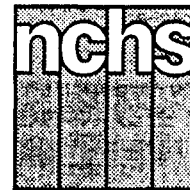


# Advance Data



From Vital and Health Statistics of the CENTERS FOR DISEASE CONTROL AND PREVENTION/National Center for Health Statistics

## 1991 Summary: National Hospital Discharge Survey

by Edmund J. Graves, Division of Health Care Statistics

### Introduction

During 1991, an estimated 31.1 million inpatients, excluding newborn infants, were discharged from short-stay non-Federal hospitals in the United States. These patients used 199.1 million days of inpatient hospital care. The discharge rate was 124.1 discharges per 1,000 civilian population and the average length of stay was 6.4 days.

These and other statistics presented in this report are based on data collected by means of the National Hospital Discharge Survey (NHDS), a continuous survey that has been conducted by the National Center for Health Statistics (NCHS) since 1965. In 1991, data were abstracted from the medical records of approximately 274,000 patients discharged from 484 short-stay non-Federal hospitals. Beginning in 1988, a new three-stage stratified

sample design was put in operation. A brief description of the new design, data collection procedures, and estimation process and definitions of terms used in this report can be found in the section entitled "Technical notes." A description of the development and design of the original NHDS, which was in operation from 1965 to 1987, has been published (1). Differences may exist between data for 1988-91 and earlier years because of the redesign of the survey.

Medical data for hospitalized patients are coded according to the *International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM)* (2). Up to seven diagnoses and four procedures are coded for each discharge. Although diagnoses included in the ICD-9-CM section entitled "Supplementary classification of external causes of injury and poisoning" (codes

E800-E999) are used in the NHDS, these diagnoses are excluded from this report. The conditions diagnosed and procedures performed are presented here by chapter of ICD-9-CM. Within these chapters, a few diagnoses and procedures or groups thereof also are shown. These specific categories were selected primarily because of their large estimates or because they are of special interest. More detailed analyses of NHDS data are published in Series 13 of the NCHS *Vital and Health Statistics* reports.

Starting in 1985, some hospitals participating in the NHDS have submitted machine-readable data tapes. In 1991, approximately 33 percent of the hospitals used this method to submit data. Analysis indicates that a greater number of nonsurgical procedures per patient are recorded from these hospitals

### Acknowledgments

This report was prepared in the Division of Health Care Statistics. Jean Kozak of the Hospital Care Statistics Branch, provided technical assistance in developing the style and content of this report. George Wolfe of the Technical Services Branch, provided assistance in producing estimates of reliability. Dorothy Graham of the Technical Services Branch verified the estimates in the report and Charles Adams and Malcolm Graham of the Technical Services Branch provided advice on the computer programming aspects of the report. This report was edited by Klaudia Cox and typeset by Jacqueline M. Davis of the Publications Branch, Division of Data Services.



U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES  
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Centers for Disease Control and Prevention  
National Center for Health Statistics



**Table 1. Number of inpatients discharged from short-stay hospitals by selected characteristics: United States, 1991**

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

<i>Selected characteristic</i>	<i>Both sexes</i>	<i>Male</i>	<i>Female</i>
Number of patients discharged in thousands			
Total . . . . .	31,098	12,478	18,620
Age			
Under 15 years . . . . .	2,498	1,435	1,064
15-44 years . . . . .	11,620	3,248	8,372
45-64 years . . . . .	6,173	3,088	3,085
65 years and over . . . . .	10,806	4,708	6,098
Region			
Northeast . . . . .	7,153	3,047	4,106
Midwest . . . . .	7,315	2,995	4,321
South . . . . .	11,290	4,418	6,871
West . . . . .	5,340	2,018	3,322

**Table 2. Rate of inpatients discharged from short-stay hospitals, by age, geographic region, and sex: United States, 1991**

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

<i>Age and region</i>	<i>Both sexes</i>	<i>Male</i>	<i>Female</i>
Rate of patients discharged per 1,000 population			
Total . . . . .	124.1	102.7	144.3
Age			
Under 15 years . . . . .	45.3	50.8	39.5
15-44 years . . . . .	99.3	55.9	142.1
45-64 years . . . . .	132.2	137.5	127.2
65 years and over . . . . .	340.3	368.1	321.6
Region			
Northeast . . . . .	140.6	124.7	155.3
Midwest . . . . .	121.7	102.8	139.6
South . . . . .	131.2	106.6	154.0
West . . . . .	99.7	76.1	122.9

**Table 3. Average length of stay for inpatients discharged from short-stay hospitals by selected characteristics: United States, 1991**

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

<i>Selected characteristic</i>	<i>Both sexes</i>	<i>Male</i>	<i>Female</i>
Average length of stay in days			
Total . . . . .	6.4	7.0	6.0
Age			
Under 15 years . . . . .	4.8	4.9	4.8
15-44 years . . . . .	4.6	6.4	4.0
45-64 years . . . . .	6.5	6.5	6.5
65 years and over . . . . .	8.6	8.3	8.8
Region			
Northeast . . . . .	7.3	7.6	7.1
Midwest . . . . .	6.5	6.9	6.2
South . . . . .	6.2	6.8	5.8
West . . . . .	5.4	6.3	4.8

than from hospitals submitting data in the traditional manual mode (see "Technical notes"). A portion of the increases from 1984 to 1991 in the estimates for miscellaneous diagnostic and therapeutic procedures and, therefore, for total procedures may be due to this change in data collection methods.

In addition, the 1991 data were the first for which all ICD-9-CM procedure codes were used in the NHDS. In previous years, selected codes were excluded. These were primarily codes for certain miscellaneous diagnostic and therapeutic procedures.

## Data highlights

### Utilization by patient and hospital characteristics

The number, rate, and average length of stay of patients discharged from short-stay non-Federal hospitals are shown by age, geographic region, and sex in tables 1-3. The 31.1 million patients discharged from short-stay hospitals during 1991 comprised an estimated 12.5 million males and 18.6 million females. The rate per 1,000 population for females was 144, which was 41 percent higher than the rate of 103 for males. The number and rate of discharges are higher for females than for males largely because of women 15-44 years of age who are hospitalized for deliveries and pregnancy-related conditions.

The average length of stay was 7.0 days for males and 6.0 days for females during 1991. The average length of stay of the 4.0 million women who were hospitalized for deliveries was 2.8 days. The average length of stay was 4.8 days for patients under 15 years of age, 4.6 days for patients 15-44 years of age, 6.5 days for patients 45-64 years of age, and 8.6 days for patients 65 years of age and over.

The number of discharges from short-stay hospitals by geographic region during 1991 ranged from 11.3 million in the South to 5.3 million in the West. Regional differences in the number of discharges are accounted

for in part by variations in the population sizes. The rates per 1,000 population ranged from 141 in the Northeast Region to 100 in the West. Average lengths of stay by geographic region were 5.4 days in the West, 6.2 days in the South, 6.5 days in the Midwest, and 7.3 days in the Northeast.

