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Discharge Status of Inpatients Discharged From Short-Stay Hospitals: United States, 1965–81

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Introduction

This report provides national estimates on the discharge status of patients discharged from non-Federal short-stay hospitals from 1965 through 1981. For this report discharge status is defined at two levels: alive and dead. The frequency and percent distribution of patients discharged alive and dead are provided for each year from 1965 through 1981 (with "not stated" data also included); while other trend data are presented for the years 1965, 1970, 1975, and 1981 (with "not stated" data excluded).

The statistics in this report are based on data collected through the National Hospital Discharge Survey (NHDS), a continuous survey conducted by the National Center for Health Statistics since 1965. The data for the survey are obtained from the face sheets of a sample of the medical records of inpatients discharged from a national sample of short-stay general and specialty hospitals in the United States. Various revisions of the International Classification of Diseases have been used in NHDS to code medical data since 1965.The seventh revision[1] was used from 1965 through 1968, the eighth revision[2] covered the period 1970–78, and the ninth revision[3] was used from 1979 through 1981. The survey design, data collection procedures, and estimation process are described briefly in Technical notes, and a more detailed report on the design of NHDS has been published.[4]

Familiarity with the definitions used in NHDS is important for interpreting the data and for making comparisons with statistical data on hospital utilization that are available from other sources. For example, patients who are dead on arrival or who die in the emergency room of a hospital without being admitted to the hospital are not included in the scope of this survey. Definitions of the terms used in this report are presented in Technical notes.

Information on the number and cause of deaths in the United States is collected by the Division of Vital Statistics of the National Center for Health Statistics. Estimates in this report reflecting a deceased patient's first-listed diagnosis do not necessarily reflect the underlying cause of death.

Discharge status 1965–81

The distribution of patients according to whether they were discharged alive or dead is quite consistent from 1965 through 1981 (table 1). About 2.8 percent of all patients were discharged dead from short-stay hospitals in 1965, and about 2.5 percent were discharged dead in 1981. This demonstrates one of the most notable characteristics of the statistics in this report: their consistency over time.

Between 1965 and 1976 the number of patients with their discharge status not stated never exceeded 20 percent of the number of patients discharged dead. The abstract form used by NHDS to collect data was modified in 1977. This modification produced some ambiguity in coding the variable discharge status and resulted in an increase in the number of cases of discharge status not stated for the years 1977–80. This was corrected, and in 1981 the number of patients with an unknown discharge status was reduced considerably.

When discharge status is examined by age, the data bear out the expected, that the number of patients discharged dead is largest in the older age groups. This is true for males and females for each year presented in table 1. Patients 65 years of age and over accounted for 58.8 percent of all patients discharged dead in 1965; this increased to 69.4 percent in 1981. The distribution of deaths in hospitals by age was quite similar for both sexes in each of the years 1965, 1970, 1975, and 1981 (table 2).

Table 1. Number and percent distribution of inpatients discharged from short-stay hospitals by discharge status: United States, 1965–81

[Discharges from non-Federal hospitals, excluding newborn infants]

Year of discharge	Discharge status							
	All discharges	Alive	Dead	Not stated	All discharges	Alive	Dead	Not stated
	Number in thousands				Percent distribution			
1981	38,544	36,905	982	657	100.0	95.7	2.5	1.7
1980	37,832	35,212	964	1,657	100.0	93.1	2.5	4.4
1979	36,747	33,812	924	2,011	100.0	92.0	2.5	5.5
1978	35,616	32,857	881	1,879	100.0	92.3	2.5	5.3
1977	35,902	32,215	851	2,836	100.0	89.7	2.4	7.9
1976	34,372	33,416	852	103	100.0	97.2	2.5	0.3
1975	34,043	33,117	839	87	100.0	97.3	2.5	0.3
1974	33,018	32,081	847	90	100.0	97.2	2.6	0.3
1973	32,125	31,154	847	97	100.0	97.0	2.7	0.3
1972	31,627	30,603	880	144	100.0	96.8	2.8	0.5
1971	29,459	28,460	833	166	100.0	96.6	2.8	0.6
1970	29,127	28,116	853	157	100.0	96.5	2.9	0.5
1969	28,529	27,502	867	160	100.0	96.4	3.0	0.6
1968	28,070	27,086	860	124	100.0	96.5	3.1	0.4
1967	27,964	26,966	838	159	100.0	96.4	3.0	0.6
1966	28,477	27,579	811	87	100.0	96.8	2.8	0.3
1965	29,100	28,246	818	35	100.0	97.1	2.8	0.1

