1	7.3	3.1	5.7
11.4	6.1	3.5	1.8	0.8	4.1	2.4	1.0	0.8

Table 4. Average length of stay by color and marital status of patient, geographic region, and bed size of hospital: United States, 1968

Geographic region and bed size of hospital	Color			
	Total ¹	White	All others	Not stated
	Average length of stay in days			
United States-----	8.5	8.5	8.8	7.9
6-99 beds-----	7.1	7.2	6.8	6.7
100-499 beds-----	8.5	8.5	8.5	8.0
500 beds or more-----	10.3	10.3	10.5	10.0
Northeast-----	9.9	9.9	11.4	8.1
6-99 beds-----	8.3	8.3	5.7	8.2
100-499 beds-----	9.6	9.6	10.0	7.9
500 beds or more-----	12.2	12.0	13.3	8.5
North Central-----	8.8	8.8	8.4	8.7
6-99 beds-----	7.6	7.7	6.5	7.7
100-499 beds-----	8.6	8.6	8.5	8.6
500 beds or more-----	10.5	10.8	9.0	10.6
South-----	7.8	7.7	8.4	7.6
6-99 beds-----	7.1	7.2	7.4	6.2
100-499 beds-----	7.9	7.8	8.1	8.2
500 beds or more-----	8.8	8.4	9.7	7.7
West-----	7.1	7.2	7.2	6.7
6-99 beds-----	5.9	6.2	5.3	4.6
100-499 beds-----	7.3	7.3	7.6	7.0
500 beds or more-----	8.9	9.0	8.5	8.7

¹Includes color, age, and marital status not stated.

²Excludes marital status not stated for patients 15 years and over.

³Presently living with spouse.

⁴Single, divorced, separated, and widowed.

Table 4. Average length of stay by color and marital status of patient, geographic region, and bed size of hospital: United States, 1968—Con.

Marital status								
All statuses, all ages ²	Married ³				Unmarried ⁴			
	Total, 15+ years	15-44 years	45-64 years	65+ years	Total, 15+ years	15-44 years	45-64 years	65+ years
Average length of stay in days								
8.4	8.1	5.9	9.4	13.1	10.9	6.8	12.0	15.4
7.1	6.8	4.8	7.3	11.4	9.4	5.2	9.2	13.4
8.4	8.2	5.9	9.5	13.4	11.1	6.7	12.2	15.7
10.3	9.8	7.3	11.8	15.1	12.2	8.6	14.4	17.5
9.9	9.3	6.4	11.0	15.5	13.1	8.1	14.1	18.7
8.3	7.6	5.4	8.0	12.3	11.7	6.1	9.4	17.5
9.6	9.1	6.2	10.8	15.3	12.8	7.6	13.9	18.0
12.2	11.4	8.1	13.2	18.6	14.7	10.0	16.1	22.6
8.7	8.5	6.2	9.9	13.5	11.3	7.0	12.0	15.7
7.5	7.2	5.0	8.1	11.6	9.8	5.3	9.8	13.4
8.6	8.4	6.1	9.6	13.8	11.4	6.9	11.9	16.1
10.5	10.4	7.6	12.2	15.4	12.6	9.0	13.8	17.3
7.7	7.5	5.6	8.5	11.9	9.9	6.2	11.2	13.6
7.1	6.7	4.9	7.0	11.1	9.5	5.3	9.7	13.0
7.9	7.8	5.8	8.9	12.6	10.0	6.1	11.3	14.1
8.7	8.2	6.5	10.5	11.3	10.3	7.6	13.4	13.5
6.9	6.8	4.9	7.8	11.2	8.9	5.6	10.4	12.8
5.8	5.9	4.1	6.6	11.7	7.4	4.5	6.8	12.0
7.1	6.9	5.0	8.0	10.6	9.3	5.7	10.7	13.1
8.9	8.6	6.7	10.0	13.9	9.8	7.2	13.7	13.3

Table 5. Average length of stay by age and sex of patient and ownership of hospital: United States, 1968

Age and sex	Type of ownership			
	Total	Voluntary	Government	Proprietary
	Average length of stay in days			
Both sexes-----	8.5	8.6	8.3	7.2
Under 15 years-----	5.0	4.9	5.7	4.4
15-44 years-----	6.1	6.2	6.0	5.7
45-64 years-----	10.0	10.2	9.8	8.4
65 years and over-----	14.2	14.5	13.6	12.1
Male-----	9.0	9.2	9.1	7.2
Under 15 years-----	5.2	5.1	5.8	4.1
15-44 years-----	7.3	7.4	7.6	6.0
45-64 years-----	10.0	10.1	10.1	8.1
65 years and over-----	13.6	13.9	12.9	11.7
Female, including deliveries-----	8.1	8.3	7.7	7.2
Under 15 years-----	4.8	4.6	5.5	4.7
15-44 years-----	5.7	5.8	5.3	5.5
45-64 years-----	10.0	10.2	9.5	8.6
65 years and over-----	14.8	15.1	14.3	12.5
Female, excluding deliveries-----	9.0	9.2	8.8	7.6
Under 15 years-----	4.8	4.6	5.6	4.7
15-44 years-----	6.5	6.7	6.3	5.9
45-64 years-----	10.0	10.2	9.5	8.7
65 years and over-----	14.8	15.1	14.3	12.5

