



**Utilization of
Short-Stay
Hospitals:**
United States, 1981
Annual Summary

Data From the National Health Survey
Series 13, No. 72

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This report presents statistics on the utilization of non-Federal short-stay hospitals based on data collected through the National Hospital Discharge Survey from a national sample of the hospital records of discharged inpatients. Estimates are provided by the demographic characteristics of patients discharged, conditions diagnosed, and surgical and nonsurgical procedures performed, and by geographic region, bed size, and ownership of hospitals that provided inpatient care. Measurements of hospital utilization are given in terms of frequency, rate, percent, and average length of stay.

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Series 13, No. 72**

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Preface

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

Analysis of data and interpretation of findings contained in this report were performed by the Division of Health Care Statistics, National Center for Health Statistics.

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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
#	Figure suppressed to comply with confidentiality requirements

Utilization of Short-Stay Hospitals

Annual Summary

by Edmund J. Graves and Barbara J. Haupt,
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Introduction

This report provides national estimates on the utilization of non-Federal short-stay hospitals during 1981. Data are summarized for selected demographic characteristics of the patients discharged, characteristics of the hospitals where the patients were treated, conditions diagnosed, and surgical and nonsurgical procedures performed.

The statistics in this report are based on data collected by the National Center for Health Statistics by means of the National Hospital Discharge Survey, which is a continuous voluntary survey in use since 1965. The data for the survey are obtained from the face-sheets of a sample of inpatient medical records that are obtained from a national sample of short-stay general and specialty hospitals located in the United States. Approximately 227,000 medical records from 550 hospitals were included in the 1981 survey. A brief description of the sample design and the sources of data can be found in appendix I. A detailed report on the design of the National Hospital Discharge Survey was published in 1970.¹

Types of hospital utilization measurements shown are frequencies, rates and percent distributions of discharges, days of care, and average lengths of stay. The estimates are presented by age, sex, and race of the patients discharged and by the geographic region, bed size, and ownership of the short-stay hospitals (tables 1–12). Statistics on the conditions diagnosed (tables 13–17) and procedures performed (tables 18–22) are also shown by patient and hospital characteristics. Data for newborn infants are included only in the section “Newborn infant discharges.” Since these data are based on a sample they may not agree with data on births published in *Vital Statistics of the United States*.

Coding of medical data for patients hospitalized is performed according to the *International Classification of Diseases, 9th Revision, Clinical Modification*² (ICD–9–CM). Earlier data for 1970–78 were coded according to the *Eighth*

*Revision International Classification of Diseases, Adapted for Use in the United States*³ (ICDA). Differences between these two systems are discussed in appendix I under the section entitled “Medical coding and edit.” A maximum of seven diagnoses and four procedures are coded for each medical record in the sample. Although diagnoses included in the ICD–9–CM section entitled “Supplementary classification of external causes of injury and poisoning” (codes E800–E999) are used by the National Hospital Discharge Survey, these diagnoses are excluded from this report. The conditions diagnosed and procedures performed are presented here by the major diagnostic classes and procedure groups of the ICD–9–CM. Within these classes and groups, some categories of diagnoses and procedures are also shown. These specific categories were selected primarily because of large frequencies or because they are of special interest. Residual categories of diagnoses and procedures, however, are not included in the tables. More detailed analyses of these data will be presented in later reports in Series 13 of the *Vital and Health Statistics* reports.

Familiarity with the definitions used in the National Hospital Discharge Survey is important for interpreting the data and for making comparisons with statistical data on short-stay hospital utilization that are available from other sources. Definitions of the terms used in this report are presented in appendix II.

Information on short-stay hospital utilization is also collected by another program of the National Center for Health Statistics, the National Health Interview Survey. Estimates from this survey are generally different from those of the National Hospital Discharge Survey (NHDS) because of differences in collection procedures, population sampled, and definitions. Data from the National Health Interview Survey are published in Series 10 of the *Vital and Health Statistics* reports.

Highlights

During 1981 an estimated 38.5 million inpatients, excluding newborn infants, were discharged from non-Federal short-stay hospitals. These patients used 277.2 million days of care during the year. Their average length of stay was 7.2 days. Approximately 42 percent of the patients were discharged within 4 days of their admission and 6-percent remained in the hospital for 3 weeks or longer. Patients hospitalized during 1981 accounted for 169 discharges and 1,218 days of care per 1,000 civilian population.

Prior to 1981, the rates were based on the civilian non-institutionalized population. Starting in 1981, however, the rates were based on the civilian population. Because the civilian population is larger than the civilian noninstitutionalized population, rates based on the former will be slightly lower than those based on the latter. The change in the type of population used in computing rates was necessary because many institutionalized people use short-stay hospitals. This is especially true for persons in the older age groups because these patients are often admitted from nursing homes.

Selected measures of hospital utilization for 1965, 1970, 1975, 1980, and 1981 are as shown in table A. The number of discharges was approximately 33 percent higher in 1981 than in 1965; however, the discharge rate was only 12 percent higher for the same period. Smaller increases were noted for days of care. Although the number of days of care was 23 percent higher the rate differences were not statistically significant.

Although the rate of discharges and days of care decreased between 1965 and 1970, these differences were not significant. The decrease was due to an underestimate of hospital utilization in 1970 because new hospitals that came into the universe of hospitals were not sampled for NHDS prior to 1972.⁴ More information on updating the universe can be found in appendix I.

The percent of patients with surgery was higher in 1980 and 1981 than in 1965-75. This was due primarily to the inclusion of nonsurgical procedures and some obstetrical procedures that were not included before 1978.

Utilization by patient characteristics

The 38.5 million patients discharged from short-stay hospitals during 1981 included an estimated 15.4 million males and 23.2 million females (table 1). The rates per 1,000 population were 140 for males and 197 for females, making the rate for females almost 41 percent higher than the rate for males. The number and rate of discharges are always higher for females than for males because of the large number of women in their childbearing years (15-44 years of age) who are hospitalized for deliveries and other obstetrical conditions. Excluding deliveries, the rate for females discharged was 164, or only about 17 percent higher than the rate for males (table 8).