Table 2. Number and percent distribution of inpatients discharged from short-stay hospitals by discharge status, sex, and age: United States, 1965, 1970, 1975, and 1981

[Discharges from non-Federal hospitals, excluding newborn infants]

Year of discharge, sex, and age	Discharge status							
	All discharges	Alive	Dead	Not stated	All discharges	Alive	Dead	Not stated
1965	Number in thousands				Percent distribution			
Both sexes, all ages	29,100	28,246	818	35	100.0	100.0	100.0	100.0
Under 15 years	4,580	4,504	69	7	15.7	15.9	8.5	19.1
15–44 years	13,126	13,063	51	13	45.1	46.2	6.2	36.4
45–64 years	6,702	6,476	217	8	23.0	22.9	26.5	23.6
65 years and over	4,692	4,203	481	7	16.1	14.9	58.8	20.9
Male, all ages	11,330	10,886	430	14	100.0	100.0	100.0	100.0
Under 15 years	2,576	2,533	40	3	22.7	23.3	9.4	19.9
15–44 years	3,464	3,436	25	4	30.6	31.6	5.8	25.8
45–64 years	3,130	3,008	117	5	27.6	27.6	27.3	33.5
65 years and over	2,159	1,909	248	3	19.1	17.5	57.5	21.0
Female, all ages	17,721	17,313	387	21	100.0	100.0	100.0	100.0
Under 15 years	1,997	1,964	29	4	11.3	11.3	7.5	18.6
15–44 years	9,646	9,610	26	9	54.4	55.5	6.7	43.2
45–64 years	3,560	3,456	99	4	20.1	20.0	25.7	17.4
65 years and over	2,519	2,282	233	5	14.2	13.2	60.2	20.8
1970								
Both sexes, all ages	29,127	28,116	853	157	100.0	100.0	100.0	100.0
Under 15 years	3,873	3,833	24	16	13.3	13.6	2.8	10.3
15–44 years	12,664	12,528	62	75	43.5	44.6	7.2	47.7
45–64 years	6,693	6,445	211	36	23.0	22.9	24.8	23.1
65 years and over	5,897	5,311	556	30	20.2	18.9	65.2	19.0
Male, all ages	11,431	10,921	451	58	100.0	100.0	100.0	100.0
Under 15 years	2,173	2,151	14	9	19.0	19.7	3.2	14.8
15–44 years	3,486	3,434	33	19	30.5	31.4	7.3	33.5
45–64 years	3,104	2,971	117	16	27.2	27.2	26.0	27.5
65 years and over	2,667	2,366	287	14	23.3	21.7	63.6	24.3
Female, all ages	17,696	17,195	402	99	100.0	100.0	100.0	100.0
Under 15 years	1,699	1,682	10	8	9.6	9.8	2.4	7.6
15–44 years	9,178	9,093	29	56	51.9	52.9	7.2	56.0
45–64 years	3,588	3,474	94	20	20.3	20.2	23.3	20.5
65 years and over	3,230	2,945	269	16	18.3	17.1	67.1	15.9

