Number 210 • February 18, 1992

Advance Data

From Vital and Health Statistics of the National Center for Health Statistics

1990 Summary: National Hospital Discharge Survey

by Edmund J. Graves, Division of Health Care Statistics

Introduction

During 1990, an estimated 30.8 million inpatients, excluding newborn infants, were discharged from short-stay non-Federal hospitals in the United States. These patients used 197.4 million days of inpatient hospital care. The discharge rate was 124 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 1990, data were abstracted from the medical records of approximately 266,000 patients discharged from 474 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 1988–90 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 through commercial abstracting services. In 1990, approximately 34 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 than from hospitals submitting data in the traditional manual mode (see "Technical notes"). A portion of the increases from 1984 to 1990 in the estimates for miscellaneous diagnostic and therapeutic procedures and, therefore, for total procedures may be due to this change in data collection methods.

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 30.8 million patients discharged from short-stay hospitals during 1990 comprised an estimated 12.3 million males and 18.5 million females. The rate per 1,000 population for females was 144, which was 41 percent higher

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Centers for Disease Control
National Center for Health Statistics
Manning Feinleib, M.D., Dr. P.H., Director

CDC
CENTERS FOR DISEASE CONTROL

Table 1. Number of inpatients discharged from short-stay hospitals by age and geographic region: United States, 1990

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

Age and region	Both sexes	Male	Female
	Number of patients discharged in thousands		
Total	30,788	12,280	18,508
Age			
Under 15 years	2,412	1,362	1,049
15–44 years	11,799	3,330	8,469
45–64 years	6,244	3,115	3,129
65 years and over	10,333	4,472	5,861
Region			
Northeast	6,895	2,876	4,019
Midwest	7,620	3,039	4,581
South	11,173	4,351	6,822
West	5,100	2,013	3,086

Table 2. Rate of inpatients discharged from short-stay hospitals, by age, geographic region, and sex: United States, 1990

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

Age and region	Both sexes	Male	Female
	Rate of patients discharged per 1,000 population		
Total	123.5	101.5	144.1
Age			
Under 15 years	43.9	48.5	39.2
15–44 years	101.7	58.0	144.5
45–64 years	133.1	138.3	128.2
65 years and over	327.1	346.2	313.8
Region			
Northeast	135.9	118.4	152.0
Midwest	126.2	103.5	147.7
South	130.2	105.1	153.6
West	97.2	77.8	116.1

Table 3. Average length of stay for inpatients discharged from short-stay hospitals by age, geographic region, and sex: United States, 1990

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

Age and region	Both sexes	Male	Female
	Average length of stay in days		
Total	6.4	6.9	6.1
Age			
Under 15 years	4.8	4.8	4.9
15–44 years	4.6	6.1	4.0
45–64 years	6.8	6.7	6.8
65 years and over	8.7	8.3	8.9
Region			
Northeast	7.7	8.1	7.3
Midwest	6.4	6.8	6.1
South	6.1	6.5	5.8
West	5.5	6.3	5.0

than the rate of 102 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 6.9 days for males and 6.1 days for females during 1990. 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, 6.8 days for patients 45–64 years of age, and 8.7 days for patients 65 years of age and over.

The number of discharges from short-stay hospitals by geographic region during 1990 ranged from 11.2 million in the South to 5.1 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 136 in the Northeast Region to 97 in the West. Average lengths of stay by geographic region were 5.5 days in the West, 6.1 days in the South, 6.4 days in the Midwest, and 7.7 days in the Northeast.

Utilization by diagnosis

Diseases of the circulatory system ranked first in 1990 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 5.2 million discharges. Other leading ICD–9–CM diagnostic chapters were supplementary classifications (including females with deliveries) (4.5 million discharges) and diseases of the digestive system (3.2 million discharges). Approximately 42 percent of the patients discharged from non-Federal short-stay hospitals were included in these three 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 pneumonia, acute respiratory infections, asthma, noninfectious enteritis and colitis, and fractures. For patients 15–44 years of age, frequent diagnoses were deliveries, psychoses, fractures, heart disease, and intervertebral disc disorders. 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 1.3 days for chronic disease of tonsils and adenoids to 14.6 days for psychoses.

Utilization by procedures

One or more surgical or nonsurgical procedures were performed for an estimated 20.2 million of the 30.8 million inpatients discharged from short-stay hospitals during 1990. A total of 40.5 million procedures, or an average of 2.0 per patient who underwent at least one procedure, were recorded in 1990.

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 extraction of lens and hysterectomy) are presented as single categories even though they are divided into more precise subgroups in ICD–9–CM.

Three-fourths of all the surgical and nonsurgical procedures performed during 1990 are listed in just 5 of the 16 procedure chapters. These were diagnostic and therapeutic procedures (11.9 million), obstetrical procedures (6.8 million), operations on the digestive system (5.3 million), operations on the cardiovascular system (3.9 million), and operations on the musculoskeletal system (3.1 million).