Except for children under 5 years of age and women in their childbearing years, annual rates of discharges increased consistently with each older age group for both males and females. This pattern of increase also applies to women in their childbearing years if those who were hospitalized only for deliveries are excluded from the rates. Discharge rates for older patients (65 years of age and over) compared with those for younger patients (under 15 years of age) were more than 5 times higher for both sexes.

In 1981, male patients used an estimated 117.8 million days of care in short-stay hospitals, compared with 159.4 million days of care used by females (table 2). The rate of days of care per 1,000 population was 1,072 for males and 1,354 for females, or about 26 percent higher for females than for males. Differences between the rates of days of care for each

Table A. Selected measures of hospital utilization: United States, 1965, 1970, 1971, 1980, and 1981

[Data for non-Federal short-stay hospitals. Excludes newborn infants]

Measure of utilization	1965	1970	1975	1980	1981
Number of patients discharged in thousands	28,792	29,127	34,043	37,832	38,544
Rate of patients discharged per 1,000 population	150.3	144.3	159.2	167.7	169.3
Number of days of care in thousands	225,011	226,445	262,389	274,508	277,230
Rate of days of care per 1,000 population	1,174.3	1,121.6	1,227.3	1,217.0	1,217.7
Average length of stay in days	7.8	7.8	7.7	7.3	7.2
Percent of patients with surgery	138.2	139.7	141.7	52.2	53.4

¹Figures for 1980 and 1981 should be compared with caution to those of earlier years because data prior to 1979 excludes nonsurgical procedures and the following obstetrical procedures: episiotomy, artificial rupture of membranes, internal version, and outlet and low forceps delivery.

sex were smaller than for discharges mainly because the average length of stay for about 3.9 million women who were hospitalized for deliveries was only 3.7 days. This length of stay compares with an average length of stay of 7.7 days for males and 7.5 days for females who were not hospitalized for deliveries (tables 2 and 6).

The annual number of days of care per 1,000 population increased about 12 times with advancing age from 337 for patients under 15 years of age to 4,155 for patients 65 years of age and over (table 2). The much higher increase in the rate of days of care than of discharges from the youngest to the oldest age group was due to long average lengths of stay for persons 65 years of age and over (10.5 days). The average length of stay is longer for the aged because of the greater severity of illness in this group. This situation is indicated by larger proportions of older than younger patients with incapacitating chronic illness, and the highest proportion of any age group with multiple diagnoses, both of which result in long average lengths of stay and high annual rates of days of care.

The proportion of males (49 percent) and of females (52 percent) who were discharged from short-stay hospitals within 4 days of their admission were approximately equal (table 3). The percent of patients hospitalized fewer than 5 days decreased with each older age group from 74 percent for those under 15 years of age to 30 percent for patients 65 years of age and over. Conversely, the proportion of patients hospitalized for 3 weeks or longer increased from about 3 percent for the youngest age group to 11 percent for those 65 years of age and over. About 7 percent of the males and 5 percent of the females were hospitalized for at least 3 weeks.

Information on the race of patients is collected through the NHDS. Prior to 1981, race was reported as "white," "all other," and "race not stated." In 1981, however, a race was imputed for those patients whose race was not stated on the face sheet of the medical record. A brief description of the methodology used in imputing race is found in the section "Presentation of estimates" in appendix I. In this report, the race classification used is "white," "black," and "all other races."

In 1981, an estimated 32.2 million discharged patients were white, 5.0 million were black, and 1.3 million were all other races. There were some demographic differences between the race groups. The largest difference between white, black, and all other races was in the distribution of discharges by age. White patients were older than black and all other patients as a group and for both sexes (table 4). Twenty-nine percent of the white patients were 65 years of age and over, compared with 15 percent of the black patients and 14 percent of all other patients. That is, the percent of white patients that were 65 years of age and over was about twice those of patients classified as black and as all other races. Although the percents are different, a similar pattern exists in the civilian population. About 12 percent of the white population, 8 percent of the black population, and 6 percent of the population classified as all other races are 65 years of age and over.^a

The number of days of care in 1981 totaled 231.8 million for white patients, 37.5 million for black patients, and 7.9 million for all other patients (table 5). The average lengths of stay were 7.2 days for white patients, 7.5 days for black patients, and 6.1 days for all other patients (table 6).

Utilization by hospital characteristics

Discharges from short-stay hospitals by geographic region in 1981 ranged from 6.4 million in the West Region to 13.2 million in the South Region (table 7). Regional differences in the number of discharges are accounted for mainly by variations in population sizes (see appendix I, table III) and, to a lesser extent, by variations in the discharge rates.

The rates of regional discharges per 1,000 population in 1981 were 146 in the West, 159 in the Northeast, 174 in the South, and 190 in the North Central Regions (table 8). Among the geographic regions, the North Central Region had the highest discharge rate for patients 45 years of age and over. For those under 45 years of age, the differences in the discharge rates were not significantly different from those in the South. However, the number of discharges in the South Region was about the same or higher for each age and sex group as compared with the North Central Region, because the population in the South was about a fifth larger than that in the North Central Region.

Both the number and the rate per 1,000 population of days of care were lowest in the West Region. The highest number of days of care was in the South Region for most of the age and sex categories, although the highest rates were primarily in the North Central and the Northeast Regions (tables 7 and 8). The number of days of care for the total population ranged from 38.6 million in the West to 90.1 million in the South Region; the rate per 1,000 population varied from 884 days in the West Region to 1,400 days in the North Central Region.

Average lengths of stay by geographic region were 6.0 days in the West, 6.8 days in the South, 7.4 days in the North Central, and 8.5 days in the Northeast (table 9).