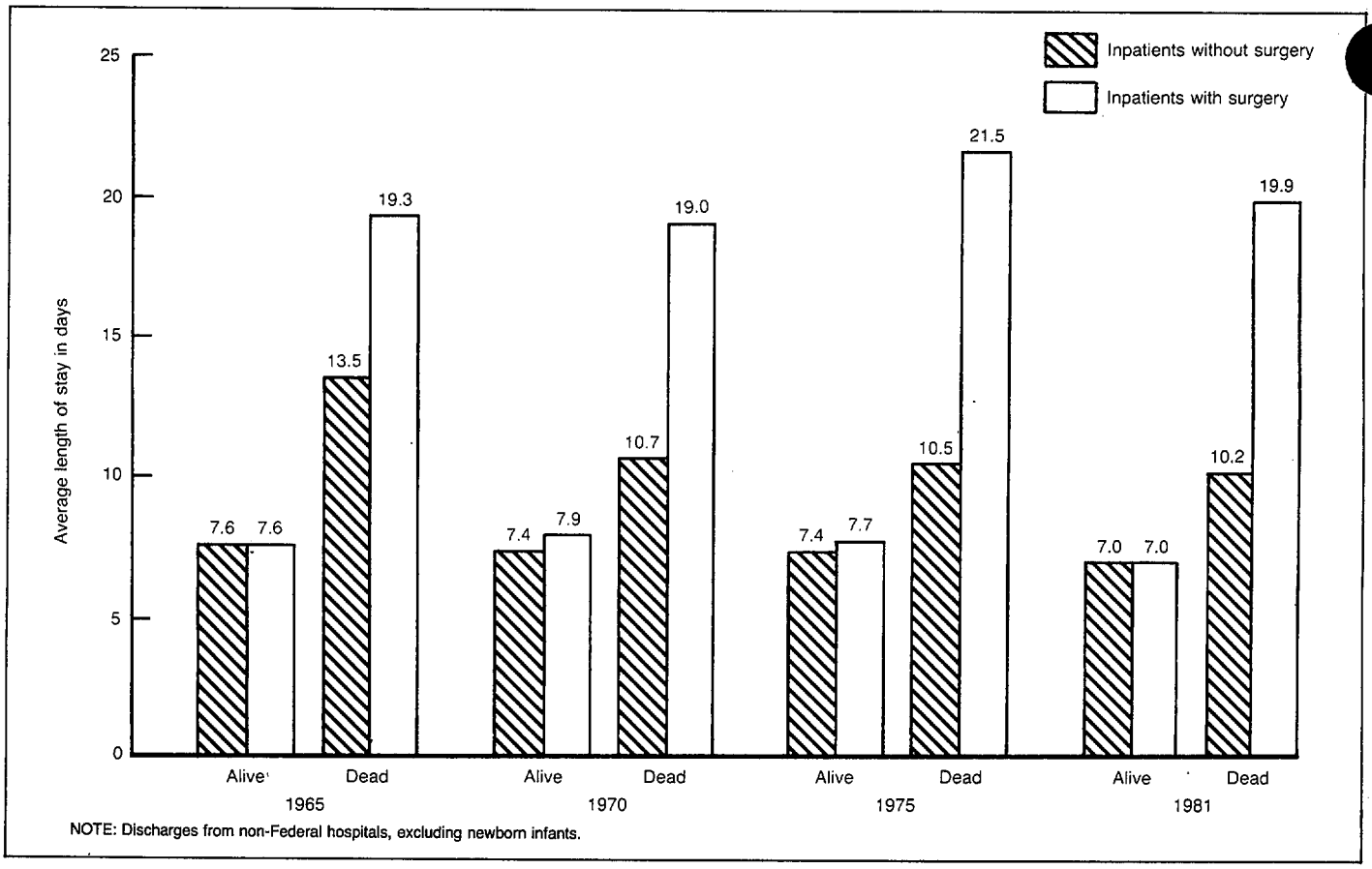
Table 2. Number and percent distribution of inpatients discharged from short-stay hospitals by discharge status, sex, and age: United States, 1965, 1970, 1975, and 1981—Con.

[Discharges from non-Federal hospitals, excluding newborn infants]