Table 6. Average length of stay by age, color, and marital status of patient and ownership of hospital: United States, 1968

Color and marital status	Type of ownership			
	Total	Voluntary	Government	Proprietary
<u>Color</u>				
Average length of stay in days				
Total-----	8.5	8.6	8.3	7.2
White-----	8.5	8.7	8.1	7.2
All other-----	8.8	8.5	9.4	7.0
Not stated-----	7.9	8.1	7.4	7.1
<u>Marital status</u>				
All statuses, 15+ years-----	8.6	8.8	8.7	7.3
Married, 15+ years-----	8.1	8.4	7.3	7.3
15-44 years-----	5.9	6.0	5.3	5.8
45-64 years-----	9.4	9.7	8.6	8.0
65 years and over-----	13.1	13.6	11.8	11.8
Unmarried, 15+ years-----	10.9	11.1	10.9	8.7
15-44 years-----	6.8	6.8	7.2	5.3
45-64 years-----	12.0	12.0	12.6	10.2
65 years and over-----	15.4	15.6	15.3	12.5
Marital status not stated-----	10.1	9.8	10.5	9.1

Table 7. Number of discharges by age and sex of patient, geographic region, and bed size of hospital: United States, 1968

Geographic region and bed size of hospital	Both sexes, all ages ¹	Male				
		All ages ²	Under 15 years	15-44 years	45-64 years	65+ years
	Number in thousands					
United States-----	28,070	11,204	2,239	3,364	3,111	2,486
6-99 beds-----	6,208	2,501	471	743	655	629
100-499 beds-----	17,541	6,970	1,456	2,036	1,957	1,519
500 beds or more-----	4,322	1,734	311	585	499	338
Northeast-----	6,279	2,494	496	705	731	561
6-99 beds-----	558	247	47	67	72	60
100-499 beds-----	4,619	1,814	372	504	531	406
500 beds or more-----	1,102	433	76	134	128	95
North Central-----	8,679	3,471	745	1,007	921	797
6-99 beds-----	1,606	626	120	174	141	190
100-499 beds-----	5,555	2,216	507	633	595	481
500 beds or more-----	1,518	629	119	200	185	125
South-----	8,872	3,534	688	1,111	974	759
6-99 beds-----	2,798	1,146	204	351	312	279
100-499 beds-----	4,855	1,917	395	590	534	397
500 beds or more-----	1,218	471	89	170	128	83
West-----	4,241	1,705	310	541	484	370
6-99 beds-----	1,247	482	100	151	130	100
100-499 beds-----	2,511	1,022	182	309	297	234
500 beds or more-----	484	201	³ 27	81	58	³ 35

¹Includes age and sex not stated.

²Includes age not stated.

³Caution should be exercised in the use of this figure since the approximate relative standard error of the estimated number of discharges exceeds 25 percent. See "Reliability of Estimates," appendix I.

Table 7. Number of discharges by age and sex of patient, geographic region, and bed size of hospital: United States, 1968—Con.

Female, including deliveries					Female, excluding deliveries				
All ages ²	Under 15 years	15-44 years	45-64 years	65+ years	All ages ²	Under 15 years	15-44 years	45-64 years	65+ years
Number in thousands									
16,801	1,739	8,654	3,389	3,015	13,455	1,726	5,327	3,383	3,015
3,693	387	1,806	716	783	3,045	385	1,162	714	783
10,528	1,111	5,405	2,152	1,859	8,427	1,104	3,314	2,148	1,859
2,580	241	1,443	522	373	1,982	237	851	521	373
3,770	365	1,958	769	677	2,952	363	1,145	767	677
309	³ 32	149	54	74	245	³ 32	85	53	74
2,794	271	1,440	579	504	2,193	269	841	579	504
667	62	370	136	99	515	62	219	135	99
5,188	579	2,618	1,025	965	4,145	575	1,580	1,024	965
977	94	488	171	223	767	93	279	171	223
3,325	390	1,674	665	595	2,676	387	1,029	664	595
886	95	455	189	147	701	94	271	189	147
5,315	554	2,753	1,057	949	4,339	548	1,786	1,054	949
1,644	171	762	343	367	1,432	170	552	343	367
2,926	318	1,544	576	487	2,357	315	980	574	487
745	65	446	138	96	550	63	254	137	96
2,529	241	1,325	538	425	2,019	240	816	537	425
763	90	406	147	119	602	90	246	147	119
1,484	133	747	331	273	1,201	132	465	331	273
282	³ 18	172	59	³ 32	216	³ 18	106	59	³ 32