The number of patients discharged from short-stay hospitals and days of care by sex and age of the patients and by geographic region and bed size of the hospitals are as shown in table 7. The percent distributions of these data are shown in table B.

Discharges from short-stay hospitals for patients of all ages were about 40 percent male and 60 percent female in every hospital bed-size group. Females with deliveries accounted for about 10 percent of the discharges regardless of hospital size. However, some variation was found in the distribution of patients by age. Specifically, as the bed size of the hospital increased, the percent of patients who were 65 years of age and over decreased from 31 percent for those in the smallest hospitals to 23 percent for those in the largest hospitals. An overall increase was found in the percent of patients aged 15–44 years from the smallest to the largest hospitals. The percent of patients under 15 and 45–64 years of age showed no significant differences with increasing bed size.

Days of care by sex, age, and bed size of hospital were generally distributed in a fashion similar to discharges (table

^aThe estimates are consistent with those published in the U.S. Bureau of the Census Current Population Reports, Series P-25, Nos. 913 and 917.

Table B. Number and percent distribution of patients and days of care and average length of stay for patients discharged from short-stay hospitals by sex and age of patient, according to bed size of hospital: United States, 1981

[Discharges from non-Federal short-stay hospitals. Excludes newborn infants]

<i>Sex and age</i>	<i>Number</i>	<i>All sizes</i>	<i>6-99 beds</i>	<i>100-199 beds</i>	<i>200-299 beds</i>	<i>300-499 beds</i>	<i>500 beds or more</i>
Number of patients discharged in thousands							
All patients discharged	38,544	38,544	6,943	7,016	6,091	9,418	9,076
Sex		Percent distribution					
Both sexes	38,544	100.0	100.0	100.0	100.0	100.0	100.0
Male	15,379	39.9	39.2	39.6	40.2	41.0	39.4
Female including deliveries	23,165	60.1	60.8	60.4	59.8	59.0	60.6
Female excluding deliveries	19,252	49.9	52.5	50.4	49.8	49.1	48.7
Age							
All ages	38,544	100.0	100.0	100.0	100.0	100.0	100.0
Under 15 years	3,733	9.7	8.7	11.9	9.8	8.7	9.6
15-44 years	15,725	40.8	38.8	40.1	40.0	40.8	43.4
45-64 years	8,677	22.5	21.3	21.3	21.7	23.5	23.9
65 years and over	10,408	27.0	31.1	26.6	28.6	27.0	23.1
Number of days of care in thousands							
All days of care	277,230	277,230	40,911	46,580	43,925	72,175	73,639
Sex		Percent distribution					
Both sexes	277,230	100.0	100.0	100.0	100.0	100.0	100.0
Male	117,789	42.5	40.0	42.5	42.2	42.9	43.7
Female including deliveries	159,441	57.5	60.0	57.5	57.8	57.1	56.3
Female excluding deliveries	144,926	52.3	55.6	52.3	53.0	52.0	50.3
Age							
All ages	277,230	100.0	100.0	100.0	100.0	100.0	100.0
Under 15 years	17,270	6.2	4.9	7.5	6.3	4.9	7.4
15-44 years	81,379	29.4	28.3	29.1	26.9	29.3	31.5
45-64 years	69,492	25.1	22.7	23.9	23.5	25.8	27.3
65 years and over	109,038	39.3	44.0	39.5	43.3	39.9	33.8
Average length of stay in days							
Total	7.2	7.2	5.9	6.6	7.2	7.7	8.1
Sex							
Male	7.7	7.7	6.0	7.1	7.6	8.0	9.0
Female including deliveries	6.9	6.9	5.8	6.3	7.0	7.4	7.5
Female excluding deliveries	7.5	7.5	6.2	6.9	7.7	8.1	8.4
Age							
Under 15 years	4.6	4.6	3.3	4.2	4.6	4.3	6.2
15-44 years	5.2	5.2	4.3	4.8	4.9	5.5	5.9
45-64 years	8.0	8.0	6.3	7.4	7.8	8.4	9.3
65 years and over	10.5	10.5	8.3	9.9	10.9	11.3	11.9

B). However, a smaller percent of days of care than of discharges was recorded for patients aged 15-44 years. For patients 45 years and over a larger percent of days of care than of discharges was recorded. The differences for those aged 15-44 years were the result of short lengths of stay for females with deliveries. However, for those over 45 years of age the differences were the result of the older patients being hospitalized longer than those under 45 years of age.

The average length of stay for patients discharged from short-stay hospitals in 1981 increased steadily from 5.9 days in the smallest hospitals (6-99 beds) to 8.1 days in the largest hospitals (500 beds or more) (table B). The average length of

stay was slightly longer for males than for females in all hospitals; however, when females who were hospitalized for deliveries are excluded, the average lengths of stay for both sexes were virtually the same except for patients under 15 years of age. The average length of stay increased as the age of the patients increased regardless of the size of the hospital.

Some exceptions to these patterns in the average length of stay existed among regions as shown in table 10. For example, the average length of stay did not increase with increasing bed size for female patients 15-44 years of age in the Northeast Region.

Approximately 7 out of 10 patients in non-Federal short-

stay hospitals were discharged from voluntary nonprofit hospitals operated by church and other nonprofit groups during every year the NHDS was conducted. In 1981, voluntary nonprofit hospitals provided medical care to an estimated 27.2 million patients, or 71 percent of all patients hospitalized. Hospitals operated by State and local governments cared for 8.3 million patients, or 22 percent of all discharges, and proprietary hospitals operated for profit cared for 3.0 million patients, or 8 percent of all discharges (table 11).