Year of discharge, sex, and age	Discharge status							
	All discharges	Alive	Dead	Not stated	All discharges	Alive	Dead	Not stated
1975	Number in thousands				Percent distribution			
Both sexes, all ages	34,043	33,117	839	87	100.0	100.0	100.0	100.0
Under 15 years	3,826	3,799	18	9	11.2	11.5	2.1	10.5
15–44 years	14,171	14,077	54	40	41.6	42.5	6.4	46.2
45–64 years	8,391	8,168	206	17	24.6	24.7	24.6	19.4
65 years and over	7,654	7,073	561	21	22.5	21.4	66.9	23.9
Male, all ages	13,519	13,034	450	36	100.0	100.0	100.0	100.0
Under 15 years	2,143	2,126	11	6	15.9	16.3	2.5	16.4
15–44 years	4,107	4,063	31	13	30.4	31.2	7.0	35.5
45–64 years	3,870	3,743	120	7	28.6	28.7	26.7	20.1
65 years and over	3,399	3,102	287	10	25.1	23.8	63.9	28.0
Female, all ages	20,523	20,083	390	51	100.0	100.0	100.0	100.0
Under 15 years	1,682	1,672	7	3	8.2	8.3	1.7	6.4
15–44 years	10,064	10,014	23	27	49.0	49.9	5.8	53.6
45–64 years	4,522	4,425	87	10	22.0	22.0	22.2	19.0
65 years and over	4,256	3,971	274	11	20.7	19.8	70.3	21.1
1981								
Both sexes, all ages	38,544	36,905	982	657	100.0	100.0	100.0	100.0
Under 15 years	3,733	3,631	33	69	9.7	9.8	3.3	11.5
15–44 years	15,725	15,393	57	276	40.8	41.7	5.8	41.9
45–64 years	8,677	8,309	211	157	22.5	22.5	21.5	22.8
65 years and over	10,408	9,571	681	156	27.0	25.9	69.4	23.7
Male, all ages	15,379	14,626	500	253	100.0	100.0	100.0	100.0
Under 15 years	2,101	2,049	17	35	13.7	14.0	3.4	13.9
15–44 years	4,672	4,563	31	78	30.4	31.2	6.2	31.0
45–64 years	4,098	3,924	107	67	26.7	26.8	21.5	26.7
65 years and over	4,507	4,091	344	72	29.3	28.0	68.9	28.4
Female, all ages	23,165	22,279	482	404	100.0	100.0	100.0	100.0
Under 15 years	1,632	1,582	16	24	7.0	7.1	3.2	7.3
15–44 years	11,053	10,830	26	197	47.7	48.6	5.4	49.8
45–64 years	4,579	4,386	104	89	19.8	19.7	21.6	22.0
65 years and over	5,901	5,480	337	84	25.5	24.6	69.8	20.8

The two most common causes of death in the United States are cancer and heart disease. Although data from NHDS on diagnoses do not necessarily reflect cause of death, a first-listed diagnosis of cancer or of a disease of the circulatory system accounts for a relatively large proportion of patients discharged dead. Data relating diagnosis and discharge status across years of the survey are not directly comparable because of changes in the diagnostic classification system used to code data. The changes instituted in 1970 and 1979 make comparisons across decades imprecise. Nonetheless, diseases of the circulatory system and cancer ranked first and second, respectively, as the most frequent diagnoses for patients discharged dead from 1965 through 1981. The most recent NHDS data, for 1981, indicated that 39.1 percent of all patients discharged dead had as a first-listed diagnosis a disease of the circulatory system and that 25.0 percent had a first-listed diagnosis of cancer.

There is an interesting relationship between a patient's discharge status, whether or not the patient had surgery, and the patient's length of stay in the hospital. Figure 1 indicates that patients discharged alive had similar lengths of stay whether they had surgery or not. However, patients discharged dead had a longer length of stay on the average than patients discharged alive; furthermore, patients discharged dead who had surgery had the longest average lengths of stay. This phenomenon was fairly consistent for the years 1965, 1970, 1975, and 1981, as presented in figure 1. This pattern was examined in a previous report[5] using 1979 data that revealed this relationship also to be consistent across patient age.



NOTE: Discharges from non-Federal hospitals, excluding newborn infants.

Figure 1. Average length of stay in short-stay hospitals for inpatients with surgery and for inpatients without surgery, by discharge status: United States, 1965, 1970, 1975, and 1981

References

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[7] National Center for Health Statistics, M.J. Witkin: Utilization of short-stay hospitals by characteristics of discharged patients, United States, 1965. *Vital and Health Statistics*. PHS Pub. No. 1000-Series 13-No. 3. Public Health Service. Washington. U.S. Government Printing Office, Dec. 1967.

Technical notes

Survey methodology

Source of data

The National Hospital Discharge Survey (NHDS) encompasses patients discharged from short-stay hospitals, exclusive of military and Veterans Administration hospitals, located in the 50 States and the District of Columbia. Only hospitals with six beds or more and an average length of stay of less than 30 days for all patients are included in the survey. Discharges of newborn infants are excluded from this report.

The universe of the survey consisted of 6,965 short-stay hospitals contained in the 1963 Master Facility Inventory of Hospitals and Institutions. New hospitals were sampled for inclusion in the survey in 1972, 1975, 1977, and 1981.