### Utilization by diagnosis

Diseases of the circulatory system ranked first in 1991 of the ICD-9-CM diagnostic chapters as a principal or first-listed diagnosis for patients discharged from non-Federal short-stay hospitals. These conditions accounted for an estimated 5.3 million discharges. Other leading ICD-9-CM diagnostic chapters were supplementary classifications (including females with deliveries) (4.4 million discharges), diseases of the digestive system (3.3 million discharges), and diseases of the respiratory system (3.1 million discharges). Approximately 52 percent of the patients discharged from non-Federal short-stay hospitals were included in these four ICD-9-CM diagnostic chapters.

The diagnostic categories presented in this report were selected either because they appear as principal or first-listed diagnoses with high frequency or because the conditions are of special interest. Many of these categories (such as malignant neoplasms, psychoses, and fractures) are groupings of more detailed diagnoses.

The number and rate of discharges and average length of stay for each ICD-9-CM diagnostic chapter and selected categories are shown by sex and age in tables 4-6. The most common diagnostic categories for all patients were deliveries and heart disease. Other leading diagnostic categories were malignant neoplasms, pneumonia, and fractures. Excluding deliveries, these last four diagnostic categories were the leading first-listed diagnoses for both males and females. Some of the more common diagnoses for patients

under 15 years of age were acute respiratory infections, pneumonia, and asthma. For patients 15-44 years of age, frequent diagnoses were deliveries, psychoses, and fractures. For patients 45-64 years of age and 65 years of age and over, heart disease and malignant neoplasms were major causes of hospitalization. The average length of stay for all patients ranged from 1.2 days for chronic disease of tonsils and adenoids to 14.6 days for malignant neoplasm of large intestine and rectum.

### Utilization by procedure

One or more surgical or nonsurgical procedures were performed for an estimated 21.0 million of the 31.1 million inpatients discharged from short-stay hospitals during 1991. A total of 43.9 million procedures, or an average of 2.1 per patient who underwent at least one procedure, were recorded in 1991.

Procedures are grouped in the tables of this report by the ICD-9-CM procedure chapters. Selected procedures within these chapters also are presented by specific categories. Some of these categories (such as cesarean section and hysterectomy) are presented as single categories even though they are divided into more precise subgroups in ICD-9-CM.

More than three-fourths of all the surgical and nonsurgical procedures performed during 1991 are listed in just 5 of the 16 procedure chapters. These were miscellaneous diagnostic and therapeutic procedures (14.8 million), obstetrical procedures (6.9 million), operations on the digestive system (5.6 million), operations on the cardiovascular system (4.1 million), and operations on the musculoskeletal system (3.3 million).

The number and rate of all-listed procedures in 1991 for each ICD-9-CM procedure chapter and selected procedure categories are shown by sex and age in tables 7 and 8. Of the 43.9 million procedures performed during 1991, 17.3 million were for males and 26.7 million were

for females. The corresponding rates per 100,000 population were 17,529.3 for both sexes, 14,204.6 for males, and 20,661.0 for females. Frequent procedures for males were arteriography and angiocardiology, computerized axial tomography, and diagnostic ultrasound. Procedures commonly performed on females were episiotomy, fetal EKG and fetal monitoring, and diagnostic ultrasound.

The rate of procedures by age per 100,000 population ranged from 4,054.9 for patients under 15 years of age to 47,468.0 for patients 65 years of age and over. Commonly performed procedures for patients under 15 years of age were respiratory therapy, spinal tap, computerized axial tomography, and diagnostic ultrasound; for patients 15-44 years of age, episiotomy, fetal EKG and fetal monitoring, and cesarean section; for patients 45-64 years of age, arteriography and angiocardiology, cardiac catheterization, diagnostic ultrasound, and computerized axial tomography; for patients 65 years of age and over, arteriography and angiocardiology, computerized axial tomography, and diagnostic ultrasound.

### References

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**Table 4. Number of inpatients discharged from short-stay hospitals, by category of first-listed diagnosis, sex, and age: United States, 1991**