The estimated 277.2 million days of care utilized by patients in short-stay hospitals during 1981 were distributed by ownership of hospitals in the following manner: voluntary nonprofit, 200.2 million days, or 72 percent; government, 54.6 million days, or 20 percent; and proprietary, 22.4 million days, or 8 percent. Average lengths of stay were 7.4 days in voluntary nonprofit hospitals, 6.6 days in government hospitals, and 7.4 days in proprietary hospitals (table 12).

Utilization by diagnosis

First-listed diagnosis—Diseases of the circulatory system ranked first in 1981 among the ICD-9-CM diagnostic classes as a principal or first-listed diagnosis among patients discharged from non-Federal short-stay hospitals (table 13). These conditions accounted for an estimated 5.3 million discharges. Other

leading ICD-9-CM diagnostic classes were diseases of the digestive system (4.7 million discharges); supplementary classifications, which include females with deliveries (4.6 million discharges); injury and poisoning (3.6 million discharges); diseases of the genitourinary system (3.5 million discharges); and diseases of the respiratory system (3.5 million discharges). About two-thirds of the patients discharged from non-Federal short-stay hospitals were included in these six ICD-9-CM diagnostic classes.

The diagnostic categories presented in this summary report were selected either because they appear as principal or first-listed diagnoses with great frequency or because the conditions are of special interest. Although many of these categories such as malignant neoplasms, heart disease, psychoses, and fractures all sites are combinations of more detailed diagnoses, they are presented as single categories without showing the specific diagnostic inclusions.

The number and rate of discharges, days of care, and average length of stay by selected first-listed diagnoses in 1981, including females with deliveries, are presented in table C. These categories accounted for 48 percent of all patients discharged during 1981 and include the most frequent first-listed diagnoses for each sex, age, race, region, and bed-size group. The most common first-listed diagnosis for most of these groups, as well as for all patients, was females with deliveries.

Table C. Number and rate of patients and days of care for patients discharged from short-stay hospitals and average length of stay, by selected first-listed diagnostic categories: United States, 1981

[Discharges from non-Federal short-stay hospitals. Excludes newborn infants. Diagnostic groupings and code number inclusions are based on the *International Classification of Diseases, 9th Revision, Clinical Modification*]

Diagnostic category and ICD-9-CM code	Discharged patients		Days of care		Average length of stay in days
	Number in thousands	Rate per 1,000 population	Number in thousands	Rate per 1,000 population	
All conditions ¹	38,544	169.3	277,230	1,217.7	7.2
Females with deliveries..... V27	3,913	17.2	14,515	63.8	3.7
Normal deliveries ²	1,818	8.0	5,346	23.5	2.9
Complicated deliveries ²	2,095	9.2	9,169	40.3	4.4
Heart disease..... 391-392.0, 393-398, 402, 404, 410-416, 420-429	3,339	14.7	30,926	135.8	9.3
Acute myocardial infarction..... 410	465	2.0	5,548	24.4	11.9
Atherosclerotic heart disease..... 414.0	554	2.4	5,329	23.4	9.6
Other ischemic heart disease..... 411-413, 414.1-414.9	841	3.7	6,125	26.9	7.3
Cardiac dysrhythmias..... 427	439	1.9	3,376	14.8	7.7
Malignant neoplasms..... 140-208	1,949	8.6	22,765	100.0	11.7
Fractures, all sites..... 800-829	1,138	5.0	12,082	53.1	10.6
Cerebrovascular disease..... 430-438	806	3.5	10,014	44.0	12.4
Pneumonia, all forms..... 480-486	769	3.4	6,597	29.0	8.6
Diabetes mellitus..... 250	655	2.9	6,369	28.0	9.7
Benign neoplasms, carcinoma-in-situ, and neoplasms of uncertain behavior..... 210-239	634	2.8	3,848	16.9	6.1
Noninfectious enteritis and colitis..... 555-558	597	2.6	3,229	14.2	5.4
Psychoses..... 290-299	569	2.5	8,923	39.2	15.7
Arthropathies and related disorders..... 710-719	568	2.5	5,162	22.7	9.1
All abortions, including ectopic and molar pregnancies..... 630-639	516	2.3	1,122	4.9	2.2
Cataract..... 366	506	2.2	1,691	7.4	3.3
Cholelithiasis..... 574	482	2.1	4,609	20.2	9.6
Inguinal hernia..... 550	481	2.1	2,191	9.6	4.6
Chronic disease of tonsils and adenoids..... 474	449	2.0	832	3.7	1.9
Alcohol dependence syndrome..... 303	446	2.0	4,655	20.4	10.4
Diseases of the central nervous system..... 320-336, 340-349	432	1.9	4,614	20.3	10.7
Asthma..... 493	418	1.8	2,417	10.6	5.8

¹Includes data for diagnostic conditions not shown in table.

²See appendix for definition.

Excluding this category, the two most frequent first-listed diagnoses were heart disease and malignant neoplasms for all groups except patients under 45 years of age and patients in the smallest hospitals (6–99 beds).

For patients under 15 years of age, the most frequent first-listed diagnosis was chronic disease of tonsils and adenoids. Some other frequent diagnoses for these patients were pneumonia, all forms, diseases of the ear and mastoid process, and noninfectious enteritis and colitis.

Excluding females with deliveries, the two most frequent first-listed diagnoses for patients 15–44 years of age were all abortions, including ectopic and molar pregnancies, and fractures, all sites.

The most frequent first-listed diagnosis, besides deliveries, for patients other than white was heart disease. Other common diagnoses for this group included malignant neoplasms, all abortions, including ectopic and molar pregnancies, diabetes mellitus, and fractures, all sites.

For hospitals with 6–99 beds, the most common first-listed diagnosis was heart disease, followed by females with deliveries. Other frequent diagnoses in these hospitals were pneumonia, all forms, and fractures, all sites.