The number and rate of all-listed procedures in 1990 for each ICD–9–CM procedure chapter and selected procedure categories are shown by sex and age in tables 7 and 8. Of the 40.5 million procedures performed during 1990, 15.9 million were for males and 24.6 million were for females. The corresponding rates per 100,000 population were 16,243.0 for both sexes, 13,161.7 for males, and 19,143.8 for females. Frequent procedures for males were arteriography and angiocardiography and computerized axial tomography. Procedures commonly performed on females were episiotomy, fetal EKG and fetal monitoring, cesarean section, and diagnostic ultrasound.

The rate of procedures by age per 100,000 population ranged from 3,571.2 for patients under 15 years of age to 42,125.2 for patients 65 years of age and over. Commonly performed procedures for patients under 15 years of age were respiratory therapy, spinal tap, 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 angiocardiography, cardiac catheterization, diagnostic ultrasound, and computerized axial tomography; for patients 65 years of age and over, computerized axial tomography, arteriography and angiocardiography, and diagnostic ultrasound.

References

1. Simmons WR. Development of the design of the NCHS Hospital Discharge Survey. National Center for Health Statistics. Vital Health Stat 2(39). 1970.
2. Public Health Service and Health Care Financing Administration. International Classification of Diseases, 9th Revision, Clinical Modification. Washington: Public Health Service. 1980.
3. SMG Marketing Group, Inc. Hospital Market Database. Chicago: Healthcare Information Specialists. 1989.
4. Shah BV. SESUDAAN: Standard Errors Program for Computing of Standardized Rates from Sample Survey Data. Research Triangle Park, North Carolina: Research Triangle Institute. 1981.

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

Table 4. Number of inpatients discharged from short-stay hospitals, by category of first-listed diagnosis, sex, and age: United States, 1990

[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	30,788	12,280	18,508	2,412	11,799	6,244	10,333
Infectious and parasitic diseases 001–139	737	356	380	191	226	91	229
Septicemia 038	216	99	116	22	17	33	144
Neoplasms 140–239	1,965	804	1,161	41	361	681	882
Malignant neoplasms 140–208,230–234	1,571	730	841	29	185	545	812
Malignant neoplasm of large intestine and rectum 153–154,197.5	175	85	90	*	*5	58	112
Malignant neoplasm of trachea, bronchus, and lung 162,197.0,197.3	231	141	90	*	12	101	119
Malignant neoplasm of breast 174–175,198.81	164	*	163	*	24	67	72
Benign neoplasms and neoplasms of uncertain behavior and unspecified nature 210–229,235–239	393	74	319	12	176	135	70
Endocrine, nutritional and metabolic diseases, and immunity disorders 240–279	1,089	436	653	105	232	261	492
Diabetes mellitus 250	420	190	230	21	112	134	153
Volume depletion 276.5	319	127	192	59	41	49	171
Diseases of the blood and blood-forming organs 280–289	324	158	166	61	93	54	115
Mental disorders 290–319	1,538	777	761	50	938	317	234
Psychoses 290–299	812	360	452	19	449	179	165
Alcohol dependence syndrome 303	239	184	55	*	153	66	18
Diseases of the nervous system and sense organs 320–389	770	356	414	154	214	159	243
Diseases of the central nervous system 320–336,340–349	342	155	187	52	128	67	96
Diseases of the ear and mastoid process 380–389	157	77	81	78	25	25	30
Diseases of the circulatory system 390–459	5,161	2,668	2,493	25	406	1,515	3,215
Heart disease 391–392.0,393–398,402, 404,410–416,420–429	3,556	1,913	1,643	16	240	1,100	2,200
Acute myocardial infarction 410	675	413	261	*	39	233	401
Coronary atherosclerosis 414.0	410	277	133	–	28	189	193
Other ischemic heart disease 411–413,414.1–414.9	870	465	406	*	62	316	492
Cardiac dysrhythmias 427	483	244	239	*7	37	131	308
Congestive heart failure 428.0	701	315	386	*	20	117	560
Cerebrovascular disease 430–438	812	359	452	*	38	162	610
Diseases of the respiratory system 460–519	2,966	1,430	1,536	701	498	520	1,247
Acute respiratory infections 460–466	487	235	252	186	63	74	164
Chronic disease of tonsils and adenoids 474	102	41	61	67	33	*	*
Pneumonia 480–486	1,052	530	522	211	141	153	546
Asthma 493	476	191	285	169	119	86	102
Diseases of the digestive system 520–579	3,239	1,449	1,790	252	980	842	1,165
Ulcers of the stomach and small intestine 531–534	244	131	113	*	48	74	120
Appendicitis 540–543	238	138	101	62	135	26	16
Inguinal hernia 550	168	149	18	19	39	46	63
Noninfectious enteritis and colitis 555–558	373	151	223	97	123	63	90
Cholelithiasis 574	506	132	374	*	198	160	145
Diseases of the genitourinary system 580–629	2,175	803	1,373	70	866	500	739
Calculus of kidney and ureter 592	272	177	95	*	136	89	46
Hyperplasia of prostate 600	259	259	...	*	*	63	195
Complications of pregnancy, childbirth, and the puerperium[1] 630–676	734	...	734	*5	729	*	...
Abortions and ectopic and molar pregnancies 630–639	208	...	208	*	205	*	...
Diseases of the skin and subcutaneous tissue 680–709	462	234	228	45	150	105	161
Cellulitis and abscess 681–682	288	151	137	27	94	76	92
Diseases of the musculoskeletal system and connective tissue 710–739	1,592	735	857	38	568	458	529
Arthropathies and related disorders 710–719	479	197	283	10	119	113	237
Intervertebral disc disorders 722	425	241	183	*	222	145	57
Congenital anomalies 740–759	182	105	77	120	34	20	*8
Certain conditions originating in the perinatal period 760–779	163	93	70	159	*	*	*
Symptoms, signs, and ill-defined conditions 780–799	410	201	209	59	180	110	60
Injury and poisoning 800–999	2,774	1,476	1,298	266	1,174	482	851
Fractures, all sites 800–829	1,017	466	551	87	332	149	448
Fracture of neck of femur 820	281	72	209	*	*8	24	245
Intracranial injuries (excluding those with skull fracture) 850–854	184	112	72	31	100	21	32
Lacerations and open wounds 870–904	240	179	61	28	165	24	23
Supplementary classifications V01–V82	4,507	198	4,309	68	4,150	128	160
Females with deliveries V27	4,025	...	4,025	13	4,008	*	...