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

Category of first-listed diagnosis and ICD-9-CM Code	Total	Sex		Age			
		Male	Female	Under 15 years	15-44 years	45-64 years	65 years and over
Number of patients discharged in thousands							
All conditions . . . . .	31,098	12,478	18,620	2,498	11,620	6,173	10,806
Infectious and parasitic diseases . . . . .001-139	759	363	396	207	218	101	232
Septicemia . . . . .038	240	103	137	20	22	39	159
Neoplasms . . . . .140-239	2,001	860	1,141	52	363	626	960
Malignant neoplasms . . . . .140-208,230-234	1,594	781	812	40	172	499	883
Malignant neoplasm of large intestine and rectum . . . . .153-154,197.5	168	86	82	*	*5	39	124
Malignant neoplasm of trachea, bronchus, and lung . . . . .162,197.0,197.3	236	147	89	*	10	101	125
Malignant neoplasm of breast . . . . .174-175,198.81	158	*	156	*	25	59	73
Benign neoplasms and neoplasms of uncertain behavior and unspecified nature . . . . .210-229,235-239	407	78	329	13	191	126	77
Endocrine, nutritional and metabolic diseases, and immunity disorders . . . . .240-279	1,143	437	706	95	251	269	528
Diabetes mellitus . . . . .250	429	185	245	21	121	128	160
Volume depletion . . . . .276.5	329	121	208	50	46	44	189
Diseases of the blood and blood-forming organs . . . . .280-289	348	167	181	59	110	58	121
Mental disorders . . . . .290-319	1,657	840	817	61	1,009	328	260
Psychoses . . . . .290-299	902	416	486	24	488	189	201
Alcohol dependence syndrome . . . . .303	228	172	56	*	152	60	16
Diseases of the nervous system and sense organs . . . . .320-389	755	352	404	147	195	153	261
Diseases of the central nervous system . . . . .320-336,340-349	331	160	171	52	117	64	98
Diseases of the ear and mastoid process . . . . .380-389	144	72	72	71	26	22	26
Diseases of the circulatory system . . . . .390-459	5,338	2,728	2,611	28	396	1,509	3,405
Heart disease . . . . .391-392.0,393-398,402,404,410-416,420-429	3,704	1,977	1,727	17	232	1,095	2,361
Acute myocardial infarction . . . . .410	697	422	275	*	45	228	424
Coronary atherosclerosis . . . . .414.0	384	263	121	-	22	172	190
Other ischemic heart disease . . . . .411-413,414.1-414.9	876	461	415	*	48	313	514
Cardiac dysrhythmias . . . . .427	536	249	287	*5	41	129	361
Congestive heart failure . . . . .428.0	764	360	405	*	19	126	615
Cerebrovascular disease . . . . .430-438	835	370	466	*	35	156	640
Diseases of the respiratory system . . . . .460-519	3,052	1,508	1,544	736	500	530	1,286
Acute respiratory infections . . . . .460-466	518	258	261	220	68	75	156
Chronic disease of tonsils and adenoids . . . . .474	76	32	44	52	22	*	*
Pneumonia . . . . .480-486	1,088	545	543	214	133	152	589
Asthma . . . . .493	490	221	269	187	128	85	90
Diseases of the digestive system . . . . .520-579	3,256	1,455	1,801	244	950	851	1,211
Ulcers of the stomach and small intestine . . . . .531-534	237	125	112	*	43	69	124
Appendicitis . . . . .540-543	232	129	103	55	138	26	12
Inguinal hernia . . . . .550	135	120	14	22	26	41	46
Noninfectious enteritis and colitis . . . . .555-558	351	142	209	91	108	62	90
Cholelithiasis . . . . .574	552	159	393	*	195	187	168
Diseases of the genitourinary system . . . . .580-629	2,071	781	1,291	72	847	457	695
Calculus of kidney and ureter . . . . .592	241	160	81	*	117	84	40
Hyperplasia of prostate . . . . .600	229	229	...	-	*	49	180
Complications of pregnancy, childbirth, and the puerperium <sup>1</sup> . . . . .630-676	723	...	723	*	718	*	...
Abortions and ectopic and molar pregnancies . . . . .630-639	180	...	180	*	178	*	...
Diseases of the skin and subcutaneous tissue . . . . .680-709	462	245	217	49	142	108	162
Cellulitis and abscess . . . . .681-682	297	165	132	31	94	77	95
Diseases of the musculoskeletal system and connective tissue . . . . .710-739	1,600	738	862	50	548	450	553
Arthropathies and related disorders . . . . .710-719	526	228	298	14	125	125	261
Intervertebral disc disorders . . . . .722	391	225	166	*	209	132	51
Congenital anomalies . . . . .740-759	192	101	91	125	37	21	10
Certain conditions originating in the perinatal period . . . . .760-779	147	79	68	146	*	-	*
Symptoms, signs, and ill-defined conditions . . . . .780-799	386	202	184	63	146	115	62
Injury and poisoning . . . . .800-999	2,768	1,437	1,331	286	1,102	492	888
Fractures, all sites . . . . .800-829	1,034	481	553	104	320	158	452
Fracture of neck of femur . . . . .820	300	80	219	*	10	27	259
Intracranial injuries (excluding those with skull fracture) . . . . .850-854	180	106	74	30	96	20	34
Lacerations and open wounds . . . . .870-904	193	137	56	25	128	24	16
Supplementary classifications . . . . .V01-V82	4,438	188	4,250	76	4,089	105	169
Females with deliveries . . . . .V27	3,973	...	3,973	14	3,956	*	...

<sup>1</sup>First-listed diagnosis for females with deliveries is coded V27, shown under "supplementary classifications."

Table 5. Rate of inpatients discharged from short-stay hospitals, by category of first-listed diagnosis, sex, and age: United States, 1991

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