Table 8. Number of discharges by color and marital status of patient, geographic region, and bed size of hospital: United States, 1968

Geographic region and bed size	Color			
	Total ¹	White	All others	Not stated
United States-----	28,070	21,629	2,907	3,535
6-99 beds-----	6,208	5,036	474	697
100-499 beds-----	17,541	13,427	1,508	2,606
500 beds or more-----	4,322	3,165	925	231
Northeast-----	6,279	5,384	602	293
6-99 beds-----	558	434	*	119
100-499 beds-----	4,619	4,138	337	144
500 beds or more-----	1,102	812	259	30
North Central-----	8,679	6,492	602	1,584
6-99 beds-----	1,606	1,300	96	210
100-499 beds-----	5,555	4,077	276	1,202
500 beds or more-----	1,518	1,115	231	172
South-----	8,872	6,745	1,318	809
6-99 beds-----	2,798	2,280	274	244
100-499 beds-----	4,855	3,649	670	536
500 beds or more-----	1,218	816	374	⁵ 28
West-----	4,241	3,008	384	849
6-99 beds-----	1,247	1,024	99	124
100-499 beds-----	2,511	1,562	225	724
500 beds or more-----	484	422	60	*

¹Includes color, age, and marital status not stated.

²Excludes marital status not stated for patients 15 years and over.

³Presently living with spouse.

⁴Single, divorced, separated, widowed.

⁵Caution should be exercised in the use of this figure since the approximate relative standard error of the estimated number of discharges exceeds 25 percent. See "Reliability of Estimates," appendix I.

Table 8. Number of discharges by color and marital status of patient, geographic region, and bed size of hospital: United States, 1968—Con.

Marital status								
All statuses, all ages ²	Married ³				Unmarried ⁴			
	Total, 15+ years	15-44 years	45-64 years	65+ years	Total, 15+ years	15-44 years	45-64 years	65+ years
Number of discharges								
27,469	16,197	8,558	5,036	2,603	7,292	3,249	1,344	2,698
6,030	3,604	1,867	1,081	657	1,565	631	252	682
17,234	10,246	5,407	3,231	1,609	4,418	1,935	819	1,664
4,206	2,346	1,284	724	338	1,308	682	274	352
6,210	3,583	1,867	1,139	577	1,766	774	350	642
553	320	159	96	65	153	57	529	67
4,581	2,710	1,416	865	429	1,228	517	240	470
1,076	553	292	177	83	385	200	81	104
8,555	5,006	2,625	1,537	844	2,224	965	387	872
1,573	923	487	243	193	436	168	62	205
5,483	3,207	1,687	1,010	510	1,380	601	239	540
1,500	877	452	284	141	408	196	86	127
8,626	5,194	2,794	1,586	814	2,190	970	395	825
2,692	1,628	817	517	293	688	263	114	311
4,768	2,899	1,580	879	440	1,156	520	213	423
1,167	668	397	189	82	346	187	68	91
4,077	2,414	1,272	773	368	1,113	539	213	360
1,212	734	404	224	105	288	143	46	99
2,402	1,431	724	476	231	656	297	128	231
464	249	144	73	532	169	99	539	531

Table 9. Number of discharges by age and sex of patient and ownership of hospital: United States, 1968

Age and sex	Type of ownership			
	Total	Voluntary	Government	Proprietary
	Number in thousands			
Total -----	¹ 28,070	20,264	5,916	1,890
Under 15 years-----	3,988	2,880	818	290
15-44 years-----	12,036	8,550	2,652	834
45-64 years-----	6,517	4,811	1,270	437
65 years and over-----	5,520	4,017	1,174	328
Male-----	11,204	7,999	2,436	769
Under 15 years-----	2,239	1,617	465	² 157
15-44 years-----	3,364	2,310	792	261
45-64 years-----	3,111	2,271	633	207
65 years and over-----	2,486	1,798	546	² 143
Female, including deliveries-----	16,801	12,218	3,465	1,118
Under 15 years-----	1,739	1,256	351	² 133
15-44 years-----	8,654	6,226	1,856	571
45-64 years-----	3,389	2,527	633	228
65 years and over-----	3,015	2,206	624	² 185
Female, excluding deliveries-----	13,455	9,781	2,696	978
Under 15 years-----	1,726	1,247	346	² 133
15-44 years-----	5,327	3,801	1,094	432
45-64 years-----	3,383	2,523	632	228
65 years and over-----	3,015	2,206	624	² 185

¹Includes age and sex not stated.