[1]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, 1990

[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	1,234.6	1,015.5	1,440.9	439.4	1,017.4	1,330.5	3,270.8
Infectious and parasitic diseases 001–139	29.5	29.5	29.6	34.8	19.5	19.5	72.3
Septicemia .038	8.6	8.2	9.1	4.0	1.5	7.0	45.5
Neoplasms 140–239	78.8	66.5	90.4	7.4	31.1	145.0	279.2
Malignant neoplasms .140–208,230–234	63.0	60.4	65.5	5.2	15.9	116.2	257.1
Malignant neoplasm of large intestine and rectum .153–154,197.5	7.0	7.0	7.0	*	*0.4	12.4	35.3
Malignant neoplasm of trachea, bronchus, and lung .162,197.0,197.3	9.3	11.7	7.0	*	1.0	21.4	37.7
Malignant neoplasm of breast .174–175,198.81	6.6	*	12.7	*	2.0	14.3	22.9
Benign neoplasms and neoplasms of uncertain behavior and unspecified nature .210–229,235–239	15.8	6.1	24.9	2.2	15.2	28.8	22.1
Endocrine, nutritional and metabolic diseases, and immunity disorders 240–279	43.7	36.0	50.9	19.1	20.0	55.6	155.8
Diabetes mellitus .250	16.8	15.7	17.9	3.8	9.6	28.6	48.5
Volume depletion 276.5	12.8	10.5	14.9	10.8	3.5	10.4	54.0
Diseases of the blood and blood-forming organs 280–289	13.0	13.1	12.9	11.2	8.0	11.5	36.5
Mental disorders 290–319	61.7	64.3	59.2	9.1	80.8	67.5	73.9
Psychoses 290–299	32.5	29.8	35.2	3.4	38.7	38.1	52.3
Alcohol dependence syndrome .303	9.6	15.2	4.3	*	13.2	14.1	5.7
Diseases of the nervous system and sense organs 320–389	30.9	29.4	32.3	28.0	18.5	33.9	77.0
Diseases of the central nervous system .320–336,340–349	13.7	12.8	14.6	9.4	11.0	14.2	30.4
Diseases of the ear and mastoid process 380–389	6.3	6.3	6.3	14.1	2.1	5.4	9.4
Diseases of the circulatory system 390–459	206.9	220.6	194.1	4.6	35.0	322.8	1,017.6
Heart disease 391–392.0,393–398,402, 404,410–416,420–429	142.6	158.2	127.9	3.0	20.7	234.4	696.3
Acute myocardial infarction .410	27.1	34.2	20.3	*	3.4	49.7	127.0
Coronary atherosclerosis 414.0	16.4	22.9	10.4	–	2.4	40.3	61.0
Other ischemic heart disease 411–413,414.1–414.9	34.9	38.4	31.6	*	5.4	67.4	155.6
Cardiac dysrhythmias .427	19.4	20.2	18.6	*1.3	3.2	28.0	97.4
Congestive heart failure 428.0	28.1	26.0	30.0	*	1.7	24.9	177.2
Cerebrovascular disease 430–438	32.6	29.7	35.2	*	3.3	34.6	193.0
Diseases of the respiratory system 460–519	118.9	118.2	119.6	127.6	43.0	110.7	394.7
Acute respiratory infections 460–466	19.5	19.4	19.6	33.8	5.5	15.8	52.0
Chronic disease of tonsils and adenoids .474	4.1	3.4	4.7	12.2	2.9	*	*
Pneumonia 480–486	42.2	43.8	40.6	38.5	12.1	32.7	172.9
Asthma .493	19.1	15.8	22.2	30.8	10.3	18.2	32.4
Diseases of the digestive system 520–579	129.9	119.8	139.3	46.0	84.5	179.3	368.6
Ulcers of the stomach and small intestine 531–534	9.8	10.8	8.8	*	4.2	15.8	37.9
Appendicitis 540–543	9.6	11.4	7.8	11.2	11.7	5.5	5.0
Inguinal hernia .550	6.7	12.3	1.4	3.5	3.4	9.8	19.8
Noninfectious enteritis and colitis 555–558	15.0	12.5	17.3	17.7	10.6	13.4	28.6
Cholelithiasis .574	20.3	10.9	29.1	*	17.1	34.2	45.9
Diseases of the genitourinary system 580–629	87.2	66.4	106.9	12.8	74.7	106.6	233.8
Calculus of kidney and ureter .592	10.9	14.6	7.4	*	11.8	18.9	14.5
Hyperplasia of prostate .600	10.4	21.4	...	*	*	13.5	61.9
Complications of pregnancy, childbirth, and the puerperium[1] 630–676	29.5	...	57.2	*0.9	62.8	*	...
Abortions and ectopic and molar pregnancies 630–639	8.3	...	16.2	*	17.7	*	...
Diseases of the skin and subcutaneous tissue 680–709	18.5	19.4	17.7	8.2	13.0	22.4	51.1
Cellulitis and abscess 681–682	11.5	12.5	10.7	4.9	8.1	16.2	29.0
Diseases of the musculoskeletal system and connective tissue 710–739	63.8	60.8	66.7	6.8	49.0	97.5	167.4
Arthropathies and related disorders 710–719	19.2	16.3	22.0	1.9	10.3	24.0	75.1
Intervertebral disc disorders .722	17.0	20.0	14.3	*	19.2	30.9	18.0
Congenital anomalies 740–759	7.3	8.7	6.0	21.9	2.9	4.3	*2.5
Certain conditions originating in the perinatal period 760–779	6.5	7.7	5.5	29.1	*	*	*
Symptoms, signs, and ill-defined conditions 780–799	16.4	16.6	16.3	10.8	15.6	23.5	19.1
Injury and poisoning 800–999	111.2	122.1	101.0	48.5	101.3	102.7	269.3
Fractures, all sites 800–829	40.8	38.5	42.9	15.9	28.6	31.9	142.0
Fracture of neck of femur .820	11.3	5.9	16.3	*	*0.7	5.0	77.6
Intracranial injuries (excluding those with skull fracture) 850–854	7.4	9.3	5.6	5.6	8.6	4.5	10.1
Lacerations and open wounds 870–904	9.6	14.8	4.7	5.1	14.3	5.1	7.2
Supplementary classifications V01–V82	180.7	16.4	335.5	12.5	357.8	27.4	50.8
Females with deliveries .V27	161.4	...	313.4	2.4	345.6	*	...