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 24 size-by-region classes. Within each of these 24 primary strata, the allocation of the hospitals was made through a controlled selection technique so that hospitals in the sample would be properly distributed with regard to type of ownership and geographic division. Sample hospitals were drawn with probabilities ranging from certainty for the largest hospitals to 1 in 40 for the smallest hospitals.

Sample discharges were selected within the hospitals using the daily listing sheet of discharges as the sampling frame. These discharges were selected by a random technique, usually on the basis of the terminal digit or digits of the patient's medical record number, a number assigned when the patient was admitted to the hospital. The within-hospital sampling ratio for selecting sample discharges varied inversely with the probability of selection of the hospital.

Data collection and estimation

The sample selection and the transcription of information from the hospital records for abstract forms were performed by the hospital staff or by representatives of the National Center for Health Statistics or by both. The data were abstracted from the face sheets of the medical records. All discharge diagnoses were listed on the abstract in the order of the principal one, or the first-listed one if the principal one was not identified, followed by the order in which all other diagnoses were entered on the face sheet of the medical record.

Statistics produced by NHDS are derived by a complex estimating procedure. The basic unit of estimation is the sample inpatient discharge abstract. The estimating procedure used to produce essentially unbiased national estimates in NHDS has three principal components: inflation by reciprocals of the probabilities of sample selection, adjustment for non-response, and ratio adjustment to fixed totals. These components of estimation are described in appendix I of two earlier publications.[6,7]

Sampling errors and rounding of numbers

The standard error is a measure of the sampling variability that occurs by chance because only a sample, rather than an entire universe, is surveyed. The relative standard error of the estimate is obtained by dividing the standard error by the estimate itself and is expressed as a percent of the estimate. Table I shows relative standard errors for discharges and first-listed diagnoses for 1981. The standard errors for average lengths of stay are shown in table II. Standard errors for each year from 1965 through 1981 are not presented, both in order to save space and because they are relatively similar from year to year. Therefore, while these tables provide a general idea of sampling variability, more precise values can be provided by NHDS.

Estimates have been rounded to the nearest thousand. For this reason detailed figures within tables do not always add to the totals. Percents and average lengths of stay were calculated from original, unrounded figures and will not necessarily agree precisely with percents or average lengths of stay calculated from rounded data.

Tests of significance

In this report, the determination of statistical inference is based on the two-tailed Bonferroni test for multiple comparisons. Terms relating to differences such as "higher" and "less" indicate that the differences are statistically significant. Terms such as "similar" or "no difference" mean that no statistically significant difference exists between the estimates

Table I. Approximate relative standard errors of estimated number of discharges, 1981

Size of estimate	*Relative standard error*
10,000	16.3
50,000	10.2
100,000	8.5
300,000	6.6
500,000	5.9
1,000,000	5.1
4,000,000	4.0

Table II. Approximate standard errors of average lengths of stay, 1981

Number of discharges	*Average length of stay in days*			
	2	*6*	*10*	*20*
	Standard error in days			
10,000	0.7	1.2	1.7	2.2
50,000	0.3	0.7	1.0	1.4
100,000	0.3	0.6	0.9	1.2
500,000	0.2	0.5	0.8	0.9
1,000,000	0.2	0.5	0.8	0.7
5,000,000	0.2	0.5	0.8	...

NOTE: A list of references follows the text.

being compared. A lack of comment on the difference between any two estimates does not mean that the difference was tested and found to be not significant.

Definition of terms

Patient—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 patients refers to the number of discharges during the year, including any multiple discharges of the same individual from one or more short-stay hospitals.

Average length of stay—The total number of patient days accumulated at time of discharge by patients discharged during the year divided by the number of patients discharged.

First-listed diagnosis—The coded diagnosis identified as the principal diagnosis or listed first on the face sheet of the medical record. The number of first-listed diagnoses is equivalent to the number of discharges.

Symbols

- - -	Data not available
. . .	Category not applicable
-	Quantity zero
0.0	Quantity more than zero but less than 0.05
Z	Quantity more than zero but less than 500 where numbers are rounded to thousands
*	Figure does not meet standards of reliability or precision (more than 30-percent relative standard error)
#	Figure suppressed to comply with confidentiality requirements

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