²Caution should be exercised in the use of this figure since the approximate relative standard error of the estimated number of discharges exceeds 25 percent. See "Reliability of Estimates," appendix I.

Table 10. Number of discharges by age, color, and marital status of patient and ownership of hospital: United States, 1968

Color and marital status	Type of ownership				
	Total	Voluntary	Government	Proprietary	
<u>Color</u>		Number in thousands			
Total-----	¹ 28,070	20,264	5,916	1,890	
White-----	21,629	15,761	4,253	1,615	
All other-----	2,907	1,698	1,142	² 67	
Not stated-----	3,535	2,806	521	208	
<u>Marital status</u>					
All statuses, 15+ years-----	27,469	19,949	5,661	1,859	
Married, 15+ years-----	16,197	11,910	3,148	1,138	
15-44 years-----	8,558	6,222	1,719	617	
45-64 years-----	5,036	3,780	897	359	
65 years and over-----	2,603	1,908	533	² 162	
Unmarried, 15+ years-----	7,292	5,162	1,699	431	
15-44 years-----	3,249	2,229	815	205	
45-64 years-----	1,344	964	311	² 70	
65 years and over-----	2,698	1,969	574	155	
Marital status not stated ³ -----	601	315	255	*	

¹Includes color, age, and marital status not stated.

²Caution should be exercised in the use of this figure since the approximate relative standard error of the estimated number of discharges exceeds 25 percent. See "Reliability of Estimates," appendix I.

³Includes marital status not stated for all age groups.

APPENDIX I

TECHNICAL NOTES ON METHODS

Statistical Design of the Hospital Discharge Survey

Scope of the survey.—The scope of the Hospital Discharge Survey (HDS) encompasses patients discharged from noninstitutional hospitals exclusive of military and VA hospitals which have six beds or more for inpatient use, which are located in the 50 States and the District of Columbia, and which have an average length of stay of less than 30 days. Although all discharges of inpatients from these hospitals are within the scope of the survey, all newborn infants are excluded from this report.

Sampling frame and size of hospital.—The universe (sampling frame) for the Hospital Discharge Survey consists of the short-stay hospitals, exclusive of military and VA hospitals, which are included in the Master Facility Inventory of Hospitals and Institutions (MFI). A detailed description of how the MFI was developed, its content, plans for maintaining it, and procedures for assessing the completeness of its coverage is published in an earlier report.⁵

There were 6,965 hospitals in the universe. The distribution of short-stay hospitals by bed size and region in the universe and in the HDS sample is shown in table I. The sample for 1968 consisted of 465 hospitals, an increase over 1967 attributable to the addition of two more panels of hospitals. Of these 465 hospitals 17 were ruled out of scope of the survey because they failed to meet the definition of a short-stay hospital and 35 hospitals refused to participate. Approximately 210,000 abstracts were received from the remaining 413 hospitals that participated during 1968.

Sample design.—All hospitals with 1,000 beds or more in the universe of short-stay hospitals were selected with certainty in the sample. All hospitals with fewer than 1,000 beds were stratified, the primary strata being the 24 size-by-region classes shown in table I. Within each of these 24 primary strata, allocation of the hospitals was made through a controlled selection technique so that hospitals in the sample would be properly distributed with regard to ownership and geographic division. Sample hospitals were

drawn with probabilities ranging from certainty for the largest hospitals to one in 40 for the smallest hospitals.

The within-hospital sampling ratio for selecting discharges varied inversely with the probability of selection of the hospital. The smallest sampling fraction of discharged patients was taken in the largest hospitals, and the largest fraction was taken in the smallest hospitals. This was done to compensate for the fact that hospitals were selected with probabilities proportionate to their size class and to assure that the overall probability of selecting a discharge would be approximately the same in all hospitals.

In nearly all hospitals the daily listing sheet of discharges was the frame from which the subsamples of discharges were selected within the sample hospitals. The sample discharges were selected by a random technique, usually on the basis of the terminal digit(s) of the patient's medical record number—a number assigned when the patient is admitted to the hospital. If the hospital's daily discharge listing did not show the medical record numbers, the sample was selected by starting with a randomly selected discharge and taking every *k*th discharge thereafter.