[1] 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, 1990

[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	6.9	6.1	4.8	4.6	6.8	8.7
Infectious and parasitic diseases 001–139	9.1	10.2	8.2	4.6	9.7	10.9	11.6
Septicemia .038	13.3	14.0	12.6	7.5	14.7	15.1	13.5
Neoplasms 140–239	8.5	9.2	8.1	7.9	6.0	8.2	9.9
Malignant neoplasms .140–208,230–234	9.4	9.5	9.2	9.7	*	8.8	10.1
Malignant neoplasm of large intestine and rectum .153–154,197.5	13.7	13.0	14.4	*	*9.8	13.3	14.2
Malignant neoplasm of trachea, bronchus, and lung .162,197.0,197.3	8.5	8.0	9.1	*	4.6	7.7	9.5
Malignant neoplasm of breast .174–175,198.81	4.6	*	4.6	*	4.0	4.3	5.0
Benign neoplasms and neoplasms of uncertain behavior and unspecified nature .210–229,235–239	5.3	6.1	5.1	3.6	4.0	5.5	8.2
Endocrine, nutritional and metabolic diseases, and immunity disorders 240–279	7.0	6.8	7.1	4.3	5.0	7.0	8.5
Diabetes mellitus .250	7.8	7.6	8.1	4.3	5.7	8.1	9.7
Volume depletion 276.5	6.5	6.1	6.9	2.9	3.5	6.7	8.5
Diseases of the blood and blood-forming organs 280–289	5.8	6.0	5.6	4.0	5.8	6.8	6.3
Mental disorders 290–319	12.2	11.5	13.0	21.1	11.7	11.3	13.6
Psychoses 290–299	14.6	13.9	15.2	26.3	14.1	13.7	15.6
Alcohol dependence syndrome .303	9.9	9.9	10.1	*	10.0	9.3	10.4
Diseases of the nervous system and sense organs 320–389	5.5	5.8	5.3	4.5	5.2	5.4	6.5
Diseases of the central nervous system .320–336,340–349	8.6	9.4	8.0	7.3	6.6	9.0	11.8
Diseases of the ear and mastoid process 380–389	2.8	2.8	2.8	2.6	2.8	2.3	3.8
Diseases of the circulatory system 390–459	7.3	7.1	7.6	7.6	5.5	6.4	8.0
Heart disease 391–392.0,393–398,402, 404,410–416,420–429	6.9	6.7	7.1	8.3	5.4	5.9	7.6
Acute myocardial infarction .410	8.4	8.4	8.4	*	6.7	7.5	9.1
Coronary atherosclerosis 414.0	5.8	5.7	6.2	–	3.9	4.9	7.0
Other ischemic heart disease 411–413,414.1–414.9	5.2	5.0	5.3	*	3.6	4.9	5.6
Cardiac dysrhythmias .427	5.8	5.5	6.0	*5.1	4.1	4.6	6.5
Congestive heart failure 428.0	8.0	7.5	8.4	*	5.8	7.0	8.3
Cerebrovascular disease 430–438	9.5	9.2	9.7	*	7.0	10.3	9.5
Diseases of the respiratory system 460–519	6.9	6.7	7.0	3.5	4.9	7.0	9.5
Acute respiratory infections 460–466	5.1	4.7	5.5	3.3	3.7	6.1	7.3
Chronic disease of tonsils and adenoids .474	1.3	1.3	1.3	1.3	1.2	*	*
Pneumonia 480–486	8.3	8.2	8.4	4.5	6.9	8.0	10.2
Asthma .493	4.7	3.9	5.2	2.9	4.2	5.2	7.6
Diseases of the digestive system 520–579	5.9	5.6	6.2	3.5	4.4	6.1	7.6
Ulcers of the stomach and small intestine 531–534	6.5	6.1	7.0	*	4.9	6.0	7.6
Appendicitis 540–543	4.4	4.3	4.5	4.0	3.8	5.8	8.4
Inguinal hernia .550	2.3	2.2	3.0	1.4	1.5	2.3	3.1
Noninfectious enteritis and colitis 555–558	4.9	4.7	5.0	3.0	4.3	5.5	7.2
Cholelithiasis .574	5.8	6.6	5.5	*	4.3	5.9	7.7
Diseases of the genitourinary system 580–629	5.1	5.0	5.1	3.5	3.7	4.5	7.1
Calculus of kidney and ureter .592	3.1	2.7	3.8	*	2.6	2.9	4.9
Hyperplasia of prostate .600	4.9	4.9	...	*	*	4.2	5.2
Complications of pregnancy, childbirth, and the puerperium[1] 630–676	2.6	...	2.6	*2.7	2.6	*	...
Abortions and ectopic and molar pregnancies 630–639	2.1	...	2.1	*	2.1	*	...
Diseases of the skin and subcutaneous tissue 680–709	7.9	7.7	8.2	4.0	6.0	8.4	10.5
Cellulitis and abscess 681–682	7.2	6.4	8.0	3.9	5.7	8.3	8.6
Diseases of the musculoskeletal system and connective tissue 710–739	6.4	5.7	7.1	5.1	4.5	5.9	9.0
Arthropathies and related disorders 710–719	7.8	7.0	8.4	5.3	4.6	7.4	9.8
Intervertebral disc disorders .722	5.1	4.8	5.5	*	4.4	5.2	7.6
Congenital anomalies 740–759	6.0	5.8	6.3	5.7	4.6	9.9	*7.8
Certain conditions originating in the perinatal period 760–779	10.2	9.0	11.8	10.2	*	*	*
Symptoms, signs, and ill-defined conditions 780–799	2.8	2.6	3.1	2.6	2.6	2.9	3.7
Injury and poisoning 800–999	6.8	6.1	7.6	4.2	5.1	6.9	9.9
Fractures, all sites 800–829	8.3	6.7	9.7	4.3	5.9	7.6	11.1
Fracture of neck of femur .820	12.8	11.7	13.3	*	*10.3	12.8	13.0
Intracranial injuries (excluding those with skull fracture) 850–854	5.5	5.6	5.4	4.9	5.0	6.0	7.5
Lacerations and open wounds 870–904	4.3	4.3	4.2	3.4	4.0	4.8	7.1
Supplementary classifications V01–V82	3.2	6.5	3.0	3.5	2.8	5.7	9.6
Females with deliveries .V27	2.8	...	2.8	2.6	2.8	*	...