The number and rate of patients discharged from short-stay hospitals and average length of stay, by ICD–9–CM diagnostic classes and selected categories, are presented by age for 1981 in table 13. Although the estimated rates of discharge from short-stay hospitals generally increased as the age of the patients increased, especially for patients 15 years of age and over, some decreases were observed. For example, decreases in rates between the two oldest age groups (45–64 years and 65 years and over) occurred for the categories of alcohol dependence syndrome, calculus of kidney and ureter, intervertebral disc disorders, and sprains and strains of back (including neck). Moreover, the rates generally decreased with increasing age for the categories of chronic disease of tonsils and adenoids and disorders of menstruation and other abnormal bleeding.

The average length of stay increased with increasing age, especially for patients 15 years of age and over, for most classes and categories of diagnoses. Overall, it tended to be higher for mental disorders (especially psychoses), cerebrovascular disease, and malignant neoplasms. Other average lengths of stay over 10 days were for diseases of the central nervous system and acute myocardial infarction for patients 45 years and over, and fractures all sites for patients 65 years and over. Short average lengths of stay occurred for patients under 45 years with a first-listed diagnosis of chronic disease of tonsils and adenoids and for patients 15–44 years who are admitted for abortions, including ectopic and molar pregnancies, and sterilization.

Data on discharges and average length of stay for patients discharged from short-stay hospitals by sex and race are presented by diagnostic classes and selected categories of first listed diagnosis in table 14. Discharge rates were computed for sex but not for race. Discharge rates by race, however, may be computed using population information found in appendix I.

Rates of discharges per 10,000 population were very similar for the two sexes for most of the diagnostic classes and categories shown. However, males had significantly higher rates than females for the categories of alcohol dependence syndrome, acute myocardial infarction, other ischemic heart disease, inguinal hernia, calculus of kidney and ureter, intracranial injuries (excluding those with skull fracture), and lacerations and open wounds. For females, higher rates occurred for the categories of benign neoplasms, carcinoma in situ, and neoplasms of uncertain behavior, diabetes mellitus, essential hypertension, noninfectious enteritis and colitis, cholelithiasis, arthropathies and related disorders, and persons admitted for sterilization.

Eighty-four percent of all the patients discharged were white and 16 percent were all other races (including black); however, the racial distribution of patients for some diagnostic categories was significantly different from that of all patients. For example, the percents were higher for white patients who were discharged with a first-listed diagnosis of heart disease (90 percent) and lower for those with a diagnosis of abortion, including molar and ectopic pregnancy, and delivery (66 and 77 percent).

Information on patients discharged from short-stay hospitals by geographic region are as shown in table 15. In 1981, the number of discharges per 1,000 population ranged from 146 in the West Region to 190 in the North Central Region. The diagnostic categories for which variations in the rates were the largest were malignant neoplasms, alcohol dependence syndrome, heart disease, and females with deliveries.

During 1981, the number of patients discharged from short-stay hospitals and the average length of stay are shown by bed size of hospital and diagnostic category in table 16. Females with deliveries ranked as the highest category for first-listed diagnosis in hospitals of all bed sizes except the smallest. In hospitals of 6–99 beds, the highest ranking diagnostic category was that of heart disease.

The proportions of some diagnostic conditions treated in hospitals varied according to the size of the hospital. Greater proportions of patients were treated in the smallest hospitals (6–99 beds) for diseases of the respiratory system (table D). On the other hand, greater proportions of discharges were from the largest hospitals (500 beds or more) for neoplasms, complications of pregnancy, childbirth and the puerperium, congenital anomalies, certain conditions originating in the perinatal period, and supplemental classifications.

For the most part, the average length of stay for the diagnostic classes and categories followed the same patterns as the overall average lengths of stay for each region and bed size of hospital. That is, short hospital stays were more common in the West; long stays occurred more frequently in the Northeast Region. Similarly, the average length of stay generally increased as the size of the hospital increased. An exception to this occurred for the diagnostic category alcohol dependence syndrome. For this diagnosis, the longest average lengths of stay were in hospitals with 100–199 beds (15.5 days) and 200–299 beds (13.6 days).

All-listed diagnoses—An estimated 94.4 million diagnoses

Table D. Percent distribution of patients discharged from short-stay hospitals by bed size of hospital, according to diagnosis, 1981

[Discharges from non-Federal short-stay hospitals. Excludes newborn infants. Diagnostic groupings and code number inclusions are based on the *International Classification of Diseases, 9th Revision, Clinical Modification*]

Diagnostic class and ICD-9-CM code	Percent distribution					
	All sizes	6-99 beds	100-199 beds	200-299 beds	300-499 beds	500 beds or more
All conditions	100.0	18.0	18.2	15.8	24.4	23.5
1. Infectious and parasitic diseases 001-139	100.0	18.9	21.6	15.2	23.2	21.1
2. Neoplasms 140-239	100.0	9.4	14.0	15.5	27.2	34.0
3. Endocrine, nutritional, and metabolic diseases, and immunity disorders 240-279	100.0	20.4	18.2	15.9	24.1	21.4
4. Diseases of the blood and blood-forming organs 280-289	100.0	19.6	16.9	15.4	26.2	22.0
5. Mental disorders 290-319	100.0	20.9	16.7	12.4	27.4	22.6
6. Diseases of the nervous system and sense organs 320-389	100.0	11.2	18.8	16.4	27.4	26.2
7. Diseases of the circulatory system 390-459	100.0	19.2	17.2	17.4	24.3	22.0
8. Diseases of the respiratory system 460-519	100.0	25.4	20.0	15.8	21.4	17.4
9. Diseases of the digestive system 520-579	100.0	21.6	19.2	15.8	24.0	19.4
10. Diseases of the genitourinary system 580-629	100.0	16.4	21.0	15.7	24.4	22.5
11. Complications of pregnancy, childbirth, and the puerperium ¹ 630-676	100.0	13.9	18.2	13.7	23.6	30.6
12. Diseases of the skin and subcutaneous tissue 680-709	100.0	21.2	17.7	13.0	24.7	23.3
13. Diseases of the musculoskeletal system and connective tissue 710-739	100.0	16.7	17.5	16.0	25.6	24.2
14. Congenital anomalies 740-759	100.0	9.2	18.0	14.2	21.1	37.5
15. Certain conditions originating in the perinatal period 760-779	100.0	7.6	16.4	17.7	20.3	38.1
16. Symptoms, signs, and ill-defined conditions 780-799	100.0	20.7	17.4	16.6	23.2	22.2
17. Injury and poisoning 800-999	100.0	19.4	18.1	16.6	24.4	21.5
Supplementary classifications V01-V82	100.0	14.9	18.0	15.4	23.7	28.0