Estimation.—Statistics produced by HDS are derived by a complex procedure. The basic unit of estimation is the sample patient abstract. The estimating procedure used to produce essentially unbiased national estimates has three principal components: (1) inflation of reciprocals of the probabilities of sample selection, (2) adjustment for nonresponse, and (3) ratio adjustments to fixed totals. These components are described in appendix I of two earlier publications.^{6,7}

Data collection.—Depending on the study procedure agreed on with the hospital administrator, the sample selection and the transcription of information from the hospital records to the abstract forms were performed either by the hospital staff or by representatives of the National Center for Health Statistics (NCHS), or by both. In more than half of the hospitals that participated in HDS during 1968, this work was performed by the medical records department of the hospital. In the remaining hospitals, nearly all the work was performed by personnel of the U.S. Bureau of the Census acting for NCHS.

NOTE: The list of references follows the text.

CONFIDENTIAL-All information which would permit identification of an individual or an establishment will be held confidential, will be used only by persons engaged in and for the purposes of the survey and will not be disclosed or released to other persons or used for any other purpose (22 FR 1687).

PHS-4734-2
REV. 11-66

DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
NATIONAL CENTER FOR HEALTH STATISTICS

Form Approved:
Budget Bureau No. 68-R620-R2-2



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ABSTRACT OF PATIENT RECORD-Hospital Discharge Survey

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9. DATE OF DISCHARGE	<table border="1"> <tr> <td>MONTH</td> <td>JAN.</td><td>FEB.</td><td>MAR.</td><td>APR.</td><td>MAY</td><td>JUNE</td><td>JULY</td><td>AUG.</td><td>SEPT.</td><td>OCT.</td><td>NOV.</td><td>DEC.</td> </tr> <tr> <td>DAY</td> <td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td colspan="2">TENS</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td> </tr> <tr> <td>YEAR</td> <td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td colspan="2">UNITS</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td> </tr> </table>	MONTH	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	DAY	0	1	2	3	4	TENS		5	6	7	8	9	YEAR	0	1	2	3	4	UNITS		5	6	7	8	9													
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Figure 1. Nonmedical section of optical mark page reader form.

During the last quarter of 1968, nearly all survey hospitals changed from an optical mark page reader form (figure I), on which was transcribed data from hospital records, to the form shown in figure II.

Data processing and editing of data.—Shipments of completed abstract forms for each sample hospital were transmitted along with sample selection control sheets to NCHS for processing. Every shipment of abstracts was reviewed; each abstract form was checked for completeness; and, when necessary, problems were referred to the hospitals for clarification and correction.

The nonmedical data in sections I and II of the Medical Abstract form were converted to tape. The abstract forms were then transmitted to the medical coding section, where the diagnoses and operations were coded.

After the diagnoses and operations were coded, they were converted to tape and matched with the corresponding nonmedical portion.

Final editing was done by computer inspection of the medical data compared with the age and sex information. If sex and/or age of the patient was incompatible with the recorded medical information, priority was given to the latter in the editing decision.

The majority of rejects were corrected by re-viewing and editing the information on the abstract forms. However, where it was impossible to correct the code of a rejected item, that item was coded and tabulated as "not stated." This procedure was applied to all items except "date of admission" and "date of discharge," which were not permitted to be coded as "not stated." In instances where these data could not be obtained from the abstract form, the monthly sample listing sheet, transmitted by the sample hospital, was used as an additional source of information.

General Qualifications

Rounding of numbers.—Percents and average lengths of stay were calculated on the basis of unrounded figures and then rounded for presentation. Therefore figures within the tables may not add to presented totals.

Patient characteristics "not stated."—Age and/or sex was not stated for less than 1 percent of all discharges. However, color was not stated for approximately 13 percent of the patients discharged. The proportion of sample hospital records with color not stated varied considerably among the sample hospitals.

Reliability of Estimates

Estimates from sample surveys such as the Hospital Discharge Survey are subject to two types of errors—measurement of nonsampling errors and sampling errors. Measurement errors (nonsampling

errors) can occur in a complete count or census as well as in a sample survey. Sampling errors, on the other hand, occur because a sample instead of a complete count is taken.

Measurement errors.—These include errors due to hospital nonresponse, missing abstracts, information incompletely or inaccurately recorded on abstract forms, and processing errors. Some of these have been discussed in earlier sections.

Sampling errors.—The standard error in this survey is primarily a measure of the sampling variability that occurs by chance because the estimates are based on a sample of short-stay hospitals rather than all discharges from all short-stay hospitals. The relative standard error of an estimate is obtained by dividing the standard error of the estimate by the estimate itself and is expressed as a percentage of the estimate.

The chances are about 68 out of 100 that the value obtained in a complete enumeration is contained in the interval represented by the estimate plus and minus one standard error of the estimate; 95 out of 100 for two standard errors; and 99 out of 100 for 2½ standard errors. Applying the illustration at the bottom of figure III, the chances are about 68 out of 100 that the value that would be obtained in a complete enumeration is contained in the interval 504,000 + 9.4 percent of 504,000 (between 457,000 and 551,000); 95 out of 100 for the interval 504,000 + 9.4 percent of 504,000 multiplied by 2; 99 out of 100 for the interval 504,000 + 9.4 percent of 504,000 multiplied by 2.5.