[1] 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, 1990

[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	40,506	15,916	24,590	1,960	16,186	9,052	13,308
Operations on the nervous system 01–05	952	479	472	210	314	214	214
Spinal tap 03.31	396	204	192	166	100	54	77
Operations on the endocrine system 06–07	96	26	70	*	40	31	23
Operations on the eye 08–16	350	174	176	16	74	76	184
Operations on the ear 18–20	137	73	64	81	27	18	11
Operations on the nose, mouth, and pharynx 21–29	585	327	258	140	254	112	79
Tonsillectomy with or without adenoidectomy 28.2–28.3	117	49	68	74	40	*	*
Operations on the respiratory system 30–34	975	555	420	66	177	296	436
Bronchoscopy with or without biopsy 33.21–33.24,33.27	298	175	123	20	46	88	144
Operations on the cardiovascular system 35–39	3,881	2,317	1,564	154	429	1,438	1,860
Removal of coronary artery obstruction 36.0	285	200	85	*	22	148	115
Coronary artery bypass graft[1] 36.1	392	286	106	*	19	169	204
Cardiac catheterization 37.21–37.23	995	620	376	17	100	457	421
Insertion, replacement, removal, and revision of pacemaker leads or device 37.7–37.8	259	138	121	*	*5	52	199
Shunt or vascular bypass 39.0–39.2	162	95	67	*	16	58	83
Hemodialysis 39.95	216	105	111	*	44	77	95
Operations on the hemic and lymphatic system 40–41	361	187	174	20	80	109	151
Operations on the digestive system 42–54	5,271	2,194	3,077	212	1,487	1,386	2,185
Endoscopy of small intestine with or without biopsy 45.11–45.14,45.16	785	357	428	10	148	213	414
Endoscopy of large intestine with or without biopsy 45.21–45.25	548	212	336	*	79	136	329
Partial excision of large intestine 45.7	204	89	116	*	20	58	125
Appendectomy, excluding incidental 47.0	274	147	127	66	158	32	18
Cholecystectomy 51.2	522	147	375	*	206	168	146
Repair of inguinal hernia 53.0–53.1	205	181	24	22	43	54	86
Lysis of peritoneal adhesions 54.5	323	62	261	*5	155	79	84
Operations on the urinary system 55–59	1,664	946	718	41	390	426	807
Cystoscopy with or without biopsy 57.31–57.33	527	377	150	*7	76	127	317
Operations on the male genital organs 60–64	594	594	...	46	40	127	380
Prostatectomy 60.2–60.6	364	364	...	...	*	80	284
Operations on the female genital organs 65–71	2,440	...	2,440	10	1,711	495	223
Oophorectomy and salpingo-oophorectomy 65.3–65.6	476	...	476	*	260	160	56
Bilateral destruction or occlusion of fallopian tubes 66.2–66.3	419	...	419	–	418	*	...
Hysterectomy 68.3–68.7	591	...	591	–	349	184	58
Dilation and curettage of uterus 69.0	220	...	220	*	177	31	10
Repair of cystocele and rectocele 70.5	137	...	137	–	42	52	43
Obstetrical procedures 72–75	6,792	...	6,792	19	6,763	10	...
Episiotomy with or without forceps or vacuum extraction 72.1,72.21,72.31,72.71,73.6	1,717	...	1,717	*7	1,709	*	...
Artificial rupture of membranes 73.0	691	...	691	*	688	*	...
Cesarean section 74.0–74.2,74.4,74.99	945	...	945	*	940	*	...
Fetal EKG (scalp) and fetal monitoring, not otherwise specified 75.32,75.34	1,377	...	1,377	*	1,370	*	...
Repair of current obstetric laceration 75.5–75.6	795	...	795	*	793	*	...
Operations on the musculoskeletal system 76–84	3,132	1,624	1,508	161	1,273	733	965
Partial excision of bone 76.2–76.3,77.6–77.8	193	112	81	10	89	56	39
Open reduction of fracture with internal fixation 79.3	391	177	214	17	140	71	163
Excision or destruction of intervertebral disc 80.5	305	175	130	*	164	106	34
Total hip replacement 81.51	119	48	71	–	*8	28	82
Total knee replacement 81.54	129	46	83	–	*	32	95
Operations on the integumentary system 85–86	1,387	580	807	85	527	355	419
Mastectomy 85.4	122	*	121	*	14	52	56
Debridement of wound, infection, or burn 86.22,86.28	332	184	148	21	119	63	129
Skin graft 86.6–86.7	110	66	44	*9	42	25	34
Miscellaneous diagnostic and therapeutic procedures 87–99	11,890	5,842	6,048	694	2,600	3,225	5,371
Computerized axial tomography 87.03,87.41,87.71, 88.01,88.38	1,506	736	770	69	359	333	745
Pyelogram 87.73–87.75	291	149	142	*5	116	75	96
Arteriography and angiocardiography using contrast material 88.4–88.5	1,735	1,051	685	19	208	766	742
Diagnostic ultrasound 88.7	1,608	667	941	90	427	357	734
Circulatory monitoring 89.6	724	344	380	30	118	167	409
Radioisotope scan 92.0–92.1	603	268	335	19	105	160	318
Respiratory therapy 93.9	1,164	586	578	190	183	226	565

[1]The number of discharged patients with a coronary artery bypass graft was 262,000.