Category of first-listed diagnosis and ICD-9-CM Code	Total	Sex		Age			
		Male	Female	Under 15 years	15-44 years	45-64 years	65 years and over
Rate of inpatients discharged per 10,000 population							
All conditions . . . . .	1,241.1	1,026.7	1,443.1	453.2	993.4	1,321.6	3,403.1
Infectious and parasitic diseases . . . . .001-139	30.3	29.8	30.7	37.5	18.7	21.7	73.2
Septicemia . . . . .038	9.6	8.5	10.6	3.7	1.9	8.3	50.2
Neoplasms . . . . .140-239	79.9	70.7	88.4	9.5	31.0	133.9	302.3
Malignant neoplasms . . . . .140-208,230-234	63.6	64.3	63.0	7.2	14.7	106.9	278.1
Malignant neoplasm of large intestine and rectum . . . . .153-154,197.5	6.7	7.0	6.4	*	*0.4	8.3	39.0
Malignant neoplasm of trachea, bronchus, and lung . . . . .162,197.0,197.3	9.4	12.1	6.9	*	0.8	21.6	39.3
Malignant neoplasm of breast . . . . .174-175,198.81	6.3	*	12.1	*	2.2	12.5	23.1
Benign neoplasms and neoplasms of uncertain behavior and unspecified nature . . . . .210-229,235-239	16.2	6.4	25.5	2.3	16.3	27.0	24.3
Endocrine, nutritional and metabolic diseases, and immunity disorders . . . . .240-279	45.6	35.9	54.7	17.2	21.5	57.6	166.4
Diabetes mellitus . . . . .250	17.1	15.2	19.0	3.7	10.4	27.4	50.3
Volume depletion . . . . .276.5	13.1	10.0	16.1	9.1	3.9	9.4	59.6
Diseases of the blood and blood-forming organs . . . . .280-289	13.9	13.7	14.1	10.7	9.4	12.4	38.2
Mental disorders . . . . .290-319	66.1	69.1	63.4	11.0	86.2	70.3	81.9
Psychoses . . . . .290-299	36.0	34.2	37.7	4.3	41.7	40.5	63.3
Alcohol dependence syndrome . . . . .303	9.1	14.2	4.3	*	13.0	12.9	5.0
Diseases of the nervous system and sense organs . . . . .320-389	30.1	28.9	31.3	26.6	16.6	32.8	82.2
Diseases of the central nervous system . . . . .320-336,340-349	13.2	13.1	13.3	9.5	10.0	13.7	30.8
Diseases of the ear and mastoid process . . . . .380-389	5.8	6.0	5.6	12.8	2.2	4.7	8.2
Diseases of the circulatory system . . . . .390-459	213.1	224.4	202.3	5.1	33.9	323.1	1,072.4
Heart disease . . . . .391-392.0,393-398,402,404,410-416,420-429	147.8	162.6	133.9	3.0	19.8	234.3	743.5
Acute myocardial infarction . . . . .410	27.8	34.7	21.3	*	3.8	48.8	133.5
Coronary atherosclerosis . . . . .414.0	15.3	21.7	9.3	-	1.9	36.8	60.0
Other ischemic heart disease . . . . .411-413,414.1-414.9	35.0	37.9	32.1	*	4.1	67.0	161.7
Cardiac dysrhythmias . . . . .427	21.4	20.5	22.3	*1.0	3.5	27.5	113.8
Congestive heart failure . . . . .428.0	30.5	29.6	31.4	*	1.6	27.0	193.6
Cerebrovascular disease . . . . .430-438	33.3	30.4	36.1	*	3.0	33.5	201.5
Diseases of the respiratory system . . . . .460-519	121.8	124.1	119.7	133.6	42.7	113.4	405.2
Acute respiratory infections . . . . .460-466	20.7	21.2	20.2	39.8	5.8	16.0	49.2
Chronic disease of tonsils and adenoids . . . . .474	3.0	2.6	3.4	9.5	1.9	*	*
Pneumonia . . . . .480-486	43.4	44.8	42.1	38.9	11.4	32.5	185.5
Asthma . . . . .493	19.6	18.2	20.9	33.9	10.9	18.2	28.5
Diseases of the digestive system . . . . .520-579	129.9	119.7	139.6	44.3	81.2	182.1	381.5
Ulcers of the stomach and small intestine . . . . .531-534	9.5	10.3	8.7	*	3.6	14.8	39.1
Appendicitis . . . . .540-543	9.2	10.6	8.0	10.1	11.8	5.6	3.8
Inguinal hernia . . . . .550	5.4	9.9	1.1	4.0	2.2	8.8	14.5
Noninfectious enteritis and colitis . . . . .555-558	14.0	11.7	16.2	16.5	9.2	13.4	28.4
Cholelithiasis . . . . .574	22.0	13.1	30.4	*	16.7	39.9	53.0
Diseases of the genitourinary system . . . . .580-629	82.7	64.2	100.0	13.0	72.4	97.9	218.9
Calculus of kidney and ureter . . . . .592	9.6	13.2	6.3	*	10.0	18.0	12.6
Hyperplasia of prostate . . . . .600	9.2	18.9	...	-	*	10.4	56.7
Complications of pregnancy, childbirth, and the puerperium <sup>1</sup> . . . . .630-676	28.8	...	56.0	*	61.4	*	...
Abortions and ectopic and molar pregnancies . . . . .630-639	7.2	...	13.9	*	15.3	*	...
Diseases of the skin and subcutaneous tissue . . . . .680-709	18.4	20.1	16.8	8.9	12.1	23.2	51.1
Cellulitis and abscess . . . . .681-682	11.9	13.6	10.2	5.6	8.0	16.5	30.0
Diseases of the musculoskeletal system and connective tissue . . . . .710-739	63.9	60.7	66.8	9.0	46.8	96.3	174.1
Arthropathies and related disorders . . . . .710-719	21.0	18.7	23.1	2.6	10.7	26.7	82.3
Intervertebral disc disorders . . . . .722	15.6	18.5	12.9	*	17.8	28.3	15.9
Congenital anomalies . . . . .740-759	7.7	8.3	7.1	22.6	3.1	4.4	3.2
Certain conditions originating in the perinatal period . . . . .760-779	5.9	6.5	5.3	26.4	*	-	*
Symptoms, signs, and ill-defined conditions . . . . .780-799	15.4	16.6	14.3	11.3	12.5	24.6	19.7
Injury and poisoning . . . . .800-999	110.5	118.2	103.2	51.9	94.2	105.4	279.5
Fractures, all sites . . . . .800-829	41.3	39.6	42.9	18.9	27.4	33.8	142.4
Fracture of neck of femur . . . . .820	12.0	6.6	17.0	*	0.9	5.8	81.4
Intracranial injuries (excluding those with skull fracture) . . . . .850-854	7.2	8.7	5.7	5.5	8.2	4.3	10.8
Lacerations and open wounds . . . . .870-904	7.7	11.3	4.4	4.5	11.0	5.2	5.0
Supplementary classifications . . . . .V01-V82	177.1	15.5	329.4	13.8	349.5	22.4	53.2
Females with deliveries . . . . .V27	158.6	...	307.9	2.5	338.2	*	...