The standard error of one statistic is generally different from that of another even when the two come from the same survey. In order to derive standard errors that would be applicable to a wide variety of statistics and that could be prepared at a moderate cost, a number of approximations were required. As a result, figure III and tables II and III provide general standard errors for a wide variety of estimates rather than the specific error for any statistic.

The relative standard errors and approximate standard errors of percentages that have been prepared for this report are applicable to estimates of discharges for patient characteristics (age, sex, color, and marital status, and cross-classifications, e.g., age by sex) cross-classified by one of three hospital groupings as follows: (1) by geographic region (e.g., Northeast) and size (e.g., 6-99 beds), (2) by type of ownership (e.g., government), or (3) by hospitals summed over all regions, size, and ownership groups (all hospitals). The particular figure or table to which one refers to obtain a sampling error is contingent upon both the type of estimate (e.g., discharges) and the hospital groupings with which the patient characteristic(s) is cross-classified. The procedures that apply are as follows:

1. Approximate relative standard errors of estimated number of discharges are obtained from the curves shown in figure III.
2. Approximate relative standard errors of estimated average lengths of stay discharges are shown in table II.
3. Approximate standard errors of estimated percentages of discharges when the characteristic(s) used to form the numerator of the percentages is a subclass of the denominator are shown in table III.

Table I. Distribution of short-stay hospitals in the universe (MFI) and in the Hospital Discharge Survey sample and number of hospitals participating in the survey, by bed size of hospital and geographic region: United States, 1968

Bed size of hospital	Geographic region				
	United States	North-east	North central	South	West
<u>All sizes</u>					
Universe-----	6,965	1,107	1,979	2,620	1,259
Total sample-----	465	123	139	135	68
Number participating-----	413	110	128	117	58
<u>6-49 beds</u>					
Universe-----	3,113	119	830	1,438	646
Total sample-----	59	7	17	23	12
Number participating-----	47	5	15	17	10
<u>50-99 beds</u>					
Universe-----	1,623	288	442	587	306
Total sample-----	66	12	18	24	12
Number participating-----	60	11	18	21	10
<u>100-199 beds</u>					
Universe-----	1,144	277	378	332	157
Total sample-----	95	24	30	29	12
Number participating-----	83	23	25	25	10
<u>200-299 beds</u>					
Universe-----	552	182	151	134	85
Total sample-----	83	29	24	18	12
Number participating-----	75	26	22	17	10
<u>300-499 beds</u>					
Universe-----	386	110	129	96	51
Total sample-----	89	24	29	24	12
Number participating-----	77	19	27	21	10
<u>500-999 beds</u>					
Universe-----	129	42	46	28	13
Total sample-----	55	18	18	12	7
Number participating-----	53	17	18	11	7
<u>1,000 beds or more</u>					
Universe-----	18	9	3	5	1
Total sample-----	18	9	3	5	1
Number participating-----	18	9	3	5	1

Figure III. Approximate relative standard errors of estimated numbers of patients discharged for patient characteristics, by geographic region and size of hospital and type of ownership and for all hospitals.