Table 8. Rate of all-listed procedures for inpatients discharged from short-stay hospitals, by procedure category, sex, and age: United States, 1990

[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 per 100,000 population						
All procedures	16,243.0	13,161.7	19,143.8	3,571.2	13,956.8	19,287.0	42,125.2
Operations on the nervous system 01–05	381.6	396.5	367.6	382.7	270.3	455.5	678.2
Spinal tap .03.31	158.8	168.8	149.3	301.9	85.8	114.2	244.0
Operations on the endocrine system 06–07	38.3	21.2	54.5	*	34.3	65.4	72.4
Operations on the eye 08–16	140.2	143.6	136.9	29.0	63.6	161.4	582.9
Operations on the ear 18–20	54.7	60.1	49.7	147.3	23.5	38.2	33.4
Operations on the nose, mouth, and pharynx 21–29	234.7	270.3	201.2	255.3	219.0	239.6	249.1
Tonsillectomy with or without adenoidectomy 28.2–28.3	47.1	40.9	52.9	135.1	34.2	*	*
Operations on the respiratory system 30–34	391.0	458.7	327.3	121.0	152.8	629.9	1,379.4
Bronchoscopy with or without biopsy .33.21–33.24,33.27	119.5	144.9	95.6	36.9	39.5	188.0	454.4
Operations on the cardiovascular system 35–39	1,556.2	1,915.7	1,217.8	280.2	369.7	3,064.2	5,888.5
Removal of coronary artery obstruction .36.0	114.4	165.7	66.2	*	19.1	315.7	364.0
Coronary artery bypass graft[1] .36.1	157.2	236.7	82.4	*	16.2	360.7	645.9
Cardiac catheterization .37.21–37.23	399.2	512.4	292.6	31.5	86.2	973.9	1,332.9
Insertion, replacement, removal, and revision of pacemaker leads or device 37.7–37.8	103.8	114.0	94.2	*	*4.7	111.4	629.0
Shunt or vascular bypass 39.0–39.2	64.8	78.4	52.0	*	13.8	124.6	262.3
Hemodialysis .39.95	86.8	87.0	86.5	*	37.9	163.1	299.1
Operations on the hemic and lymphatic system 40–41	144.7	154.2	135.8	37.2	69.0	232.2	479.5
Operations on the digestive system 42–54	2,113.6	1,814.4	2,395.3	386.4	1,282.6	2,953.1	6,917.4
Endoscopy of small intestine with or without biopsy .45.11–45.14,45.16	314.7	295.2	333.0	18.1	127.3	453.9	1,311.2
Endoscopy of large intestine with or without biopsy .45.21–45.25	219.7	175.2	261.7	*	67.8	289.8	1,042.8
Partial excision of large intestine .45.7	82.0	73.4	90.0	*	16.8	122.7	394.9
Appendectomy, excluding incidental .47.0	109.8	121.7	98.6	121.0	136.2	67.2	56.4
Cholecystectomy .51.2	209.3	121.9	291.6	*	177.3	357.7	463.3
Repair of inguinal hernia 53.0–53.1	82.1	149.6	18.7	39.9	36.8	115.5	272.5
Lysis of peritoneal adhesions .54.5	129.6	51.2	203.4	*8.4	133.9	168.2	267.2
Operations on the urinary system 55–59	667.3	782.3	559.1	74.7	336.3	908.7	2,553.4
Cystoscopy with or without biopsy .57.31–57.33	211.4	312.0	116.8	*12.7	65.8	270.3	1,003.7