¹Females with deliveries are included under "Supplementary classifications."

were recorded for the 38.5 million inpatients of non-Federal short-stay hospitals in 1981 (table 17) for an average of 2.4 diagnoses per discharged patient. The average number of diagnoses per discharge increased from years prior to 1979 because of changes that were made in the way data are tabulated. Starting in 1979, up to seven diagnoses per discharge are now coded and tabulated on the NHDS data file; prior to that time, up to five diagnoses were coded. In addition, the ICD-9-CM, which is the classification scheme used for coding medical data since 1979, has inherent in it a certain amount of "double coding"; the classification used prior to 1979 does not. For example, females with deliveries all receive one additional diagnostic code that indicates the outcome of their delivery (single liveborn; twins, both liveborn; and so forth), however, this was not the case prior to 1979.

The average number of diagnoses per discharge varied only slightly by sex and race of the patient and by region and bed size of the hospital. For each of these categories, the average was 2.3-2.5 diagnoses per patient. A larger variation occurred by age. The average number of diagnoses per discharge for the age groups under 15 years, 15-44 years, 45-64 years, and 65 years and over was 1.7, 2.0, 2.6, and 3.1, respectively.

Diseases of the circulatory system ranked first among the ICD-9-CM diagnostic classes for all-listed diagnoses, with 17.4 million diagnoses. This class was followed by diseases of the digestive system (8.9 million); supplementary classifications (7.8 million); diseases of the genitourinary system (7.7 million); diseases of the respiratory system (6.8 million); and injury and poisoning (6.5 million). These six ICD-9-CM classes accounted for almost 60 percent of all-listed diagnoses in 1981.

Utilization by procedures

One or more procedures were performed for an estimated 20.6 million of the 38.5 million inpatients discharged from short-stay hospitals during 1981. A total of 33.6 million procedures, or an average of 1.6 per patient who underwent at least one procedure, were recorded in 1981 (table 18).

These figures are higher than those reported prior to 1979 because changes were made in the tabulation and coding of data for the NHDS that resulted in the reporting of a greater number of procedures. Beginning in 1979 more procedures, in terms of both number per patient and type of procedure, were coded. Specifically, starting in 1979 up to four procedures, instead of only three, were coded for each discharge. Furthermore, only figures for "surgical" operations were published in the past. However, since 1979 the total number includes many additional nonsurgical procedures. (See appendix I under the section entitled "Medical coding and edit" and appendix II under the section entitled "Terms relating to procedures" for more information on the differences between coding the ICDA and the ICD-9-CM.)

The number and percent of patients with surgical and non-surgical procedures in 1981 and the number and percent of patients with at least one surgical procedure are as shown in table E. About 53 percent of the patients discharged had some procedure, including diagnostic and nonsurgical procedures. Some variations in the proportions, however, occurred by age and sex of the patient, geographic region, and bed size of the hospital. Patients 15-44 years of age had the highest proportion of all the age groups with procedures (63 percent). Women had more procedures than men (56 percent compared with 49

Table E. Number of patients discharged from short-stay hospitals with and without procedures and percent with procedures, by age, sex, and race of patient and geographic region and bed size of hospital: United States, 1981

[Discharges from non-Federal short-stay hospitals. Excludes newborn infants]

Characteristic	All discharged patients	Patients without procedures	Patients with procedures			
			All patients	Patients with surgical procedures ¹	All patients	Patients with surgical procedures ¹
			Number in thousands		Percent	
All patients	38,544	17,975	20,569	17,441	53.4	45.2
Age						
Under 15 years	3,733	2,099	1,634	1,394	43.8	37.4
15-44 years	15,725	5,859	9,866	8,908	62.7	56.7
45-64 years	8,677	4,090	4,588	3,655	52.9	42.1
65 years and over	10,408	5,928	4,480	3,483	43.0	33.5
Sex						
Male	15,379	7,813	7,566	6,089	49.2	39.6
Female	23,165	10,162	13,003	11,352	56.1	49.0
Race						
White	32,242	15,035	17,207	14,584	53.4	45.2
Black	5,004	2,389	2,617	2,208	52.3	44.1
All other	1,298	552	746	649	57.5	50.0
Geographic region						
Northeast	7,822	3,383	4,439	3,638	56.7	46.5
North Central	11,132	5,145	5,987	5,103	53.8	45.8
South	13,202	6,667	6,535	5,542	49.5	42.0
West	6,388	2,780	3,608	3,158	56.5	49.4
Bed size of hospital						
6-99 beds	6,943	4,508	2,434	2,142	35.1	30.9
100-199 beds	7,016	3,353	3,662	3,095	52.2	44.1
200-299 beds	6,091	2,797	3,294	2,807	54.1	46.1
300-499 beds	9,418	4,047	5,371	4,556	57.0	48.4
500 beds or more	9,076	3,269	5,807	4,841	64.0	53.3

¹Excludes nonsurgical procedures.

percent), primarily because of those relating to childbirth. The proportion of patients with one or more procedures increased with the size of the hospital, from 35 percent in hospitals with 6-99 beds to almost 64 percent in hospitals with 500 beds or more.