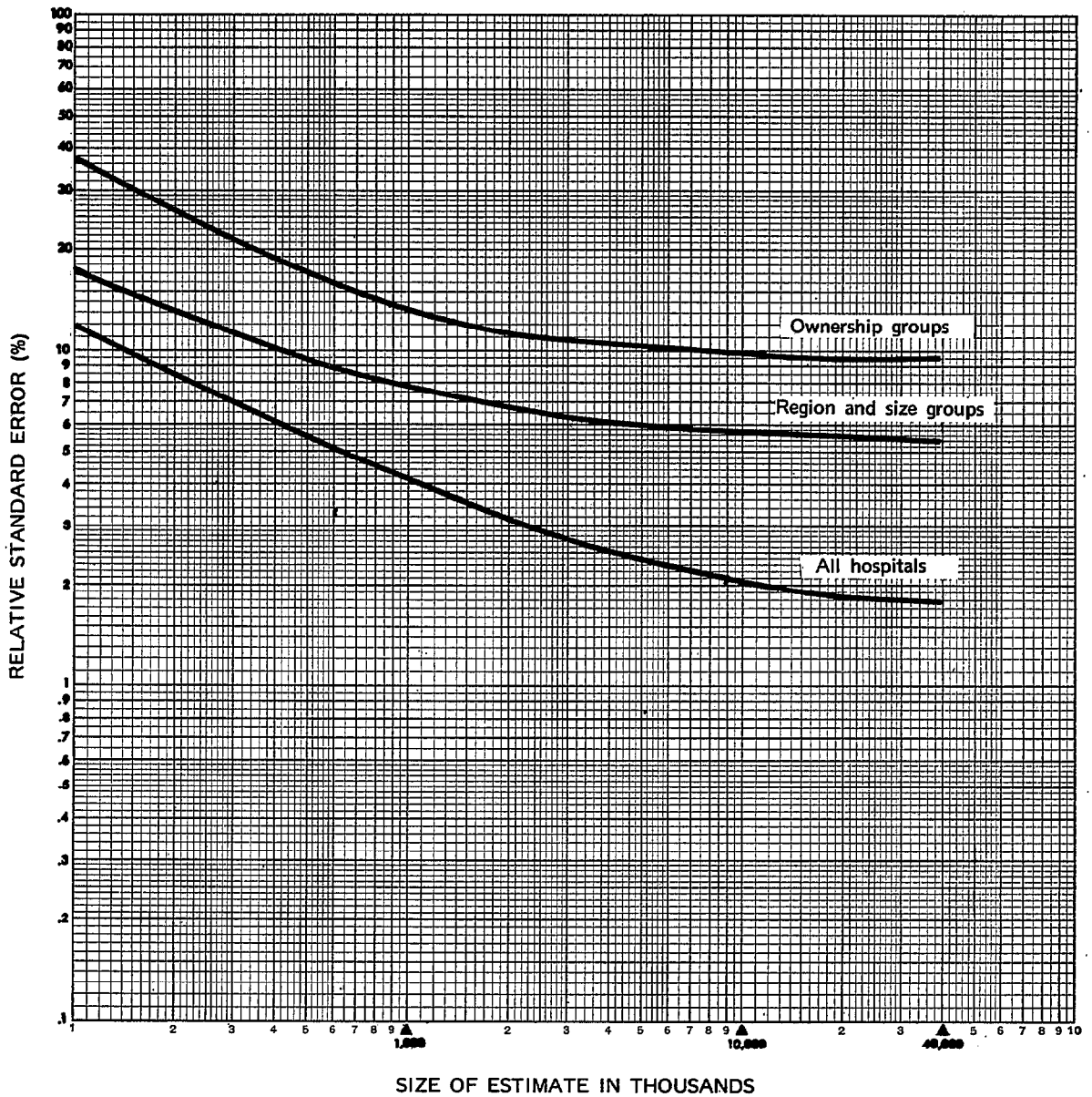


Illustration of use of figure III: As shown in table 7, an estimated 504,000 male patients aged 15-44 years were discharged from hospitals with 100-499 beds within the Northeast Region. The relative standard error of this estimate as read from the line "region and size groups" is approximately 9.4 percent: the standard error of 504,000 is 47,376 (9.4 percent of 504,000).

Table II. Approximate standard errors of average lengths of stay shown in this report: Patient characteristics cross-classified by geographic region and size of hospital and for all hospitals

[Standard errors for patient characteristics classified by type of ownership are two times the standard error shown in this table]

Number of discharges (base of average)	Average length of stay in days							
	2	4	6	8	10	12	14	16
	Standard error in days							
100,000-----	0.5	0.7	0.9	1.1	1.3	1.5	1.7	1.9
200,000-----	0.4	0.5	0.7	0.8	0.9	1.1	1.2	1.4
600,000-----	0.2	0.3	0.4	0.5	0.6	0.7	0.9	1.0
1,000,000-----	0.2	0.3	0.4	0.5	0.6	0.6	0.8	0.8
2,000,000-----	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8
6,000,000-----	0.1	0.2	0.3	0.3	0.4	0.5	0.6	0.7
10,000,000-----	0.1	0.2	0.3	0.3	0.4	0.5	0.6	0.7
20,000,000-----	0.1	0.2	0.3	0.3	0.4	0.5	0.6	0.7
30,000,000-----	0.1	0.2	0.2	0.3	0.4	0.5	0.6	0.7

NOTE: Illustration of use of table II--Table 6 shows that the average length of stay was 8.1 days for the estimated 4,253,000 discharged patients in government hospitals who were white (table 10). Linear interpolation between the values shown in table II will yield an approximate standard error of 0.3 days for an estimated average of 8.1 days with a base of 4,253,000.