<sup>1</sup>First-listed diagnosis for females with deliveries is coded V27, shown under "supplementary classifications."

**Table 6. Average length of stay for inpatients discharged from short-stay hospitals, by category of first-listed diagnosis, sex, and age: United States, 1991**[Discharges from non-Federal hospitals. Excludes newborn infants. Diagnostic groupings and code number inclusions are based on the *International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM)*]

Category of first-listed diagnosis and ICD-9-CM Code	Total	Sex		Age			
		Male	Female	Under 15 years	15-44 years	45-64 years	65 years and over
Average length of stay in days							
All conditions . . . . .	6.4	7.0	6.0	4.8	4.6	6.5	8.6
Infectious and parasitic diseases . . . . .001-139	8.5	8.9	8.1	3.8	8.6	11.3	11.3
Septicemia . . . . .038	11.6	11.7	11.5	6.1	11.1	11.7	12.3
Neoplasms . . . . .140-239	8.2	9.2	7.5	6.3	5.5	7.5	9.8
Malignant neoplasms . . . . .140-208,230-234	9.2	9.7	8.7	7.0	7.4	8.2	10.1
Malignant neoplasm of large intestine and rectum . . . . .153-154,197.5	14.6	16.7	12.4	*	*8.1	10.7	16.1
Malignant neoplasm of trachea, bronchus, and lung . . . . .162,197.0,197.3	8.6	8.5	8.7	*	5.9	7.8	9.5
Malignant neoplasm of breast . . . . .174-175,198.81	4.4	*	4.4	*	3.8	4.6	4.5
Benign neoplasms and neoplasms of uncertain behavior and unspecified nature . . . . .210-229,235-239	4.5	4.6	4.4	4.1	3.8	4.4	6.1
Endocrine, nutritional and metabolic diseases, and immunity disorders . . . . .240-279	7.1	7.1	7.1	4.3	4.6	6.9	8.9
Diabetes mellitus . . . . .250	7.1	6.8	7.3	4.8	4.7	7.5	8.9
Volume depletion . . . . .276.5	7.5	8.5	6.9	2.9	4.0	6.8	9.8
Diseases of the blood and blood-forming organs . . . . .280-289	6.2	6.1	6.3	4.3	5.6	6.6	7.5
Mental disorders . . . . .290-319	11.4	11.0	11.9	15.9	11.0	10.8	12.8
Psychoses . . . . .290-299	13.5	13.0	13.8	17.3	13.1	13.3	14.1
Alcohol dependence syndrome . . . . .303	9.5	9.1	10.6	*	9.9	8.3	9.5
Diseases of the nervous system and sense organs . . . . .320-389	5.7	5.8	5.6	4.3	4.8	5.5	7.2
Diseases of the central nervous system . . . . .320-336,340-349	8.8	8.7	9.0	6.7	5.6	9.1	13.7
Diseases of the ear and mastoid process . . . . .380-389	2.8	2.7	3.0	2.6	3.2	2.5	3.3
Diseases of the circulatory system . . . . .390-459	7.3	7.0	7.6	10.1	5.6	6.4	7.9
Heart disease . . . . .391-392.0,393-398,402,404,410-416,420-429	6.8	6.7	7.0	13.4	5.5	6.3	7.2
Acute myocardial infarction . . . . .410	8.1	7.5	9.1	*	5.9	7.2	8.8
Coronary atherosclerosis . . . . .414.0	7.1	7.4	6.5	-	5.4	8.0	6.5
Other ischemic heart disease . . . . .411-413,414.1-414.9	5.0	5.0	5.1	*	3.9	4.3	5.6
Cardiac dysrhythmias . . . . .427	5.3	5.0	5.5	*4.0	3.6	4.8	5.6
Congestive heart failure . . . . .428.0	7.9	7.5	8.4	*	7.4	7.6	7.9
Cerebrovascular disease . . . . .430-438	9.3	9.1	9.6	*	9.4	7.9	9.7
Diseases of the respiratory system . . . . .460-519	6.8	6.4	7.1	3.5	5.0	7.0	9.2
Acute respiratory infections . . . . .460-466	4.8	4.1	5.4	3.1	4.2	5.5	7.0
Chronic disease of tonsils and adenoids . . . . .474	1.2	1.3	1.1	1.2	1.2	*	*
Pneumonia . . . . .480-486	8.2	7.9	8.5	4.1	6.5	7.9	10.2
Asthma . . . . .493	4.5	4.1	4.9	3.0	4.5	5.2	7.2
Diseases of the digestive system . . . . .520-579	5.9	5.9	5.9	3.7	4.8	5.5	7.6
Ulcers of the stomach and small intestine . . . . .531-534	6.9	6.6	7.3	*	4.6	5.6	8.5
Appendicitis . . . . .540-543	4.2	4.2	4.3	3.9	3.7	5.7	8.6
Inguinal hernia . . . . .550	2.4	2.4	2.5	1.5	1.5	1.8	3.8
Noninfectious enteritis and colitis . . . . .555-558	5.6	5.8	5.4	3.3	5.1	6.5	7.7
Cholelithiasis . . . . .574	5.0	5.3	4.8	*	4.6	4.0	6.4
Diseases of the genitourinary system . . . . .580-629	4.8	5.3	4.5	4.0	3.7	4.7	6.5
Calculus of kidney and ureter . . . . .592	2.7	2.5	3.2	*	2.4	2.8	3.6
Hyperplasia of prostate . . . . .600	5.3	5.3	...	-	*	7.3	4.8
Complications of pregnancy, childbirth, and the puerperium <sup>1</sup> . . . . .630-676	2.9	...	2.9	*	2.9	*	...
Abortions and ectopic and molar pregnancies . . . . .630-639	2.4	...	2.4	*	2.4	*	...
Diseases of the skin and subcutaneous tissue . . . . .680-709	8.4	8.0	8.9	3.8	7.3	7.8	11.2
Cellulitis and abscess . . . . .681-682	7.1	7.0	7.3	3.7	6.0	7.2	9.3
Diseases of the musculoskeletal system and connective tissue . . . . .710-739	6.4	5.7	7.0	5.4	4.7	5.5	8.9
Arthropathies and related disorders . . . . .710-719	7.4	6.6	8.0	5.3	4.1	6.7	9.4
Intervertebral disc disorders . . . . .722	5.0	4.5	5.6	*	4.5	4.7	7.5
Congenital anomalies . . . . .740-759	6.2	6.2	6.2	6.8	4.5	5.9	5.5
Certain conditions originating in the perinatal period . . . . .760-779	10.7	11.3	10.1	10.7	*	-	*
Symptoms, signs, and ill-defined conditions . . . . .780-799	3.0	3.0	3.0	2.5	2.6	2.7	5.2
Injury and poisoning . . . . .800-999	6.9	6.3	7.6	4.5	5.5	6.5	9.6
Fractures, all sites . . . . .800-829	8.4	7.3	9.4	5.4	6.1	7.2	11.3
Fracture of neck of femur . . . . .820	12.3	10.9	12.8	*	7.4	10.4	12.8
Intracranial injuries (excluding those with skull fracture) . . . . .850-854	5.8	6.2	5.2	2.5	5.9	8.0	7.1
Lacerations and open wounds . . . . .870-904	4.9	3.7	7.8	3.4	5.2	4.3	5.2
Supplementary classifications . . . . .V01-V82	3.3	7.5	3.1	4.7	2.8	5.8	12.1
Females with deliveries . . . . .V27	2.8	...	2.8	2.4	2.8	*	...

<sup>1</sup>First-listed diagnosis for females with deliveries is coded V27, shown under "supplementary classifications."

**Table 7. Number of all-listed procedures for inpatients discharged from short-stay hospitals, by procedure category, sex, and age: United States, 1991**

[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 (ICD-9-CM)*]