Operations on the male genital organs 60–64	238.2	491.3	...	84.4	34.8	270.7	1,203.9
Prostatectomy 60.2–60.6	145.9	300.8	...	...	*	169.4	899.1
Operations on the female genital organs 65–71	978.3	...	1,899.4	18.9	1,475.6	1,054.8	706.0
Oophorectomy and salpingo-oophorectomy 65.3–65.6	190.9	...	370.6	*	223.9	340.1	177.3
Bilateral destruction or occlusion of fallopian tubes 66.2–66.3	167.9	...	326.0	–	360.6	*	...
Hysterectomy 68.3–68.7	237.0	...	460.2	–	301.0	392.5	182.9
Dilation and curettage of uterus .69.0	88.4	...	171.5	*	152.5	66.7	33.0
Repair of cystocele and rectocele .70.5	54.9	...	106.5	–	36.4	111.0	134.8
Obstetrical procedures 72–75	2,723.8	...	5,288.1	34.9	5,831.7	21.7	...
Episiotomy with or without forceps or vacuum extraction 72.1,72.21, 72.31,72.71,73.6	688.6	...	1,336.9	*12.2	1,473.8	*	...
Artificial rupture of membranes .73.0	277.1	...	538.0	*	593.1	*	...
Cesarean section 74.0–74.2,74.4,74.99	379.1	...	736.0	*	810.5	*	...
Fetal EKG (scalp) and fetal monitoring, not otherwise specified 75.32,75.34	552.1	...	1,071.9	*	1,181.4	*	...
Repair of current obstetric laceration 75.5–75.6	318.7	...	618.7	*	683.7	*	...
Operations on the musculoskeletal system 76–84	1,256.1	1,342.9	1,174.3	294.1	1,097.4	1,562.7	3,053.9
Partial excision of bone 76.2–76.3,77.6–77.8	77.4	92.7	62.9	18.5	76.4	118.3	122.3
Open reduction of fracture with internal fixation .79.3	156.8	146.1	166.8	30.5	121.1	151.1	515.4
Excision or destruction of intervertebral disc .80.5	122.2	144.8	100.9	*	141.4	225.7	107.9
Total hip replacement .81.51	47.7	39.8	55.1	–	*7.1	60.5	260.5
Total knee replacement .81.54	51.7	37.6	65.0	–	*	67.3	301.5
Operations on the integumentary system 85–86	556.2	479.4	628.5	155.5	454.7	757.1	1,326.6
Mastectomy .85.4	48.9	*	94.1	*	11.8	111.2	176.0
Debridement of wound, infection, or burn 86.22,86.28	133.2	152.0	115.5	39.0	102.3	135.2	407.2
Skin graft 86.6–86.7	44.1	54.6	34.3	*16.2	35.8	53.5	109.0
Miscellaneous diagnostic and therapeutic procedures 87–99	4,767.9	4,831.2	4,708.2	1,265.3	2,241.6	6,871.8	17,000.5
Computerized axial tomography 87.03,87.41, 87.71,88.01,88.38	603.8	608.2	599.7	125.3	310.0	709.5	2,356.8
Pyelogram 87.73–87.75	116.8	123.1	110.8	*8.5	100.1	158.9	303.3
Arteriography and angiocardiography using contrast material 88.4–88.5	695.8	868.8	532.9	35.2	179.5	1,631.4	2,348.8
Diagnostic ultrasound .88.7	645.0	551.6	732.9	164.6	368.0	760.8	2,324.3
Circulatory monitoring .89.6	290.5	284.8	295.8	55.5	101.7	355.1	1,295.5
Radioisotope scan 92.0–92.1	241.8	221.6	260.8	35.4	90.8	340.7	1,008.0
Respiratory therapy .93.9	466.8	484.4	450.2	346.5	158.2	481.3	1,787.0