Table III. Approximate standard errors of percentages shown in this report for discharges: Patient characteristics cross-classified by geographic region and size of hospital and for all hospitals

Number of discharges (base of percent)	Estimated percent					
	2 or 98	4 or 96	10 or 90	20 or 80	30 or 70	50
	Standard error in percentage points					
100,000-----	2.4	3.3	5.0	6.7	7.7	8.4
200,000-----	1.7	2.3	3.6	4.8	5.4	5.9
600,000-----	1.0	1.3	2.1	2.7	3.1	3.4
1,000,000-----	0.7	1.0	1.6	2.1	2.4	2.7
2,000,000-----	0.5	0.7	1.1	1.5	1.7	1.9
6,000,000-----	0.3	0.4	0.7	0.9	1.0	1.1
10,000,000-----	0.2	0.3	0.5	0.7	0.8	0.8
20,000,000-----	0.2	0.2	0.4	0.5	0.5	0.6
30,000,000-----	0.1	0.2	0.3	0.4	0.4	0.5

NOTE: Illustration of use of table III--Table 3 shows that 10.2 percent of the 8,626,000 married patients aged 45-64 years (table 8) were discharged from hospitals with 100-499 beds within the South region. Linear interpolation between the values shown in table III will yield an approximate standard error of 0.6 percent for an estimate of 10.2 percent with a base of 8,626,000.

APPENDIX II

DEFINITIONS OF CERTAIN TERMS USED IN THIS REPORT

Terms Relating to Hospitalization

Inpatient.—A person who is formally admitted to the inpatient service of a short-stay hospital for observation, care, diagnosis, or treatment. In this report the number of inpatients refers to the number of discharges during 1968, including multiple discharges of the same individual (if any) from one short-stay hospital or more. All newborn infants, defined as those admitted by birth to the hospital, are excluded from this report. "Inpatient" and "patient" are used synonymously.

Other infants.—Infants under 1 year of age at time of admission to the hospital inpatient service. In this report the number of discharges of "other infants" includes infants admitted on the day of birth, directly or by transfer from another medical facility, with or without mention of a disease, disorder, or immaturity.

Discharge.—The formal release of an inpatient by a hospital, that is, the termination of a period of hospitalization by death or by disposition to place of residence, nursing home, or another hospital. In this report, "discharges" and "patients (or inpatients) discharged" are used synonymously.

Days of care.—The total number of inpatient days accumulated at time of discharge by patients discharged from short-stay hospitals during 1968. A stay of less than 1 day (inpatient admission and discharge on the same day) is counted as 1 day in the summation of total days of care. For patients admitted and discharged on different days, the number of days of care is computed by counting all days from (and including) the date of admission to (but not including) the date of discharge.

Average length of stay.—The total number of inpatient days accumulated at time of discharge by patients discharged during 1968 divided by the number of patients discharged. "Average duration," "duration of stay," and "length of stay" are used interchangeably.

Hospitals and Hospital Characteristics

Short-stay hospitals.—General and short-term special hospitals having six beds or more for inpatient use and an average (mean) length of stay of less than 30 days. Federal hospitals and hospital units of institutions are not included. "Hospitals" and "short-stay hospitals" are used synonymously.

Size of hospital.—Measured by the number of beds, cribs, and pediatric bassinets regularly maintained (set up and staffed for use) for inpatients; bassinets for newborn infants are not included. In this report the classification of hospitals by bed size is based on the number of beds at or near midyear reported by the hospitals.

Location of hospitals.—See "Geographic region:"

Type of ownership (control) of hospital.—Refers to the type of organization that controls and operates the hospital. In this report the classification of hospitals by type of ownership is based on responses provided by sample hospitals. The hospitals are grouped as follows:

Voluntary hospitals.—Hospitals operated by a church or another nonprofit organization.

Government hospitals.—Hospitals operated by State and local governments.

Proprietary hospitals.—Hospitals controlled by individuals, partnerships, or corporations for profit.

Demographic Terms

Age.—Refers to age at last birthday prior to admission to the hospital inpatient service (newborn infants excepted).

Color.—In this report patients are classified into two groups, "white" and "all other." The "all other" classification includes all categories other than white which are too small for statistical purposes to be presented separately. "White" includes Mexican and Puerto Rican unless otherwise identified on the patient's record.

Marital status.—In this report married includes all persons living with spouse; unmarried includes all persons 15 years and over who are single, separated, divorced, or widowed.

Geographic region.—In this report hospitals are classified by location according to the four geographic regions of the United States which correspond to those used by the U.S. Bureau of the Census.

<i>Region</i>	<i>States Included</i>
Northeast -----	Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, and Pennsylvania
North Central ---	Michigan, Ohio, Illinois, Indiana, Wisconsin, Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, and Kansas
South -----	Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida, Kentucky, Tennessee, Alabama, Mississippi, Arkansas, Louisiana, Oklahoma, and Texas
West -----	Montana, Idaho, Wyoming, Colorado, New Mexico, Arizona, Utah, Nevada, Washington, Oregon, California, Hawaii, and Alaska



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