Procedure category and ICD-9-CM Code	Total	Sex		Age			
		Male	Female	Under 15 years	15-44 years	45-64 years	65 years and over
Number of all-listed procedures in thousands							
All procedures . . . . .	43,922	17,264	26,658	2,235	17,090	9,524	15,073
Operations on the nervous system . . . . .01-05	970	500	470	236	328	196	210
Spinal tap . . . . .03.31	380	208	172	183	94	46	57
Operations on the endocrine system . . . . .06-07	103	28	75	*	41	33	25
Operations on the eye . . . . .08-16	399	189	210	25	65	85	224
Operations on the ear . . . . .18-20	129	75	54	66	36	15	13
Operations on the nose, mouth, and pharynx . . . . .21-29	541	288	254	118	237	96	90
Tonsillectomy with or without adenoidectomy . . . . .28.2-28.3	86	40	46	54	28	*	*
Operations on the respiratory system . . . . .30-34	956	561	396	60	173	290	433
Bronchoscopy with or without biopsy . . . . .33.21-33.24,33.27	309	186	123	18	45	95	152
Operations on the cardiovascular system . . . . .35-39	4,123	2,383	1,740	148	477	1,476	2,022
Removal of coronary artery obstruction . . . . .36.0	331	223	107	*	24	163	143
Coronary artery bypass graft <sup>1</sup> . . . . .36.1	407	296	111	*	23	178	206
Cardiac catheterization . . . . .37.21-37.23	1,000	603	397	19	89	447	446
Insertion, replacement, removal, and revision of pacemaker leads or device . . . . .37.7-37.8	300	145	155	*	9	44	244
Shunt or vascular bypass . . . . .39.0-39.2	168	92	76	*	14	57	93
Hemodialysis . . . . .39.95	261	129	132	*	61	79	118
Operations on the hemic and lymphatic system . . . . .40-41	392	212	180	20	77	110	185
Operations on the digestive system . . . . .42-54	5,559	2,319	3,241	221	1,571	1,400	2,367
Endoscopy of small intestine with or without biopsy . . . . .45.11-45.14,45.16	804	391	413	11	145	202	446
Endoscopy of large intestine with or without biopsy . . . . .45.21-45.25	574	234	340	*	90	127	353
Partial excision of large intestine . . . . .45.7	220	94	125	*	23	57	139
Appendectomy, excluding incidental . . . . .47.0	255	135	120	57	156	29	14
Cholecystectomy . . . . .51.2	571	166	404	*	194	189	185
Repair of inguinal hernia . . . . .53.0-53.1	172	155	17	25	31	51	65
Lysis of peritoneal adhesions . . . . .54.5	339	60	279	*5	167	75	92
Operations on the urinary system . . . . .55-59	1,558	884	674	47	376	386	750
Cystoscopy with or without biopsy . . . . .57.31-57.33	458	333	125	9	64	103	281
Operations on the male genital organs . . . . .60-64	584	584	...	46	40	116	382
Prostatectomy . . . . .60.2-60.6	363	363	...	...	*	68	295
Operations on the female genital organs . . . . .65-71	2,308	...	2,308	*8	1,624	445	231
Oophorectomy and salpingo-oophorectomy . . . . .65.3-65.6	458	...	458	*	248	150	59
Bilateral destruction or occlusion of Fallopian tubes . . . . .66.2-66.3	401	...	401	*	400	*	...
Hysterectomy . . . . .68.3-68.7	546	...	546	-	322	161	63
Dilation and curettage of uterus . . . . .69.0	196	...	196	*	159	22	14
Repair of cystocele and rectocele . . . . .70.5	139	...	139	*	40	48	50
Obstetrical procedures . . . . .72-75	6,867	...	6,867	24	6,839	*	...
Episiotomy with or without forceps or vacuum extraction . . . . .72.1,72.21,72.31,72.71,73.6	1,684	...	1,684	*8	1,675	*	...
Artificial rupture of membranes . . . . .73.0	775	...	775	*	771	*	...
Cesarean section . . . . .74.0-74.2,74.4,74.99	933	...	933	*	931	*	...
Fetal EKG (scalp) and fetal monitoring, not otherwise specified . . . . .75.32,75.34	1,327	...	1,327	*	1,321	*	...
Repair of current obstetric laceration . . . . .75.5-75.6	795	...	795	*	792	*	...
Operations on the musculoskeletal system . . . . .76-84	3,323	1,710	1,614	208	1,323	798	994
Partial excision of bone . . . . .76.2-76.3,77.6-77.8	216	119	97	10	96	67	43
Open reduction of fracture with internal fixation . . . . .79.3	418	193	225	27	145	76	170
Excision or destruction of intervertebral disc . . . . .80.5	306	181	125	*	162	102	42
Total hip replacement . . . . .81.51	117	50	67	*	*8	31	78
Total knee replacement . . . . .81.54	160	60	100	-	*	36	121
Operations on the integumentary system . . . . .85-86	1,324	552	773	75	488	330	431
Mastectomy . . . . .85.4	118	*	117	*	17	42	58
Debridement of wound, infection, or burn . . . . .86.22,86.28	326	181	145	19	107	62	138
Skin graft . . . . .86.6-86.7	99	60	39	9	40	22	27
Miscellaneous diagnostic and therapeutic procedures . . . . .87-99	14,785	6,981	7,804	929	3,397	3,743	6,715
Computerized axial tomography . . . . .87.03,87.41,87.71,88.01,88.38	1,531	731	801	77	370	345	739
Pyelogram . . . . .87.73-87.75	245	133	112	*	93	61	86
Arteriography and angiocardiology using contrast material . . . . .88.4-88.5	1,718	989	729	22	182	723	791
Diagnostic ultrasound . . . . .88.7	1,592	652	940	74	424	354	739
Circulatory monitoring . . . . .89.6	703	339	364	29	118	167	390
Radiolotope scan . . . . .92.0-92.1	539	228	311	16	105	148	270
Respiratory therapy . . . . .93.9	1,214	596	618	196	193	236	588

<sup>1</sup>The number of discharged patients with a coronary artery bypass graft was 265,000.

**Table 8. Rate of all-listed procedures for inpatients discharged from short-stay hospitals, by procedure category, sex, and age: United States, 1991**[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 (ICD-9-CM)*]