[1]The rate per 100,000 population of discharged patients with a coronary bypass graft was 105.2.

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.

Beginning with 1988, the NHDS sampling frame consists 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. For 1990, the sample consisted of 542 hospitals. Of the 542 hospitals, 23 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 519 in-scope (eligible) hospitals, 474 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 34 percent of the respondent hospitals in 1990, that involved the purchase of data tapes from abstracting service organizations.

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. A few of these hospitals submitted their data via computer printout or tape. Of the hospitals using the manual system in 1990, 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 from abstracting service organizations. Records were systematically sampled by NCHS.

The medical abstract form and the abstract service 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. Based on consideration of the complex sample design of the NHDS, the following guidelines are used for presenting the NHDS estimates:

- If the relative standard error of an estimate is larger than 30 percent, or the sample size is less than 30, the estimate is not shown. Only an asterisk (*) appears in the tables.
- If the sample size is less than 60, the value of the estimate should not be assumed to be reliable. The estimate is preceded by an asterisk (*) in the tables.

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 (4).

The constants for relative standard error curves for the National Hospital Discharge Survey constants are presented in table I. The relative standard error [RSE(X)] of an

estimate X may be estimated from the formula:

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

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. The following ICD-9-CM procedure codes are not used in the the NHDS:

87.09, 87.11, 87.12, 87.16–87.17, 87.22–87.29, 87.39, 87.43–87.49, 87.85, 87.89, 87.92, 87.95, 87.99, 88.09, 88.16, 88.19, 88.21–88.29, 88.31, 88.33, 88.35, 88.37, 88.39, 89.01–89.09, 89.11–89.13, 89.15–89.16, 89.26, 89.29, 89.31, 89.33–89.39, 89.7–89.8, 90.01–90.99, 91.01–91.99, 93.01–93.09, 93.11–93.19, 93.21–93.25, 93.27–93.28, 93.31–93.39, 93.61–93.67, 93.71–93.78, 93.81–93.89, 94.01–94.09, 94.11–94.19, 94.21–94.23, 94.29, 94.31–94.39, 94.41–94.49, 94.51–94.59, 95.01–95.03, 95.05–95.09, 95.14–95.15, 95.31–95.36, 95.41–95.48, 96.11–96.19, 96.26–96.28, 96.34–96.39, 96.41–96.48, 96.51–96.59, 96.6, 97.01–97.04, 97.14–97.16, 97.21–97.29, 97.31–97.39, 97.41–97.49, 97.51–97.59, 97.61–97.69, 97.72–97.79, 97.81–97.87, 97.89, 99.12–99.14,

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

99.16–99.18, 99.26–99.29, 99.31–99.39, 99.41–99.48, 99.51–99.59.

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.

Demographic terms

Population—The U.S. resident population excluding members of the Armed Forces. The population estimates are from unpublished tabulations provided by the U.S. Bureau of the Census that do not include the results of the 1990 Census.

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.

Region	*States included*
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

*U.S. Government Printing Office: 1992— 312-093/40019

Suggested citation

Graves EJ. 1990 Summary: National Hospital Discharge Survey. Advance data from vital and health statistics; no. 210. Hyattsville, Maryland: National Center for Health Statistics. 1992.

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Centers for Disease Control
National Center for Health Statistics
6525 Belcrest Road
Hyattsville, Maryland 20782

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, $300

To receive this publication regularly, contact the National Center for Health Statistics by calling 301-436-8500

DHHS Publication No. (PHS) 92-1250

FIRST CLASS MAIL
POSTAGE & FEES PAID
PHS/NCHS
PERMIT No. G-281