Six out of 10 patients (58 percent) with procedures had only one operation or nonsurgical procedure during their hospitalization (table F). About 26 percent of the patients had two procedures, about 9 percent had three, and about 6 percent had four or more. By age, patients under 15 years of age had the lowest proportion of multiple procedures (32 percent) and those 45-64 and 65 years of age and over had the largest proportion (48 and 49 percent, respectively). About 36 percent of the patients discharged from the smallest hospitals had more than one procedure; about 40 percent of the patients discharged from hospitals of all other sizes had two or more procedures during their hospitalization.

The percent of patients with surgical procedures (i.e., all procedures except nonsurgical—see appendix II) by number of procedures are as shown in table F. About two-thirds (66 percent) of the patients with surgical procedures had only one, 24 percent had two, and 10 percent had three or more.

Procedures are grouped in the detailed tables of this report by the 16 major ICD-9-CM groups. Selected procedures within these groups are presented by specific categories within the detailed tables as well as in the text tables. Some of these categories such as repair of inguinal hernia, prostatectomy, and hysterectomy are presented as single categories although they may be divided into more precise subgroups.

Operations on the digestive system ranked first among the surgical and nonsurgical procedures (5.6 million) performed during 1981. These were followed by miscellaneous diagnostic and therapeutic procedures (4.8 million), operations on the female genital organs (4.2 million), obstetrical procedures (3.9 million), and operations on the musculoskeletal system (3.4 million). Over three-fifths (65 percent) of the procedures performed in 1981 were included in these five major groups.

The number and rate of all-listed procedures in 1981 by selected ICD-9-CM categories are shown in table G. The categories presented in this table include procedures that were performed frequently during the year. Many of the procedures included in this table are diagnostic and nonsurgical procedures that have been unpublished by the NHDS prior to 1979 such as endoscopy on the digestive system, cystoscopy and urethros-

Table F. Percent distribution of patients discharged from short-stay hospitals by number of procedures, according to age, sex, and race of patient and geographic region and bed size of hospital: United States, 1981

[Discharges from non-Federal short-stay hospitals. Excludes newborn infants]

<i>Characteristic</i>	<i>All discharged patients with procedures</i>	<i>1 procedure</i>	<i>2 procedures</i>	<i>3 procedures</i>	<i>4 procedures or more¹</i>
Percent distribution					
All patients	100.0	58.1	26.3	9.5	6.1
Age					
Under 15 years	100.0	67.6	24.0	5.6	2.8
15-44 years	100.0	62.7	24.7	8.2	4.4
45-64 years	100.0	51.7	28.2	11.7	8.4
65 years and over	100.0	51.0	29.0	11.3	8.6
Sex					
Male	100.0	56.5	26.7	9.6	7.1
Female	100.0	59.0	26.1	9.4	5.5
Race					
White	100.0	57.5	26.7	9.7	6.2
Black	100.0	60.7	24.4	8.8	6.1
All other	100.0	62.9	25.0	7.5	4.5
Geographic region					
Northeast	100.0	59.6	25.3	8.8	6.2
North Central	100.0	56.4	26.5	10.2	6.9
South	100.0	57.7	26.7	9.8	5.9
West	100.0	60.0	26.8	8.4	4.9
Bed size of hospital					
6-99 beds	100.0	63.7	23.3	8.0	5.0
100-199 beds	100.0	58.6	25.2	9.4	5.8
200-299 beds	100.0	57.3	27.2	9.6	5.8
300-499 beds	100.0	58.2	27.1	9.1	5.6
500 beds or more	100.0	55.8	26.5	10.3	7.3
Patients with surgical procedures ²	100.0	66.0	24.0	7.1	2.9

¹A maximum of four procedures was coded for each patient discharged.

²Excludes nonsurgical procedures.

copy, arteriography and angiocardiology using contrast material, and radioisotope scan. Over one-half million of each of these procedures were performed during 1981.

Data for the more traditional leading surgical operations are as shown in table G. Some of the most frequently performed surgeries, of which 500,000 or more were performed in 1981, included diagnostic dilation and curettage of uterus, excision or destruction of lesion or tissue of skin or subcutaneous tissue, hysterectomy, bilateral destruction or occlusion of fallopian tubes, cesarean section, and repair of inguinal hernia.

The estimated 33.6 million procedures performed in 1981 are presented for the ICD-9-CM major groups and selected categories, by sex and race, and for persons 15 years of age and over in table 18. The corresponding rates by sex and for the age group 15 years of age and over are as shown in table 19.

Of the 33.6 million procedures performed during 1981, about 12.7 million were for males and 21.0 million were for females. The corresponding rates per 1,000 population were 148 for both sexes, 115 for males, and 178 for females. Of

the procedures shown in table 18, the most common ones for males were repair of inguinal hernia and prostatectomy. For females, the most frequently performed procedures were diagnostic dilation and curettage of uterus, hysterectomy, bilateral destruction or occlusion of fallopian tubes, and cesarean section.

Generally, the percent distribution of total procedures for white patients was similar to that for all other patients (including black patients). However, all other patients had larger proportions than white patients for operations on the female genital organs and obstetrical procedures.

The rate of procedures per 1,000 population increased with advancing age from 46 for patients under 15 years to 303 for patients 65 years of age and over (table H). Except for females 15-44 years of age, the rates for both sexes also increased as age increased. The rate for females 15-44 years of age was higher than that for females 45-64 years of age because of the large number of females 15-44 years of age operated on for obstetrical and gynecological conditions.