Procedure category and ICD-9-CM Code	Total	Sex		Age			
		Male	Female	Under 15 years	15-44 years	45-64 years	65 years and over
Rate of all-listed procedures in thousands							
All procedures . . . . .	17,529.3	14,204.6	20,661.0	4,054.9	14,610.5	20,389.8	47,468.0
Operations on the nervous system . . . . .01-05	387.3	411.5	364.5	428.9	280.6	419.7	660.4
Spinal tap . . . . .03.31	151.6	171.1	133.2	332.2	80.6	97.5	178.8
Operations on the endocrine system . . . . .06-07	41.0	22.9	58.1	*	35.3	71.7	77.2
Operations on the eye . . . . .08-16	159.2	155.7	162.4	44.5	55.8	182.8	704.3
Operations on the ear . . . . .18-20	51.6	61.7	42.0	119.3	30.6	31.7	40.3
Operations on the nose, mouth, and pharynx . . . . .21-29	216.1	236.7	196.7	214.4	202.6	205.4	284.2
Tonsillectomy with or without adenoidectomy . . . . .28.2-28.3	34.1	32.5	35.7	98.2	23.8	*	*
Operations on the respiratory system . . . . .30-34	381.6	461.2	306.6	109.7	147.5	620.5	1,364.8
Bronchoscopy with or without biopsy . . . . .33.21-33.24,33.27	123.4	153.4	95.2	32.2	38.4	202.3	479.0
Operations on the cardiovascular system . . . . .35-39	1,645.5	1,960.3	1,348.9	269.0	407.5	3,161.0	6,366.7
Removal of coronary artery obstruction . . . . .36.0	131.9	183.5	83.3	*	20.8	350.0	449.1
Coronary artery bypass graft <sup>1</sup> . . . . .36.1	162.6	243.5	86.4	*	19.4	381.3	650.2
Cardiac catheterization . . . . .37.21-37.23	399.1	496.0	307.9	33.7	75.9	956.3	1,404.8
Insertion, replacement, removal, and revision of pacemaker leads or device . . . . .37.7-37.8	119.6	119.3	119.9	*	7.8	94.3	769.9
Shunt or vascular bypass . . . . .39.0-39.2	67.2	75.7	59.1	*	11.9	121.7	293.5
Hemodialysis . . . . .39.95	104.0	106.0	102.2	*	52.5	168.1	372.6
Operations on the hemic and lymphatic system . . . . .40-41	156.3	174.3	139.4	35.5	66.2	234.5	583.3
Operations on the digestive system . . . . .42-54	2,218.8	1,908.0	2,511.6	401.3	1,342.6	2,997.9	7,455.8
Endoscopy of small intestine with or without biopsy . . . . .45.11-45.14,45.16	320.9	321.9	320.0	20.1	123.9	431.9	1,405.6
Endoscopy of large intestine with or without biopsy . . . . .45.21-45.25	229.0	192.6	263.4	*	77.3	272.1	1,111.1
Partial excision of large intestine . . . . .45.7	87.7	77.7	97.1	*	19.6	121.6	436.3
Appendectomy, excluding incidental . . . . .47.0	101.8	111.4	92.7	102.5	133.4	61.8	42.6
Cholecystectomy . . . . .51.2	227.8	136.9	313.4	*	165.8	405.0	581.9
Repair of inguinal hernia . . . . .53.0-53.1	68.8	127.4	13.6	45.8	26.8	109.0	204.1
Lysis of peritoneal adhesions . . . . .54.5	135.4	49.4	216.5	*9.3	142.8	161.3	289.5
Operations on the urinary system . . . . .55-59	621.8	727.4	522.3	85.0	321.2	825.3	2,361.6
Cystoscopy with or without biopsy . . . . .57.31-57.33	182.6	273.9	96.7	17.2	54.7	221.1	884.7
Operations on the male genital organs . . . . .60-64	233.2	480.8	...	84.3	33.9	248.5	1,203.3
Prostatectomy . . . . .60.2-60.6	145.1	299.1	...	...	*	145.6	930.0
Operations on the female genital organs . . . . .65-71	921.3	...	1,789.0	*14.9	1,388.0	953.3	728.4
Oophorectomy and salpingo-oophorectomy . . . . .65.3-65.6	182.7	...	354.8	*	211.8	321.7	184.2
Bilateral destruction or occlusion of fallopian tubes . . . . .66.2-66.3	160.1	...	310.9	*	341.7	*	...
Hysterectomy . . . . .68.3-68.7	218.0	...	423.4	-	275.6	344.7	198.2
Dilation and curettage of uterus . . . . .69.0	78.0	...	151.6	*	136.0	46.1	43.9
Repair of cystocele and rectocele . . . . .70.5	55.3	...	107.4	*	34.0	103.6	158.5
Obstetrical procedures . . . . .72-75	2,740.4	...	5,321.8	43.4	5,846.4	*	...
Episiotomy with or without forceps or vacuum extraction . . . . .72.1,72.21,72.31,72.71,73.6	672.2	...	1,305.3	*14.0	1,431.9	*	...
Artificial rupture of membranes . . . . .73.0	309.2	...	600.4	*	659.5	*	...
Cesarean section . . . . .74.0-74.2,74.4,74.99	372.5	...	723.4	*	795.9	*	...
Fetal EKG (scalp) and fetal monitoring, not otherwise specified . . . . .75.32,75.34	529.4	...	1,028.1	*	1,129.6	*	...
Repair of current obstetric laceration . . . . .75.5-75.6	317.3	...	616.1	*	677.3	*	...
Operations on the musculoskeletal system . . . . .76-84	1,326.3	1,406.7	1,250.6	376.9	1,131.2	1,708.4	3,131.8
Partial excision of bone . . . . .76.2-76.3,77.6-77.8	86.2	97.6	75.5	17.9	82.3	142.8	136.0
Open reduction of fracture with internal fixation . . . . .79.3	166.7	158.4	174.6	48.4	124.2	162.3	535.6
Excision or destruction of intervertebral disc . . . . .80.5	122.2	149.3	96.6	*	138.1	218.3	131.4
Total hip replacement . . . . .81.51	46.6	41.1	51.8	*	*7.2	65.5	244.5
Total knee replacement . . . . .81.54	64.0	49.4	77.8	-	*	77.6	382.3
Operations on the integumentary system . . . . .85-86	528.5	453.8	598.8	135.9	417.3	706.7	1,357.2
Mastectomy . . . . .85.4	47.2	*	90.9	*	14.8	90.3	184.0
Debridement of wound, infection, or burn . . . . .86.22,86.28	130.0	149.0	112.1	35.2	91.1	133.0	433.6
Skin graft . . . . .86.6-86.7	39.5	49.0	30.6	17.2	34.5	48.2	84.0
Miscellaneous diagnostic and therapeutic procedures . . . . .87-99	5,900.5	5,743.6	6,048.2	1,685.4	2,903.8	8,013.9	21,148.8
Computerized axial tomography . . . . .87.03,87.41,87.71,88.01,88.38	611.1	601.1	620.5	139.7	316.3	738.4	2,328.5
Pyelogram . . . . .87.73-87.75	97.8	109.3	86.9	*	79.9	129.9	272.0
Arteriography and angiocardigraphy using contrast material . . . . .88.4-88.5	685.8	813.8	565.3	40.3	155.5	1,548.0	2,492.2
Diagnostic ultrasound . . . . .88.7	635.2	536.2	728.5	133.3	362.7	758.9	2,328.6
Circulatory monitoring . . . . .89.6	280.5	278.9	282.0	52.0	100.9	356.6	1,226.9
Radioisotope scan . . . . .92.0-92.1	215.0	187.5	241.0	28.5	89.7	316.3	851.8
Respiratory therapy . . . . .93.9	484.5	490.1	479.1	356.1	165.2	505.2	1,853.0

<sup>1</sup>The rate per 1,000,000 population of discharged patients with a coronary bypass graft was 105.8.



## Technical notes

### Survey methodology

#### Source of data

The National Hospital Discharge Survey covers discharges from noninstitutional hospitals, exclusive of Federal, military, and Veterans Administration hospitals, located in the 50 States and the District of Columbia. Only short-stay hospitals (hospitals with an average length of stay for all patients of less than 30 days) or those whose specialty is general (medical or surgical) or children's general are included in the survey. These hospitals must also have six beds or more staffed for patient use.

From 1988 through 1990, the NHDS sampling frame consisted of hospitals that were listed in the April 1987 SMG Hospital Market Tape (3), met the above criteria, and began accepting patients by August 1987. In 1991 the sampling frame was updated to include hospitals from the 1991 SMG Hospital Database Tape (4). For 1991, the sample consisted of 528 hospitals. Of the 528 hospitals, 7 were found to be out of scope (ineligible) because they went out of business or otherwise failed to meet the criteria for the NHDS universe. Of the 521 in-scope (eligible) hospitals, 484 responded to the survey.

#### Sample design and data collection

The NCHS has conducted the NHDS continuously since 1965. The original sample was selected in 1964 from a frame of short-stay hospitals listed in the National Master Facility Inventory. That sample was updated periodically with samples of hospitals that opened later. Sample hospitals were selected with probabilities ranging from certainty for the largest hospitals to 1 in 40 for the smallest hospitals. Within each sample hospital, a systematic random sample of discharges was selected. A report on the design and development of the original NHDS was published (1).

Beginning in 1988, the NHDS sample includes with certainty all

hospitals with 1,000 beds or more or 40,000 discharges or more annually. The remaining sample of hospitals is based on a stratified three-stage design. The first stage consists of a selection of 112 primary sampling units (PSU's) that comprise a probability subsample of PSU's to be used in the 1985-94 National Health Interview Survey. The second stage consists of a selection of noncertainty hospitals from the sample PSU's. At the third stage, a sample of discharges was selected by a systematic random sampling technique.

Two data collection procedures were used for the survey. The first was a manual system of sample selection and data abstraction. The second was an automated method, used for approximately 33 percent of the respondent hospitals in 1991, that involved the purchase of data tapes from abstracting service organizations, state data systems, or hospitals.

In the manual system, the sample selection and the transcription of information from the hospital records to abstract forms were performed at the hospitals. The completed forms, along with sample selection control sheets, were forwarded to NCHS for coding, editing, and weighting. Of the hospitals using the manual system in 1991, about two-thirds had the work performed by their own medical records staff. In the remaining hospitals using the manual system, personnel of the U.S. Bureau of the Census did the work on behalf of NCHS.

For the automated system, NCHS purchased tapes containing machine-readable medical record data that were systematically sampled by NCHS.

The medical abstract form and the automated data tapes contain items relating to the personal characteristics of the patient, including birth date, sex, race, and marital status but not name and address; administrative information, including admission and discharge dates, discharge status, and medical record number; and medical information, including diagnoses and

surgical and nonsurgical operations or procedures. Since 1977, patient ZIP Code, expected source of payment, and dates of surgery have also been collected. (The medical record number and patient ZIP Code are confidential information and are not available to the public.)

#### Presentation of estimates

The relative standard error of the estimate and the number of sample records on which the estimate is based (referred to as the sample size) are used to identify estimates with relatively low reliability.

Because of the complex sample design of the NHDS, estimates of less than 5,000 are not presented; only an asterisk (\*) appears in the tables. These estimates generally have a relative standard error of more than 30 percent or are based on a sample of less than 30 cases. Estimates of 5,000 to 9,000 are preceded by an asterisk (\*) to indicate that they should not be assumed to be reliable. These estimates are generally based on less than 60 cases.

#### Sampling errors and rounding of numbers

The standard error is primarily a measure of sampling variability that occurs by chance because only a sample rather than the 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. The resulting value is multiplied by 100, so the relative standard error is expressed as a percent of the estimate.

Estimates of sampling variability were calculated with SESUDAAN software, which computes standard errors by using a first-order Taylor approximation of the deviation of estimates from their expected values. A description of the software and the approach it uses has been published (5).

The constants for relative standard error curves for the National

Hospital Discharge Survey are presented in table I. The constants for 1990 are shown because 1991 constants were not available at the time of publication and little difference is expected in the constants for the 2 years. The relative standard error [RSE( $X$ )] of an estimate  $X$  may be estimated from the formula:

$$RSE(X) = 100 (\sqrt{a + b/X})$$

where  $X$ ,  $a$ , and  $b$  are as defined in table I.

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

### Tests of significance

In this report, statistical inference is based on the two-sided test with a critical value of 1.96 (0.05 level of significance). Terms such as "higher" and "less" indicate that differences are statistically significant. Terms such as "similar" or "no difference" mean that no statistically significant difference exists between the estimates being compared. A lack of comment on the difference between any two estimates does not mean that the difference was tested and found not to be significant.

### Terms relating to hospitalization

*Hospitals*—All hospitals with an average length of stay for all patients of less than 30 days or hospitals whose specialty is general (medical or surgical) or children's general are eligible for inclusion in the National Hospital Discharge Survey, except Federal hospitals, hospital units of institutions, and hospitals with less than six beds staffed for patients' use.

*Patient*—A person who is formally admitted to the inpatient service of a short-stay hospital for observation, care, diagnosis, or treatment. The terms "patient" and "inpatient" are used synonymously.

*Newborn infant*—A patient admitted by birth to a hospital.

*Discharge*—The formal release of a patient 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. The terms "discharges" and "patients discharged" are used synonymously.

*Discharge rate*—The ratio of the number of hospital discharges during a year to the number of persons in the civilian population on July 1 of that year.

*Days of care*—The number of patient days accumulated at time of discharge by a patient. A stay of less than 1 day (patient 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 number of days of care accumulated by patients discharged during the year divided by the number of these patients.

### Terms relating to diagnoses

*Diagnosis*—A disease or injury (or factor that influences health status and contact with health services that is not itself a current illness or injury) on the medical record of a patient.

*Principal diagnosis*—The condition established after study to be chiefly responsible for occasioning the admission of the patient to the hospital for care.

*First-listed diagnosis*—The coded diagnosis identified as the principal diagnosis or listed first on the face sheet or discharge summary of the medical record if the principal diagnosis cannot be identified. The number of first-listed diagnoses is equivalent to the number of discharges.

### Terms relating to procedures

*Procedure*—A surgical or nonsurgical operation, diagnostic procedure, or special treatment reported on the medical record of a patient. Beginning with the 1991 data, all ICD-9-CM procedure codes are used in the NHDS. Previously selected codes, primarily codes for miscellaneous diagnostic and therapeutic procedures, were not used.

*All-listed procedures*—The number of procedures on the face sheet of the medical record. In the NHDS a maximum of four procedures are coded.

*Rate of procedures*—The ratio of the number of procedures during a year to the number of persons in the civilian population on July 1 of that year determines the rate of procedures.

Table I. Estimated parameters for relative standard error equations for National Hospital Discharge Survey statistics, by sex, age, and geographic region: United States, 1990

Characteristic	Number of discharges or first-listed diagnoses		Number of procedures	
	a	b	a	b
Total	0.00213	228.834	0.00547	92.597
Sex				
Male	0.00152	313.079	0.00410	89.724
Female	0.00125	311.632	0.00337	83.021
Age				
Under 15 years	0.01597	47.116	0.03171	44.124
15-44 years	0.00142	299.762	0.00302	139.070
45-64 years	0.00157	234.543	0.00491	68.024
65 years and over	0.00161	263.223	0.00436	47.886
Region				
Northeast	0.00274	56.268	0.00588	108.765
Midwest	0.00487	183.531	0.00886	107.681
South	0.00375	343.892	0.00781	50.919
West	0.00564	318.914	0.01235	144.582

**Demographic terms**

*Population*—The U.S. resident population excluding members of the Armed Forces.

*Age*—Patient's age at birthday prior to admission to the hospital.

*Geographic region*—Hospitals are classified by location in one of the four geographic regions of the United States that 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
Midwest . . . .	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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**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 standard of reliability or precision (see Technical notes)
#	Figure suppressed to comply with confidentiality requirements

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