The number of procedures for patients discharged from short-stay hospitals by procedure category and geographic re-

Table G. Number and rate of all-listed procedures for patients discharged from short-stay hospitals, by selected procedure categories: United States, 1981

[Discharges from non-Federal hospitals. Excludes newborn infants. Procedure groupings and code number inclusions are based on the *International Classification of Diseases, 9th Revision, Clinical Modification*]

Procedure category and ICD-9-CM code	Procedures	
	Number in thousands	Rate per 100,000 population
All procedures	33,635	14,774.4
Surgical procedures ¹	25,624	11,255.6
Nonsurgical procedures ¹	8,011	3,518.9
Procedures to assist delivery	2,501	1,098.7
Endoscopy of the digestive system	1,453	638.3
Biopsy ¹	1,412	620.4
Endoscopy of the urinary system through natural orifice	856	376.1
Diagnostic dilation and curettage of uterus	833	366.1
Excision or destruction of lesion or tissue of skin or subcutaneous tissue	725	318.4
Cesarean section	702	308.2
Hysterectomy	673	295.9
Arteriography and angiocardiology by using contrast material	669	293.7
Bilateral destruction or occlusion of fallopian tubes	647	284.2
Radioisotope scan	587	257.6
Extraction of lens	540	237.4
Repair of inguinal hernia	517	227.1
Cholecystectomy	482	211.6
Oophorectomy and salpingo-oophorectomy	480	210.8
Pyelogram	465	204.2
Tonsillectomy with or without adenoidectomy	457	200.6
Repair of current obstetric laceration	439	192.7
Arthroplasty of joints	431	189.2
Diagnostic ultrasound	426	187.2
Computerized axial tomography (C.A.T. scan)	424	186.3
Cardiac catheterization	414	181.7
Operations on muscles, tendons, fascia, and bursa	408	179.3
Open reduction of fracture	359	157.6
Prostatectomy	348	152.9
Contrast myelogram	328	144.0
Appendectomy, excluding incidental	312	137.0
Insertion of prosthetic lens (pseudophakos)	297	130.4
Dilation and curettage of uterus after delivery or abortion	295	129.6

¹ See appendix II for ICD-9-CM codes in this category.

Table H. Number and rate of all-listed procedures for patients discharged from short-stay hospitals, by sex and age of patient: United States, 1981

[Discharges from non-Federal short-stay hospitals. Excludes newborn infants]

Age	Both sexes	Male	Female
Number of procedures in thousands			
All ages	33,635	12,658	20,978
Under 15 years	2,348	1,368	980
15-44 years	15,217	3,785	11,433
45-64 years	8,111	3,679	4,432
65 years and over	7,959	3,826	4,133
Rate per 1,000 population			
All ages	147.7	115.2	178.2
Under 15 years	45.8	52.5	39.1
15-44 years	143.9	72.7	212.9
45-64 years	182.5	174.2	190.1
65 years and over	303.2	362.3	263.4

gion is presented in table 20 and the corresponding rates are shown in table 21. The rate of procedures per 1,000 population was lowest in the West Region (131) and highest in the North Central Region (171). Rates were highest in all regions for operations on the digestive system, operations on the female genital organs, obstetrical procedures, operations on the musculoskeletal system, and miscellaneous diagnostic and therapeutic procedures.

The number of procedures patients underwent in short-stay hospitals during 1981 for each ICD-9-CM category by bed size of hospital where the procedure was performed are as shown in table 22. Except for the largest hospitals, operations on the digestive system were observed to rank highest of all-listed procedures for all hospital bed-size groups and operations on the female genital organs ranked next. The most common procedures for hospitals of 500 beds or more were miscellaneous diagnostic and therapeutic procedures, followed by operations on the digestive system and operations on the female genital organs.

Table J. Percent distribution of all-listed procedures for patients discharged from short-stay hospitals by bed size of hospital, according to procedure category: United States, 1981

[Discharges from non-Federal short-stay hospitals. Excludes newborn infants. Procedure groupings and code number inclusions are based on the *International Classification of Diseases, 9th Revision, Clinical Modification*]

Procedure category and ICD-9-CM code	All sizes	6-99 beds	100-199 beds	200-299 beds	300-499 beds	500 beds or more
Percent distribution						
All procedures	100.0	11.2	17.7	16.1	25.9	29.2
Operations on the nervous system 01-05	100.0	7.0	17.2	14.5	24.8	36.5
Operations on the endocrine system 06-07	100.0	6.7	13.5	15.4	30.8	32.7
Operations on the eye 08-16	100.0	8.9	19.4	16.1	30.1	25.6
Operations on the ear 18-20	100.0	5.0	19.8	19.8	28.5	26.9
Operations on the nose, mouth, and pharynx 21-29	100.0	13.7	18.8	17.4	27.1	23.0
Operations on the respiratory system 30-34	100.0	5.7	13.8	16.6	28.1	35.7
Operations on the cardiovascular system 35-39	100.0	2.8	9.5	17.4	29.0	41.4
Operations on the hemic and lymphatic system 40-41	100.0	6.7	13.1	13.1	30.0	37.0
Operations on the digestive system 42-54	100.0	13.0	19.1	17.3	25.2	25.5
Operations on the urinary system 55-59	100.0	9.8	19.3	16.8	28.0	26.1
Operations on the male genital organs 60-64	100.0	11.6	20.9	16.8	26.6	24.1
Operations on the female genital organs 65-71	100.0	13.6	20.7	15.3	23.4	26.9
Obstetrical procedures 72-75	100.0	13.1	16.8	14.3	24.9	30.9
Operations on the musculoskeletal system 76-84	100.0	14.0	17.1	17.2	26.0	25.7
Operations on the integumentary system 85-86	100.0	17.3	16.6	15.6	24.8	25.7
Miscellaneous diagnostic and therapeutic procedures 87-99	100.0	6.4	16.7	14.9	25.7	36.4

The percent distributions of the major groups of procedures by bed size of hospital are as shown in table J. Hospitals with 300 beds or more treated an estimated 48 percent of the patients hospitalized during 1981, but they performed about 55 percent of the operations. Procedures for which large percents

were performed in hospitals with 300 beds or more were operations on the cardiovascular system (70 percent), on the hemic and lymphatic system (67 percent), on the respiratory system (64 percent), and on the endocrine system (64 percent).